

Netscape Application Server Foundation Class Reference (Java)

Netscape Application Server

Version 4.0

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This preface contains the following topics:

- Using the Documentation
- About This Guide
- Naming Conventions

Using the Documentation

The following table lists the tasks and concepts that are described in the Netscape Application Server (NAS) and Netscape Application Builder (NAB) printed manuals and online README file. If you are trying to accomplish a specific task or learn more about a specific concept, refer to the appropriate manual.

Note that the printed manuals are also available as online files in PDF and HTML format.

| For information about | See the following | Shipped with |
|---|--------------------|---|
| Late-breaking information about the software and the documentation | readme.htm | NAS 4.0, NAS 4.0 Developer Edition (Solaris), NAB 4.0 |
| Installing Netscape Application Server and its various components (Web Connector plug-in, Netscape Application Server Administrator), and configuring the sample applications | Installation Guide | NAS 4.0 Developer Edition (Solaris), NAS 4.0 |
| Installing Netscape Application Builder | install.htm | NAB 4.0 |
| Basic features of NAS, such as its software components, general capabilities, and system architecture | Overview | NAS 4.0, NAS 4.0 Developer Edition (Solaris), NAB 4.0 |

| For information about | See the following | Shipped with |
|--|----------------------|---|
| <p>Deploying Netscape Application Server at your site, by performing the following tasks:</p> <ul style="list-style-type: none"> • Planning your Netscape Application Server environment • Integrating the product within your existing enterprise and network topology • Developing server capacity and performance goals • Running stress tests to measure server performance • Fine-tuning the server to improve performance | Deployment Guide | NAS 4.0 |
| <p>Administering one or more application servers using the Netscape Application Server Administrator tool to perform the following tasks:</p> <ul style="list-style-type: none"> • Deploying applications with the Deployment Manager tool • Monitoring and logging server activity • Setting up users and groups • Administering database connectivity • Administering transactions • Load balancing servers • Managing distributed data synchronization | Administration Guide | NAS 4.0 |
| <p>Migrating your applications to the new Netscape Application Server 4.0 programming model from version 2.1, including a sample migration of an Online Bank application provided with Netscape Application Server</p> | Migration Guide | NAS 4.0, NAS 4.0 Developer Edition (Solaris), NAB 4.0 |

| For information about | See the following | Shipped with |
|--|--|--|
| <p>Creating NAS 4.0 applications within an integrated development environment by performing the following tasks:</p> <ul style="list-style-type: none"> • Creating and managing projects • Using wizards • Creating data-access logic • Creating presentation logic and layout • Creating business logic • Compiling, testing, and debugging applications • Deploying and downloading applications • Working with source control • Using third-party tools | User's Guide | NAB 4.0 |
| <p>Creating NAS 4.0 applications that follow the new open Java standards model (Servlets, EJBs, JSPs, and JDBC), by performing the following tasks:</p> <ul style="list-style-type: none"> • Creating the presentation and execution layers of an application • Placing discrete pieces of business logic and entities into Enterprise Java Beans (EJB) components • Using JDBC to communicate with databases • Using iterative testing, debugging, and application fine-tuning procedures to generate applications that execute correctly and quickly | Programmer's Guide (Java) | NAS 4.0 Developer Edition (Solaris), NAB 4.0 |
| <p>Using the public classes and interfaces, and their methods in the Netscape Application Server class library to write Java applications</p> | Server Foundation Class Reference (Java) | NAS 4.0 Developer Edition (Solaris), NAB 4.0 |

| For information about | See the following | Shipped with |
|--|---|------------------|
| Creating NAS C++ applications using the NAS class library by performing the following tasks: <ul style="list-style-type: none"> • Designing applications • Writing AppLogics. • Creating HTML templates • Creating queries • Running and debugging applications | Programmer's Guide (C++) | Order separately |
| Using the public classes and interfaces, and their methods in the Netscape Application Server class library to write C++ applications | Server Foundation Class Reference (C++) | Order separately |

About This Guide

The *Netscape Application Server Foundation Class Reference (Java)* provides specification-level documentation for the public classes and interfaces, and their methods, in the Netscape Application Server Foundation Class Library. Use this book to look up how a particular class or interface method works, what syntax is required, and for examples on how to use it.

For conceptual and task-oriented information on designing and developing Netscape Application Server applications, read the *Programmer's Guide (Java)*.

Naming Conventions

| Item | Convention |
|----------------|---|
| Package name | Lowercase with periods indicating directory levels. For example, com.netscape.server.servlet.extension. |
| Class name | Mixed case with initial uppercase. For example, AppLogic class. |
| Interface name | Mixed case with initial uppercase. For example, IAppEventObj. |
| Method name | Mixed case with initial lowercase. For example, getTables(). |
| Parameters | Mixed case with initial lowercase. For example, myQuery. |

Naming Conventions

Summary of the NAS API

This chapter gives an overview of the classes and interfaces that make up the Netscape Application Server Foundation Class Library, also called the NAS API.

This chapter includes the following main topics:

- Support for Standard Java APIs
- How to Use the NAS API

Support for Standard Java APIs

NAS supports several industry-standard Java APIs. In particular, NAS supports the APIs and technologies as defined by the following specifications:

- *Java Servlet 2.1 API Specification*
- *Enterprise JavaBeans 1.0 Specification*
- *JavaServer Pages 0.92 Specification*
- *JDBC 2.0 Core API Specification*
- *JDBC 2.0 Standard Extensions Specification*

Note that NAS 4.0 provides full support for JDBC 1.0 and partial support for JDBC 2.0. The supported JDBC 2.0 functionality is described in the *Programmer's Guide (Java)*.

The specifications listed above are accessible from the following location:

`installdir/nas/docs/index.htm`

where `installdir` is the location in which you installed NAS.

Note that Sun Microsystems owns the process of defining, creating, and publishing these specifications. As a result, you can find more information about these APIs at their web site:

`http://java.sun.com`

This web site also hosts the latest versions of the Java specifications, which are not necessarily supported in NAS 4.0.

How to Use the NAS API

This guide, *Netscape Application Server Foundation Class Reference (Java)*, provides information on the NAS API. If you want to develop an application that is 100% compliant with the industry-standard Java technologies (servlets, JSPs, EJBs, and JDBC calls), do not use the NAS API.

However, there are three main situations for which the NAS API is useful.

- To take advantage of additional NAS features.
- To use the development environment provided by Netscape Application Builder (NAB). The NAS API is used in some of the code that NAB automatically generates.
- To use deprecated functionality for backward compatibility.

These uses are described in the following subsections.

Additional NAS Features

In many situations, you'd like your application to use functionality that is not supported by the industry-standard APIs (for example, application events, security, and distributed state).

In addition, your application may need to access

- code that was built to run on a previous release of NAS.
- other proprietary code.

For these situations, you may want to use the features listed in the following table:

| Classes | Interfaces | |
|-----------|---------------------|----------------|
| GXContext | HttpServletRequest2 | IEnumObject |
| NASRowSet | HttpSession2 | ILock |
| SqlUtil | IAppEventMgr | IMailbox |
| | IAppEventObj | IServerContext |
| | ICallerContext | IState2 |
| | IContext | |

The Development Environment of Netscape Application Builder

If you develop applications using Netscape Application Builder (NAB), your generated code may rely on the classes or interfaces listed in the following table. Typically, only NAB users will use these classes or interfaces, although they are available to anyone developing applications in the NAS environment.

| Classes | Interfaces |
|---------------------|----------------------|
| BaseUtils | IListRowSet |
| DBRowSet | IRowSet2 |
| DefaultHttpSession | IServletErrorHandler |
| DefaultHttpSession2 | |
| DefaultTemplateMap | |
| MemRowSet | |
| NASString | |
| NASStringBuffer | |

Deprecated Functionality

Netscape Application Server now supports a standards-based application model. As a result, many of the classes and interfaces in the NAS Foundation Class Library are deprecated. They are provided only for backward compatibility with existing NAS applications.

Deprecated code will become unsupported in an upcoming release. Netscape therefore recommends that new applications use equivalent functionality from the industry-standard Java APIs. In many cases, you may want to migrate existing applications, so that they operate within the new application model. For more information, see the *Migration Guide*.

The following classes and interfaces of the NAS API are deprecated. Within this reference guide, the corresponding headings are marked (*deprecated*).

| Classes | Interfaces | |
|-------------------|----------------|---------------|
| AppLogic | IAppEvent | IResultSet |
| GUID | IBuffer | ISequence |
| GX | ICallableStmt | ISequenceMgr |
| GXVAL | IColumn | ISession2 |
| Session2 | IDataConn | ISessionIDGen |
| TemplateDataBasic | IDataConnSet | IStreamBuffer |
| TemplateMapBasic | IError | ITable |
| Util | IHierQuery | ITemplateData |
| | IHierResultSet | ITemplateMap |
| | IObject | ITile |
| | IOrder | ITrans |
| | IPreparedQuery | IValList |
| | IQuery | |

Classes

This chapter provides reference material on the classes in the Netscape Application Server Foundation Class Library.

The following classes are included in this chapter:

| | |
|-----------------------------|--------------------------------------|
| AppLogic class (deprecated) | MemRowSet class |
| BaseUtils class | NASRowSet class |
| DBRowSet class | NASString class |
| DefaultHttpSession class | NASStringBuffer class |
| DefaultHttpSession2 class | Session2 class (deprecated) |
| DefaultTemplateMap class | SqlUtil class |
| GUID class (deprecated) | TemplateDataBasic class (deprecated) |
| GX class (deprecated) | TemplateMapBasic class (deprecated) |
| GXContext class | Util class (deprecated) |
| GXVAL class (deprecated) | |

AppLogic class (*deprecated*)

The AppLogic class is deprecated and is provided for backward compatibility only. AppLogics are not part of NAS's new application model, which is based on standards defined in the servlet, EJB, and JDBC specifications. The AppLogic class is provided so that existing AppLogics continue to be supported. However, new applications should avoid calling AppLogic methods whenever possible.

For information about replacing AppLogic functionality in existing applications, see the *Migration Guide*.

The AppLogic class is the base class for all AppLogic code. It provides a suite of useful AppLogic-related helper methods and member variables. You can, for example, use methods in your derived AppLogic class to create database connections, queries, transactions, and HTML output.

To use the AppLogic class, you must first import the `com.kivasoft.applogic` package at the beginning of your AppLogic file, as shown in the following example:

```
import com.kivasoft.applogic.*;
```

After you import the `com.kivasoft.applogic` package, you can create an instance of AppLogic and override the `execute()` method with AppLogic-specific code, as shown in the following example:

```
public class myAppLogic extends AppLogic {
    public int execute() {
        /* Override execute() method with AppLogic code */
        return result("Hello, world!\n");
    }
}
```

Package

`com.kivasoft.applogic`

Variables

| Variable | Description |
|----------|---|
| context | IContext object, which provides access to Netscape Application Server services. Some objects require services from IContext. |
| valIn | IValList object containing input parameters and other information. During the execute() method, an AppLogic can access items in the IValList to retrieve the arguments passed into the request. |
| valOut | IValList object containing output parameters. During the execute() method, the AppLogic can add or update items in the IValList to specify output values for the request. |

Methods

Most methods of the AppLogic class are deprecated. Instead of calling these methods, we recommend using equivalent functionality as described with each AppLogic method.

In some cases, you may want to call AppLogic methods to access NAS features that are not currently available through the Java standards. For example, you may want to take advantage of caching or distributed state trees. In the following table, **boldface** type indicates a method that may be useful in NAS 4.0 applications.

| Method | Description |
|------------------------|---|
| createDataConn() | Creates a new data connection object and opens a connection to a database or data source. |
| createDataConnSet() | Creates a collection used to dynamically assign query name / data connection pairs before loading a query file. |
| createHierQuery() | Creates a new query object used for building and running a hierarchical query. |
| createMailbox() | Creates an electronic mailbox object used for communicating with a user through email. |
| createQuery() | Creates a new query object used for building and running a flat query. |

| Method | Description |
|---------------------------|--|
| createSession() | Creates a new session object used for tracking a user session. |
| createTrans() | Creates a new transaction object used for transaction processing operations on a database. |
| deleteCache() | Deletes the result cache for a specified AppLogic. |
| destroySession() | Deletes a user session. |
| evalOutput() | Creates an output report by merging data with a report template file. |
| evalTemplate() | Creates an output report by merging data with a report template file. The report is an HTML document that can be viewed using a Web browser. |
| execute() | Performs the main task of an AppLogic object, such as accessing a database, generating a report, or other operations. Should be overridden or implemented. |
| getAppEvent() | Retrieves the application event object. |
| getSession() | Returns an existing user session. |
| getStateTreeRoot() | Returns an existing root node of a state tree or creates a new one. |
| isAuthorized() | Checks a user's permission level to a specified action or AppLogic. |
| isCached() | Returns true if AppLogic results are being saved in the result cache. |
| loadHierQuery() | Creates a hierarchical query by loading a query file and one or more query names with associated data connections. |
| log() | Writes a message to the server log. |
| loginSession() | Logs an authorized user into a session with a secured application. |
| logoutSession() | Logs a user out of a session with a secured application. |
| newRequest() | Calls another AppLogic from within the current AppLogic. |
| newRequestAsync() | Calls another AppLogic from within the current AppLogic, and runs it asynchronously. |

| Method | Description |
|---------------------------------|--|
| removeAllCachedResults() | Clears an AppLogic's result cache. |
| removeCachedResult() | Clears specific results from an AppLogic's result cache. |
| result() | Specifies the return value of an AppLogic. |
| saveSession() | Saves changes to a session. |
| setCacheCriteria() | Stores AppLogic results, such as HTML, data values, and streamed results, in a result cache. |
| setSessionVisibility() | Sets the session visibility. |
| setVariable() | Sets a value that is passed to later AppLogic requests that are called by the same client session. |
| skipCache() | Skips result caching for the current AppLogic execution. |
| streamResult() | Streams output results as a string. |
| streamResultBinary() | Streams output binary data, such as a GIF file. |
| streamResultHeader() | Streams output header data. |

Example

The following example shows importing the com.kivasoft and Java packages, and overriding the execute() method with code that logs a series of messages:

```
import java.lang.*;
import com.kivasoft.*;
import com.kivasoft.types.*;
import com.kivasoft.util.*;
import com.kivasoft.applogic.*;

public class mySimpleAppLogic extends AppLogic {
    public int execute() {
        log("The execute method got called.");
        log("I can do anything I want here, such as");
        log("run queries, generate reports, update tables,");
        log("and log messages like this one.");
        return GXE.SUCCESS;
    }
}
```

createDataConn()

Creates a new data connection object and opens a connection to a database or data source.

createDataConn() is deprecated. In standard-based applications, use the `getConnection()` method in the `javax.sql.DataSource` interface.

Syntax 1 Use this version for most database drivers.

```
public IDataConn createDataConn(
    int flags,
    int driver,
    String datasource,
    String database,
    String username,
    String password)
```

Syntax 2 Use this version for database drivers requiring parameters not found in Syntax 1. Provides parameters through an `IValList` object instead. To use this syntax, you must first create an instance of the `IValList` interface and use `setValString()` to specify the connection parameter names and values.

```
public IDataConn createDataConn(
    int flags,
    int driver,
    IValList prop,
    IContext context)
```

flags One or more optional flags used for connecting to the specified data source.

- To try to use a cached connection, if one is available, specify `GX_DA_CONN_FLAGS.GX_DA_CACHED`. If no cached connections are currently available, a new one is created.
- To always create a new connection (instead of using a cached connection), specify `GX_DA_CONN_FLAGS.GX_DA_NEW`.
- To retry if a connection is not available, specify `GX_DA_CONN_FLAGS.GX_DA_CONN_BLOCK`.
- To return a failure immediately after the first attempt if a connection is not available, specify `GX_DA_CONN_FLAGS.GX_DA_CONN_NOBLOCK`.

The AppLogic can pass one parameter from both mutually exclusive pairs, as shown in the following example:

```
(GX_DA_CONN_FLAGS.GX_DA_CACHED |  
GX_DA_CONN_FLAGS.GX_DA_CONN_BLOCK)
```

Specify 0 (zero) to use the system's default settings:

```
GX_DA_CONN_FLAGS.GX_DA_CACHED and  
GX_DA_CONN_FLAGS.GX_DA_CONN_BLOCK
```

driver Specify one of the following static variables in the GX_DA_DAD_DRIVERS class:

| | |
|------------------------------|----------------------------|
| GX_DA_DRIVER_ODBC | GX_DA_DRIVER_SYBASE_CTLIB |
| GX_DA_DRIVER_MICROSOFT_JET | GX_DA_DRIVER_MICROSOFT_SQL |
| GX_DA_DRIVER_INFORMIX_SQLNET | GX_DA_DRIVER_INFORMIX_CLI |
| GX_DA_DRIVER_INFORMIX_CORBA | GX_DA_DRIVER_DB2_CLI |
| GX_DA_DRIVER_ORACLE_OCI | GX_DA_DRIVER_DEFAULT |

If GX_DA_DRIVER_DEFAULT is specified, the Netscape Application Server evaluates the drivers and their associated priorities set in the registry to determine the driver to use. Specify GX_DA_DRIVER_DEFAULT if your system uses ODBC and native drivers, and if you want the Netscape Application Server to choose between an ODBC driver and a native driver at connection time.

datasource Name of the data source to connect to. Used for databases that organize data into data source, database, and table objects and sub-objects. For example, a data source for Accounting might contain separate databases for GL, AP, and AR. Each database, such as Accounts Payable, might be a collection of individual tables, such as a vendor table, purchase order table, materials table, and so on. See your database server documentation for more information.

database Name of the database to connect to. Used for database servers that organize data into databases and tables. See your database server documentation for more information.

username Login user name that is valid for the specified database.

password Login password that is valid for the specified user name and database.

props IList of connection-specific information required to log in to the data source. Use the following keys for the connection parameters:

- "DSN" for the data source name.
- "DB" for the database name.
- "USER" for the user name.
- "PSWD" for the password.

context A pointer to the IContext object, which provides access to Netscape Application Server services. Specify null.

Usage A data connection is a communication link or session with a database or other data source. Before interacting with a data source, an AppLogic must first establish a connection with it. Each connection is represented by a data connection object, which contains all the information needed to communicate with a database or data source, such as the name of the database, database driver, user name, password, and so on. A data connection object is an instance of the IDataConn interface.

Use `createDataConn()` to set up a separate connection for each database or data source you want to access. AppLogic objects refer to the data connection object in their methods that perform subsequent operations on the database.

- Rules**
- Call `createDataConn()` before running any other database operations requiring a data connection object.
 - Your network and the database server must be correctly configured and running so that the AppLogic on your application server can log into the database management system with which it will communicate.
 - The data source name, database name, user name, and password must be valid for the database management system to which you want to connect.
 - The AppLogic must log in with sufficient access rights to perform all operations it attempts on the data source.
- Tips**
- Before logging in to the database, the AppLogic should check the user's security level to verify sufficient access rights to perform intended operations on the database.

- The Data Access Engine (DAE) manages database connections and related housekeeping tasks, such as shutdown and cleanup. While the DAE performs these tasks automatically and intermittently, an AppLogic can also explicitly close data connections using `closeConn()` in the `IDataConn` interface.
- Before using an ODBC connection, you must use the ODBC administration utility supplied with your database software to define and name a data source. For more information about how to do this, refer to your ODBC documentation.
- To connect to a Sybase database, specify `null` for the `datasource`, and specify the database in the form of `server:database_name`. For example:

```
devds003:dnet00a
```

- A connection object can only be used by one thread at a time. When you need to access a database, get the connection object and save it in a local variable. When you're done, close the connection. For example:

```
Connection conn = DataSource.getConnection();
// code for database access
conn.close();
```

Return Value `IDataConn` object representing the specified data connection, or `null` if a failure occurred. AppLogic uses the data connection object to uniquely identify this data connection in subsequent operations, such as queries and record insert, update, and delete operations.

Example

```
// Method to open a connection to a database
protected com.kivasoft.IDataConn getOBDataConn()
{
    String username = "kdemo";
    String password = "kdemo";
    IDataConn newDataConn = createDataConn(0,
        GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
        /* Datasource name. */ "ksample",
        /* Database name.   */ "",
        /* userName.       */ username,
        /* password.      */ password);

    if (newDataConn == null)
    {
        log("ERROR: Could not create database connection");
    }
}
```

```

    }
    return newDataConn;
}

```

Related Topics IDataConn interface,
IValList interface

createDataConnSet()

Creates a collection used to dynamically assign query name/data connection pairs before loading a query file.

createDataConnSet() is deprecated. In standard-based applications, use the JDBC API to provide similar functionality.

Syntax `public IDataConnSet createDataConnSet(
int flags)`

flags Specify 0. Internal use only.

Usage Use `createDataConnSet()` only if you are loading a query file using `loadHierQuery()`. To use a query file, an AppLogic first establishes a data connection with each database on which any queries will be run.

Next, the AppLogic calls `createDataConnSet()` to create an `IDataConnSet` object, then populates this collection with query name / data connection pairs. Each query name in the collection matches a named query in the query file. `IDataConnSet` provides a method for adding query name / data connection pairs to the collection. In this way, AppLogic can use standardized queries and select and assign data connections dynamically at runtime.

Finally, the AppLogic calls `loadHierQuery()` to create the hierarchical query object.

Return Value `IDataConnSet` object that can hold a collection of data connections, or null for failure (such as insufficient memory).

Example

```

IDataConnSet connSet;
connSet = createDataConnSet(0);
// Specify query / db connection pairs
connSet.addConn("employee", conn_empDB);
connSet.addConn("sales", conn_salesDB);
IHierQuery hqry;
// Load the GXQ file with the db connection set

```

```
hqry = loadHierQuery("employeeReport.gxq",connSet, 0, null);  
  
// Run the report  
evalTemplate("employeeReport.html", hqry);
```

Related Topics [loadHierQuery\(\)](#),
[IDataConnSet](#) interface

createHierQuery()

Creates a new query object used for building and running a hierarchical query.

createHierQuery() is deprecated. In standard-based applications, use the JDBC API to create join statements.

Syntax `public IHierQuery createHierQuery()`

Usage Use `createHierQuery()` for nested output or for merging query results with a template using `evalOutput()` or `evalTemplate()`.

A hierarchical query can be more complex than a flat query. A hierarchical query combines one or more flat queries which, when run on the database server, returns a result set with multiple nested levels of data. The number of nested levels is limited only by system resources.

The hierarchical query is not necessarily a single query. In fact, a hierarchical query is a collection of one or more flat queries arranged in a series of cascading parent-child, one-to-many relationships. The parent query obtains the outer level of information, or summary, and the child query obtains the inner level of information, or detail. The parent level of information determines the grouping of information in its child levels. The child query is run multiple times, once for each row in the parent query's result set.

- Tips**
- Use `createQuery()` instead for simple, flat queries requiring tabular, non-nested output that is merged with HTML templates.
 - To use a hierarchical query, an AppLogic first creates each individual flat query and defines its selection criteria. Next, it creates the `IHierQuery` object with `createHierQuery()`, then calls `addQuery()` repeatedly to add a child query to a parent query for each level of detail in the hierarchical query.

- Alternatively, an AppLogic can create a hierarchical query by loading a query file using `loadHierQuery()`. With this technique, the Netscape Application Server can cache query objects to service requests for identical queries more quickly.

Return Value IHierQuery object representing a hierarchical query, or null for failure. An AppLogic module uses this object to uniquely identify this hierarchical query in subsequent operations, such as defining the query criteria, executing the query, retrieving query results, and processing templates.

Example 1

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
qry.setFields("loginName, Password, AccessLevel");
qry.setOrderBy("LoginName");

// Create the hierarchical query used for template processing
IHierQuery hqry = createHierQuery();

// Add the flat query object and data connection to hqry
hqry.addQuery(qry, conn, "USERS", "", "");

// Pass hierarchical query to evalTemplate() for reporting
if(evalTemplate("apps/template/userinfo.html", hqry)== GXE.SUCCESS)
    return result("");
else
    return result("Failed to Generate HTML");
}
```

Example 2

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
qry.setFields("loginName, Password, AccessLevel");
qry.setWhere("UserId > 100");

// Create the hierarchical query
IHierQuery hqry = createHierQuery();
hqry.addQuery(qry, conn, "USERS", "", "");

// Execute the hierarchical query
IHierResultSet hrs = hqry.execute(0, 0, null);

// Process rows in result set
```

```
if(hrs.getRowNumber("USERS")!=0)
. . .
```

Related Topics addQuery() in the IHierQuery interface,
createDataConn(),
createQuery(),
execute() in the IHierQuery interface,
IHierQuery interface,
IHierResultSet interface

createMailbox()

Creates an electronic mailbox object used for communicating with a user's mailbox.

Syntax

```
public IMailbox createMailbox(
    String pHost,
    String pUser,
    String pPassword,
    String pUserAddr)
```

pHost Address of POP and SMTP server, such as mail.myOrg.com. If the POP and SMTP servers are running on different hosts, you must use two separate createMailbox() calls.

pUser Name of user's POP account, such as jdoe.

pPassword Password for POP server.

pUserAddr Return address for outgoing mail, such as john@myOrg.com. Usually the electronic mail address of the user sending the message.

Usage Use createMailbox() to set up a mail session for sending and receiving electronic mail messages.

In the Internet electronic mail architecture, different servers are used for incoming and outgoing messages.

- POP (post-office protocol) servers process incoming mail and forward messages to the recipient's mailbox.
- SMTP (simple mail transport protocol) servers forward outgoing mail to the addressee's mail server.

| | |
|-----------------------|---|
| Rules | <ul style="list-style-type: none"> • The specified user account and password must be valid for the specified POP host name. • The user address must be valid for the specified SMTP server. |
| Tip | Once instantiated, use the methods in the IMailbox interface to open and close a mailbox, as well as send and receive mail messages. |
| Return Value | IMailbox object representing a mailbox, or null for failure (such as an invalid parameter). |
| Related Topics | IMailbox interface |

createQuery()

Creates a new query object used for building and running a flat query.

createQuery() is deprecated. In standard-based applications, use the createStatement() method in the java.sql.Connection interface.

Syntax `public IQuery createQuery()`

Usage A flat query is the simplest type of query. It retrieves data in a tabular, non-hierarchical result set. Unlike a hierarchical query, a flat query returns a result set that is *not* divided into levels or groups.

An AppLogic can also use createQuery() to create a query object to perform SELECT, INSERT, DELETE, or UPDATE operations on a database.

- Tips**
- To query a database, the AppLogic first uses createQuery() to create the query object, then constructs the query selection criteria using methods in the IQuery interface, and finally runs the query on a database server. The AppLogic can process results using methods in the IResultSet interface.
 - Alternatively, AppLogic can pass a SQL SELECT statement directly to the database server using setSQL() in the IQuery interface.
 - To retrieve data with nested levels of information, use createHierQuery() instead.

Return Value IQuery object representing a query, or null for failure. AppLogic uses this object to uniquely identify this query in subsequent operations, such as defining the query criteria, executing the query, retrieving query results, and processing templates.

```
Example // Create the flat query object
IQuery qry = createQuery();
// Set up the query
qry.setTables("CTLcust");
qry.setFields("CustomerID, Customer");
qry.setWhere("Customer"+"='"+String.valueOf(custId)+"'");

// Execute the query
ResultSet rs = conn.executeQuery(0, qry, null, null);

// Check for a result set with rows
if((rs!=null)&&(rs.getRowNumber())>0)
    return result("Sorry, this user ("+
        firstName+" "+lastName+") already exists");
// Otherwise, process the result set . . .
```

Related Topics createDataConn(),
createQuery(),
IHierQuery interface,
IHierResultSet interface,
executeQuery() in the IDataConn interface

createSession()

Creates a new session object used for tracking a user session.

createSession() is deprecated. In standard-based applications, use the getSession() method in the interface javax.servlet.http.HttpSession, and set the boolean parameter to true.

Syntax public ISession2 createSession(
 int dwFlags,
 int dwTimeout,
 String pAppName,
 String pSessionID,
 ISessionIDGen pIDGen)

dwFlags Specify one of the following flags, or 0 to use the default system settings:

- GXSESSION.GXSESSION_LOCAL to make the session visible to AppLogics in the local process only.

- `GXSESSION.GXSESSION_CLUSTER` to make the session visible to all AppLogics within the cluster.
- `GXSESSION.GXSESSION_DISTRIB` to make the session visible to all AppLogics on all Netscape Application Servers.
- `GXSESSION.GXSESSION_TIMEOUT_ABSOLUTE` to specify that the session expires at a specific date and time. Do not use this flag. It is currently unimplemented but reserved for future use.
- `GXSESSION.GXSESSION_TIMEOUT_CREATE` to specify that the session expires *n* seconds from the time the session was created.

The default scope is distributed and the default timeout is 60 seconds from the time the session was last accessed.

dwTimeout Session timeout, in number of seconds, or zero for no timeout. The meaning of timeout depends on the timeout flag specified in `dwFlags`. A value of 0 means the session is deleted when the AppLogic calls `destroySession()`.

pAppName Name of the application associated with the session. The application name enables the Netscape Application Server to determine which AppLogics have access to the session data. Specify null to use the application name assigned to the AppLogic during kreg registration.

pSessionID The session ID to use. Specify null to use the default ID generated by the system.

pIDGen The session ID generation object used to generate session IDs. Specify null.

Usage Use `createSession()` to create a new session between a user and your application. AppLogics use sessions to store information about each user's interaction with an application. For example, a login AppLogic might create a session object to store the user's login name and password. This session data is then available to other AppLogics in the application.

Rule If you implement a custom session class, you must override `createSession()`.

Return Value `ISession2` object representing a user session, or null for failure.

Example In the following code, `getSession()` checks if a session exists. If there isn't an existing session, `createSession()` creates a new session.

```
ISession2 sess;
```

```
sess = getSession(0, "Catalog", null);
if (sess == null)
{
    log("Could not get session, creating a new one");
    sess = createSession(GXSESSION.GXSESSION_DISTRIB, 0,
        null, null, null);
}
```

Related Topics getSession(),
saveSession(),
Session2 class,
ISession2 interface

createTrans()

Creates a new transaction object used for transaction processing operations on a database.

createTrans() is deprecated. In standard-based applications, call setAutoCommit(FALSE), a method in the java.sql.Connection interface.

Syntax public ITrans createTrans()

Usage Transaction processing allows the AppLogic to define a series of operations that succeed or fail as a group. If all operations in the group succeed, then the system commits, or saves, all of the modifications from the operations. If any operation in the group fails for any reason, then the AppLogic can roll back, or abandon, any proposed changes to the target table(s).

If your application requires transaction processing, use createTrans() to create a transaction object. Pass this transaction object to subsequent methods, such as addRow() or executeQuery(), that make up a transaction.

- Tips**
- Use this method in conjunction with addRow(), updateRow(), and deleteRow() methods in the ITable interface and executeQuery() in the IDataConn interface.
 - To manage transaction processing operations, use createTrans() to create an instance of the ITrans interface, then use begin(), commit(), and rollback() in the ITrans interface to begin, commit, and rollback the transaction, respectively.

Return Value ITrans object representing a transaction, or null for failure. AppLogic uses this object to uniquely identify this transaction in subsequent transaction processing operations, such as beginning, committing, or rolling back a transaction.

Example

```
// Create and begin a transaction
ITrans trx = createTrans();
trx.begin();

// 1) Process the credit card
if(!processCreditCard(cusId, card, number, expirationDate, trx)) {
    trx.rollback();
    return result("Could not process the credit card information"); }

// 2) Process the invoice record
InfoHolder info=new InfoHolder();
if(!makeInvoiceRecord(cusId, number, trx, info)) {
    trx.rollback();
    return result("Could not create the invoice record"); };

// 3) Process products on the invoice
if(!makeInvoiceEntries(info.invoiceId, trx)) {
    trx.rollback();
    return result("Can't create product records"); };

// 4) Process optional shipping information
if(shippingInfo && !makeShippingRecord(info.invoiceId, trx, addr1,
addr2, city, state, zip)) {
    trx.rollback();
    return result("Could not create the shipping information record"); };

// 5) Process the inventory for each purchased product
if(!reduceProductInventory(trx)) {
    // Problem occurred - abandon everything
    trx.rollback();
    return result("Could not reduce inventory");
}

// No problem occurred - save everything
trx.commit(0);
// Return success message / report
```

Related Topics ITrans interface

deleteCache()

Deletes the result cache for a specified AppLogic.

Syntax `public int deleteCache(
 String guid)`

guid The guid that identifies the AppLogic whose result cache to delete. Specify null to delete the current AppLogic's cache.

Usage To free system resources, use `deleteCache()` to clear all results from an AppLogic's cache when the results are no longer needed. This method also stops further caching of results.

- Tips**
- To clear an AppLogic's result cache, but continue caching, use `removeAllCachedResults()`.
 - To clear a specific result from the cache, use `removeCachedResult()`.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
int hr;  
String guid = valIn.getValString("applogic");  
  
hr = deleteCache(guid);  
  
if (hr == GXE.SUCCESS)  
    return result("Successfully deleted cache")  
else  
    return result("Failed to delete cache");
```

Related Topics `removeAllCachedResults()`,
`removeCachedResult()`,
`setCacheCriteria()`

destroySession()

Deletes a user session.

destroySession() is deprecated. In standard-based applications, use the `invalidate()` method in the interface `javax.servlet.http.HttpSession`.

Syntax `public int destroySession(
 ISessionIDGen pIDGen)`

pIDGen The session ID generation object used to generate session IDs. Specify null .

Usage To increase security and conserve system resources, use `destroySession()` to delete a session between a user and the application when the session is no longer required. An AppLogic typically calls `destroySession()` when the user logs out of an application.

Tip If the AppLogic set a timeout value for the session when it was created, you need not delete the session explicitly with `destroySession()`. The session is deleted automatically when the timeout expires.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `createSession()`,
`getSession()`

evalOutput()

Creates an output report by merging data with a report template file. Depending on the client—AppLogic or web browser—`evalOutput()` returns either a self-describing data stream or HTML output.

evalOutput() is deprecated. In standard-based applications, similar functionality can be achieved by using the interface `javax.servlet.RequestDispatcher`.

Syntax 1 Merges a template with data from a hierarchical query object.

```
public int evalOutput(
    String templatePath,
    IHierQuery query,
    ITemplateMap map,
    IStream stream,
    IValList props);
```

Syntax 2 Merges a template with data from an `ITemplateData` object or `IHierResultSet` object. `IHierResultSet` objects implement the `ITemplateData` interface.

```
public int evalOutput(
    String templatePath,
    ITemplateData data,
    ITemplateMap map,
    IStream stream,
    IValList props);
```

templatePath Path to the template file used to create the report. At a minimum, specify the file name. Do not specify the filename extension; for example, specify “report” instead of “report.html”. The `evalOutput()` method automatically uses the correct filename extension depending on the client type. Use a relative path whenever possible. The Netscape Application Server first searches for the template using the specified path. If the template is not found, the Netscape Application Server uses the configured `TEMPLATE\PATH` search path to find it. For more information on configuring the search path, see *Administration Guide*.

query Hierarchical query object from which `evalOutput().createTrans()` derives the hierarchical result set to merge with the template. The Template Engine runs the query on the database server. To specify this parameter, the AppLogic must first create the specified hierarchical query, using `createHierQuery()` in the AppLogic class, and then define it using methods in the `IHierQuery` interface or calling `loadHierQuery()`.

map Field map that links template fields to calculated values. Fields in the template are expressed with the cell type `gx` tags. Additionally, the map can be used to map source data with a non-matching field name but identically-formatted data. To specify this parameter, the AppLogic should instantiate the `TemplateMapBasic` class, add template / field mappings using `put()` in the `ITemplateMap` interface, then pass the populated `ITemplateMap` object to `evalOutput()` for template processing.

stream The output stream where results will be captured for subsequent retrieval and processing. Specify `null` to use the default stream, which sends results back to the client. To specify this parameter, an AppLogic creates a stream buffer object from `IStreamBuffer`, which it passes to `evalOutput()`. After `evalOutput()` returns, the AppLogic calls `getStreamData()` in the `IStreamBuffer` interface to retrieve the contents of the buffer as an array of byte values.

data `ITemplateData` object containing data. This can be a hierarchical result set from executing a hierarchical query or it can be data programmatically organized in memory. To specify this data in memory, an AppLogic must first instantiate the `TemplateDataBasic` class (or implement your own version of the `ITemplateData` interface), populate the `ITemplateData` object with rows of hierarchical data, then pass it to `evalOutput()` for template processing.

props Specify `null`.

Usage Use `evalOutput()` in an `AppLogic` that returns output to different types of clients. The `evalOutput()` method detects the client type, selects the appropriate template file to merge with the data, and generates the appropriate output, as described in the following table:

| Client | Template File Used by <code>evalOutput()</code> | Output Returned by <code>evalOutput()</code> |
|---|---|---|
| Web browser | HTML | HTML page |
| <code>AppLogic</code> that passed to its <code>newRequest()</code> call the following key and value in the input <code>IValList</code> parameter: key: <code>gx_client_type</code> value: "ocl" | GXML | Self-describing data stream, which contains the names of the fields in the result set and their values. |
| <code>AppLogic</code> that does not specify a client type explicitly, or that passed to its <code>newRequest()</code> call the following key and value in the input <code>IValList</code> parameter: key: <code>gx_client_type</code> value: "http" | HTML | HTML page |

Both the GXML and HTML template files contain embedded tags, called GX tags, that specify how the Template Engine merges dynamic data with the template to produce the output report. In addition, the HTML template file can contain graphics, static text, and other components, just like any HTML-formatted document.

The data that the Template Engine merges with the template can come from several sources. Most commonly, it comes from the result set of a hierarchical query. However, it can also come from an `ITemplateData` object containing data organized hierarchically in memory.

- Tips**
- If possible, write queries so that field names in the result set match the field names in the template. Otherwise, you must use an `ITemplateMap` object to map field names.

- To create an GXML file, you can convert an HTML template file with the `khtml2gxml` utility. This utility strips HTML tags from the template file and saves the file as a GXML file. The following is an example of how to run the utility from the command line:

```
khtml2gxml mytemplate.html
```

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create a hierarchical query used for template processing
IHierQuery hqry = createHierQuery();

// Add a flat query object and data connection to hqry
hqry.addQuery(qry, conn, "USERS", "", "");

// Pass hierarchical query to evalOutput() for reporting
if(evalOutput("apps/template/userinfo", hqry)== GXE.SUCCESS)
    return result("");
else
    return result("Failed to Generate HTML");
}
```

Related Topics `evalTemplate()`,
`result()`,
 IHierQuery interface,
 TemplateDataBasic class and the ITemplateData interface,
 TemplateMapBasic class and the ITemplateMap interface

evalTemplate()

Creates an output report by merging data with a report template file. The report is an HTML document that can be viewed using a Web browser.

evalTemplate() is deprecated. In standard-based applications, similar functionality can be achieved by using the interface `javax.servlet.RequestDispatcher`.

Syntax 1 Merges an HTML report template with data from a hierarchical query object.

```
public int evalTemplate(
    String path,
    IHierQuery query)
```

Syntax 2 Merges an HTML report template with data from a hierarchical query object.

```
public int evalTemplate(
    String path,
    IHierQuery query,
    ITemplateMap map,
    IStream stream)
```

Syntax 3 Merges an HTML report template with data from an ITemplateData object or IHierResultSet object. IHierResultSet objects implement the ITemplateData interface.

```
public int evalTemplate(
    String path,
    ITemplateData data,
    ITemplateMap map)
```

path Path to the HTML template file used to create the report. At a minimum, specify the file name. Use a relative path whenever possible. The Netscape Application Server first searches for the template using the specified path. If the template is not found, the Netscape Application Server uses the configured TEMPLATE\PATH search path to find it. For more information on configuring the search path, see the *Administration Guide*.

query Hierarchical query object from which evalTemplate() derives the hierarchical result set to merge with the HTML template. The Template Engine runs the query on the database server. To specify this parameter, the AppLogic must first create the specified hierarchical query, using createHierQuery() in the AppLogic class, and then define it using methods in the IHierQuery interface or calling loadHierQuery().

map Field map that links template fields to calculated values. Fields in the template are expressed with the cell type gx tags. Additionally, the map can be used to map source data with a non-matching field name but identically-formatted data. To specify this parameter, the AppLogic should instantiate the TemplateMapBasic class, add template / field mappings using put() in the ITemplateMap interface, then pass the populated ITemplateMap object to evalTemplate() for template processing.

stream The output stream where results will be captured for subsequent retrieval and processing. Specify null to use the default stream, which sends results back to the client. To specify this parameter, an AppLogic creates a stream buffer object from IStreamBuffer, which it passes to evalOutput(). After evalTemplate() returns, the AppLogic calls getStreamData() in the IStreamBuffer interface to retrieve the contents of the buffer as an array of byte values.

data ITemplateData object containing data. This can be a hierarchical result set from executing a hierarchical query or it can be data programmatically organized in memory. To specify this data in memory, an AppLogic must first instantiate the TemplateDataBasic class (or implement your own version of the ITemplateData interface), populate the ITemplateData object with rows of hierarchical data, then pass it to evalTemplate() for template processing.

Usage Use evalTemplate() to create an HTML report by merging data with an HTML template file. An HTML template is an HTML document with the addition of special embedded tags, called GX tags, that specify how the Template Engine merges dynamic data with the template to produce the output report or HTML page. In addition to these dynamic links, a template can contain static text, graphics, and other components, just like any HTML-formatted document.

The data that the Template Engine merges with the template can come from several sources. Most commonly, it comes from the result set of a hierarchical query. However, it can also come from an ITemplateData object containing data organized hierarchically in memory.

- Tips**
- If your AppLogic requires the flexibility of returning different output depending on the client—a Web browser or another AppLogic—use evalOutput() instead.
 - If possible, write queries so that field names in the result set match the field names in the template. Otherwise, you must use an ITemplateMap object to map field names.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
qry.setFields("loginName, Password, AccessLevel");
qry.setOrderBy("LoginName");

// Create the hierarchical query used for template processing
IHierQuery hqry = createHierQuery();

// Add the flat query object and data connection to hqry
hqry.addQuery(qry, conn, "USERS", "", "");

// Pass hierarchical query to evalTemplate() for reporting
if(evalTemplate("apps/template/userinfo.html", hqry)==GXE.SUCCESS)
```

```

        return result("");
    else
        return result("Failed to Generate HTML");
    }

```

Related Topics `evalOutput()`,
 IHierQuery interface,
 TemplateDataBasic class and the ITemplateData interface,
 TemplateMapBasic class and the ITemplateMap interface

execute()

Performs the main task of an AppLogic, such as accessing a database, generating a report, or other operations. It should be overridden in your AppLogic subclass.

execute() is deprecated. In standard-based applications, use one of the request processing methods in the class `javax.servlet.http.HttpServlet`. For example, use `doGet()`, `doPost()`, or `service()`.

Syntax `public int execute()`

Usage Netscape Application Server calls the AppLogic's `execute()` method automatically whenever a request is received for an AppLogic, such as when a user submits a form or an information request.

Rule By default, `execute()` does nothing except return a value of zero (0). You should always write code to override this method in your AppLogic derived class.

- Tips**
- In general, your AppLogic class will inherit from the AppLogic class and override the default behavior of the `execute()` method, such as retrieving an orders report from a database.
 - The AppLogic can analyze the `valIn` member variable for input arguments using methods in the `IValList` interface.
 - The AppLogic can modify the `valIn` member variable using methods in the `IValList` interface.

Return Value `GXE.SUCCESS` if the method succeeds.

Example The following example overrides the `execute()` method to display "Hello world":

```
package gxApp.sample
import java.lang.*;
import com.kivasoft.*;
import com.kivasoft.types.*;
import com.kivasoft.util.*;
import com.kivasoft.applogic.*;

public class HelloWorldAppLogic extends AppLogic {
public int execute() {
// Simple code that overrides execute() method
return result("Hello world!");
}
}
```

Related Topics result(),
IValList interface

getAppEvent()

Retrieves the application event object.

getAppEvent() is deprecated. See New Usage section for more information.

Syntax public IAppEvent getAppEvent()

New Usage This method is deprecated and is provided for backward compatibility only.

New applications should use the IAppEventMgr interface and IAppEventObj interface, along with the GetAppEventMgr() method in the com.kivasoft.dlm.GXContext class.

Old Usage Use getAppEvent() to retrieve an IAppEvent object. Through the IAppEvent interface, you can create and manage application events. An AppLogic uses application event objects to define events that are triggered at a specified time or times or when triggered explicitly.

Return Value IAppEvent object, or null for failure.

Related Topics IAppEvent interface,
registerEvent() in the IAppEvent interface

getSession()

Returns an existing user session.

getSession() is deprecated. In standard-based applications, use the `getSession()` method in the interface `javax.servlet.http.HttpSession`.

Syntax

```
public ISession2 getSession(
    int dwFlags,
    String appName,
    ISessionIDGen pIDGen)
```

dwFlags Specify 0 (zero).

pAppName Name of the application associated with the session. The application name enables the Netscape Application Server to determine which AppLogics have access to the session data. Specify null to use the application name assigned to the AppLogic during kreg registration.

pIDGen The session ID generation object used to generate session IDs. Specify null.

Usage Use `getSession()` to obtain an existing session. Use it also to determine if a user session exists before calling `createSession()` to create one.

Rule If you implement a custom session class, you must implement your own method to get a session, which in turn, can call the `getSession()` method.

Return Value `ISession2` object representing a user session, or null for failure.

Example 1 In the following code, `getSession()` checks if a session exists. If there isn't an existing session, `createSession()` creates a new session.

```
ISession2 sess;
sess = getSession(0, "Catalog", null);
if (sess == null)
{
    log("Could not get session, creating a new one");
    sess = createSession(GXSESSION.GXSESSION_DISTRIB, 0,
        null, null, null);
}
```

Example 2 In the following code, `getSession()` gets an existing session, then checks if the user is authorized to perform a secured task:

```
public class ProductRestock extends AppLogic
{
```

```

public int execute()
{
    try {
        ISession2 mySess;
        mySess = getSession(0, null, null);
        if (mySess == null) {
            log("missing session");
            return evalOutput("kivaapp/shop/please_login",
                (ITemplateData) null,
                (ITemplateMap) null, null, null);
        }
        // Check to see if the current role is authorized
        // to update inventory.
        //
        if (isAuthorized("Shop_Inventory", "WRITE") !=
            GXACLPERMSTATUS.GXACL_ALLOWED)
        {
            log("unauthorized access: Shop_Inventory");
            return evalOutput("kivaapp/shop/no_access",
                (ITemplateData) null,
                (ITemplateMap) null, null, null);
        }
        // Record the inventory restock transaction.
    }
}

```

Related Topics createSession(),
loginSession(),
saveSession(),
Session2 class,
ISession2 interface

getStateTreeRoot()

Returns an existing root node of a state tree or creates a new one.

Syntax public IState2 getStateTreeRoot(
int dwFlags,
String pName)

dwFlags Specify one of the following flags or zero to use the default settings:

- GXSTATE.GXSTATE_LOCAL to make the node visible to the local process only.

- GXSTATE.GXSTATE_CLUSTER to make the node visible to all AppLogics within the cluster.
- GXSTATE.GXSTATE_DISTRIB, the default, to make the node visible to all AppLogics on all servers.

pName The name of the root node. If a node with this name doesn't already exist, a new node is created.

Usage Use `getStateTreeRoot()` to create a state tree. A state tree is a hierarchical data storage mechanism. It is used primarily for storing application data that needs to be distributed across server processes and clusters.

Return Value IState2 object representing the root node, or null for failure.

Example The following code shows how to create a state tree and a child node:

```
IState2 tree = getStateTreeRoot(GXSTATE.GXSTATE_DISTRIB, "Grammy");

if (tree!=null)
{
    IState2 child = tree.getStateChild("Best Female Vocal");
    if (child == null)
    {
        child = tree.createStateChild("Best Female Vocal", 0,
            GXSTATE.GXSTATE_DISTRIB);
    }
}
```

Related Topics IState2 interface

isAuthorized()

Checks a user's permission level to a specified action or AppLogic.

isAuthorized() is deprecated. As of the 2.1 servlet specification, there is no standard security model for servlets. However, NAS provides a security model. In servlets, use the equivalent `isAuthorized()` method, available from the `HttpSession2` interface in package `com.netscape.server.servlet.extension`.

Syntax 1 Use in most cases.

```
public int isAuthorized(
    String pTarget,
    String pPermission)
```

Syntax 2 Contains several parameters that are placeholders for future functionality.

```
public int isAuthorized(  
    String pDomain,  
    String pTarget,  
    String pPermission,  
    int method,  
    int flags,  
    ICred pCred,  
    IObject pEnv)
```

pDomain The type of Access Control Lists (ACL). An ACL (created by the server administrator) defines the type of operations, such as Read or Write, that a user or group can perform. There are two types of ACLs: AppLogic and general. For this parameter, specify one of the following strings, which specifies the type of ACL to check for this user:

"kiva:acl,logic"

"kiva:acl,general"

pTarget The name of the ACL, if the ACL is a general type. If the ACL is an AppLogic ACL, specify the AppLogic name or GUID string.

pPermission The type of permission, for example, "EXECUTE."

method Specify 0.

flags Specify 0.

pCred Specify null.

pEnv Specify null.

Usage Use `isAuthorized()` in portions of the code where application security is enforced through Access Control Lists (ACL). This method lets an application check if a user has permission to execute an AppLogic or perform a particular action. The application can use the result of `isAuthorized()` as a condition in an If statement. It can, for example, return a message to users who are denied access to an AppLogic.

Application developers should obtain the list of registered ACLs, users and groups from the server administrator who created these items. ACLs are created through the Enterprise Administrator tool or through the kreg tool.

Rule Before calling `isAuthorized()`, the application must create a session with `createSession()` and a user must be logged in with `loginSession()`.

Return Value One of the following:

| Value | Description |
|----------------------------------|---|
| GXACLPERMSTATUS.GXACL_ALLOWED | The specified permission is granted to the user. |
| GXACLPERMSTATUS.GXACL_NOTALLOWED | The specified permission is not granted to the user. |
| GXACLPERMSTATUS.GXACL_DONTKNOW | The specified permission is unlisted or there is conflicting information. |

Example

```
if (isAuthorized("MonthlyForecast", "READ") !=
GXACLPERMSTATUS.GXACL_ALLOWED)
    return result("<html><body>sorry no access</body></html>");
else
    // run monthly forecast report
```

Related Topics [loginSession\(\)](#)

isCached()

Returns true if AppLogic results are being saved in the result cache.

Syntax `public boolean isCached()`

Usage Call `isCached()` to determine whether caching is enabled for the current AppLogic. You should, for example, call `isCached()` before calling `setCacheCriteria()` to avoid inadvertently overwriting the current contents of the result cache.

Return Value A boolean true if caching is enabled, or a boolean false if not.

Example

```
// Determine whether AppLogic is cached
// before setting cache criteria
if(!isCached()) {
    log("Setting agent cache criteria");
    if(setCacheCriteria(60, 3, "category")!=0)
        log("Could not set agent cache criteria");
    else
        log("Succeeded in setting agent cache criteria");
}
else
```

```
log("Not setting agent cache criteria");
```

Related Topics skipCache()

loadHierQuery()

Creates a hierarchical query by loading a query file containing one or more query names and associated data connections.

loadHierQuery() is deprecated. In standard-based applications, use the JDBC API to execute a join statement.

Syntax

```
public IHierQuery loadHierQuery(  
    String pFileName,  
    IDataConnSet pDataConnSet,  
    int flags,  
    IValList pParams)
```

pFileName Name of the query (.GXQ) file, including the path. Use a relative path when possible.

A query file is an ASCII text file containing one or more SQL statements. You can create the file using any ASCII text editor. Use the following syntactical guidelines:

- The file for a hierarchical query contains several SQL SELECT statements (compliant with ANSI SQL89) with the following additions:

- Each query is preceded by the following line:

```
query queryName using (driverCode, DSN, UserName) is
```

- For a child query, append the following line after the SQL SELECT statement:

```
join currentQueryName to parent parentName where  
currentQueryName.table.column = parentName.colorAlias
```

- In the query file, do not use any semicolons (;) or other vendor-specific SQL statement terminators.

pDataConnSet Collection of query name/data connection pairs. The query names in the collection must match the named queries in the query file. The associated IDataConn object identifies the data connection for the query.

flags Specify 0 (zero). Internal use only.

pParams IList of query file parameters, or null. A collection of placeholders for the WHERE clause. A placeholder may be a name or a number. It is prefixed by a colon (:) character. The placeholders can be replaced by specifying replacement values in the ValList parameter.

Usage Use loadHierQuery() to create a hierarchical query object. An AppLogic can retrieve standardized queries stored in a data file and, at runtime, can dynamically select and assign the data sources on which the query is run. You create the query file separately using the Query Designer or an ASCII text editor, ANSI 89 standard SQL SELECT statements, and specialized syntax. A query file can define both flat and hierarchical queries.

To use a query file, the AppLogic first establishes a data connection with each database on which any queries will be run. Next, the AppLogic calls createDataConnSet() in the AppLogic class to create an IDataConnSet collection, then populates this collection with query name / data connection pairs. Each query name in the collection matches a named query in the query file.

IDataConnSet provides a method for adding query name / data connection pairs to the collection. In this way, AppLogic can use standardized queries and assign data connections dynamically at runtime. Finally, the AppLogic calls loadHierQuery() to create the hierarchical query object.

- Rules**
- AppLogic must first call createDataConnSet() to create an IDataConnSet, then add query name / data connection pairs using addConn() in the IDataConnSet interface.
 - The query names in the collection must match the query names in the query file.

Return Value IHierQuery object representing a hierarchical query, or null for failure (such as query file not found). The AppLogic uses this object to uniquely identify this hierarchical query in subsequent operations, such as defining the query criteria, executing the query, retrieving query results, and processing templates.

Example The following example shows a query (GXQ) file and a section of an AppLogic that loads the hierarchical query file and creates an HTML report:

Query file:

```
/* STATES */
query STATES using (ODBC, kstates, kuser) is
```

```
select STATES.STATE as STATES_STATE
from STATES
where (STATES.REGION = ':REGION')
order by STATES.STATE asc

/* DETAILS */
query DETAILS using (ODBC, kdetails, kuser) is
select COUNTIES.COUNTYNAM as COUNTIES_COUNTYNAM,
       COUNTIES.POP as COUNTIES_POP,
       COUNTIES.STATE as COUNTIES_STATE
from COUNTIES
order by COUNTIES.COUNTYNAM asc

join DETAILS to parent STATES
where DETAILS.COUNTIES.STATE = 'STATES.STATES_STATE'
```

AppLogic code snippet:

```
IDataConnSet connSet;
connSet = createDataConnSet(0);

// Create database connections
IDataConn conn_detailDB = createDataConn(0,
GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT, "kdetails", "", "kuser",
"kpassword");

IDataConn conn_statesDB = createDataConn(0,
GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC, "kstates", "", "kuser",
"kpassword");

// Specify query / db connection pairs
connSet.addConn("DETAILS", conn_detailDB);
connSet.addConn("STATES", conn_statesDB);

// Create IVallList that contains the REGION parameter
// value to pass to the hierarchical query
IVallList param = GX.CreateVallList();
param.setValString("REGION", "WEST");

IHierQuery hqry;
// Load the GXQ file with the db connection set and
// parameter value
hqry = loadHierQuery("state.gxq", connSet, 0, param);
```

```
// Run the report
evalTemplate("state.html", hqry);
```

Related Topics createDataConnSet(),
IDataConnSet interface,
IHierQuery interface

loadQuery()

Creates a flat query by loading a query file.

loadQuery() is deprecated. Instead, use loadQuery() from the class com.kivasoft.util.SqlUtil.

Syntax

```
public IQuery loadQuery(
    String pFileName,
    String pQueryName,
    int flags,
    IValList pParams)
```

pFileName Name of the query (.GXQ) file, including the path. Use a relative path when possible.

A query file is an ASCII text file containing one or more SQL statements. You can create the file using any ASCII text editor. Use the following syntactical guidelines:

- The query file for a flat query contains a SQL SELECT statement (compliant with ANSI SQL89) preceded by the following line:

```
/* optional comments */
query queryName using (driverCode, DSN, UserName) is
```

where *queryName* is the name of the flat query. Do not use any semicolons (;) in the query file.

- In the query file, do not use any semicolons (;) or other vendor-specific SQL statement terminators. The SQL statement may contain placeholders in the WHERE clause.

pQueryName Name of the query in the query file.

flags Specify 0 (zero). Internal use only.

pParams IVallList of query file parameters, or null. A collection of placeholders for the WHERE clause. A placeholder may be a name or a number. It is prefixed by a colon (:) character. The placeholders can be replaced by specifying replacement values in the IVallList parameter.

Usage Use loadQuery() to create a flat query object by loading a query (.GXQ) file. An AppLogic can retrieve standardized queries stored in a data file and, at runtime, can dynamically select and assign the data source on which the query is run.

You create the query file separately using the Query Designer or an ASCII text editor, ANSI 89 standard SQL SELECT statements, and special syntax.

To run the flat query, call executeQuery() in the IDataConn interface (deprecated).

Return Value IQuery object, or null for failure (such as query file not found).

Example The following example shows a query (GXQ) file and a section of an AppLogic that loads and executes the query:

Query file:

```
/* STATES */
query STATES using (ODBC, kstates, kuser) is
select STATES.STATE as STATES_STATE
from STATES
where (STATES.REGION = ':REGION')
order by STATES.STATE asc
```

AppLogic code snippet:

```
// Create database connection
IDataConn conn = createDataConn(0,
GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT, "kstates", "", "kuser",
"kpassword");

// Create IVallList that contains the REGION parameter
// value to pass to the query
IVallList param = GX.CreateVallList();
param.setValString("REGION", "WEST");

IQuery qry;
// Load the query file with the parameter value
qry = loadQuery("state.gxq", "STATES", 0, param);
```

```
// Execute the query
ResultSet rs = conn.executeQuery(
GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING, qry, null, null);
```

Related Topics IQuery interface (deprecated)

log()

Writes a message to the server log.

log() is deprecated. In standard-based applications, use one of the log() methods available from the javax.servlet package. For example, refer to the GenericServlet class or the ServletContext interface.

Syntax 1 Logs a message (type = GXLOG.GXEVENTTYPE_INFORMATION and category = 0).

```
public int log(
    String msg)
```

Syntax 2 Logs an event with a message, specifying the type and category of event.

```
public int log(
    int type,
    int category,
    String msg)
```

msg Message text to log.

type Message type. Use one of the following variables:

- GXLOG.GXEVENTTYPE_INFORMATION
- GXLOG.GXEVENTTYPE_ERROR
- GXLOG.GXEVENTTYPE_SYSTEM
- GXLOG.GXEVENTTYPE_WARNING

category User-defined message category. Do not use the range of values reserved for the Netscape Application Server systems, which is 0 to 65535, inclusive.

Usage Use log() for displaying or storing simple messages or for debugging. The output can be directed to the console, to a text file, or to a database table. To direct output, use the Netscape Application Server Administrator. For more information, see the *Administration Guide*.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Log a message
log("This is the message text saved to the log");
```

Example 2

```
// Log messages that include String variables
log(firstName+lastName+password+" "+String.valueOf(cusId));
log(GXLOG.GXEVENTTYPE_ERROR, -1, Cannot find table: "+"Shipping");
```

loginSession()

Logs an authorized user into a session with a secured application.

loginSession() is deprecated. As of the 2.1 servlet specification, there is no standard security model for servlets. However, NAS provides a security model. In servlets, use the equivalent loginSession() method, available from the HttpSession2 interface in package com.netscape.server.servlet.extension.

Syntax 1 Use in most cases.

```
public int loginSession(
    String name,
    String password)
```

Syntax 2 Contains several parameters that are placeholders for future functionality.

```
public int loginSession(
    String pDomain,
    int dwMethod,
    int dwFlags,
    String pName,
    byte[] pAuthData,
    int nAuthData)
```

name The login user name.

password The user password.

pDomain Specify null.

dwMethod Specify 0.

dwFlags Specify 0.

pName The login user name.

pAuthData The user password.

nAuthData The size of the password.

Usage Call `loginSession()` after creating a user session with `createSession()` or after retrieving a user session with `getSession()`. `loginSession()` checks the passed in login name and password against the user names and passwords stored in the Netscape Application Server (the administrator sets up and manages this information) and logs the user into the session if the login name and password are valid.

If login is successful, a security credential object is created and associated with the session. The server checks this security credential object each time it receives an AppLogic request, and verifies if the user has execute permission for the AppLogic.

Using `loginSession()` in conjunction with `isAuthorized()`, an application can ensure that only authorized users can execute certain AppLogics or take certain actions.

Tip The server administrator creates users and passwords and manages access to AppLogics and specified resources, such as sales or forecast reports. During the development and debugging phases, application developers can use the `ldapmodify` tool to create users, groups, and ACLs in the LDIF file. These tasks cannot be done programmatically.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
public class Welcome extends AppLogic
{
    public int execute()
    {
        try {

            // Check user login
            if (valIn.getValString("NAME") == null ||
                valIn.getValString("PASSWORD") == null) {
                log("missing login NAME/PASSWORD");
                return evalOutput("kivaapp/shop/login_again",
                    (ITemplateData) null,
                    (ITemplateMap) null, null, null);
            }

            // If login succeeds, create a session
            ISession2 mySess;
```

```

mySess = getSession(0, null, null);
if (mySess == null) {
    mySess=createSession(0, 60000, null, null, null);
    log("created session: " + String.valueOf(mySess != null));
} else
    log("got session");

// Now, look up user NAME/PASSWORD in database
// and see what role the user has. The database
// should have a user table which tracks all the
// users of the online shop application.
//
String role;
role = /* Database lookup here. */ "Shop_Customer";

// Call loginSession() to set up the session with
// that role. Future requests to AppLogics in this
// session will now operate under the right role.
//
loginSession(role, "");
saveSession(null);

// Check to see if the current role is authorized
// against some of the more advanced operations,
// and choose the appropriate main menu page to
// return to the user.
//
if (isAuthorized("Shop_Inventory", "READ") ==
    GXACLPERMSTATUS.GXACL_ALLOWED ||
    isAuthorized("Shop_Daily_Forecast", "READ") ==
    GXACLPERMSTATUS.GXACL_ALLOWED ||
    isAuthorized("Shop_Weekly_Forecast", "READ") ==
    GXACLPERMSTATUS.GXACL_ALLOWED)
    return evalOutput("mainmenu_advanced",
        (ITemplateData) null,
        (ITemplateMap) null, null, null);
return evalOutput("kivaapp/shop/mainmenu_regular",
    (ITemplateData) null,
    (ITemplateMap) null, null, null);
} finally {
}
}

```

}

Related Topics `isAuthorized()`,
`logoutSession()`

logoutSession()

Logs a user out of a session with a secured application.

logoutSession() is deprecated. As of the 2.1 servlet specification, there is no standard security model for servlets. However, NAS provides a security model. In servlets, use the equivalent `isAuthorized()` method, available from the `HttpSession2` interface in package `com.netscape.server.servlet.extension`.

Syntax

```
public int logoutSession(
    int dwFlags)
```

dwFlags Specify 0.

Usage If the AppLogic called `loginSession()` to log into a session with a secured application, call `logoutSession()` when the user exits the application, or the secured portion of it.

Rule Call `getSession()` before calling `logoutSession()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `getSession()`,
`isAuthorized()`,
`loginSession()`

newRequest()

Calls another AppLogic from within the current AppLogic.

Syntax 1 Passes in the `ValIn` and `ValOut` of the current AppLogic to the called AppLogic. If the called AppLogic streams results, the calling AppLogic streams the same results.

```
public int newRequest(
    String guidSTR)
```

Syntax 2 Passes in the specified `valIn` and `valOut`.

```
public int newRequest(  
    String guidSTR,  
    IValList vIn,  
    IValList vOut)
```

Syntax 3 Use to explicitly specify the location of AppLogic execution.

```
public int newRequest(  
    String guidSTR,  
    IObject vIn,  
    IObject vOut,  
    int host,  
    int port,  
    int flag)
```

guidSTR String GUID or name of the AppLogic to execute.

vIn IValList object containing input parameters to pass to the called AppLogic.

vOut IValList object containing result values of the called AppLogic.

host IP address of the Internet host of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

port Internet port of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

flag Specify zero.

Usage Use `newRequest()` to call another AppLogic from within the current AppLogic. When it calls `newRequest()`, the AppLogic passes to the Netscape Application Server the GUID or name of the AppLogic to execute and, optionally, any input and output parameters.

Netscape Application Server constructs a request using the parameters specified and processes it like any other request, by instantiating the AppLogic and passing in its parameters. The results from the called AppLogic module are returned to the calling AppLogic.

The AppLogic that `newRequest()` invokes can do one of the following tasks:

- Process application logic and return result values in the `vOut` parameter.
- Process application logic and return the resulting data form (such as a report) by streaming the output or by calling `result()`.

- Process application logic and return result values in the vOut parameter as well as return the resulting data form (such as a report) by streaming the output or by calling result().

If the called AppLogic uses evalOutput() to stream results, evalOutput() returns HTML results by default. The current AppLogic can, however, specify that evalOutput() return a non-HTML data stream by setting the gx_client_type key to "ocl" in the input IVaList of newRequest(). For example:

```
vallist.setValString("gx_client_type", "ocl");
```

Rule The specified GUID string, input parameters, and output parameters must be valid for the specified AppLogic.

- Tips**
- The calling AppLogic can create new input and output IVaLists so as to avoid changing its own input and output IVaLists.
 - The AppLogic can call another AppLogic, passing its own input and output IVaLists. In this case, the called AppLogic accesses the same stream destinations as the calling AppLogic.
 - Use newRequestAsync() instead of newRequest() to execute asynchronous request.
 - Called AppLogics might reside on different servers, depending on partitioning and load balancing configurations, might be written in a different language, or might have cached results. The calling AppLogic can be unaware or independent of these conditions.
 - Using newRequest(), you can modularize parts of the application, build dynamic header/footer information and smart reporting templates, and hide complex or confidential business logic in secure submodules or even separate servers.
 - Use newRequest() judiciously. Each invoked AppLogic uses a certain amount of communications and server resources.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Call specified AppLogic and pass parameters
newRequest( "{E5CA1000-6EEE-11cf-96FD-0020AFED9A65}",
    paramsToModule, paramsReturned);
```

Example 2

```
// Use DisplayBasket AppLogic to display the contents
if(newRequest("DisplayBasket", valIn, valOut)==0){
```

```
        return 0;
    }
    else
        return result("Cannot execute DisplayBasket AppLogic");
```

Related Topics GUID class,
IValList interface

newRequestAsync()

Calls another AppLogic from within the current AppLogic, and runs it asynchronously.

Syntax 1 Passes in the ValIn and ValOut of the AppLogic.

```
public IOrder newRequestAsync(
    String guidSTR)
```

Syntax 2 Passes in the specified valIn and valOut.

```
public IOrder newRequestAsync(
    String guidSTR,
    IValList vIn,
    IValList vOut)
```

Syntax 3 Use to explicitly specify the location of AppLogic execution.

```
public IOrder newRequest(
    String guidSTR,
    IObject vIn,
    IObject vOut,
    int host,
    int port,
    int flag)
```

guidSTR String GUID or name of the AppLogic to execute.

vIn IValList object containing input parameters to pass to the called AppLogic.

vOut IValList evalOutput() object containing result values of the called AppLogic.

host IP address of the Internet host of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

port Internet port of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

flag Specify 0.

Usage Use `newRequestAsync()` to call another AppLogic from within the current AppLogic, and run it asynchronously. Executing an AppLogic asynchronously is useful if the AppLogic performs a lengthy operation, or if the AppLogic acts as a monitor or remains persistent. For example, an asynchronous AppLogic may perform a lengthy database query to produce a complex result set that it sends an e-mail to a destination address. Another AppLogic module may run continuously and re-index HTML pages every 24 hours.

When an AppLogic calls `newRequestAsync()`, it passes to the Netscape Application Server the GUID of the AppLogic module to execute and, optionally, any input and output parameters.

The Netscape Application Server constructs a request using the parameters specified and processes it like any other request, by instantiating the AppLogic and passing in its parameters. The results from the called AppLogic module are returned to the calling AppLogic.

The AppLogic that `newRequestAsync()` invokes can do one of the following tasks:

- Process application logic and return result values in the `vOut` parameter.
- Process application logic and return the resulting data form (such as a report) by streaming the output or by calling `result()`.
- Process application logic and return result values in the `vOut` parameter as well as return the resulting data form (such as a report) by streaming the output or by calling `result()`.

Rules

- The specified AppLogic must be accessible to the Netscape Application Server.
- The specified GUID string, input parameters, and output parameters must be valid for the specified AppLogic module.

Tips

- To get the current status of the request, use the `getState()` method in the returned `IOrder` object.
- The calling AppLogic can use `GX.WaitForOrder()` to wait for one or multiple asynchronous requests to return.

- The calling AppLogic can create new input and output IValLists so as to avoid changing its own input and output IValLists.
- The AppLogic can call another AppLogic, passing its own input and output IValLists. In this case, the called AppLogic accesses the same stream destinations as the calling AppLogic. To prevent conflicts in streaming, the calling AppLogic can use `GX.WaitForOrder()` to wait until the called AppLogic is finished.
- Using `newRequestAsync()`, you can modularize parts of the application, build dynamic header/footer information and smart reporting templates, and hide complex or confidential business logic in secure submodules or even separate servers.
- Use `newRequestAsync()` judiciously. Each invoked AppLogic uses a certain amount of communications and server resources.

Return Value IOrder object, or null for failure.

Example

```
Orders[] = new IOrder[1];
int nOrder;

Orders[0] = newRequestAsync(asyncGUIDStr, valIn, valOut);
if (Orders[0] != null)
{
    log("Successfully invoked async AppLogic\n");

    // wait for async applogic to finish (max 100 seconds)
    nOrder = GX.WaitForOrder(Orders, context, 100);
    if (nOrder >= 0)
    {
        return result("Error in executing async request:
            order wait returned an error");
    }
    else
    {
        getStateIOrder state = Orders[0].getState();
        if (state == null || state.pdwState != GXE.SUCCESS)
            return result("Error in executing async
                request");
    }
}
else
```

```
{
    log("Failed to invoke async AppLogic\n");
}
```

Related Topics GUID class,
IOrder interface,
IValList interface

removeAllCachedResults()

Clears an AppLogic's result cache.

Syntax `public int removeAllCachedResults(
String guid)`

guid The guid that identifies the AppLogic whose result cache to clear. Specify null to clear the current AppLogic's cache.

Usage To free system resources, use `removeAllCachedResults()` to clear an AppLogic's result cache when the results are no longer needed. This method clears the cache, but does not disable caching.

- Tips**
- To clear an AppLogic's entire result cache and discontinue caching, use `deleteCache()`.
 - To clear a specific result from the cache, use `removeCachedResult()`.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
int hr;
String guid = valIn.getValString("applogic");

hr = removeAllCachedResults(guid);
if (hr == GXE.SUCCESS)
    return result("Successfully cleared cached results")
else
    return result("Failed to clear cached results");
```

Related Topics `deleteCache()`,
`removeCachedResult()`,
`setCacheCriteria()`

removeCachedResult()

Clears a specific result from an AppLogic's result cache.

Syntax `public int removeCachedResult(
 String guid,
 IVallList criteria)`

guid The guid that identifies the AppLogic whose cached result to clear. Specify null to clear the current AppLogic's cached result.

criteria An IVallList object that contains the criteria for selecting the result to remove. In the IVallList object, set a specific value that matches the cache criteria passed to setCacheCriteria(). For example, if the cache criteria passed to setCacheCriteria() was "Salary=40000-60000", you can remove results where salary is 50000 by setting in the IVallList object a "Salary" key to a value of "50000".

Usage Use removeCachedResult() to clear a specific result from an AppLogic's cache when the result is no longer needed.

- Tips**
- To clear an AppLogic's entire result cache and discontinue caching, use deleteCache().
 - To clear an AppLogic's entire result cache, but continue caching, use removeAllCachedResults().

Return Value GXE.SUCCESS if the method succeeds.

Example

```
int hr;  
String guid = valIn.getValString("applogic");  
  
IVallList resultList = GX.CreateValList();  
resultList.setValString("Salary", "50000");  
  
hr = removeCachedResult(guid, resultList);  
  
if (hr == GXE.SUCCESS)  
    return result("Successfully deleted specified result")  
else  
    return result("Failed to delete specified result");
```

Related Topics `deleteCache()`,
`removeAllCachedResults()`,
`setCacheCriteria()`

result()

Specifies the return value of an AppLogic.

result() is deprecated. In standard-based applications, use similar functionality as defined in the Servlet API. For example, refer to `javax.servlet.ServletOutputStream` or `javax.servlet.http.HttpServletResponse`.

Syntax

```
public int result(  
    String result)
```

result Text representing the result value of the current AppLogic.

Usage Use `result()` in conjunction with the `execute()` method to define a return value for an AppLogic. In general, use `result()` in an AppLogic that services HTTP or HTML requests and returns a simple HTML string that does not require streaming.

In the `execute()` method, the AppLogic can call `result()` in conjunction with the return statement to send data results directly back to the entity that called the AppLogic.

Rule An AppLogic can stream results using `streamResultHeader()` or `streamResult()`. If the AppLogic streams results, call `result()` only *after* finishing streaming.

Tips

- To construct HTML output programmatically, use the Java `StringBuffer` class to efficiently build up an HTML result, which can then be efficiently converted to a string to be passed in as the input to `result()`.
- An AppLogic can cache results for reuse using `setCacheCriteria()`.
- Alternatively, the AppLogic can return results using a template. The AppLogic can call `evalOutput()` to merge a dynamically created result set from a hierarchical query with a template to produce formatted results. The result from `evalOutput()` is streamed automatically.

Return Value `GXE.SUCCESS` if the method succeeds.

Example 1

```
// Return a simple HTML string
public class HelloWorld extends AppLogic {
```

```
        public int execute() {  
            return result("Hello, world!\n");  
        }  
    }  
}
```

Example 2 // Dynamically create the return string

```
public int execute() {  
    String resultStr;  
    String text;  
    text = valIn.getValString("Incoming Text");  
    if (text == null)  
        resultStr = "No input text.";  
    else if (text.indexOf('-') >= 0)  
        resultStr = "Input text has a hyphen.";  
    else  
        resultStr = "Input text has no hyphen.";  
    resultStr = "<HTML>" + resultStr + "</HTML>";  
    return result(resultStr);  
}
```

Related Topics `execute()`,
`streamResult()`,
`streamResultHeader()`

saveSession()

Saves changes to a session.

saveSession() is deprecated. In standard-based applications, this method is unnecessary because the functionality is automatically provided.

Syntax `public int saveSession(
 ISessionIDGen pIDGen)`

pIDGen The session ID generation object used to generate session IDs.
Specify null.

Usage Use `saveSession()` to ensure that changes are saved in the distributed state storage area, which stores the session information for subsequent use if any other AppLogics are invoked within the same session.

The `saveSession()` method uses a cookie—if the Web browser supports cookies—to pass the session ID back and forth between the Web browser and Netscape Application Server. It transfers only the session ID, not the session information itself, to provide better information security.

Because `saveSession()` uses `streamResultHeader()` to register the cookie, be sure to call `saveSession()` before calling `streamResult()`, `evalTemplate()`, or any other HTTP body streaming methods.

- Tip**
- The AppLogic needs to call the `saveSession()` method in the AppLogic class at least once to set a cookie. The `saveSession()` method in the `ISession2` interface only saves data to the distributed state store, whereas `saveSession()` in the AppLogic class saves data to the distributed state store *and* sets a cookie.
 - The AppLogic should call `saveSession()` to save changes after updating session data.
 - To improve performance, keep smaller amounts of information in the session.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `createSession()`,
`getSession()`,
 Session2 class,
 ISession2 interface

setCacheCriteria()

Stores AppLogic results, such as HTML, data values, and streamed data, in a result cache.

setCacheCriteria() is deprecated. In NAS 4.0 applications, this functionality is controlled using the `setCacheCriteria` property in the `ServletInfo.ntv` file.

Syntax

```
public int setCacheCriteria(
    int timeout,
    int cachesize,
    String criteria)
```

timeout Number of seconds the AppLogic result remains in the result cache after the last access. To clear the result cache after a specified time from its creation, use the `GXREPOSIT.GXREPOSIT_TIMEOUT_CREATE` flag, as shown

in the following example:

```
setCacheCriteria(GXREPOSIT.GXREPOSIT_TIMEOUT_CREATE |
300, ...). In this example, the cache is cleared 300 seconds after it is
created. Set timeout to zero to clear the result cache and disable caching for this
AppLogic.
```

cacheSize Maximum number of results to be cached for the AppLogic at any time. The result cache stores distinct AppLogic output up to the cacheSize limit. If the AppLogic generates another output to cache, the least accessed member of the cache is dropped. Setting cacheSize to zero clears the result cache and disables caching for this AppLogic.

criteria Criteria expression containing a string of comma-delimited descriptors. Each descriptor defines a match with one of the input parameters to the AppLogic. Use the following syntax:

| Syntax | Description |
|------------------------|--|
| <code>arg</code> | Test succeeds for any value of <i>arg</i> in the input parameter list. For example: <code>setCacheCriteria(3600,1,"EmployeeCode");</code> |
| <code>arg=v</code> | Test whether <i>arg</i> matches <i>v</i> (a string or numeric expression). For example: <code>"stock=NSCP"</code> Assign an asterisk (*) to the argument to cache a new set of results every time the AppLogic module runs with a different value. For example: <code>setCacheCriteria(3600,1,"EmployeeCode=*");</code> |
| <code>arg=v1 v2</code> | Test whether <i>arg</i> matches any values in the list (<i>v1</i> , <i>v2</i> , and so on). For example: <code>"dept=sales marketing support"</code> |
| <code>arg=n1-n2</code> | Test whether <i>arg</i> is a number that falls within the range. For example: <code>"salary=40000-60000"</code> |

Usage Use to specify caching for the results from an AppLogic. An AppLogic can cache any type of result. Caching improves performance for time-consuming operations such as queries and report generation.

When caching is enabled for an AppLogic, the Netscape Application Server stores its input parameter values and its results in the cache so that, if the AppLogic is called again with the same parameters (matching the cache

criteria), the Netscape Application Server retrieves its results directly from the cache instead of running the AppLogic again. If the AppLogic is called with different parameters, the Netscape Application Server runs the AppLogic again and saves its result in the cache as well.

Each AppLogic has only one cache but it can contain multiple sets of results if the AppLogic was run multiple times with different parameters for each call.

- Tips**
- Do not use caching if real-time results are needed. For example, to ensure current data, caching is not recommended for query operations on highly volatile data.
 - Use `skipCache()` to bypass result caching if an error occurred during AppLogic execution.
 - Use `isCached()` to test whether caching is currently enabled. Calling `isCached()` is important because it prevents calling `setCacheCriteria()` too many times.
 - To change the caching criteria for AppLogic, call `setCacheCriteria()` again, this time specifying different caching criteria. Each subsequent call supersedes the previous call, discarding the current contents of the result cache, and its criteria remain in effect until the next `setCacheCriteria()` call, if applicable.
 - To stop caching results, call `deleteCache()`. A subsequent call to `setCacheCriteria()` can reactivate caching.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Verify AppLogic caching before setting cache criteria
if(!isCached()) {
    log("Set criteria to save output from 3 deptcodes");
    if(setCacheCriteria(60, 3, "deptcode")!=0)
        log("Could not set criteria");
    else
        log("Succeeded in setting criteria");
}
else
    log("Not Setting Criteria");
```

Example 2

```
// Cache multiple results for up to 100 values of Department
setCacheCriteria(3600,100,"Department");
```

Example 3

```
// Cache single result for given matching value of Department
```

```
setCacheCriteria(3600,1,"Department=Operations");
```

Example 4 // Cache multiple results for two matching values of dept
setCacheCriteria(3600,2,"Department=Research | Engineering");

Example 5 // Cache one result for salary in a range
setCacheCriteria(3600,1,"Salary=40000-60000");

Example 6 // Cache two results for several parameters
setCacheCriteria(3600, 2,
"Department=Sales,Salary=40000-60000");

Related Topics deleteCache(),
removeAllCachedResults(),
removeCachedResult(),
isCached(),
skipCache()

setSessionVisibility()

Sets the session visibility.

setSessionVisibility() is deprecated. It provides functionality that does not apply to standard-based applications.

Syntax public int setSessionVisibility(
String domain,
String path,
boolean isSecure)

domain The domain in which the session is visible.

path The path to which this session must be visible.

isSecure If TRUE, the session is visible only to secure servers (HTTPS).

Usage Because of the way cookies are used to identify sessions, NAS sessions are, by default, accessible only within the same URL name space where they were created. As a result, if you call only the saveSession() method, then your session is not visible to any other domain or URL.

However, if you call setSessionVisibility() before calling saveSession(), you can control the visibility of the session. The setSessionVisibility() method internally controls the attributes of the cookie used in transmitting the session ID.

You must be part of the domain to set the domain attribute. For example, if the domain is set to netscape.com, then the session is visible to foo.netscape.com, bar.netscape.com, and so on. Domains must have at least two periods (.) in them. For example, .net is an invalid domain attribute.

By default, the session is visible only to the URL that created the session cookie. Use the path parameter to specify different URLs that will be visible. For example, the path /phoenix would match "/phoenixbird" and "/phoenix/bird.html". To make the entire server root visible, specify a path of "/", the most general value possible.

Both the domain and path parameters are null-terminated character strings. They are not modified within the `setSessionVisibility()` method.

Rule For the session visibility to take effect, you must invoke `setSessionVisibility()` before a call to `saveSession()`. The `saveSession()` method uses the visibility attributes set from `setSessionVisibility()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `saveSession()`

setVariable()

Sets a value that is passed to later AppLogic requests that are called by the same client. If the client is a browser, cookies are used to transfer variable values.

setVariable() is deprecated. In standard-based applications, use the `addCookie()` method in the interface `javax.servlet.http.HttpServletResponse`.

Syntax 1

```
public int setVariable(
    String name,
    String value)
```

Syntax 2

```
public int setVariable(
    String name,
    String value,
    int timeout,
    String urlPath,
    String urlDomain,
    boolean secure)
```

name The name of the value to record for this browser session. The value will appear on any future AppLogic's input `IValList` under this name.

value The string value to record.

timeout Number of seconds before the cookie expires. Applies to HTTP clients only.

urlPath The subset of URLs in a domain for which the cookie is valid. Applies to HTTP clients only.

urlDomain The domain for which the cookie is valid. Applies to HTTP clients only.

secure If a cookie is marked secure, it will be sent only if the communications channel with the host is a secure one. Currently, this means that secure cookies will be sent only to HTTPS (HTTP over SSL) servers. Applies to HTTP clients only.

Usage Use `setVariable()` to store information specific to a client that you want to pass to other AppLogics invoked by the same client. The values set with `setVariable()` are passed to the input `IVallList (valln)` of the called AppLogics.

In the case of an HTTP client, `setVariable()` streams the variable out in an HTTP header. The HTTP header registers a cookie, which is the mechanism used to pass data back and forth between the browser and the Netscape Application Server.

Rule Because `setVariable()` streams information in an HTTP header, call it before calling any HTTP body streaming methods, such as `streamResult()`, `evalOutput()`, and `evalTemplate()`.

Tip If your application requires more security, you should use Netscape Application Server's session mechanism instead of cookies to maintain session information. With a Netscape Application Server session, data is stored on the server and only a session ID is passed between the client and the server. For more information about the session mechanism, see `ISession2` interface.

Return Value `GXE.SUCCESS` if the method succeeds.

skipCache()

Skips result caching for the current AppLogic execution.

Syntax `public int skipCache()`

Usage Use `skipCache()` to prevent results from the current request from being saved in the results cache if an error occurs during AppLogic execution.

Rule For `skipCache()` to have any effect, you must first enable caching by calling `setCacheCriteria()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
// Skip result caching if an error occurs
// during AppLogic execution
public class produceReport extends AppLogic {
    public int execute() {
        if (isCached == false)
            // Set up results cache
            setCacheCriteria(3600, 1, "");
        String result;
        if (. . . Input arguments are not valid . . .) {
            result = "Please enter your employee id...";

            // We don't want the above error prompt to be
            // put into the result cache, so we must
            // call skipCache.
            skipCache();
        }
        else {
            result = [. . . Generate report . . .];
        }
        return result(result);
    }
}
```

Related Topics `deleteCache()`,
`removeAllCachedResults()`,
`removeCachedResult()`,
`isCached()`,
`setCacheCriteria()`,
IVallList interface

streamResult()

Streams results as a string.

streamResult() is deprecated. In standard-based applications, use similar functionality as defined in the Servlet API. For example, refer to `javax.servlet.ServletOutputStream` or `javax.servlet.http.HttpServletResponse`.

Syntax

```
public synchronized int streamResult(
    String res)
```

res The body data to stream. If returning HTML body data, you can use HTML formatting following HTTP body conventions. See your HTTP documentation for more information.

Usage Use `streamResult()` to stream data as soon as it is available. With streaming, an AppLogic can make the first portion of the data available for use immediately, even if the remainder of the stream has not yet been processed. This is especially useful with large volumes of data, such as a query that takes a while for the database server to process completely. An AppLogic can process and display those rows in the result set that have been returned. Without streaming, AppLogic must prepare the entire result first before returning any data.

The `streamResult()` method is typically used to stream HTTP body content. Before calling `streamResult()`, the AppLogic must call `streamResultHeader()` to return the HTTP header data first. The HTTP protocol separates data streams into header and body data, and specifies that the header data and body data are returned in that order. For details about HTTP header and body data, see your HTTP documentation.

- Tips**
- Alternatively, use `evalTemplate()` to stream HTTP body output. It merges data with an HTML template. As soon as a segment of the output page is finished, `evalTemplate()` streams it out to the Web browser.
 - An AppLogic can call `streamResultHeader()` and `streamResult()` repeatedly to stream more results.
 - To stream binary data, use `streamResultBinary()`.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Stream header and body, passing the header and body data
// as variables.
streamResultHeader(headerVariable);
streamResult(bodyVariable);
```

Example 2

```
// Stream header or body in several parts, using several
// method calls, starting with the header
streamResultHeader(startHeader);
```

```
streamResultHeader(finishHeader);
streamResult(bodyStart);
streamResult(bodyMiddle);
streamResult(bodyEnd);
```

Related Topics `streamResultBinary()`,
`streamResultHeader()`

streamResultBinary()

Streams binary data, such as a GIF file.

streamResultBinary() is deprecated. In standard-based applications, use similar functionality as defined in the Servlet API. For example, refer to `javax.servlet.ServletOutputStream` or `javax.servlet.http.HttpServletResponse`.

Syntax

```
public synchronized int streamResultBinary(
    byte[] buf,
    int offset,
    int length)
```

buf The array from which binary data is streamed.

offset Index in the array. The starting position in the array to start streaming binary body data.

length Number of bytes to stream from the array, starting at the specified offset position.

Usage Use `streamResultBinary()` to stream binary data as soon as it is available. With streaming, an AppLogic can make the first portion of the data available for use immediately, even if the remainder of the stream has not yet been processed. This is especially useful with large volumes of data, such as a query that takes a while for the database server to process completely. An AppLogic can process and display those rows in the result set that have been returned. Without streaming, AppLogic must prepare the entire result first before returning any data.

The `streamResultBinary()` method is used to stream HTTP body data of binary type, such as an image (GIF) file. Before calling `streamResultBinary()`, the AppLogic should call `streamResultHeader()` to return the HTTP header data first. The HTTP protocol separates data streams into header and body data, and specifies that the header data and body data are returned in that order. For details about HTTP header and body data, see your HTTP documentation.

- Tips**
- Alternatively, use `evalTemplate()` to stream HTTP body output. It merges data with an HTML template. As soon as a segment of the output page is finished, `evalTemplate()` streams it out to the waiting Web browser.
 - To stream non-binary data, use `streamResult()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `streamResult()`,
`streamResultHeader()`

streamResultHeader()

Streams header data.

streamResultHeader() is deprecated. In standard-based applications, use similar functionality as defined in the Servlet API. For example, refer to `javax.servlet.ServletOutputStream` or `javax.servlet.http.HttpServletResponse`.

Syntax

```
public synchronized int streamResultHeader(  
    String hdr)
```

hdr The header data to stream. If returning HTTP header data, use the HTTP header conventions, such as the following:

```
"Content-Type: text/html"  
"Location: <redirect url>"
```

See your HTTP documentation for more information.

Usage Use `streamResultHeader()` to return header data before streaming body data. With streaming, an AppLogic can make the first portion of the data available for use immediately, even if the remainder of the stream has not yet been processed. This is especially useful with large volumes of data, such as a query that takes a while for the database server to process completely. An AppLogic can process and display those rows in the result set that have been returned. Without streaming, AppLogic must prepare the entire result first before returning any data.

The `streamResultHeader()` method is typically used in conjunction with `streamResult()` to stream HTTP data. Before calling `streamResult()`, the AppLogic should call `streamResultHeader()` to return the HTTP header data

first. The HTTP protocol separates data streams into header and body data, and specifies that the header data and body data are returned in that order. For details about HTTP header and body data, see your HTTP documentation.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Stream header and body, passing the header and body data
// as variables.
StreamResultHeader(headerVariable);
StreamResult(bodyVariable);
```

Example 2

```
// Stream header or body in several parts, using several
// method calls, starting with the header
StreamResultHeader(startHeader);
StreamResultHeader(finishHeader);
StreamResult(bodyStart);
StreamResult(bodyMiddle);
StreamResult(bodyEnd);
```

Related Topics `streamResult()`,
`streamResultBinary()`

AppLogic class (deprecated)

BaseUtils class

The BaseUtils class provides a set of convenience methods similar to those in the GX class. The methods of this class apply to user-written AppLogics.

Although anyone developing a NAS application can use BaseUtils, this class is typically used in components generated by Netscape Application Builder.

Package

com.netscape.server.servlet.extension

Constructor

```
public BaseUtils()
```

Methods

| Method | Description |
|--|---|
| <code>convertITemplateDataToResultSet()</code> | Creates a <code>ResultSet</code> wrapper for an <code>ITemplateData</code> object. |
| <code>createListRowSet()</code> | Creates a <code>RowSet</code> object that conforms to the <code>IListRowSet</code> interface. |
| <code>createMethodHash()</code> | Creates a method hash. |
| <code>createStringFromBuffer()</code> | Creates a string from an <code>IBuffer</code> object. |
| <code>doubleQuote()</code> | Converts each occurrence of one single quote to two successive single quotes. |
| <code>includeJSP()</code> | A convenience method for streaming a JSP file. |
| <code>initRowSets()</code> | Initializes <code>RowSet</code> objects specified in a servlet's configuration file. |
| <code>log()</code> | Calls the <code>log()</code> method in the <code>AppLogic</code> class and logs an error to the error output. |

`convertITemplateDataToResultSet()`

Creates a `ResultSet` wrapper for an `ITemplateData` object.

Syntax `public static ResultSet convertITemplateDataToResultSet(
String groupName,
ITemplateData templateData)`

groupName The group name of the specified `ITemplateData`.

templateData The `ITemplateData` to be wrapped.

Usage The `convertITemplateDataToResultSet()` method takes an `ITemplateData` object and wraps it so that it conforms to the specifications of a JDBC `ResultSet` object.

Rules Hierarchical `ITemplateData` objects are not supported, so do not specify one as a parameter.

Return Value A `ResultSet` object.

createListRowSet()

Creates a RowSet object that conforms to the IListRowSet interface.

Syntax

```
public static IListRowSet createListRowSet(
    HttpServletRequest request,
    HttpServletResponse response,
    String listName)
```

request The request object.

response The response object.

listName The name of the RowSet to pass in.

Usage The createListRowSet() method creates a RowSet object that conforms to the IListRowSet interface. IListRowSet objects are useful for dynamically populating a pop-up list. The listName parameter is used to add the RowSet name as an attribute of the specified request.

Return Value An IListRowSet object.

Related Topics IListRowSet interface

createMethodHash()

Creates a method hash.

Syntax

```
public static final MethodHash createMethodHash()
```

Usage Method hashes are used to cache method lookups but are hidden from the user. createMethodHash() allows for the construction of method hashes. This construction is necessary when subclasses of DBRowSet are created.

Return Value A method hash.

Related Topics getStaticMethodCache() in the DBRowSet class

createStringFromBuffer()

Creates a string from an IBuffer object.

Syntax

```
public static final String createStringFromBuffer(
    IBuffer buff)
```

buff IBuffer object containing the value to convert.

Usage This method creates a String from an IBuffer object. Use `createStringFromBuffer()` instead of the `toString()` method of the Util class. Unlike `toString()`, the `createStringFromBuffer()` method accounts for null terminators. Ignoring null terminators in an IBuffer object causes incorrect Strings.

Tip `createStringFromBuffer()` does not perform character conversion. You may want to write your own method if character conversion is important.

Return Value String representing the data in an IBuffer object.

Example

```
ITemplateMap map = (ITemplateMap) request.getAttribute("GX_MAP");
IBuffer buff;
buff = map.get("foo", null, null);
```

Related Topics Util class,
IBuffer interface

doubleQuote()

Converts each occurrence of one single quote to two successive single quotes.

Syntax

```
public static final String doubleQuote(
    String input)
```

input The input string whose single quotes are to be affected.

Usage Use `doubleQuote()` for input bindings to queries. Suppose there is a query that takes one input parameter, `NameInput`:

```
select *
from emp
where (ename = ':NameInput')
```

If the name is O'Reilly, then the following query would be loaded:

```
select *
from emp
where (ename ='O'Reilly')
```

Normally, an attempt to execute this query results in a syntax error. The correct query should be as follows:

```
select *
```

```
from emp
where (ename = 'O''Reilly')
```

To produce this query, any single quotes in the input binding for NameInput must be doubled up. The `doubleQuote()` method performs this doubling up.

Return Value The converted string.

Example

```
// Create a DBRowSet from a query in a query file for output.
DBRowSet ds = new DBRowSet(this, "main", "query_filename.gxq",
    "connection_name");

bindLoadValue("NameInput",
    BaseUtils.doubleQuote(request.getParameter("NameInput")));
ds.setQueryName("query_name");
request.setAttribute(ds.getName(), ds); // Ready for output!
```

Related Topics DBRowSet class, GX class

includeJSP()

A convenience method for streaming a JSP file.

Syntax

```
public static void includeJSP(
    HttpServletRequest request,
    HttpServletResponse response,
    String name) throws ServletException, IOException
```

request The request object.

response The response object.

name The name of the JSP or servlet to include.

Usage The `includeJSP()` method provides a shortcut for streaming a JSP file (or a servlet file). This method also sets the response object's `ContentType` to "text/html". If an error occurs when including the file, a `ServletException` is thrown.

initRowSets()

Initializes `RowSet` objects specified in a servlet's configuration file.

Syntax

```
public static int initRowSets(
    HttpServletRequest request,
```

```
HttpServletResponse response)
```

request The request object.

response The response object.

Usage Use the `initRowSets()` method to instantiate and initialize all `RowSet` objects from the metadata in a servlet's configuration file. The `initRowSets()` method also stores the `RowSets` into the specified request object.

A servlet's configuration file has a "RowSets" entry under the `ServletData` key. The "RowSets" entry identifies each `RowSet` that the application designer knew about at design-time.

For each `RowSet`, the `initRowSets()` method first checks the value of the `autoCreate` variable. If `autoCreate` is set to `true` or is not set, then `initRowSets()` instantiates the `RowSet` identified by the `className` variable.

The `initRowSets()` method next initializes each `RowSet` in either of two ways:

If the `RowSet` is an instance of `IRowSet2`, then `initRowSets()` initializes the `RowSet` by calling the `setName()`, `setRequest()`, `setResponse()` and `initMetaInfo()` methods of the `IRowSet2` interface.

If the `RowSet` is not an instance of `IRowSet2`, then the properties in the metadata are assumed to be settable on the `RowSet` by a call to its `setProperty()` method. The `initRowSets()` method will look up the `setProperty()` method and call it if it's available.

When `RowSets` are instantiated, the null constructor is used. If a null constructor is not available, the server takes the first constructor defined for that class and calls it with null parameters.

The `initRowSets()` method also creates a new `DefaultTemplateMap` and adds it into the request object. The `DefaultTemplateMap` is added as an attribute under the name `GX_MAP`.

Rule Do not call `initRowSets()` from an EJB. No provision yet exists for instantiating `RowSets` from an EJB.

Return Value Return codes defined in the `IServletErrorHandler` interface: `SUCCESS` if the method succeeds; `FAIL_DONT_STREAM_ERROR` or `FAIL_STREAM_ERROR`.

Related Topics `IRowSet2` interface, `IServletErrorHandler` interface, `DefaultTemplateMap` class

log()

Calls the log() method in the AppLogic class and logs an error to the error output.

Syntax 1 Logs a message (type = GXLOG.GXEVENTTYPE_INFORMATION and category = 0).

```
public static int log(
    HttpServletRequest request,
    String message)
```

Syntax 2 Logs an exception instead of a message:

```
public static int log(
    HttpServletRequest request,
    String message,           // message is currently unused
    Throwable t)
```

Syntax 3 Logs an event with a message, specifying the type and category of event:

```
public static int log(
    HttpServletRequest request,
    int type,
    int category,
    String message)
```

message The message text to log.

request The request object that contains the pointer to the AppLogic.

t The Throwable that caused the problem.

type The type of message to log. Use one of the following variables:

- GXLOG.GXEVENTTYPE_INFORMATION
- GXLOG.GXEVENTTYPE_ERROR
- GXLOG.GXEVENTTYPE_SYSTEM
- GXLOG.GXEVENTTYPE_WARNING

category User-defined message category. Do not use the range of values reserved for the Netscape Application Server systems, which is 0 to 65535, inclusive.

Usage Use log() as a convenience method for calling the AppLogic's log() method and logging an error to the error output.

In Syntax 2, the request's `streamError()` method is called with a null response object. The `IServletErrorHandler` object is responsible for converting the exception to a string and then calling:

```
log(HttpServletRequest request, String message)
```

which is the `log()` method defined by Syntax 1.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `log()` in the `AppLogic` class,
`IServletErrorHandler` interface

DBRowSet class

When you generate JSPs with Netscape Application Builder (NAB), the resulting JSPs use declarative tags, which support a result-set-oriented view of data rather than a bean-oriented view. To support standard RowSet objects in NAB-generated JSPs, NAS provides the DBRowSet class.

DBRowSet is a declarative-tag-aware extension to the NASRowSet class. Use the methods of DBRowSet in any JSP you have generated with NAB. NAB programmers can extend DBRowSet to display formatted, columnar data in a JSP.

DBRowSet can either load queries from a query file or use queries set up by the user. When results (and/or result sets) are requested, the Statement is executed to produce the requested values. After the data is exhausted, the `isLast()` method returns true and the `next()` method returns false.

DBRowSet replaces the DBDataSet and DBStoredProcedure classes from NAB 3.0.

Package

`com.netscape.server.servlet.extension`

Constructors

Syntax 1 Use this syntax for the null constructor:

```
public DBRowSet() throws SQLException
```

Syntax 2 Use the following constructor to allocate a new DBRowSet with a given name and the name of the file from which queries will be loaded.

```
public DBRowSet(
    HttpServletRequest request,
    HttpServletResponse response,
    String name,
    String filename) throws SQLException
```

Syntax 3 Use the following constructor to allocate a new DBRowSet with a given name, the name of the file from which queries will be loaded later, and the name of the connection against which this query will be executed.

```
public DBRowSet(
    HttpServletRequest request,
    HttpServletResponse response,
    String name,
    String filename,
    String connectionName) throws SQLException
```

Syntax 4 Use this constructor like the previous one, but specify a query name as well.

```
public DBRowSet(
    HttpServletRequest request,
    HttpServletResponse response,
    String name,
    String filename,
    String connectionName,
    String queryName) throws SQLException
```

request The request object.

response The response object.

name The name of the RowSet.

filename The name of the query file from which the queries will be loaded.

connectionName The default name of the connection to use.

queryName The name of the query to load from the query file.

SQLException This exception will be thrown by all constructors whenever the `initMetaInfo()` method throws `SQLException`.

Methods

This section is divided into four parts:

- Methods That Auto-Execute
- Methods That Auto-Initialize
- Methods That Take a Name Instead of an Index
- Other Methods

Methods That Auto-Execute

The following methods override the corresponding `NASRowSet` method and execute the `RowSet` if and only if the `RowSet` is not already executing. For more information, see either the Netscape-specific `NASRowSet` class or the `javax.sql.RowSet` interface. In particular, see the `RowSet` `execute()` method or the `DBRowSet` `isExecuted()` method.

| | | |
|--------------------------------|-----------------------------------|---|
| <code>absolute()</code> | <code>getBytes()</code> | <code>getShort()</code> |
| <code>afterLast()</code> | <code>getCharacterStream()</code> | <code>getString()</code> — see note below |
| <code>beforeFirst()</code> | <code>getClob()</code> | <code>getTime()</code> |
| <code>first()</code> | <code>getDate()</code> | <code>getTimeStamp()</code> |
| <code>getArray()</code> | <code>getDouble()</code> | <code>isLast()</code> |
| <code>getAsciiStream()</code> | <code>getFloat()</code> | <code>last()</code> |
| <code>getBigDecimal()</code> | <code>getInputFormat()</code> | <code>moveToCurrentRow()</code> |
| <code>getBinaryStream()</code> | <code>getInt()</code> | <code>moveToInsertRow()</code> |
| <code>getBlob()</code> | <code>getLong()</code> | <code>next()</code> |
| <code>getBoolean()</code> | <code>getObject()</code> | <code>previous()</code> |
| <code>getByte()</code> | <code>getRef()</code> | <code>relative()</code> |

Note: The String-parameter version of `getString()` attempts to resolve references to method invocations as well as references to the database columns.

Methods That Auto-Initialize

The following methods override the corresponding `NASRowSet` method and initialize the `RowSet` if and only if the `RowSet` is not already initialized. For more information, see the Netscape-specific `NASRowSet` class or the standard `RowSet` interface. In addition, see the `DBRowSet` methods `init()` and `isInitialized()`.

- `execute()`
- `getCommand()`
- `getStatement()`

Methods That Take a Name Instead of an Index

Queries created with NAB identify their parameters by name. But JDBC uses query parameters that are identified by an index.

DBRowSet therefore provides a group of “set” methods that have counterparts in the RowSet interface. The only difference is that the DBRowSet method expects a String (for the parameter name), where the corresponding RowSet method expects an integer (for the parameter index). This group of “set” methods is listed below:

| | | | |
|-------------------|----------------------|-------------|----------------|
| setArray() | setByte() | setDouble() | setObject() |
| setAsciiStream() | setBytes() | setFloat() | setRef() |
| setBigDecimal() | setCharacterStream() | setInt() | setShort() |
| setBinaryStream() | setClob() | setLong() | setString() |
| setBlob() | setCommand() | setName() | setTime() |
| setBoolean() | setDate() | setNull() | setTimestamp() |

In order for your servlets to set parameters on the RowSets, you must translate parameter names to parameter indexes. There are two ways to do this:

- Call any of the set methods listed above, supplying the parameter name as the String value. Each of the listed set methods will in turn call `getLoadParameter()`, which returns the index associated with the named query parameter.
- Call the `getLoadParameter()` method directly, supplying the parameter name to convert to a parameter index. Then call the standard RowSet version of the set methods listed above, supplying the parameter index that was previously returned by `getLoadParameter()`.

For more information about the previous set methods, see the corresponding methods in the standard `javax.sql.RowSet` interface.

Other Methods

The remaining DBRowSet methods are described here, with the DBRowSet class. These methods are summarized in the following table:

| Method | Description |
|--------------------------------|--|
| <code>bindLoadValue()</code> | Sets a parameter to a particular String value, prior to loading the query. |
| <code>clearParameters()</code> | Clears the list of parameters. |

| | |
|--------------------------|---|
| getFetchSize() | Retrieves the value required by the FetchSize hidden field for NAB's "VCR" support. |
| getLoadParameter() | Gets the parameter index for a particular parameter in the query. |
| getName() | Gets the name for the RowSet. |
| getNextRowNumber() | Retrieves one record number beyond the last one that has been printed out. |
| getQueryFile() | Gets the name of the file that was used (or will be used) to load queries. |
| getQueryName() | Gets the name of the query to be loaded from the query file. |
| getRowNumber() | Retrieves the last record number that has been displayed. |
| getStaticMethodCache() | Retrieves the method cache for a particular class. |
| getString() | Overloads the getString(String) method to use a NASString instead. |
| init() | Loads the query. |
| initMetaInfo() | Initializes the RowSet to match specific metadata. |
| isEqualToExpression() | Evaluates a field specification in an HTML template. |
| isEqualToValue() | Evaluates a field specification in an HTML template. |
| isExecuted() | Determines whether the RowSet is being executed. |
| isInitialized() | Determines whether the RowSet is initialized. |
| isLastFetchableRecord() | Returns null if the current record is the last fetchable record; otherwise, it returns the null string. |
| setExecuted() | Sets whether the RowSet is being executed. |
| setInitialized() | Sets whether the RowSet is initialized. |
| setName() | Sets the name for the RowSet. |
| setQueryFile() | Sets the name of the file that was used or will be used to load queries. |
| setQueryName() | Resets the DBRowSet to access only the given query. |
| setRequest() | Sets the request object in which the RowSet will run. |
| setResponse() | Sets the response object in which the RowSet will run. |

bindLoadValue()

Sets a parameter to a particular String value, prior to loading the query.

Syntax

```
public int bindLoadValue(  
    String destVariable,  
    String value)
```

destVariable The name of the variable to set.

value The value to set for the variable.

Usage Use the bindLoadValue() method to set parameters when a query is loaded—before the query is executed. In other words, call bindLoadValue() before init() is called.

Sometimes, it is better to set a parameter at load time rather than at run time. In particular, sometimes you need to replace a parameter to make a SQL statement conform to standard SQL syntax. For example, the following SQL code is nonstandard:

```
select * from emp  
where :whereClause
```

If you set the whereClause parameter at load time, this SQL will comply with standard syntax because the parameter is substituted before the command is set on the RowSet.

Return Value GXE.SUCCESS if the method succeeds.

clearParameters()

Clears the list of parameters.

Syntax

```
public void clearParameters() throws SQLException
```

Usage Use clearParameters() to clear the list of parameters that were set by the developer.

In general, it is unnecessary to call clearParameters() because (typically) you don't re-execute your RowSet.

This method overrides the `clearParameters()` method on the `NASRowSet`. The `NASRowSet`, in turn, implements the `clearParameters()` method in `javax.sql.RowSet`.

Note that `clearParameters()` does not set the `RowSet` to be uninitialized. As a result, all information that maps parameter names to parameter indexes is lost. To preserve the parameter mapping information, first call the `setInitialized()` method to set the `RowSet` to be uninitialized. Then call `init()` again to reload the query (and thus the parameter information).

getFetchSize()

Retrieves the value required by the `FetchSize` hidden field for NAB's "VCR" support.

Syntax

```
public String getFetchSize(
    NASString max)
```

max The maximum number to retrieve for the next iteration.

Usage The `FetchSize` hidden field supports a "VCR-like" display of records in a window. This type of display is useful when you want to get the next or previous set of records from a query that returns many pages worth of records. For example, the window might contain buttons for displaying the next, previous, first, or last page of data.

Example The `getFetchSize()` method is invoked from the template engine using a `gx`-callback such as the following:

```
%gx type=cell id=RowSet.getFetchSize(#max)%%/gx%
```

Return Value A `String` representing the value required by `FetchSize`.

Related Topics `NASString` class

getLoadParameter()

Gets the parameter index for a particular parameter in the query.

Syntax

```
public int getLoadParameter(
    String paramName)
```

paramName The name of the parameter whose index is to be retrieved.

Usage Use this method when setting parameters. In NAB, parameters are stored by name, but standard RowSets use parameter indexes. The DBRowSet class provides a group of “set” methods that automatically call `getLoadParameter()` to retrieve the index. For more information, see the section “Methods That Take a Name Instead of an Index.”

After you load the query to define the name-index pairs, you can explicitly call `getLoadParameter()` to retrieve the indices.

If the query is not already loaded (in other words, if the RowSet is not already initialized), then `getLoadParameter()` initializes the RowSet.

Return Value An integer index associated with a parameter name.

getName()

Gets the name for the RowSet.

Syntax `public String getName()`

Usage Use this method to get the name for the RowSet. This is the name that is used to store the RowSet into the attribute list of the Request object.

Related Topics `setName()`

getNextRowNumber()

Retrieves one record number beyond the last one that has been printed out.

Syntax `public String getNextRowNumber(
 NASString unused)`

unused Not used.

Usage This method is useful for populating hidden values for supporting VCR-style display (for example, buttons that display next or previous values).

Example The `getNextRowNumber()` method is invoked from the template engine, using a gx-callback such as this:

```
%gx type=cell id=RowSet.getNextRowNumber()%%/gx%
```

Return Value A String.

Related Topics `getRowNumber()`

getQueryFile()

Gets the name of the file that was used (or will be used) to load queries.

Syntax `public String getQueryFile()`

Usage Use this method to get the file name that was previously set using `setQueryFile()` or set in the constructor.

Return Value A String.

Related Topics `setQueryFile()`, `getQueryName()`

getQueryName()

Gets the name of the query to be loaded from the query file.

Syntax `public String getQueryName()`

Usage Use this method to get the name of the query to be loaded from the query file.

Return Value A String.

Related Topics `setQueryName()`, `getQueryFile()`

getRowNumber()

Retrieves the last record number that has been displayed.

Syntax `public String getRowNumber(
 NASString groupName)`

groupName Not used.

Usage This method is useful for populating table outputs with a row number for each row.

Example The `getRowNumber()` method is invoked from the template engine, using a gx-callback such as this:

```
%gx type=cell id=RowSet.getRowNumber()%%/gx%
```

Return Value A String.

Related Topics `getNextRowNumber()`

getStaticMethodCache()

Retrieves the method cache for a particular class.

Syntax `public MethodHash getStaticMethodCache()`

Usage In order for RowSet subclasses to be efficiently garbage-collected, each RowSet subclass must override this method to return a different MethodHash. In this way, each class caches only the methods defined in this class or its superclasses without dangling references to the methods of other classes.

Return Value A MethodHash object.

Related Topics `createMethodCache()` in the BaseUtils class

getString()

Overloads the `getString(String)` method to use a NASString instead.

Syntax `public String getString(
 NASString colName) throws SQLException`

colName The name of the column, as a NASString.

The `javax.sql.RowSet` interface has a `getString()` method that takes a `String` parameter. The `getString(NASString)` version intercepts the `getString(String)` version, allowing you to specify a NASString instead.

A `SQLException` is thrown, as is done in the `getString(String)` form of the method.

Return Value A `String`.

Related Topics `javax.sql.RowSet` interface

init()

Loads the query.

Syntax `public void init()`

Usage The `init()` method is called implicitly during the `execute()` call.

Related Topics `execute()`, `initMetaInfo()`

initMetaInfo()

Initializes the RowSet to match specific metadata.

Syntax `public boolean initMetaInfo(
 OrderedHash metaData) throws SQLException`

metaData An OrderedHash of properties. The RowSet will be initialized with these properties.

Usage The `initMetaInfo()` is used to initialize a RowSet. This method is called by `BaseUtils.initRowSets()` when the RowSet is created.

The `metaData` parameter specifies the properties stored in a method in the NTV list. The properties specify the query file name, the query name, the connection name, and the input bindings for the query parameters. In this way, the RowSet is initialized so as to match the properties stored in the NTV-list method.

If any subclasses have cached metadata that differs from this RowSet's metadata, then the subclasses should override the method in the NTV list.

Return Value Returns false if the initialization fails for some reason.

isEqualToExpression()

Evaluates a field specification in an HTML template.

Syntax `public String isEqualToExpression(
 NASString expression)`

expression The expression to evaluate.

Usage This method is similar to `isEqualToValue()`. Both methods are intended to be called from the template engine, with the expression containing one equal sign (=) and the lefthand value being a full field specification. In `isEqualToValue()` the righthand value is a constant, whereas in `isEqualToExpression()`, the righthand value is another field specification.

The `isEqualToValue()` method lets you write more standard `if` statements in an HTML template. The `isEqualToExpression()` method is useful for filling a popup list.

Example The following code fragment creates a data set as a list:

```

MemRowSet ds = new MemRowSet();
ds.setRequest(request);
ds.setResponse(response);
ds.setName("myList");

ds.addItem("Star Trek", "1");
ds.addItem("Babylon 5", "2");
ds.addItem("Red Dwarf", "3");
ds.addItem("Crusade", "4");
ds.setListSelection("2"); // Babylon 5 is the default selection
request.setAttribute(ds.getName(), ds);

```

To display this list on a web page, you might create an HTML template containing the following code:

```

<SELECT NAME="TVShow">
%gx type=tile id=myList%
<OPTION VALUE="%gx type=cell id=myList.value% %/gx%"
%gx
type=cell
id=myList.isEqualToExpression(
    myList.value=myList.ListSelection)%SELECTED
%/gx%
>

%gx type=cell id=myList.label%/gx%
%/gx%
</SELECT>

```

Return Value Returns null if the expression is true, or "" if the expression is false.

Related Topics [isEqualToValue\(\)](#),
[MemRowSet class](#)

isEqualToValue()

Evaluates a field specification in an HTML template.

Syntax `public String isEqualToExpression(
 NASString expression)`

expression The expression to evaluate.

Usage This method is similar to `isEqualToExpression()`. Both methods are intended to be called from the template engine, with the expression containing one equal sign (=) and the lefthand value being a full field specification. In `isEqualToValue()` the righthand value is a constant, whereas in `isEqualToExpression()`, the righthand value is another field specification.

The `isEqualToValue()` method lets you write more standard `if` statements in an HTML template. The `isEqualToExpression()` method is useful for filling a popup list.

For example, you can use `isEqualToValue()` to determine whether a checkbox should be “CHECKED” or not.

Example

```
<gx type=cell id=isEqualToValue(DataSet.field_name=ALLMINE)>
    HTML specific to ALLMINE
</gx>
```

Return Value Returns null if the expression is true, or "" if the expression is false.

Related Topics `isEqualToExpression()`

isExecuted()

Determines whether the RowSet is being executed.

Syntax `public boolean isExecuted()`

Usage Use `isExecuted()` to determine whether the RowSet is being executed.

Return Value Returns true if the RowSet is being executed; otherwise, returns false.

Related Topics `setExecuted()`

isInitialized()

Determines whether the RowSet is initialized.

Syntax `public boolean isInitialized()`

Usage Use `isInitialized()` to determine whether the RowSet is initialized.

Return Value Returns true if the RowSet is initialized; otherwise, returns false.

Related Topics `setInitialized()`, `init()`, `initMetaInfo()`

isLastFetchableRecord()

Returns null if the current record is the last fetchable record; otherwise, it returns the null string.

Syntax `public String isLastFetchableRecord(
 NASString unused)`

unused Not used. The default query name is always used.

Usage This method lets you write JavaScript code that, for example, changes the name of the Next button to be Refresh. In this way, users don't get a blank row when they press the ">" (Next) button at the end of a record set.

Return Value Returns null if the current record is the last fetchable record; otherwise, it returns the null string.

Example This method is invoked from the template engine using a gx-callback such as the following:

```
<%gx type=cell id=RowSet.isLastFetchableRecord()%>  
<SCRIPT>  
datasetFetchCommandNext.name = "datasetFetchCommandRefresh"  
</SCRIPT>  
</gx%>
```

setExecuted()

Sets whether the RowSet is being executed.

Syntax `public void setExecuted(
 boolean executed)`

executed The state indicating whether the RowSet is executing or not.

Usage Use `setExecuted()` to specify the state of RowSet execution. Specify `true` to indicate that the RowSet is being executed, and specify `false` otherwise. You can also use `isExecuted()` to determine whether the RowSet is being executed.

Related Topics `isExecuted()`

setInitialized()

Sets whether the RowSet is initialized.

Syntax `public void setInitialized(
 boolean initialized)`

initialized The state indicating whether the RowSet is initialized.

Usage Use `setInitialized()` to specify the initialization state. Specify `true` to indicate that the RowSet is initialized, which means that the `init()` method has been called. Otherwise, specify `false`. You can also use `isInitialized()` to determine whether the RowSet is initialized.

Related Topics `isInitialized()`, `init()`, `initMetaInfo()`

setName()

Sets the name for the RowSet.

Syntax `public void setName(
 String name)`

Usage Use this method to set the name for the RowSet. You can also set the name using the constructor.

Note that this method also sets the query name—to the same name. If you don't want this to happen, then call `setQueryName()` to reset the query name.

setQueryFile()

Sets the name of the file that was used or will be used to load queries.

Syntax `public int setQueryFile(
 String filename)`

filename The name of the file that contains the queries for this RowSet.

Usage Use `setQueryFile()` to specify the file for loading queries. You can use `getQueryFile()` to retrieve the file name.

Rule `setQueryFile()` must be called on an uninitialized RowSet.

Return Value -1 if called on an initialized RowSet.

Related Topics `getQueryFile()`, `setQueryName()`

setQueryName()

Resets the DBRowSet to access only the given query.

Syntax

```
public int setQueryName(  
    String query)
```

query The name of the query that the DBRowSet should load.

Usage Use `setQueryName()` to reset the DBRowSet to access the specified query. Call `setQueryName()` before executing the DBRowSet.

Return Value -1 if called on an executed DBRowSet.

Related Topics `getQueryName()`, `setQueryFile()`

setRequest()

Sets the request object in which the RowSet will run.

Syntax

```
public void setRequest(  
    HttpServletRequest request)
```

request The `HttpServletRequest` object.

Usage This method is called during construction. The `HttpServletRequest` is useful when implementing `isEqualToExpression()`, where other RowSets may be required.

setResponse()

Sets the response object in which the RowSet will run.

Syntax

```
public void setResponse(  
    HttpServletResponse response)
```

response The `HttpServletResponse` object.

Usage Use `setResponse()` to set the response object in which the RowSet will run.

DefaultHttpSession class

The DefaultHttpSession class is a proxy class for a javax.servlet.http.HttpSession object. When you create subclasses of DefaultHttpSession, these subclasses enable their session objects to conform to the JavaBeans specification (for instance, individual property-getters and property-setters). Both the DefaultHttpSession and user-derived subclasses must have a constructor that takes one argument, the HttpSession.

To retrieve the instance of DefaultHttpSession, you must first ensure that you have correctly configured the SessionInfo section of the application's appInfo.ntv file. In particular, you must set the httpSessionBeanClass attribute to identify the class that acts as proxy for the HttpSession. Assuming that httpSessionBeanClass is set correctly, you can now cast the request to HttpServletRequest2 and call that interface's getHttpSessionBean() method.

Note that DefaultHttpSession implements HttpSession. If you want an HttpSession2 object, you must extend the DefaultHttpSession2 class instead.

Although anyone developing a NAS application can use DefaultHttpSession, this class is typically used in components generated by Netscape Application Builder.

Package

com.netscape.server.servlet.extension

Constructor

The following constructor is required:

```
public DefaultHttpSession(  
    HttpSession baseSession)
```

Use the baseSession parameter to pass in the HttpSession that will serve as the target for all delegated HttpSession methods.

Methods

Most of the methods in the DefaultHttpSession class are delegated from a corresponding method in the HttpSession interface. The following DefaultHttpSession methods are delegated:

- `getCreationTime()`
- `getId()`
- `getLastAccessedTime()`
- `getMaxInactiveInterval()`
- `getSessionContext()`
- `getValue()`
- `getValueNames()`
- `invalidate()`
- `isNew()`
- `putValue()`
- `removeValue()`
- `setMaxInactiveInterval()`

For more information on the previous methods, see the interface `javax.servlet.http.HttpSession`.

`DefaultHttpSession` contains the following additional methods:

| Method | Description |
|-------------------------------|--|
| <code>getHttpSession()</code> | Returns the delegated implementor of the <code>HttpSession</code> methods. |
| <code>getString()</code> | Returns a <code>String</code> value from an <code>HttpSession</code> object. |
| <code>setHttpSession()</code> | Sets the delegated implementor of all <code>HttpSession</code> methods. |

Related Topics

`getHttpSessionBean()` in the `HttpServletRequest2` interface, `DefaultHttpSession2` class

`getHttpSession()`

Returns the delegated implementor of the `HttpSession` methods.

Syntax `public HttpSession getHttpSession()`

Return Value An `HttpSession` object.

Related Topics `setHttpSession()`

getString()

Returns a String value from an HttpSession object.

Syntax

```
public String getString(  
    String name)
```

name The name of the string whose value is to be returned.

Usage The getString() method is almost identical to the getValue() method. The only difference is that getValue() returns an Object value, whereas getString() returns a String value.

Return Value A String.

Related Topics getValue() method in the HttpSession interface, from the Java Servlet API.

setHttpSession()

Sets the delegated implementor of all HttpSession methods.

Syntax

```
public void setHttpSession(  
    HttpSession baseSession)
```

baseSession The HttpSession object that is delegated as the implementor of all HttpSession methods.

Usage Use setHttpSession() to define the proxy object that implements HttpSession methods. Use getHttpSession() to retrieve the object.

Related Topics getHttpSession()

DefaultHttpSession2 class

The `DefaultHttpSession2` class is a proxy class for an `HttpSession2` object. `HttpSession2` is an interface of the NAS API, in the package `com.netscape.server.servlet.extension`.

When you create subclasses of `DefaultHttpSession2`, these subclasses enable their session objects to conform to the JavaBeans specification (for instance, individual property-getters and property-setters). Both the `DefaultHttpSession2` and user-derived subclasses must have a constructor that takes one argument, the `HttpSession`. This `HttpSession` must also be an `HttpSession2` object.

In other words, the application must use NAS sessions that implement both `HttpSession` and `HttpSession2`. To configure applications to use NAS sessions, set the appropriate session property in the `appInfo.ntv` file.

To retrieve the instance of `DefaultHttpSession2`, you must first ensure that you have correctly configured the `SessionInfo` section of the application's `appInfo.ntv` file. In particular, you must set the `httpSessionBeanClass` attribute to identify the class that acts as proxy for the `HttpSession2`. Assuming that `httpSessionBeanClass` is set correctly, you can now cast the request to `HttpServletRequest2` and call that interface's `getHttpSessionBean()` method.

Note that `DefaultHttpSession2` implements `HttpSession2`. If you want an `HttpSession` object, you must extend the `DefaultHttpSession` class instead.

Although anyone developing a NAS application can use `DefaultHttpSession2`, this class is typically used in components generated by Netscape Application Builder.

Package

`com.netscape.server.servlet.extension`

Constructor

The following constructor is required:

```
public DefaultHttpSession2(  
    HttpSession baseSession)
```

Use the `baseSession` parameter to pass in the Object that will serve as the target for all delegated `HttpSession2` and `HttpSession` methods.

Methods

Most of the methods in the DefaultHttpSession2 class are delegated from a corresponding method in the interface `com.netscape.server.servlet.extension.HttpSession2`. The following DefaultHttpSession2 methods are delegated:

- `getBytes()`
- `isAuthorized()`
- `putBytes()`
- `getInt()`
- `loginSession()`
- `putInt()`
- `getString()`
- `logoutSession()`
- `putString()`

For more information on the previous methods, see the HttpSession2 interface in this guide.

DefaultHttpSession2 contains the following additional methods:

| Method | Description |
|--------------------------------|--|
| <code>getHttpSession2()</code> | Returns the delegated implementor of the HttpSession2 methods. |
| <code>invalidate()</code> | Overrides the <code>invalidate()</code> method of DefaultHttpSession to clear out the pointer to the session delegate. |
| <code>setHttpSession2()</code> | Sets the delegated implementor of all HttpSession2 methods. |

Related Topics

`getSessionBean()` in the `HttpServletRequest2` interface, DefaultHttpSession class

getHttpSession2()

Returns the delegated implementor of the HttpSession2 methods.

Syntax `public HttpSession2 getHttpSession2()`

Return Value An HttpSession2 object.

Related Topics `setHttpSession2()`

invalidate()

Overrides the `invalidate()` method of `DefaultHttpSession` to clear out the pointer to the session delegate.

Syntax `public void invalidate()`

Usage The `invalidate()` method overrides the `DefaultHttpSession invalidate()` method, which in turn is a delegated `HttpSession` method. Use `invalidate()` to clear out the pointer to the session delegate.

Related Topics `invalidate()` method in the `javax.servlet.http.HttpSession` interface

setHttpSession2()

Sets the delegated implementor of all `HttpSession2` methods.

Syntax `public void setHttpSession2(
HttpSession2 baseSession2)`

baseSession2 The `HttpSession2` object that is delegated as the implementor of all `HttpSession2` methods.

Usage Use `setHttpSession2()` to set the `HttpSession2` object that acts as the delegated implementor of all `HttpSession2` methods. Use `getHttpSession2()` to retrieve the object that was set.

The `setHttpSession2()` method calls `setHttpSession()` if the passed-in `baseSession2` parameter is also an `HttpSession` object.

Related Topics `getHttpSession2()`

DefaultTemplateMap class

When you generate JSPs with Netscape Application Builder (NAB), the resulting JSPs use declarative tags, which support a result-set-oriented view of data rather than a bean-oriented view. To support the result-set-oriented view of request data and session data, NAS provides the DefaultTemplateMap class.

DefaultTemplateMap is a declarative-tag-aware extension to the TemplateMapBasic class. Use the methods of DefaultTemplateMap in any JSP you have generated with NAB.

The DefaultTemplateMap class represents the default implementation of an ITemplateMap object created by BaseUtils.initRowSets(). The call to BaseUtils.initRowSets() creates an object that serves as the ITemplateMap in the JSP template engine.

The DefaultTemplateMap class provides a set of “virtual” ResultSets: valIn, valOut, session, and security. These four variables contain data that corresponds to values of the request attributes.

For example, the following sets of tags are identical:

| Virtual ResultSet Form | Request Attribute Form |
|---|---|
| <code><gx type=cell id=valIn.foo> </gx></code> | <code><%= request.getParameter("foo")%></code> |
| <code><gx type=cell id=valOut.foo> </gx></code> | <code><%= request.getAttribute("foo")%></code> |
| <code><gx type=cell id=session.foo> </gx></code> | <code><%= request.getSession().getValue("foo")%></code> |
| <code><gx type=cell id=security.foo> Show something here </gx></code> | <code><% AppLogic applogic = ((HttpServletRequest)request).getAppLogic(); if (GXACLPERMSTATUS.GXACL_ALLOWED == applogic.isAuthorized("foo", "JSP")) { %> Show something here <% } %></code> |

Package

com.netscape.server.servlet.extension

Constructor

The following constructor is required:

```
public DefaultTemplateMap(
    HttpServletRequest request,
    HttpServletResponse response)
```

The parameters represent the request and response objects.

Related Topics

TemplateMapBasic class

Methods

| Method | Description |
|------------------------|--|
| doesResultSetExist() | Determines whether a result set exists. |
| getBuffer() | Resolves the id attribute specified in a GX markup tag in the template being processed by the JSP. |
| getStaticMethodCache() | Returns a method cache. |
| getString() | Resolves the id attribute in a GX markup tag. |
| isEqualToExpression() | Evaluates a field specification in an HTML template. |
| isEqualToValue() | Evaluates a field specification in an HTML template. |

doesResultSetExist()

Determines whether a result set exists.

Syntax `public String doesResultSetExist(
 NASString key)`

key The result set to check for.

Usage Use `doesResultSetExist()` to determine whether a result set exists.

Return Value Returns null if the specified result set exists in the request attribute set; otherwise returns "", the null string.

Example The following code calls `doesResultSetExist()` from within a `gx` tag:

```
<gx type=cell id=doesResultSetExist(foo)>
    Do something here; for example, dereference the result set
</gx>
```

To achieve the same effect without using `doesResultSetExist()`, you could use the following code instead.

```
<% Object foo = request.getAttribute("foo");
    if ( foo != null && foo instanceof ResultSet )
    {
%>
    Do something here; for example, dereference the result set
<% } %>
```

getBuffer()

Resolves the `id` attribute specified in a `GX` markup tag in the template being processed by the JSP.

Syntax 1 This form is called to verify that the named tag is neither a reference to the virtual `ResultSet` (such as `valIn`) nor a reference to a method call (such as `doesResultSetExist`). If verification succeeds, the second method form is called. If verification fails (meaning that the named tag is, in fact, a reference to a virtual `ResultSet` or to a method call), then the value is computed and returned.

```
public IBuffer getBuffer(
    String name,
    IObject pData,
    IObject pMark)
```

Syntax 2 This form is called after the previous form of `getBuffer()` succeeds with its verifications.

```
public IBuffer getBuffer(
    NASString name,
    IObject pData,
    IObject pMark)
```

name The field name of the `id` attribute in the current `GX` markup tag.

pData Specify null. Internal use only.

pMark Specify null. Internal use only.

Usage Typically, developers never call this method explicitly. The JSP calls `getBuffer()` to resolve the `id` attribute specified in a GX markup tag in the template being processed by the JSP. To provide application-specific processing, a servlet can subclass the `TemplateMapBasic` class and override `getBuffer()` to manipulate the JSP-generation process. For example, a servlet can intercept and filter data from a database before the JSP processes it.

Syntax 1 of `getBuffer()`, which takes a `String` parameter, should not be overridden. This form supports virtual `ResultSet`s and user-defined method calls. See `getStaticMethodCache()` for more information.

Syntax 2 of `getBuffer()` should be overridden instead.

Return Value An `IBuffer` object that contains the value of the `id` mapping, or null for failure.

Related Topics `ITemplateData` interface (deprecated)

`TemplateDataBasic` class (deprecated)

getStaticMethodCache()

Returns a method cache.

Syntax `public MethodHash getStaticMethodCache()`

Usage `getStaticMethodCache()`, which is intended to be overridden for caching, returns a method cache that is stored statically on a class.

This method returns either its method cache or null. `getStaticMethodCache()` must return its method cache only when this method is called on an object of the same class in which the method is defined.

If the classes are different, the server might cache methods on Java classes that are no longer in use and that should be garbage-collected. In this case, the method returns null instead.

If you create subclasses of `DefaultTemplateMap`, you must provide an implementation of `getStaticMethodCache()`, so that caching occurs for method-lookups against your subclass.

Return Value A `MethodHash` object representing a method cache, or null for failure.

Related Topics createMethodHash() in the BaseUtils class

getString()

Resolves the id attribute in a GX markup tag.

Syntax 1

```
public String getString(
    String name,
    IObject pData,
    IObject pMark)
```

Syntax 2

```
public String getString(
    NASString name,
    IObject pData,
    IObject pMark)
```

name The field name of the id attribute in the current GX markup tag.

pData Specify null. Internal use only.

pMark Specify null. Internal use only.

Usage The getString() and getBuffer() methods are identical, except that getString() returns a String rather than an IBuffer object.

isEqualToExpression()

Evaluates a field specification in an HTML template.

Syntax

```
public String isEqualToExpression(
    NASString expression)
```

expression The expression to evaluate.

Usage This method is similar to isEqualToValue(). Both methods are intended to be called from the template engine, with the expression containing one equal sign (=) and the lefthand value being a full field specification. However, in isEqualToValue() the righthand value is a constant, whereas in isEqualToExpression(), the righthand value is another field specification.

The isEqualtoValue() method lets you write more standard if statements in an HTML template. The isEqualToExpression() method is useful for filling a popup list.

Example The following code fragment creates a data set as a list:

```
MemRowSet ds = new MemRowSet();
ds.setRequest(request);
ds.setResponse(response);
ds.setName("myList");

ds.addListItem("Star Trek", "1");
ds.addListItem("Babylon 5", "2");
ds.addListItem("Red Dwarf", "3");
ds.addListItem("Crusade", "4");
request.setAttribute(ds.getName(), ds);
```

To display this list on a web page, you might create an HTML template containing the following code:

```
<SELECT NAME="TVShow">
%gx type=tile id=myList%
<OPTION VALUE="%gx type=cell id=myList.value% %/gx%"
%gx
type=cell
id=myList.isEqualToExpression(
    myList.value=valIn.foo)%SELECTED
%/gx%
>

%gx type=cell id=myList.label%%/gx%
%/gx%
</SELECT>
```

Return Value A String value representing, for example, the ID of a gx tag in an HTML template.

Related Topics [isEqualToValue\(\)](#)

isEqualToValue()

Evaluates a field specification in an HTML template.

Syntax `public String isEqualToExpression(
 NASString expression)`

expression The expression to evaluate.

Usage This method is similar to `isEqualToExpression()`. Both methods are intended to be called from the template engine, with the expression containing one equal sign (=) and the lefthand value being a full field specification. However, in `isEqualToValue()` the righthand value is a constant, whereas in `isEqualToExpression()`, the righthand value is another field specification.

The `isEqualToValue()` method lets you write more standard `if` statements in an HTML template. The `isEqualToExpression()` method is useful for filling a popup list.

For example, you can use `isEqualToValue()` to determine whether a checkbox should be “CHECKED” or not.

Example

```
<gx type=cell id=isEqualToValue(session.field_name=ALLMINE)>  
    HTML specific to ALLMINE  
</gx>
```

Return Value A String value representing, for example, the ID of a `gx` tag in an HTML template.

Related Topics `isEqualToExpression()`

GUID class (*deprecated*)

The GUID class is not necessary in the new application model. This class is deprecated and is provided for backward compatibility only.

The GUID class represents a Globally Unique Identifier, or GUID, which uniquely identifies each application component under Netscape Application Server. This class provides methods for creating, specifying, and testing GUIDs within application components.

A GUID is a 128-bit hexadecimal number in the following printed format:

```
{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}
```

Each X is a hexadecimal digit, and the braces and hyphens are required.

GUIDs provide a simple layer of security for your applications because they are not easily human-readable, as in the following example:

```
{E8128C30-6BF8-11cf-96FC-0020AFED9A65}
```

When calling an application component from a web page or from another application component, you must specify a GUID, usually in a string printed format, as shown in the examples in this section. When an application component is called, a request message notifies Netscape Application Server, which then runs the component.

You must assign and register a unique GUID for each application component you create. For more information about registering GUIDs, see the *Programmer's Guide*.

To instantiate the GUID class, use the Java new keyword, as shown in the following example:

```
GUID myGUID;  
myGUID = new GUID();
```

Package

com.kivasoft.types

Methods

| Method | Description |
|----------|---|
| GUID() | Creates a GUID object. |
| isNull() | Determines whether the GUID object is null (all zeros). |
| reset() | Resets the GUID object to null (all zeros). |

Extends

Object.

Example

```
String str;
// Create a unique GUID string
str = runprogram("kguidgen", null, null, null);
if (str != null) {
    //example: str = "{E8128C30-6BF8-11cf-96FC-0020AFED9A65}";
    GUID guid;
    guid = new GUID(str);
    if (!guid.isNull()) {
        return guid;
    }
}
return null;
}
```

GUID()

Creates a GUID object.

Syntax 1 This version, the default constructor method, creates a null GUID containing all zeros.

```
public guid()
```

Syntax 2 This version creates a GUID from a String representation.

```
public GUID(String guidString)
```

guidString String representing the GUID, using hexadecimal numbers, in the following format:

```
{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}
```

Return Value A GUID object containing either all zeros (null) or a 128-bit hexadecimal number, or null for failure (such as the input string or values are not in the correct format).

Example

```
String str;
// Create a unique GUID string
str = runprogram("kguidgen", null, null, null);
if (str != null) {
    // example: str = "{E8128C30-6BF8-11cf-96FC-0020AFED9A65}";
    GUID guid;
    guid = new GUID(str);
    if (!guid.isNull()) {
        return guid;
    }
}
return null;
}
```

Related Topics `isNull()`, `reset()`

isNull()

Determines whether the GUID object is null (all zeros).

Syntax `public boolean isNull()`

Usage Use `isNull()` after calling `GUID()` to determine whether the GUID was created successfully. A null GUID object has the following format:

```
{00000000-0000-0000-0000-000000000000}
```

Return Value A Boolean true if the specified GUID is null, or false if not.

Example

```
if (!guid.isNull()) {
    return guid;
}
```

Related Topics `GUID()`, `reset()`

reset()

Resets the GUID object to null (all zeros). A null GUID object has the following format:

```
{00000000-0000-0000-0000-000000000000}
```

Syntax `public void reset()`

Example

```
// Reset a GUID to null
guid.reset();
// At this point, guid.isNull() returns true
```

Related Topics `GUID()`, `isNull()`

GX class (*deprecated*)

The GX class is deprecated and is provided for backward compatibility only. New applications developed according to the servlet-JSP programming model do not need the functionality provided by the GX class.

The GX class is a utility class for general operations, such as creating a memory buffer or an IVallList object. Like the Math and System classes in the Java Class Library, the GX class provides a suite of static methods that can be used anywhere regardless of whether an instance of the class exists or not.

You call the methods in the GX class by using the following convention: *GX.method*. The following example shows how you call `CreateBuffer()`, a method in the GX class:

```
IBuffer buff;
buff = GX.CreateBuffer();
```

Package

com.kivasoft.util

Methods

| Method | Description |
|--|---|
| <code>CreateBuffer()</code> | Creates a new IBuffer object, which represents a block of memory. |
| <code>CreateBufferFromString()</code> | Creates a new IBuffer object, which represents a block of memory, and assigns a string value to it. |
| <code>CreateStreamBuffer()</code> | Creates a new IStreamBuffer object, which represents a buffer for capturing streamed output during template processing. |
| <code>CreateTemplateDataBasic()</code> | Creates a new ITemplateData object, which represents a hierarchical source of data. |
| <code>CreateTemplateMapBasic()</code> | Creates a new ITemplateMap object, which represents a mapping between a template field specification and dynamic data used for template processing. |

| Method | Description |
|-----------------|---|
| CreateValList() | Creates a new IValList object, which represents a collection of values. |
| ProcessOutput() | Processes the results in an AppLogic's output IValList (vOut) and returns an ITile object from which the caller can extract data. |
| Release() | Releases an object from memory. |
| WaitForOrder() | Waits for asynchronous operations, such as database queries, to be completed. |

CreateBuffer()

Creates a new IBuffer object, which represents a block of memory.

Syntax `public static IBuffer CreateBuffer()`

Usage Use `CreateBuffer()` to create `IBuffer` objects to pass as input arguments to methods, such as `put()` in the `TemplateMapBasic` class. After you create the `IBuffer` object, use methods in the `IBuffer` interface to allocate the memory buffer and to assign a value to it.

Tip If the buffer is to contain a string, use `CreateBufferFromString()` instead. This method creates the `IBuffer` object and assigns a string value to it.

Return Value `IBuffer` object, or null for failure.

Related Topics `IBuffer` interface (deprecated)

CreateBufferFromString()

Creates a new `IBuffer` object, which represents a block of memory, and assigns a string value to it.

Syntax `public static IBuffer CreateBufferFromString(
String str)`

str The string to assign to the memory buffer.

Usage Use `CreateBufferFromString()` to create an `IBuffer` object that contains a string value. The `put()` method in the `TemplateMapBasic` class, for example, takes an `IBuffer` object and a string value as an input argument.

Return Value `IBuffer` object, or null for failure.

Example

```
String str = "StateName";
IBuffer buff;
buff = GX.CreateBufferFromString(str);
...
ITemplateMap tplmap;
tplmap.put("$STATES", buff);
```

Related Topics `IBuffer` interface (deprecated)

CreateStreamBuffer()

Deprecated. This method is retained for backward compatibility only.

Creates a new `IStream` object, which represents a buffer for capturing streamed output during template processing.

Syntax `public IStream CreateStreamBuffer(IStream stream)`

stream Specify null to create a simple stream buffer. Specify another stream buffer to chain two stream buffers.

Usage Use `CreateStreamBuffer()` to create a stream buffer to pass to `evalOutput()` or `evalTemplate()`. The `evalOutput()` and `evalTemplate()` methods merge a template with data from the `ITemplateData` object and stream the output to the buffer. Use a stream buffer if, for example, your `AppLogic` needs to manipulate the data before sending it to another `AppLogic`.

Tip The `IStream` object implements the `IStreamBuffer` interface. To manipulate data in a stream buffer, use the `getStreamData()` method in the `IStreamBuffer` interface (deprecated).

Return Value `IStream` object, or null for failure.

Related Topics `evalOutput()` and `evalTemplate()` in the `AppLogic` class (deprecated)
`IStreamBuffer` interface (deprecated)

CreateTemplateDataBasic()

Deprecated. This method is retained for backward compatibility only.

Creates a new ITemplateData object, which represents a hierarchical source of data.

Syntax `public static ITemplateData CreateTemplateDataBasic(
String str)`

str The name of the TemplateDataBasic object.

Usage Use CreateTemplateDataBasic() to create a hierarchical source of data to pass to evalOutput() or evalTemplate(). The evalOutput() and evalTemplate() methods merge a template with data from the ITemplateData object and stream an output report.

Tip CreateTemplateDataBasic() returns an ITemplateData object. If the AppLogic needs to call a method in the TemplateDataBasic class, cast the ITemplateData object to the TemplateDataBasic class, as shown in the following example:

```
TemplateDataBasic td;  
td = (TemplateDataBasic)GX.CreateTemplateDataBasic("td");
```

Return Value ITemplateData object, or null for failure.

Example In the following code snippet, two TemplateDataBasic objects are created to store the results from a query to avoid running the same query twice. The two TemplateDataBasic objects are then combined into one and passed to evalTemplate() for processing.

```
// Create the TemplateDataBasic objects.  
// CreateTemplateDataBasic() returns an ITemplateData  
// object, which is cast to TemplateDataBasic  
TemplateDataBasic acctsTempDB =  
(TemplateDataBasic)GX.CreateTemplateDataBasic("CustAccts");  
TemplateDataBasic acctsTempDB2 =  
(TemplateDataBasic)GX.CreateTemplateDataBasic("CustAccts2");  
  
String acctDesc;  
String acctNum;  
  
// Get the indices of columns in the result set  
int acctDescCol = rs.getColumnOrdinal("OBAacctType_acctDesc");  
int acctNumCol = rs.getColumnOrdinal("OBAacct_acctNum");
```

```

// Loop through the result set and add rows to the
// TemplateDataBasic objects
do
{
    acctDesc = rs.getValueString(acctDescCol);
    acctNum = rs.getValueString(acctNumCol);

    String newRowString = "acctDesc=" + acctDesc + ";" +
        "acctNum=" + acctNum;

    log(newRowString);
    acctsTempDB.rowAppend(newRowString);
    acctsTempDB2.rowAppend(newRowString);
} while (rs.fetchNext() == 0);

//Create a dummy parent to contain the two template objects
TemplateDataBasic parentTempDB =
(TemplateDataBasic)GX.CreateTemplateDataBasic("Parent");
parentTempDB.rowAppend("Dummy=dummy");// one dummy row
parentTempDB.groupAppend(acctsTempDB);
parentTempDB.groupAppend(acctsTempDB2);

// Merge the template data results with a template
if (evalTemplate("GXApp/OnlineBank/templates/Transfer.html",
parentTempDB, null) != 0)
{
    return handleOBSYSTEMError("Unable to handle template");
}
return (result(null));

```

Related Topics [evalOutput\(\)](#) and [evalTemplate\(\)](#) in the [AppLogic](#) class (deprecated)

[ITemplateData](#) interface (deprecated)

[TemplateDataBasic](#) class (deprecated)

CreateTemplateMapBasic()

Deprecated. This method is retained for backward compatibility only.

Creates a new `ITemplateMap` object, which represents a mapping between a template field specification and dynamic data used for template processing.

Syntax `public static ITemplateMap CreateTemplateMapBasic()`

Usage Use `CreateTemplateMapBasic()` to create a template map object to pass to `evalOutput()` or `evalTemplate()`. A template map object is used to link template fields to calculated values or to source data with a non-matching field name but identically-formatted data.

Tip `CreateTemplateMapBasic()` returns an `ITemplateMap` object. If the `AppLogic` needs to call a method in the `TemplateMapBasic` class, cast to `TemplateMapBasic`, as shown in the following example:

```
TemplateMapBasic tplmap;
tplmap = (TemplateMapBasic) GX.CreateTemplateMapBasic();
```

Return Value `ITemplateMap` object, or null for failure.

Related Topics `evalOutput()` and `evalTemplate()` in the `AppLogic` class (deprecated)

`ITemplateMap` interface (deprecated)

`TemplateMapBasic` class (deprecated)

CreateValList()

Creates a new `IValList` object, which represents a collection of values.

Syntax `public static IValList CreateValList()`

Usage Use `CreateValList()` to create `IValList` objects to pass as input arguments to methods, such as `execute()` in the `IPreparedQuery` interface. After creating the `IValList` object, use methods in the `IValList` interface to set values in the `IValList`.

Return Value `IValList` object, or null for failure.

Example

```
IValList params;
params = GX.CreateValList();
params.setValString(":Make", "Acura")
params.setValString(":Model", "Integra")
...
resultset = pqry.execute(0, params, null, null);
```

Related Topics `IValList` interface

ProcessOutput()

Deprecated. This method is retained for backward compatibility only.

Processes the results in an AppLogic's output IVallList (vOut) and returns an ITile object from which the caller can extract data.

Syntax

```
public static ITile ProcessOutput(
    IContext context,
    int flags,
    IVallList list)
```

context The IContext object, which gives the AppLogic access to Netscape Application Server services. Pass in the AppLogic's context member variable.

flags Specify 0. Internal use only.

list The output IVallList that contains the results returned by a called AppLogic.

Usage Use ProcessOutput() to process non-HTML results that are returned in the following situation:

1. A client (AppLogic or OCL client application) calls an AppLogic with newRequest().
2. Through newRequest(), the client passes input and output IVallLists to the called AppLogic. If the client is an AppLogic, it should specify the value "ocl" for the gx_client_type key in the input IVallList. The "ocl" value is assigned automatically for OCL clients.
3. The called AppLogic processes the request and returns results in the output IVallList.

ProcessOutput() returns the processed data as an ITile object. Data in the ITile object is organized like a hierarchical result set. The client can use methods in the ITile interface to loop through the result set and retrieve values.

Return Value ITile object, or null for failure.

Example

```
// Call an AppLogic
hr = newRequest(guid, vIn, vOut, 0);
if (hr == GXE.SUCCESS)
{
    // Get the root tile from the output vallist
```

```
ITile roottile = GX.ProcessOutput(null, 0, vOut);
if (roottile != null)
{
    String sval;
    ITile ptile;

    //Iterate over all products and print their names
    ptile = roottile.getTileChild("PRODUCTS");
    hr = GXE.SUCCESS;
    System.out.println("Products:");
    while (ptile != null && hr != GXE.FAIL)
    {
        sval = ptile.getTileValue("PRODUCTS.ProdName");
        System.out.println("    " + sval);

        hr = ptile.moveTileNextRecord();
    }
}
```

Related Topics newRequest() in the AppLogic class (deprecated)

ITile interface (deprecated)

Release()

Releases an object from memory.

Syntax public static int Release(
Object obj)

obj The object to release.

Usage Use Release() to free an object from memory when it is no longer needed. Although Java automatically detects and frees objects that are no longer being used, the Java garbage collector generally runs only at set garbage collection intervals; unused objects might not be freed immediately. Release() gives your application more control over object deallocation and system resource usage.

Return Value GXE.SUCCESS if the method succeeds.

Example GX.Release(resultSet);

WaitForOrder()

Deprecated. This method is retained for backward compatibility only.

Waits for asynchronous operations, such as database queries, to be completed.

Syntax

```
public static int WaitForOrder(
    IOrder orders[],
    IObject context,
    int timeout);
```

orders An array of IOrder objects. Each element in the array corresponds to an asynchronous operation.

context The context object, which is a member variable of the AppLogic class.

timeout Maximum number of seconds to wait before expiring, if none of the asynchronous queries is finished. Specify 0 to wait forever.

Usage Use WaitForOrder() to wait for one or more asynchronous operations, such as asynchronous database queries, to return the completed results from the database server on which they are submitted. Asynchronous queries that were started with executeQuery() in the IDataConn interface might return result sets that are not finished yet. An AppLogic, however, must wait for the result set to be finished before using it.

WaitForOrder() waits until one of the following conditions occurs:

- The status of the IOrder object associated with one of the queries changes to GXORDER_STATE.GX_STATE_DONE.
- The specified timeout limit has been exceeded.

Return Value The index in the orders array of the IOrder that is now completed. WaitForOrder() returns a negative number if an error or timeout occurred.

Example

```
class MyAppLogic extends AppLogic
    execute(){
        ...
        IOrder orders[] = new orders[5];
        // fill array with order objects

        int done_index = GX.WaitForOrder(orders, this.context,
                                         timeout);

        if (done_index >= 0)
```

GX class (deprecated)

```
        System.out.println("order finished:" +
            orders[done_index]);
    else
        System.out.println("error or timeout occurred");
```

Related Topics [IOrder interface \(deprecated\)](#)

GXContext class

GXContext is a utility class that enables developers to access NAS services. Most methods of this class are used primarily in the method stubs of Java extensions. For more information about using GXContext while creating extensions, see the *Developer's Guide* that accompanies your version of Netscape Extension Builder, a separately available product.

In rare situations, EJB and servlet developers may want to call the methods of GXContext, thereby allowing NAS 4.0 applications to include additional NAS features that are not currently supported in the EJB or servlet specifications. For example, the `CreateMailbox()` method supports electronic messaging.

In addition to using GXContext methods, servlet developers can access NAS features in other ways. Servlet developers can use the methods of two NAS-specific interfaces—`HttpSession2` or `HttpServletRequest2`—as well as the methods of `AppLogic`, a deprecated class.

You call the methods in the GXContext class by using the following convention:

```
GXContext.method
```

All of the methods on the GXContext class require the caller to supply an instance of `com.kivasoft.IContext`. There are many ways in which the context may be obtained, depending on the type of the calling component. Refer to the following examples.

Examples

The following examples describe different ways to obtain a context.

Example 1 From an `AppLogic`, an instance of this context is available as a member variable `context` within the superclass `com.kivasoft.applogic.AppLogic`. The following code is used from within an `AppLogic` method:

```
com.kivasoft.IContext kivaContext;
kivaContext = this.context;
```

Example 2 From a servlet, the standard servlet context can be cast to `IServerContext`, and from there, a `com.kivasoft.IContext` instance can be obtained. The servlet code would look like this:

```
ServletContext ctx = getServletContext();
```

```

com.netscape.server.IServerContext sc;

// legal cast within NAS
sc = (com.netscape.server.IServerContext) ctx;
com.kivasoft.IContext kivaContext = sc.getContext();

```

Example 3 As an alternative to Example 2, a caller can access the underlying AppLogic instance from a servlet and obtain the context there, as described in Example 1 for AppLogics. The servlet code would look like this:

```

HttpServletRequest req;
HttpServletRequest2 req2;
req2 = (HttpServletRequest2) req; // legal cast within NAS
AppLogic al = req2.getAppLogic();
com.kivasoft.IContext kivaContext;
kivaContext = al.context;

```

Example 4 From a bean, the standard `javax.ejb.SessionContext` or `javax.ejb.EntityContext` can be cast to an `IServerContext`, and from there, a `com.kivasoft.IContext` instance can be obtained. In a bean, the code would look like this:

```

javax.ejb.SessionContext m_ctx;
.
.
.
com.netscape.server.IServerContext sc;
// legal cast within NAS
sc = (com.netscape.server.IServerContext) m_ctx;
com.kivasoft.IContext kivaContext;
kivaContext = sc.getContext();

```

Example 5 From a Java extension, an instance of the context is supplied to the `init()` method of your extension, as shown by the following code:

```

public int init(IObject obj) {
    com.kivasoft.IContext kivaContext = (com.kivasoft.IContext) obj;
    .
    .
    .
}

```

Package

`com.kivasoft.dlm`

Methods

| Method | Description |
|---------------------|--|
| CreateMailbox() | Creates an electronic mailbox object used for communicating with a user's mailbox. |
| DestroySession() | Deletes a user session. |
| GetAppEventMgr() | Retrieves the object for managing application events. |
| GetObject() | Retrieves an object from the context. |
| GetSession() | Retrieves a session other than the current one. |
| GetSessionCount() | Returns the number of sessions in a NAS cluster. |
| GetStateTreeRoot() | Returns an existing root node of a state tree or creates a new one. |
| Log() | Writes a message to the server log. |
| NewRequest() | Calls an AppLogic. |
| NewRequestAsync() | Calls another AppLogic and runs it asynchronously. |

Related Topics

com.kivasoft.applogic.AppLogic class (deprecated),
 com.netscape.server.ICallerContext interface,
 com.kivasoft.IContext interface,
 com.netscape.server.IServerContext interface,
 com.netscape.server.servlet.extension.HttpSession2 interface,
 com.netscape.server.servlet.extension.HttpServletRequest2 interface

CreateMailbox()

Creates an electronic mailbox object used for communicating with a user's mailbox.

Syntax

```
public static IMailbox CreateMailbox(
    IContext context,
    String pHost,
    String pUser,
    String pPassword,
    String pUserAddr)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

pHost Address of POP and SMTP server, such as mail.myOrg.com. If the POP and SMTP servers are running on different hosts, you must use two separate CreateMailbox() calls.

pUser Name of user’s POP account, such as jdoe.

pPassword Password for POP server.

pUserAddr Return address for outgoing mail, such as john@myOrg.com. Usually the electronic mail address of the user sending the message.

Usage Use CreateMailbox() to set up a mail session for sending and receiving electronic mail messages.

In the Internet electronic mail architecture, different servers are used for incoming and outgoing messages.

- POP (post-office protocol) servers process incoming mail and forward messages to the recipient’s mailbox.
- SMTP (simple mail transport protocol) servers forward outgoing mail to the addressee’s mail server.

- Rules**
- The specified user account and password must be valid for the specified POP host name.
 - The user address must be valid for the specified SMTP server.

Tip Once instantiated, use the methods in the IMailbox interface to open and close a mailbox, as well as send and receive mail messages.

Note In a future release of NAS, this method may be replaced by the JavaMail() method.

Return Value IMailbox object representing a mailbox, or null for failure (such as an invalid parameter).

DestroySession()

Deletes a user session.

Syntax `public static int DestroySession(`

```

    IContext context,
    String pAppName
    String pSessionID
    ISessionIDGen pIDGen)

```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

pAppName Name of the application associated with the session. The application name enables the Netscape Application Server to determine which calling code has access to the session data.

pSessionID The session ID to use.

pIDGen The session ID generation object used to generate session IDs. Specify null.

Usage To increase security and conserve system resources, use DestroySession() to delete a session between a user and the application when the session is no longer required. A caller typically calls DestroySession() when the user logs out of an application.

Tip If the caller set a timeout value for the session when it was created, you need not delete the session explicitly with DestroySession(). The session is deleted automatically when the timeout expires.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics CreateSession()

GetAppEventManager()

Retrieves the object for managing application events.

Syntax `public static IAppEventManager GetAppEventManager(
 IContext context)`

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

Usage Use GetAppEventManager() to retrieve an IAppEventManager object. Through the IAppEventManager interface, you can create and manage application events. Application event objects define events that are triggered at a specified time or triggered explicitly.

Return Value IAppEventMgr object, or null for failure.

Related Topics IAppEventMgr interface

Chapter 13, "Taking Advantage of NAS Features" in *Programmer's Guide (Java)*

GetObject()

Retrieves an object from the context.

Syntax

```
public static Object GetObject(
    IContext context,
    String contextName)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see "Examples."

contextName The name of the object in the context. If an object with this name does not exist, null is returned.

Usage Call GetObject() to retrieve a service. For example, call GetObject() from an application component in order to access the services of another loaded application component.

Return Value The returned object, or null for failure.

Example

```
IModuleData modData=GXContext.GetObject(context,
    "com.kivasoft.IModuleData");
```

GetSession()

Retrieves a session other than the current one.

Syntax

```
public static ISession2 GetSession(
    IContext context,
    int dwFlags,
    String pAppName,
    String pSessionID,
    ISessionIDGen pIDGen)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see "Examples."

dwFlags Specify 0 (zero).

pAppName Name of the application associated with the specified session ID.

pSessionID The ID of the session you want to retrieve.

pIDGen The session ID generation object used to generate session IDs. Specify null.

Usage Call `GetSession()` to retrieve a session other than the current one. For example, you may want to invalidate another session based on some timeout criteria. An application can use `GetSession()` to exert greater control over session management.

Return Value `ISession2` object representing a user session, or null for failure.

GetSessionCount()

Returns the number of sessions in a NAS cluster.

Syntax

```
public static int GetSessionCount(
    IContext context,
    int dwFlags,
    String appName)
```

context An `IContext` object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

dwFlags Unused.

appName Name of the application in which sessions are being counted.

Usage Call this method to obtain the number of existing sessions for a given application. If you want your application to limit the number of active sessions, you can call `GetSessionCount()` before creating a new session.

Return Value The number of sessions.

Related Topics Chapter 13, “Taking Advantage of NAS Features” in *Programmer’s Guide (Java)*

GetStateTreeRoot()

Returns an existing root node of a state tree or creates a new one.

Syntax

```
public static IState2 GetStateTreeRoot(
    IContext context,
```

```
int dwFlags,
String pName)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

dwFlags Specify one of the following flags or zero to use the default settings.

- GXSTATE.GXSTATE_LOCAL to make the node visible to the local process only.
- GXSTATE.GXSTATE_CLUSTER to make the node visible within the cluster.
- GXSTATE.GXSTATE_DISTRIB, the default, to make the node visible on all servers.

pName The name of the root node. If a node with this name doesn’t already exist, a new node is created.

Usage Use GetStateTreeRoot() to create a state tree. A state tree is a hierarchical data storage mechanism. It is used primarily for storing application data that needs to be distributed across server processes and clusters.

Return Value IState2 object representing the root node, or null for failure.

Example The following code shows how to create a state tree and a child node.

```
IState2 tree = GetStateTreeRoot(m_Context,
    GXSTATE.GXSTATE_DISTRIB,
    "Grammy");

if (tree!=null)
{
    IState2 child = tree.getStateChild("Best Female Vocal");
    if (child == null)
    {
        child = tree.createStateChild("Best Female Vocal", 0,
            GXSTATE.GXSTATE_DISTRIB);
    }
}
```

Log()

Writes a message to the server log.

Syntax Logs an event with a message, specifying the type and category of event.

```
public static int Log(
    IContext context,
    int type,
    int category,
    String msg)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

type Message type. Use one of the following variables:

- GXLOG.GXEVENTTYPE_INFORMATION
- GXLOG.GXEVENTTYPE_ERROR
- GXLOG.GXEVENTTYPE_SYSTEM
- GXLOG.GXEVENTTYPE_WARNING

category User-defined message category. Do not use the range of values reserved for the Netscape systems, which is 0 to 65535, inclusive.

msg Message text to log.

Usage Use Log() for displaying or storing simple messages or for debugging. The output can be directed to the console, to a text file, or to a database table. To direct output, use the Netscape Application Server Administrator. For more information, see the *Administration Guide*.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
Log(m_Context, GXLOG.GXEVENTTYPE_ERROR", -1,
    "Cannot find table: "+"Shipping");
```

NewRequest()

Calls an AppLogic.

Syntax 1 Passes in the specified valIn and valOut.

```
public static int NewRequest(
    IContext context,
    String guidSTR,
    IValList vIn,
    IValList vOut,
```

```
int flags)
```

Syntax 2 Use to explicitly specify the location of AppLogic execution.

```
public static int NewRequest(
    IContext context,
    String guidSTR,
    IObject vIn,
    IObject vOut,
    int host,
    int port)
```

Syntax 3 Use to explicitly specify the location of AppLogic execution.

```
public static int NewRequest(
    IContext context,
    String guidSTR,
    IObject vIn,
    IObject vOut,
    int host,
    int port,
    int flags)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

guidSTR String GUID or name of the AppLogic to execute.

vIn IValList object containing input parameters to pass to the called AppLogic.

vOut IValList object containing result values of the called AppLogic.

host IP address of the Internet host of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

port Internet port of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

flags Specify zero.

Usage Use NewRequest() to call an AppLogic. When you call NewRequest(), the caller passes to NAS the GUID or name of the AppLogic to execute and, optionally, any input and output parameters.

Netscape Application Server constructs a request using the parameters specified. NAS then processes the request like any other request, by instantiating the AppLogic and passing in its parameters. The results from the called AppLogic module are returned to the caller.

The AppLogic that NewRequest() invokes can do one of the following tasks:

- Process application logic and return result values in the vOut parameter.
- Process application logic and return the resulting data form (such as a report) by streaming the output or by calling result().
- Process application logic and return result values in the vOut parameter as well as return the resulting data form (such as a report) by streaming the output or by calling result().

If the called AppLogic uses evalOutput() to stream results, evalOutput() returns HTML results by default. The caller can, however, specify that evalOutput() return a non-HTML data stream by setting the gx_client_type key to "ocl" in the input IVaList of NewRequest(). For example:

```
vallist.setValString("gx_client_type", "ocl");
```

Rule The specified GUID string, input parameters, and output parameters must be valid for the specified AppLogic.

- Tips**
- The calling code can create new input and output IVaLists so as to avoid changing its own input and output IVaLists.
 - Use NewRequestAsync() instead of NewRequest() to execute an asynchronous request.
 - Called AppLogics might reside on different servers, depending on partitioning and load balancing configurations, might be written in a different language, or might have cached results. The calling code can be unaware or independent of these conditions.
 - Using NewRequest(), you can modularize parts of the application, build dynamic header/footer information and smart reporting templates, and hide complex or confidential business logic in secure submodules or even separate servers.
 - Use NewRequest() judiciously. Each invoked AppLogic uses a certain amount of communications and server resources.

Return Value GXE.SUCCESS if the method succeeds.

Example 1 // Call specified AppLogic and pass parameters
 NewRequest(m_Context,
 "{E5CA1000-6EEE-11cf-96FD-0020AFED9A65}",
 paramsToModule, paramsReturned,0);

Example 2 // Use DisplayBasket AppLogic to display the contents
 if(NewRequest(m_Context, "DisplayBasket",
 valIn, valOut,0)==0){
 return 0;
 }
 else
 return result("Cannot execute DisplayBasket AppLogic");

NewRequestAsync()

Calls another AppLogic and runs it asynchronously.

Syntax 1 Passes in the specified valIn and valOut.

```
public static IOrder NewRequestAsync(
    IContext context,
    String guidSTR,
    IValList vIn,
    IValList vOut,
    int flags)
```

Syntax 2 Use to explicitly specify the location of AppLogic execution.

```
public static IOrder NewRequestAsync(
    IContext context,
    String guidSTR,
    IObject vIn,
    IObject vOut,
    int host,
    int port)
```

Syntax 3 Use to explicitly specify the location of AppLogic execution.

```
public static IOrder NewRequestAsync(
    IContext context,
    String guidSTR,
    IObject vIn,
    IObject vOut,
    int host,
    int port,
```

```
int flags)
```

context An IContext object, which provides access to Netscape Application Server services. For information on obtaining a context, see “Examples.”

guidSTR String GUID or name of the AppLogic to execute.

vIn IVaList object containing input parameters to pass to the called AppLogic.

vOut IVaList object containing result values of the called AppLogic.

host IP address of the Internet host of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

port Internet port of the Netscape Application Server where the AppLogic is to be executed. Specify 0 to execute the AppLogic locally.

flags Specify 0.

Usage Use `NewRequestAsync()` to call another AppLogic and run it asynchronously. Executing an AppLogic asynchronously is useful if the AppLogic performs a lengthy operation, or if the AppLogic acts as a monitor or remains persistent. For example, an asynchronous AppLogic may perform a lengthy database query to produce a complex result set that it e-mails to a destination address. Another AppLogic module may run continuously and re-index HTML pages every 24 hours.

When `NewRequestAsync()` is called, the caller passes to NAS the GUID of the AppLogic module to execute and, optionally, any input and output parameters.

The Netscape Application Server constructs a request using the parameters specified and processes it like any other request, by instantiating the AppLogic and passing in its parameters. The results from the called AppLogic module are returned to the calling code.

The AppLogic that `NewRequestAsync()` invokes can do one of the following tasks:

- Process application logic and return result values in the `vOut` parameter.
- Process application logic and return the resulting data form (such as a report) by streaming the output or by calling `result()`.

- Process application logic and return result values in the vOut parameter as well as return the resulting data form (such as a report) by streaming the output or by calling result().
- Rules**
- The specified AppLogic must be accessible to the Netscape Application Server.
 - The specified GUID string, input parameters, and output parameters must be valid for the specified AppLogic module.
- Tips**
- To get the current status of the request, use the getState() method in the returned IOrder object.
 - The calling code can use GX.WaitForOrder() to wait for multiple asynchronous requests to return.
 - Using NewRequestAsync(), you can modularize parts of the application, build dynamic header/footer information and smart reporting templates, and hide complex or confidential business logic in secure submodules or even separate servers.
 - Use NewRequestAsync() judiciously. Each invoked AppLogic uses a certain amount of communications and server resources.

Return Value IOrder object, or null for failure.

Example

```

IOrder  Orders[1];
ULONG   nOrder;
HRESULT hr, ReqResult;

Orders[0] = NewRequestAsync(m_Context, asyncGUIDStr, valIn,
                           valOut, 0);

if (Orders[0] != null)
{
    Log(m_Context, "Successfully invoked async AppLogic\n");

    // wait for async applogic to finish (max 100 seconds)
    hr = waitForOrder(Orders, context, 100);
    if (hr != GXE.SUCCESS)
    {
        return result("Error in executing async request:
                      order wait returned an error");
    }
    else

```

```
    {
        getStateIOrder state = Orders[0].getState();
        if (state == null || state.pdwState != GXE.SUCCESS)
            return result("Error in executing async request");
    }
}
else
{
    Log(m_Context,
        GXLOG.GXLOG.GXEVENTTYPE_WARNING,
        -1,
        "Failed to invoke async AppLogic\n");
}
```


GXVAL class (deprecated)

GXVAL is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing GXVAL functionality in existing applications, see the *Migration Guide*.

The GXVAL class represents a single value of a particular data type. Parameters that are passed to an AppLogic, or results that are retrieved from an AppLogic, are contained in an IValList object that contains one or more GXVAL objects.

Typically, you do not need to use the GXVAL class directly. Generally, you use the `getVal***()` and `setVal***()` suite of methods in the IValList interface to access values in an IValList object. Using the `getVal***()` and `setVal***()` methods in IValList, you can access values of type integer, string, and BLOB in an IValList object. To access more types, such as float or double, use the GXVAL class.

The following example shows how you create a GXVAL object of type double:

```
import com.kivasoft.types.*;
GXVAL v;
v = new GXVAL();
// Set the member variable vt to the double type
v.vt = GXVALTYPE_ENUM.GXVT_R8;
// Call the accessor method for the double type. The member
// variable u holds the value and has accessor methods.
v.u.dblVal(123.45);
```

To create a GXVAL object of a different type, change the GXVALTYPE_ENUM value and the accessor method.

The following table lists the accessor methods and corresponding GXVAL types.

| Java type | Accessor method | GXVAL type |
|-----------|-----------------|------------|
| char | cVal() | GXVT_I1 |
| int | iVal() | GXVT_I2 |
| int | lVal() | GXVT_I4 |
| float | fltVal() | GXVT_R4 |

| Java type | Accessor method | GXVAL type |
|------------------|-----------------|------------|
| double | dblVal() | GXVT_R8 |
| boolean | boolVal() | GXVT_BOOL |
| char | bVal() | GXVT_UI1 |
| int | uiVal() | GXVT_UI2 |
| int | ulVal() | GXVT_UI4 |
| java.lang.string | pstrVal() | GXVT_LPSTR |
| byte[] | pbyteVal() | GXVT_BLOB |
| int | pvoidVal() | GXVT_VOID |

Package

com.kivasoft.types

Example

```
import com.kivasoft.types.*;

IValList vallist = GX.CreateValList();
GXVAL x = new GXVAL();
x.vt = GXVALTYPE_ENUM.GXVT_R8;
x.u.dblVal(123.45);
vallist.setVal("test", x);

GXVAL y;
y = vallist.getVal("test");
if (y.vt == GXVALTYPE_ENUM.GXVT_R8 && y.u.dblVal() == 123.45){
    //success
}
```

MemRowSet class

MemRowSet is a subclass of DBRowSet that implements the IListRowSet interface. MemRowSet provides hooks to the in-memory TemplateDataBasic class of NAS. Specifically, MemRowSet wraps the TemplateDataBasic class, adding support for callback methods. For example, a tag such as the following:

```
<gx type=cell id=Jack.callMe(Boisenberry)>
```

would call the method callMe() on the rowset named Jack.

Although anyone developing a NAS application can use MemRowSet, this class is typically used in components generated by Netscape Application Builder.

MemRowSet replaces the DataSet class from NAB 3.0.

Package

com.netscape.server.servlet.extension

Constructor

The MemRowSet class has two constructors. The first one, the null constructor, is required:

```
public MemRowSet() throws SQLException
```

The second one is a convenience constructor:

```
public MemRowSet(
    HttpServletRequest request,
    HttpServletResponse response,
    String name,
    ITemplateData dataSource) throws SQLException
```

In addition to the request and response objects, the dataSource parameter is the ITemplateData object to use to store data. The name parameter is the MemRowSet name and must correspond with the dataSource's groupName.

Both constructors throw SQLException if it occurs.

Methods

MemRowSet has dozens of methods. Most of them override a corresponding method from one of the following sources:

- NASRowSet class, from package com.netscape.server.jdbc.
- DBRowSet class, from package com.netscape.server.servlet.extension.
- RowSet interface, from package javax.sql.
- ResultSet interface, from package java.sql.

The MemRowSet methods are overridden to prevent undesirable behavior. In most cases, a developer should not call the overridden methods, because calling them has no meaning. You might unintentionally call one of these methods on a RowSet object if the RowSet is implemented by MemRowSet, which does not represent a query.

The methods of MemRowSet are listed in the following table. For methods that override a correspondingly named method, only a summary is provided. For new methods of MemRowSet, additional description is also provided after the table. New methods are marked in **boldface** type.

| Method | New Behavior of Overridden Method |
|-----------------------|--|
| absolute() | See separate description below table. |
| addListItem() | New method. Adds a new item into a MemRowSet that is being used as an IListRowSet. See separate description below table. |
| addRow() | New method. Adds data as a separate row into the data source. See separate description below table. |
| addValue() | New method. Queues a value for later addition into the data source. See separate description below table. |
| afterLast() | Can never be called. Always throws SQLException. |
| beforeFirst() | Can never be called. Always throws SQLException. |
| cancelRowUpdates() | Does nothing. |
| clearWarnings() | Does nothing. |
| close() | Removes the reference to the ITemplateData object. |
| deleteRow() | Can never be called. Always throws SQLException. |
| execute() | Sets MemRowSet to the “executing” status. |

| Method | New Behavior of Overridden Method |
|---------------------------|--|
| findColumn() | Returns -1. Columns are not indexed for MemRowSets. |
| first() | Can never be called. Always throws SQLException. |
| getArray() | Returns null. |
| getAsciiStream() | Returns null. |
| getBigDecimal() | Returns null. |
| getBinaryStream() | Returns null. |
| getBlob() | Returns null. |
| getBoolean() | Returns false. |
| getByte() | Returns -1. |
| getBytes() | Returns null. |
| getCharacterStream() | Returns null. |
| getClob() | Returns null. |
| getCommand() | Returns null. |
| getConcurrency() | Returns -1. |
| getCursorName() | Returns null. |
| getDate() | Returns null. |
| getDouble() | Returns -1. |
| getFetchDirection() | Returns -1. |
| getFetchSize() | Returns -1. |
| getFloat() | Returns -1. |
| getInt() | Returns -1. |
| getListSelection() | New method. Gets the list selection of the MemRowSet that is being used as an IListRowSet. See separate description below table. |
| getLoadParameter() | Returns 0. |
| getLong() | Returns -1. |
| getMetaData() | Returns a class that can use ITemplateData objects. |
| getObject() | With a String parameter, returns the value returned by getString(); with an int parameter, returns null. |

| Method | New Behavior of Overridden Method |
|---------------------------------------|---|
| <code>getQueryName()</code> | Returns null. |
| <code>getRef()</code> | Returns null. |
| <code>getRow()</code> | Returns the row number whose contents can currently be examined. |
| <code>getShort()</code> | Returns -1. |
| <code>getStatement()</code> | Returns null. |
| <code>getStaticMethodCache()</code> | Retrieves the method cache for a particular class. |
| <code>getString()</code> | With a String parameter, returns the value returned by its superclass; this form is not overridden. With an int parameter, returns null. |
| <code>getString()</code> | With a NASString parameter, either returns the list selection or redirects to the underlying ITemplateData data source. |
| <code>getTemplateData()</code> | New method. Gets the data source of the RowSet. See separate description below table. |
| <code>getTime()</code> | Returns null. |
| <code>getTimeStamp()</code> | Returns null. |
| <code>getType()</code> | Returns -1. |
| <code>getUnicodeStream()</code> | Returns null. |
| <code>insertRow()</code> | Can never be called. Always throws SQLException. |
| <code>isAfterLast()</code> | Delegates to the ITemplateData data source. If the RowSet hasn't been accessed, this method returns the value of <code>isEmpty()</code> on the ITemplateData. Otherwise, this method returns false. |
| <code>isBeforeFirst()</code> | Returns the value of the ITemplateData's <code>isEmpty()</code> . |
| <code>isFirst()</code> | Returns true. |
| <code>isLast()</code> | Returns false. |
| <code>last()</code> | Must never be called. Always throws SQLException. |
| <code>moveToCurrentRow()</code> | Does nothing. |
| <code>moveToInsertRow()</code> | Does nothing. |
| <code>next()</code> | Called by the template engine to return the next row. |

| Method | New Behavior of Overridden Method |
|---------------------------|--|
| previous() | Can never be called. Always throws SQLException. |
| refreshRow() | Does nothing. |
| relative() | Does nothing. |
| rowDeleted() | Returns false. |
| rowInserted() | Returns false. |
| rowUpdated() | Returns false. |
| setCommand() | Stubs out uninteresting DBRowSet functionality. |
| setFetchDirection() | Does nothing. |
| setFetchSize() | Does nothing. |
| setListSelection() | New method. Sets the list selection on the MemRowSet that is being used as an IListRowSet. See separate description below table. |
| setName() | Does nothing. |
| setQueryName() | Stubs out uninteresting DBRowSet functionality. |
| setTemplateData() | New method. Sets the data source to the provided TemplateDataBasic. See separate description below table. |
| setupQuery() | Stubs out uninteresting DBRowSet functionality. |
| updateAsciiStream() | Does nothing. |
| updateBigDecimal() | Does nothing. |
| updateBinaryStream() | Does nothing. |
| updateBoolean() | Does nothing. |
| updateByte() | Does nothing. |
| updateBytes() | Does nothing. |
| updateCharacterStream() | Does nothing. |
| updateDate() | Does nothing. |
| updateDouble() | Does nothing. |
| updateFloat() | Does nothing. |
| updateInt() | Does nothing. |
| updateLong() | Does nothing. |

| Method | New Behavior of Overridden Method |
|-------------------|-----------------------------------|
| updateNull() | Does nothing. |
| updateObject() | Does nothing. |
| updateShort() | Does nothing. |
| updateString() | Does nothing. |
| updateTime() | Does nothing. |
| updateTimestamp() | Does nothing. |
| wasNull() | Returns false. |

addListItem()

Adds a new item into a MemRowSet that is being used as an IListRowSet.

Syntax `public void addListItem(
 String label,
 String value)`

label The name of the item as it appears in the list.

value The value assigned to the label.

Usage When working with an IListRowSet, use addListItem() with setListSelection() to create a selection list or a group of radio buttons.

Example The following code fragment creates a data set as a list:

```
MemRowSet ds = new MemRowSet();
ds.setRequest(req);
ds.setResponse(res);
ds.setName("myList");
ds.addListItem("Star Trek", "1");
ds.addListItem("Babylon 5", "2");
ds.addListItem("Red Dwarf", "3");
ds.addListItem("Crusade", "4");
ds.setListSelection("2"); // Babylon 5 is the default selection
req.setAttribute(ds.getName(), ds);
```

To display this list on a web page, you might create an HTML template containing the following code:

```

<SELECT NAME="TVShow">
%gx type=tile id=myList%
<OPTION VALUE="%gx type=cell id=myList.value% %/gx%"
%gx
type=cell
id=myList.isEqualToExpression(
    myList.value=myList.ListSelection)%SELECTED
%/gx%
>

%gx type=cell id=myList.label%%/gx%
%/gx%
</SELECT>

```

Related Topics [setListSelection\(\)](#)

addRow()

Adds data as a separate row into the data source.

Syntax `public int addRow()`

Usage Use `addRow()` to add a new row to a data set. The values of the row must have been previously added using `addValue()`; otherwise, no row is added.

Example

```

MemRowSet ds = new MemRowSet();
ds.setRequest(req);
ds.setResponse(res);
ds.setName("tryMe");
ds.addValue("col1", "Hello");
ds.addValue("col2", "World");
ds.addRow();
ds.addValue("col1", "GoodBye");
ds.addValue("col2", "World");
ds.addRow();
req.setAttribute(ds.getName(), ds);

```

The previous code, along with an HTML template containing the following:

```

<gx type=tile id=tryMe>
<gx type=cell id=tryMe.col1></gx> <gx type=cell id=tryMe.col2><%gx>
<BR>
</gx>

```

would produce:

```
Hello World  
Goodbye World
```

Return Value Unused. Always 0.

Related Topics `addValue()`, `addListItem()`

addValue()

Queues a value for later addition into the data source.

Syntax

```
public int addValue(  
    String name,  
    String value)
```

name The column name of the value.

value The value to add to the data source.

Usage In-memory data sources start out without any data. Use a series of `addValue()` and `addRow()` calls to populate a data source with values.

Note that data is not actually added to the data source until `addRow()` is called.

Example See `addRow()` for an example.

Return Value Unused. Always 0.

Related Topics `addRow()`

getListSelection()

Gets the list selection of the `MemRowSet` that is being used as an `IListRowSet`.

Syntax

```
public String getListSelection(  
    String value)
```

value The value to add to the data source.

Usage Use `getListSelection()` to obtain the list selection previously set by a call to `setListSelection()`.

Return Value A `String` representing the list selection.

Related Topics `setListSelection()`

`getTemplateData()`

Gets the data source of the RowSet.

Syntax `public ITemplateData getTemplateData()`

Usage Use `getTemplateData()` to obtain the `ITemplateData` that serves as the data source of the RowSet. This `ITemplateData` object was created in either of two ways:

- implicitly, as a result of calling `addRow()`.
- by calling `setTemplateData()`.

Return Value An `ITemplateData` representing the data source.

Related Topics `setTemplateData()`

`setListSelection()`

Sets the list selection on the MemRowSet that is being used as an `IListRowSet`.

Syntax `public void setListSelection(
 String value)`

value The value to be set for the list selection.

Usage When working with an `IListRowSet`, use `addListItem()` with `setListSelection()` to create a selection list or a group of radio buttons. Use `getListSelection()` to obtain the list selection previously set by a call to `setListSelection()`.

Example See `addListItem()` for an example.

Related Topics `addListItem()`, `getListSelection()`

`setTemplateData()`

Sets the data source to the provided `TemplateDataBasic`.

Creates an ITemplateData object on a data set.

Syntax `public void setTemplateData(
 ITemplateData td)`

td The name of the ITemplateData object to create.

Usage After you call setTemplateData() with a specified ITemplateData object, data requests such as calls to getString() and next() will be routed through the passed-in ITemplateData. Therefore, if you already have an ITemplateData (for example, from an extension), you can wrap a data set around it by creating a MemRowSet and calling setTemplateData() on the MemRowSet to pass in the ITemplateData.

Furthermore, if the ITemplateData is also a TemplateDataBasic, then calls to addRow() and setHint() will succeed. However, if the ITemplateData is not a TemplateDataBasic, calls to add a row or set the hint will fail, returning a value of -1.

Related Topics `getTemplateData()`

NASRowSet class

A RowSet is an object that encapsulates a set of rows retrieved from a database or other tabular data store, such as a spreadsheet. To implement a RowSet, your code must import `javax.sql`, and implement the RowSet interface. RowSet extends the `java.sql.ResultSet` interface, permitting it to act as a JavaBeans component.

Because a RowSet is a JavaBean, you can implement events and event listeners for the RowSet, and you can set properties on the RowSet. Furthermore, because RowSet is an extension of ResultSet, you can iterate through a RowSet just as you would iterate through a result set.

You fill a RowSet by calling the `RowSet.execute()` method. The `execute()` method uses property values to determine the data source and retrieve data. The properties you decide to set and examine depend on the implementation of RowSet you invoke.

Package

`com.netscape.server.jdbc`

Constructors

In a NAS application, you can create a RowSet in either of two ways:

- You can create NAS-dependent code by calling `new` on the `NASRowSet` class:

```
NASRowSet rs = new NASRowSet();
```

- You can create NAS-independent code. To do so, call `new` on the `InitialContext` class. Then, using this `InitialContext`, look up the class that implements the RowSet interface:

```
InitialContext ctx = new InitialContext();
RowSet rs = (javax.sql.RowSet) ctx.lookup("javax.sql.RowSet");
```

The `ctx.lookup()` call returns an instance of the class that is bound to the implementation of `javax.sql.RowSet`. In this case, the class that is bound is `NASRowSet`.

Methods

This section provides details about what NASRowSet implements.

NASRowSet is a class that extends ResultSet, so the NASRowSet methods are inherited from the ResultSet object.

In addition, NASRowSet does the following:

- implements, in whole or in part, these four standard interfaces:
 - javax.sql.RowSet
 - javax.sql.RowSetReader
 - javax.sql.RowSetWriter
 - javax.sql.RowSetInternal
- implements many methods available in CachedRowSet, a class provided by Sun.
- implements loadQuery(), a method of the SqlUtil class in the com.kivasoft.util package.

RowSet interface

The RowSet interface is fully supported except as noted in the following table:

| Method | Argument | Action | Reason |
|-------------------------|-----------------------|---------------------|--|
| setReadOnly() | false | throws SQLException | NASRowSet is already read-only. |
| setType() | TYPE_SCROLL_SENSITIVE | throws SQLException | Argument is not supported. |
| setConcurrency() | CONCUR_UPDATABLE | throws SQLException | NASRowSet is read-only. |
| addRowSetListener() | any | None | Not supported. |
| removeRowSetListener() | any | None | Not supported. |
| setNull() | any type name | ignores argument | Not supported. |
| setTypeMap() | java.util.Map | None | Map is a JDK 1.2 feature, so is not supported. |

RowSetReader interface

NASRowSet provides a full implementation of the RowSetReader interface. As an alternative to one of the RowSetReader methods, you can use the `setReaderMethod()` from the `CachedRowSet` class. The argument of `setReaderMethod()` must nonetheless implement the RowSetReader interface.

RowSetWriter interface

Although NASRowSet is read-only, it implements the RowSetWriter interface for future use. The only method of RowSetWriter, `writeData()`, throws `SQLException` when called, indicating that this method is not supported.

RowSetInternal interface

This internal interface is called by a method of the RowSetReader interface to retrieve information about the RowSet. RowSetInternal has a single method, `getOriginalRow()`, which returns the entire result set instead of a single row.

CachedRowSet class

Sun provides a rowset class named `CachedRowSet`, which is an implementation of the RowSet interface. `CachedRowSet` lets you retrieve data from a data source, then detach from the data source while you examine (and modify) the data. A cached rowset keeps track of not only the original data retrieved, but also any data changes your application made. If the application tries to update the original data source, the rowset is reconnected to the data source, and only those rows that have changed are merged back into the database.

NASRowSet implements many of the methods in the `CachedRowSet` class because they're useful. However, NASRowSet does not implement all the methods. Unimplemented methods throw `SQLException` if called. The following `CachedRowSet` methods throw `SQLException` because NASRowSet is read-only:

- `acceptChanges()`
- `cancelRowDelete()`
- `cancelRowInsert()`
- `getShowDeleted()`
- `restoreOriginal()`
- `setShowDeleted()`
- `setWriter()`

The `toCollection()` method throws `SQLException` because collections are a JDK 1.2 feature.

SqlUtil class

The `SqlUtil` class is part of the NAS Foundation Class Library. This class contains `loadQuery()`, a method that supports rowsets. The `loadQuery()` method can be used on the `RowSet` interface in place of the `setCommand()` method.

For example:

```
import com.kivasoft.util.SqlUtil;
...
SqlUtil.loadQuery(rowset, pathname, queryname, params);
```

This version of `loadQuery()` reads the `queryname` from the file specified by `pathname`. The method then replaces parameters according to `params` (an `IVallList` object) and sets the query command as the `RowSet` query command.

Related Topics

`RowSet`, `RowSetInternal`, `RowSetReader`, or `RowSetWriter` interfaces in the `javax.sql` package,
`java.sql.ResultSet` interface,
`com.kivasoft.util.SqlUtil` class

Chapter 9, "Using JDBC for Database Access" in *Programmer's Guide (Java)*

NASString class

The NASString class shadows the `java.lang.String` class.

Strings are constant. However, NASStrings are not. Their value can be changed, and they provide a simple method to change which part of a String to operate on. In this way, you can section off parts of a String without the overhead of creating a new String. In addition, NASString conforms to the method signatures provided for the String class.

Although anyone developing a NAS application can use NASString, this class is typically used in components generated by Netscape Application Builder.

Package

`com.netscape.server.servlet.extension`

Constructors

The following constructors are available:

| Constructor | Type of NASString Created |
|---|--|
| <code>public NASString()</code> | Allocates a new NASString containing no characters. Using this constructor is not recommended. |
| <code>public NASString(String value)</code> | Allocates a new NASString that shadows the passed-in String. The NASString will be identical to the shadow string, except that it is changeable. |
| <code>public NASString(NASString value)</code> | Allocates a new NASString that is identical to the current substring of the passed-in NASString. |

Methods

NASString and String are almost identical. Every instance method on `java.lang.String` has a corresponding, functionally identical method on NASString. Every instance method on String that takes a String as a parameter is overloaded in NASString to take a String or a NASString.

The following additional methods are in NASString but not in String.

| Method | Description |
|------------------------------|--|
| <code>equals()</code> | Compares this NASString to the specified parameter. |
| <code>makeSubstring()</code> | Modifies this NASString to point to a substring of shadow. |
| <code>setValue()</code> | Resets the value of this NASString to shadow the specified String. |

`equals()`

Compares this NASString to the specified parameter.

Syntax 1 `public boolean equals(
Object anObject)`

Syntax 2 `public boolean equals(
String val)`

Syntax 3 `public boolean equals(
NASString string)`

Usage The `equals()` method compares this NASString to the specified parameter, either an Object, a String, or an NASString.

This method returns true if the parameter is not null and if it meets the following conditions:

- When specified as an Object (Syntax 1), the parameter must be either:
 - a String object that represents the same sequence of characters as this object
 - an NASString that shadows a substring of a String representing the same sequence of characters as this object
- When specified as String (Syntax 2), the parameter must be a String object that represents the same sequence of characters as this object
- When specified as an NASString (Syntax 3), the parameter must be an NASString that shadows a substring of a String representing the same sequence of characters as this object

The `equals()` method allows the compiler to bind to this method when the class of the object is known. This binding allows for removal of the code to check the class of the incoming object.

Return Value Returns true if the previous conditions are met; otherwise, returns false.

makeSubstring()

Modifies this NASString to point to a substring of shadow.

Syntax

```
public void makeSubstring(
    int beginIndex)
```

Syntax

```
public void makeSubstring(
    int beginIndex,
    int endIndex)
```

beginIndex The beginning index. If the NASString is already pointing at a substring, then this index can be negative, indicating that the beginning of the substring will occur earlier. If `beginIndex` is out of range, this method throws `StringIndexOutOfBoundsException`.

endIndex The ending index, excluding itself.

Usage Use `makeSubstring()` to modify this NASString to point at a substring of shadow. The substring begins at the specified index, which is the offset from the current substring being shadowed by the NASString.

If no `endIndex` is specified, the substring extends to the end of the currently shadowed substring. If `endIndex` is specified, the substring extends to the character located at `endIndex - 1` of the newly shadowed substring.

setValue()

Resets the value of this NASString to shadow the specified String.

Syntax

```
public void setValue(
    String val)
```

val The String to shadow.

Usage Use `setValue()` to reset the value of this NASString to shadow the specified String.

NASStringBuffer class

NASStringBuffer is a subclass of Object that resembles the `java.lang.StringBuffer` class (an object that manages a mutable string). Unlike `java.lang.StringBuffer`, none of NASStringBuffer's methods are synchronized, so performance is significantly increased.

NASStringBuffer also has additional methods that allow it to be more easily modified than the standard `StringBuffer`. Unfortunately, it is slower than `StringBuffer` when converting to a string.

Although anyone developing a NAS application can use NASStringBuffer, this class is typically used in components generated by Netscape Application Builder.

NASStringBuffer replaces the `FastStringBuffer` class from NAB 3.0.

Package

`com.netscape.server.servlet.extension`

Constructors

The following constructors are available:

| Constructor | Type of NASStringBuffer Created |
|--|---|
| <code>public NASStringBuffer()</code> | Contains the empty string. |
| <code>public NASStringBuffer (String aString)</code> | Contains the characters in aString. The buffer is copied, not referenced. |
| <code>public NASStringBuffer(String aString, int start, int end)</code> | Contains the range of characters in aString from the index start to end, with end excluded. |
| <code>public NASStringBuffer(char aChar)</code> | Contains the character aChar. |
| <code>public NASStringBuffer(int size)</code> | Has the given length. |

NASStringBuffer class

| Constructor | Type of NASStringBuffer Created |
|---|--|
| <code>public NASStringBuffer (NASStringBuffer nsb)</code> | Contains another NASStringBuffer's contents. The buffer is copied, not referenced. |
| <code>public NASStringBuffer (char buff[])</code> | Contains the specified character array. The buffer is copied, not referenced. |

Methods

| Method | Description |
|---------------------------------|--|
| <code>append()</code> | Appends a character or string to the <code>NASStringBuffer</code> . |
| <code>charArray()</code> | Returns the <code>NASStringBuffer</code> 's character array. |
| <code>charAt()</code> | Returns the character at the specified index. |
| <code>ensureCapacity()</code> | Makes sure that the <code>StringBuffer</code> has enough space to contain "newCapacity" characters. |
| <code>equals()</code> | Compares the contents of this <code>NASStringBuffer</code> with the contents of another <code>NASStringBuffer</code> . |
| <code>getChars()</code> | Copies characters from the <code>NASStringBuffer</code> to the specified destination array. |
| <code>indexOf()</code> | Returns the index of the first occurrence of the specified character in the <code>NASStringBuffer</code> . |
| <code>insert()</code> | Inserts a character or string into the <code>NASStringBuffer</code> . |
| <code>length()</code> | Returns the number of characters in the <code>NASStringBuffer</code> . |
| <code>moveChars()</code> | Moves the tail of the string, by removing characters. |
| <code>removeCharAt()</code> | Removes the character at the specified index. |
| <code>replace()</code> | Replaces the given range with a string, or removes the given range. |
| <code>setCharAt()</code> | Sets the value of a character at the specified index. |
| <code>setLength()</code> | Truncates the <code>NASStringBuffer</code> to the specified number of characters. |
| <code>setStringValue()</code> | Sets the contents of the <code>NASStringBuffer</code> to the characters in the specified string. |
| <code>tabOrSpaceAt()</code> | Determines whether a tab or space exists at the specified index. |
| <code>toString()</code> | Returns the <code>String</code> for the <code>NASStringBuffer</code> 's contents. |
| <code>trimToSize()</code> | Truncates the internal character array to match the size of the contained string. |
| <code>truncateToLength()</code> | Same as the <code>trimToSize()</code> method. |

append()

Appends a character or string to the NASStringBuffer.

Syntax 1 `public void append(
char aChar)`

Syntax 2 `public void append(
char str[])`

Syntax 3 `public void append(
String aString)`

Syntax 4 `public void append(
char str[],
int offset,
int length)`

aChar The character to append.

aString The string to append.

str The characters to append.

offset The index of the first character to append. If the offset is invalid, this method throws `StringIndexOutOfBoundsException`

length The number of characters to append.

Usage The first three forms of `append()` let you append a character or a string to the `NASStringBuffer`. In the last form of this method, characters in the specified character array, `str`, are appended in order, starting at the specified offset. The length of the `NASStringBuffer` increases by the specified length.

This method returns the modified `NASStringBuffer`.

charArray()

Returns the `NASStringBuffer`'s character array.

Syntax `public char[] charArray()`

Usage Use this method whenever you need to access the character array. However, do not modify this array yourself.

For example, suppose you want to draw the contents of the `NASStringBuffer`. You can do this by passing the array to the graphic's `drawString()` method that takes a character array, rather than converting the `StringBuffer` to a `String`.

Tip You may want to call `trimToSize()` first; otherwise, some characters in the array will be out of the “valid” range for the `StringBuffer`.

`charAt()`

Returns the character at the specified index.

Syntax

```
public char charAt(  
    int index)
```

index The position of the character.

Usage If the index is invalid, this method throws `StringIndexOutOfBoundsException`.

`ensureCapacity()`

Makes sure that the `StringBuffer` has enough space to contain “newCapacity” characters.

Syntax

```
public void ensureCapacity(  
    int newCapacity)
```

Usage Called internally.

`equals()`

Compares the contents of this `NASStringBuffer` with the contents of another `NASStringBuffer`.

Syntax

```
public boolean equals(  
    NASStringBuffer value)
```

Usage Specify a value to compare.

getChars()

Copies characters from the NASStringBuffer to the specified destination array.

Syntax

```
public void getChars(  
    int srcBegin,  
    int srcEnd,  
    char dst[],  
    int dstBegin)
```

srcBegin The offset in the source NASStringBuffer at which copying begins.

srcEnd The offset in the source NASStringBuffer at which copying ends.

dst The destination array, to which data is copied.

dstBegin The offset at which copying into the destination array begins.

Usage Use `getChars()` to copy characters to an array. The first character to be copied is at the index `srcBegin`, and the last character to be copied is at `srcEnd - 1`. The total number of characters to be copied is `srcEnd - srcBegin`.

These characters are copied into a subarray of the specified destination array, `dst`. This subarray begins at the index `dstBegin` and ends at the following index:

```
dstBegin + (srcEnd - srcBegin) - 1
```

If any index is invalid, this method throws `StringIndexOutOfBoundsException`.

indexOf()

Returns the index of the first occurrence of the specified character in the NASStringBuffer.

Syntax 1

```
public int indexOf(  
    char aChar,  
    int offset)
```

Syntax 2

```
public int indexOf(  
    char aChar
```

aChar The character whose position you are looking for.

offset The starting position for searching in the NASStringBuffer.

Usage You can use `indexOf()` in two forms. The first form starts at the specified offset in `NASStringBuffer` and returns the index of the specified character's first occurrence. If the offset is invalid, this method throws `StringIndexOutOfBoundsException`.

The second form is similar, except that it starts at the beginning of the `NASStringBuffer` and is equivalent to the following code:

```
indexOf(aChar, 0);
```

insert()

Inserts a character or string into the `NASStringBuffer`.

Syntax 1

```
public void insert(
    int index,
    char aChar)
```

Syntax 2

```
public void insert(
    int index,
    String aString)
```

Syntax 3

```
public void insert(
    int offset,
    char str[])
```

index The position in the `NASStringBuffer`.

aChar The character to insert.

aString The string to insert.

offset The starting position for searching in the `NASStringBuffer`.

str The character array to insert.

Usage The first two forms of the `insert()` method insert either a character or a string at the specified index.

If the index equals or exceeds the number of characters in the buffer, then this method appends the item. If the index is invalid, this method throws `StringIndexOutOfBoundsException`.

In the last form of this method, characters in the specified character array, `str`, are appended in order, starting at the specified offset. The length of the `NASStringBuffer` increases by the length of the argument.

This method returns the modified `NASStringBuffer`.

length()

Returns the number of characters in the `NASStringBuffer`.

Syntax `public int length()`

moveChars()

Moves the tail of the string, by removing characters.

Syntax `public void moveChars(
 int fromIndex,
 int toIndex)`

fromIndex Position of the first character to move. The affected characters range from this position to the end of the `NASStringBuffer`.

toIndex Position to move the affected characters.

Usage If characters are moved to an index within the existing string, the previous characters are overwritten by the move.

removeCharAt()

Removes the character at the specified index.

Syntax `public void removeCharAt(
 int index)`

index The index of the character to remove.

Usage If the index is invalid, this method throws `StringIndexOutOfBoundsException`.

replace()

Replaces the given range with a string, or removes the given range.

Syntax

```
public void replace(  
    int begin,  
    int end,  
    String value)
```

begin The index of the beginning of the range.

end The index of the end of the range.

value The string that replaces the range. If null, the range is removed.

Usage Use `replace()` to remove or replace characters in a `NASStringBuffer`. If either of the range indexes is invalid, this method throws `StringIndexOutOfBoundsException`.

setCharAt()

Sets the value of a character at the specified index.

Syntax

```
public void setCharAt(  
    int index,  
    char ch)
```

index The position of the character to set.

ch The value to set the character to.

Usage If the index is invalid, this method throws `StringIndexOutOfBoundsException`.

setLength()

Truncates the `NASStringBuffer` to the specified number of characters.

Syntax

```
public void setLength(  
    int length)
```

length Number of characters to remain in the truncated `NASStringBuffer`. If the specified length is invalid, this method does nothing.

setStringValue()

Sets the contents of the NASStringBuffer to the characters in the specified string.

Syntax `public void setStringValue(
String aString)`

aString The string to use as the new contents of NASStringBuffer.

tabOrSpaceAt()

Determines whether a tab or space exists at the specified index.

Syntax `public boolean tabOrSpaceAt(
int index)`

index The position in the NASStringBuffer.

Usage The tabOrSpaceAt() method returns true if the specified index contains a tab or a space; otherwise, this method returns false. If the index is invalid, this method throws StringIndexOutOfBoundsException.

toString()

Returns the String for the NASStringBuffer's contents.

Syntax `public String toString()`

Usage This method overrides toString() in the Object class.

trimToSize()

Truncates the internal character array to match the size of the contained string.

Syntax `public void trimToSize()`

Usage Use trimToSize() when more space than necessary is allocated to the NASStringBuffer, and you want to free this space for other uses.

truncateToLength()

Same as the trimToSize() method.

Syntax `public void truncateToLength(
int aLength)`

Session2 class (*deprecated*)

The Session2 class is deprecated and is provided for backward compatibility only. New applications should use the methods provided by the standard `javax.servlet.http.HttpSession` interface. In addition, NAS provides the `HttpSession2` interface, an extension to `HttpSession` that supports applications that must call `AppLogics`.

For more information, see Chapter 11, “Creating and Managing User Sessions,” in the *Programmer’s Guide (Java)*, or see the *Migration Guide*.

The Session2 class is designed to help you implement a custom session class if your application requires additional session functionality. To create a custom session class, subclass the Session2 class, then define new methods. Your subclass can, for example, define accessor methods to read and write information specific to your session. An online shopping application, for example, might require specialized methods, such as `AddItemToCart()`, to track shopping items per user session.

When you subclass the Session2 class, you must do the following:

- Override the `createSession()` and `getSession()` methods in the `AppLogic` class. In these methods, you can invoke the base `AppLogic` methods to obtain an `ISession2` object, and construct your own session class by passing in this object, as shown in the following example:

```
ISession2 s = super.createSession(flags, timeout, appname,
    sessionid, idgen);

if (s!= null)
    sess = new MySession(s);

return s;
```

- Pass in the `ISession2` interface in the subclass constructor, as shown in the following example:

```
public class MySession extends Session2
{
    public MySession(ISession2 sess)
```

Because the Session2 class delegates the implementation of methods in the ISession2 interface to the object passed to its constructor, you don't have to implement every method of that interface in your subclass. You need only define the methods you want to add.

Package

com.kivasoft.session

Related Topics

[ISession2 interface \(deprecated\)](#)

SqlUtil class

The SqlUtil class contains helper methods for two main purposes:

- to load queries from query files (.gxq files)
- to create or initialize JDBC classes for database access.

At present, this class contains only one helper method, `loadQuery()`. This method has six syntax variants.

Although anyone developing a NAS application can use SqlUtil, this class is typically used in components generated by Netscape Application Builder.

Package

`com.kivasoft.util`

Variables

| Variable | Description |
|-------------------------|--|
| <code>minLocChar</code> | Lower end set of characters that are considered part of a variable name, in addition to a-zA-Z0-9. |
| <code>maxLocChar</code> | Upper end set of characters that are considered part of a variable name, in addition to a-zA-Z0-9. |

Constructor

SqlUtil extends the Object class and should never be instantiated. The SqlUtil constructor is as follows:

```
public SqlUtil()
```

Methods

| Method | Description |
|--------------------------|----------------|
| <code>loadQuery()</code> | Loads a query. |

Examples

Example 1 The following code shows how you might use a SELECT query:

```
try
{
    int colIndex;
    int x;
    long y;
    NASRowSet rowSet = new com.netscape.server.jdbc.NASRowSet();

    // Initialize connection info
    rowSet.setDataSourceName("jdbc/nsample");

    // permanent parameter substitutions in the SQL statement.
    IValList param = GX.CreateValList();
    param.setValString("REGION", "WEST");
    param.setValInt("POPULATION", 100000);

    SqlUtil.loadQuery(rowSet, "state.gxq", "STATES_select1", param);

    // temporary parameter substitutions.
    rowSet.setString(param.getValInt("STATE"), "CA");
    rowSet.execute();

    // get the return values.
    colIndex = 1;
    x = rowSet.getInt(colIndex++);
    y = rowSet.getLong(colIndex++);

    rowSet.clearParameters();
    // temporary parameter substitutions.
    rowSet.setString(param.getValInt("STATE"), "TX");
    rowSet.execute();

    // get the return values.
    colIndex = 1;
    x = rowSet.getInt(colIndex++);
    y = rowSet.getLong(colIndex++);

    rowSet.close();
}
```

```

catch (SQLException err)
{
}

```

Example 2 The following code shows how you might use an UPDATE query:

```

try
{
    String url = "jdbc:netscape:ODBC:nsample"
    java.util.Properties props = new java.util.Properties();
    props.put("DRIVER", "ODBC");
    props.put("DSN", "nsample");
    props.put("DB", "nsample");
    props.put("user", "netscape");
    props.put("password", "netscape");
    Connection conn = DriverManager.getDriver(url).connect(url, props);

    // permanent parameter substitutions in the SQL statement.
    IValList param = GX.CreateValList();
    param.setValString("REGION", "WEST");
    param.setValInt("POPULATION", 100000);

    PreparedStatement prestate =
        SqlUtil.loadQuery(conn, "state.gxq", "STATES_update1", param);

    // temporary parameter substitutions.
    prestate.setString(param.getValInt("STATE"), "CA");
    prestate.setInt(param.getValInt("NEW_POP"), 10000);
    prestate.execute();

    prestate.clearParameters();
    // temporary parameter substitutions.
    prestate.setString(param.getValInt("STATE"), "TX");
    prestate.setInt(param.getValInt("NEW_POP"), 10000);
    prestate.execute();

    conn.close();
}
catch (SQLException err)
{
}

```

Related Topics

com.netscape.server.jdbc.NASRowSet class,
java.sql.Connection interface,
java.sql.PreparedStatement interface,
javax.sql.RowSet interface

Chapter 9, “Using JDBC for Database Access” in *Programmer’s Guide (Java)*

loadQuery()

Loads a query.

Syntax 1 Use any of the following three variants to initialize a RowSet, given a SELECT query.

```
static public boolean loadQuery(  
    RowSet rs,  
    String filepath,  
    String queryname,  
    IValList params)
```

Syntax 2

```
static public boolean loadQuery(  
    RowSet rs,  
    String query,  
    IValList params)
```

Syntax 3

```
static public boolean loadQuery(  
    RowSet rs,  
    Reader r,  
    String queryname,  
    IValList params)
```

Syntax 4 Use any of the following three variants to generate a PreparedStatement, given an INSERT, UPDATE, or DELETE query.

```
static public PreparedStatement loadQuery(  
    Connection conn,  
    String filepath,  
    String queryname,  
    IValList params)
```

Syntax 5

```
static public PreparedStatement loadQuery(  
    Connection conn,  
    String query,
```

```
        IValList params)
```

Syntax 6 `static public PreparedStatement loadQuery(
 Connection conn,
 Reader r,
 String queryname,
 IValList params)`

rs Specifies the rowset on which the query will act. The rowset handed in must have its Connection initialized; otherwise the loadQuery() call will fail.

filepath The full pathname of the query file (.gxq file).

queryname For Syntax 3 (using a RowSet), the name of the SELECT query in the query file. For Syntax 6 (using a Connection), the name of the INSERT, UPDATE, or DELETE query in the query file.

query For Syntax 2 (using a RowSet), the SELECT query. For Syntax 5 (using a Connection), the INSERT, UPDATE, or DELETE query.

params A list of parameter-value pairs that will be permanently replaced in the SELECT query.

r A reader that points to the contents of a query file (.gxq file).

conn Connection information needed to generate a PreparedStatement.

Usage Use loadQuery() either to initialize a RowSet given a SELECT query, or to generate a PreparedStatement given an INSERT, UPDATE, or DELETE query. This method performs the following:

- removes comments of the form /* (slash-asterisk).
- replaces any parameters it finds in the SQL statement with values that match the passed-in parameter list.
- replaces parameters it finds in the SQL statement with ?(question mark) for values it cannot find in the parameter list.
- converts SQL statements to database-specific SQL for constructs such as left joins, right joins, or outer joins.

Return Value The boolean syntax returns true if no errors were encountered or returns false for failure. The PreparedStatement syntax has the following return values: if no errors are encountered, loadQuery() returns the PreparedStatement object that references the query; otherwise, the method returns null for failure.

TemplateDataBasic class (*deprecated*)

TemplateDataBasic is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model, where similar functionality is provided through interfaces such as `java.sql.ResultSet` and `javax.sql.RowSet`.

For information about replacing TemplateDataBasic functionality in existing applications, see the *Migration Guide*.

The TemplateDataBasic class represents a memory-based, hierarchical source of data used for HTML template processing. It implements the `ITemplateData` interface (deprecated), and provides methods for creating and managing this hierarchical data.

The most common sources of data used for template processing are result sets obtained from queries on supported relational database management systems. However, an AppLogic might need to obtain data from non-RDBMS sources. For example, an AppLogic might display a list of numbers generated from a formula, or it might display a list of processors available on the server machine and their CPU loads. To display such information, the AppLogic can create an instance of the TemplateDataBasic class, populate that instance with rows of hierarchical data, and then pass the TemplateDataBasic object to the Template Engine for processing by calling `evalTemplate()` or `evalOutput()` in the AppLogic class (deprecated).

Alternatively, to provide application-specific special processing and to hook into the template generation process, AppLogic can subclass the TemplateDataBasic class and override the member methods in the `ITemplateData` interface (deprecated).

An AppLogic can create a flat or hierarchical data structure.

- For a flat data structure, create the data structure using `TemplateDataBasic()`, then call `rowAppend()` for each row of data to be added, specifying the column name and data in each row.
- For a hierarchical data structure, proceed in the following sequence:
 1. Create the parent `TemplateDataBasic()` instance.
 2. Create the child `TemplateDataBasic()` instance.

3. Add one or more rows to the child data structure using `rowAppend()` on the child instance.
4. Define the start of a new parent row by using `rowAppend()` on the parent instance.
5. Join the child data structure to the parent data structure using the parent's `groupAppend()`.
6. Repeat steps 2 through 5 for each subsequent group of data.

The number of nesting levels is limited only by system resources. One parent row can contain many joined child instances, in which case the `AppLogic` calls the parent's `groupAppend()` more than once after calling the parent's `rowAppend()`.

To create a template data source, use the `GX.CreateTemplateDataBasic()` method, as shown in the following example:

```
TemplateDataBasic data = GX.CreateTemplateDataBasic("data");
```

Package

`com.kivasoft.applogic`

Methods

| Method | Description |
|----------------------------------|---|
| <code>groupAppend()</code> | Links the specified child group to the current parent group. |
| <code>rowAppend()</code> | Appends a new row of data to the current template data object or group. |
| <code>TemplateDataBasic()</code> | Creates an empty template data object with the specified name. |

Implements

`ITemplateData` interface (deprecated)

Example 1

```
// Construct a flat result set
/* Create Data Object */
tdbSalesRev = new TemplateDataBasic("salesOffices");
/* Create records of data */
tdbSalesRev.rowAppend("office=New York;revenue=150M");
tdbSalesRev.rowAppend("office=Hong Kong;revenue=130M");
tdbSalesRev.rowAppend("office=Singapore;revenue=105M");
```

Example 2

```
// Construct a hierarchical result set with two child
// levels of data: Asia and Europe.

/* Create the hierarchical data object */
tdbContinents = new TemplateDataBasic("continents");

/* Create the Asia group */
tdbAsia = new TemplateDataBasic("countries");
/* Create child records for Asia group */
tdbAsia.rowAppend("country=China;currency=yuan");
tdbAsia.rowAppend("country=Japan;currency=yen");
tdbAsia.rowAppend("country=South Korea;currency=won");
tdbContinents.rowAppend("name=Asia");
/* Link child records to group */
tdbContinents.groupAppend(tdbAsia);

/* Create the Europe group in the same manner */
tdbEurope = new TemplateDataBasic("countries");
tdbEurope.rowAppend("country=France;currency=franc");
tdbEurope.rowAppend("country=Germany;currency=deutsche mark");
tdbEurope.rowAppend("country=Italy;currency=lire");
tdbContinents.rowAppend("name=Europe");
tdbContinents.groupAppend(tdbEurope);
```

Related Topics

[evalTemplate\(\)](#) and [evalOutput\(\)](#) in the [AppLogic](#) class (deprecated)

[ITemplateData](#) interface (deprecated)

groupAppend()

Links the specified child group to the current parent group.

Syntax `public int groupAppend(
 TemplateDataBasic childName)`

childName Name of the child TemplateDataBasic object to link.

Usage Use groupAppend() to define the hierarchical relationship from a parent row to child TemplateDataBasic objects.

- Rules**
- Call groupAppend() only after calling rowAppend(). The child instance is associated with the last row from the last call to rowAppend() on the parent.
 - The AppLogic must first create the parent and child objects using new TemplateDataBasic(), then populate the child object with rows of data using rowAppend().

Tip Use groupAppend() for hierarchical data objects only.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Construct a hierarchical result set with two child
// levels of data: Asia and Europe.

/* Create the hierarchical data object */
tdbContinents = new TemplateDataBasic("continents");

/* Create the Asia group */
tdbAsia = new TemplateDataBasic("countries");
/* Create child records for Asia group */
tdbAsia.rowAppend("country=China;currency=yuan");
tdbAsia.rowAppend("country=Japan;currency=yen");
tdbAsia.rowAppend("country=South Korea;currency=won");
tdbContinents.rowAppend("name=Asia");
/* Link child records to group */
tdbContinents.groupAppend(tdbAsia);

/* Create the Europe group in the same manner */
tdbEurope = new TemplateDataBasic("countries");
tdbEurope.rowAppend("country=France;currency=franc");
tdbEurope.rowAppend("country=Germany;currency=deutsche mark");
```

```
tdbEurope.rowAppend("country=Italy;currency=lire");
tdbContinents.rowAppend("name=Europe");
tdbContinents.groupAppend(tdbEurope);
```

Related Topics `evalTemplate()` and `evalOutput()` in the `AppLogic` class (deprecated)
`ITemplateData` interface (deprecated)

rowAppend()

Appends a new row of data to the current template data object or group.

Syntax `public int rowAppend(
String rowString)`

rowString String containing a series of column name and value pairs, separated by semi-colons, using the following format:

```
"column1=value1[:column2=value2[...]]"
```

The columns must be identical for each `rowAppend()` call within the same `TemplateDataBasic` object.

Usage Use `rowAppend()` to populate the template data object with rows of data.

Rule `AppLogic` must first create the template data object using `TemplateDataBasic()`.

Tip Add rows in the sequence in which you want the Template Engine to process them. The template data object is processed in physical order only. `AppLogic` can only append rows to the data object. It cannot subsequently insert, delete, or sort records in the template data object.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
// Construct a hierarchical result set with two child
// levels of data: Asia and Europe.

/* Create the hierarchical data object */
tdbContinents = new TemplateDataBasic("continents");

/* Create the Asia group */
tdbAsia = new TemplateDataBasic("countries");
/* Create child records for Asia group */
tdbAsia.rowAppend("country=China;currency=yuan");
tdbAsia.rowAppend("country=Japan;currency=yen");
```

```
tdbAsia.rowAppend("country=South Korea;currency=won");
tdbContinents.rowAppend("name=Asia");
/* Link child records to group */
tdbContinents.groupAppend(tdbAsia);

/* Create the Europe group in the same manner */
tdbEurope = new TemplateDataBasic("countries");
tdbEurope.rowAppend("country=France;currency=franc");
tdbEurope.rowAppend("country=Germany;currency=deutsche mark");
tdbEurope.rowAppend("country=Italy;currency=lire");
tdbContinents.rowAppend("name=Europe");
tdbContinents.groupAppend(tdbEurope);
```

Related Topics [evalTemplate\(\)](#) and [evalOutput\(\)](#) in the [AppLogic](#) class (deprecated)

[ITemplateData](#) interface (deprecated)

TemplateDataBasic()

Creates an empty template data object with the specified name.

Syntax `public TemplateDataBasic(
 String dataObjectName)`

dataObjectName Name of the parent or child data object referred to in the template.

Usage Use `new TemplateDataBasic()` to create parent and child data objects.

Rule The specified data object name must be unique within this template data object.

- Tips**
- Use `rowAppend()` to populate this data object with rows of data.
 - For hierarchical template data objects, use `groupAppend()` to define the hierarchy among `TemplateDataBasic` objects.
 - The specified data object name must be unique within the hierarchical result set.
 - Create parent and child groups in the sequence in which you want the Template Engine to process them. The template data object is processed in physical order only.

Return Value An empty `TemplateDataBasic` object, or null for failure.

```

Example // Construct a hierarchical result set with two child
           // levels of data: Asia and Europe.

           /* Create the hierarchical data object */
           tdbContinents = new TemplateDataBasic("continents");

           /* Create the Asia group */
           tdbAsia = new TemplateDataBasic("countries");
           /* Create child records for Asia group */
           tdbAsia.rowAppend("country=China;currency=yuan");
           tdbAsia.rowAppend("country=Japan;currency=yen");
           tdbAsia.rowAppend("country=South Korea;currency=won");
           tdbContinents.rowAppend("name=Asia");
           /* Link child records to group */
           tdbContinents.groupAppend(tdbAsia);

           /* Create the Europe group in the same manner */
           tdbEurope = new TemplateDataBasic("countries");
           tdbEurope.rowAppend("country=France;currency=franc");
           tdbEurope.rowAppend("country=Germany;currency=deutsche mark");
           tdbEurope.rowAppend("country=Italy;currency=lire");
           tdbContinents.rowAppend("name=Europe");
           tdbContinents.groupAppend(tdbEurope);

```

Related Topics [evalTemplate\(\)](#) and [evalOutput\(\)](#) in the [AppLogic](#) class (deprecated)

[ITemplateData](#) interface (deprecated)

TemplateDataBasic class (deprecated)

TemplateMapBasic class (*deprecated*)

TemplateMapBasic is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing TemplateMapBasic functionality in existing applications, see the *Migration Guide*.

The TemplateMapBasic class represents an object that contains one or more mappings between fields in an HTML template and the data used to replace those fields. It provides a method for defining these mappings before processing the template using evalTemplate() or evalOutput() in the AppLogic class (deprecated).

Fields in the HTML template are defined using special GX markup tags. The data, which the Template Engine uses to replace those fields dynamically at runtime, can come from any of the following sources: a calculated value, a column in a result set, a field in an ITemplateData template data object, or a field from a map object.

Before calling evalTemplate() or evalOutput() in the AppLogic class, an AppLogic uses the put() or putString() method in the TemplateMapBasic class to link the field name in the GX markup tag with a precomputed value or a named column or field in the data source. After defining the mappings, the AppLogic passes the populated ITemplateMapBasic object as the map parameter in evalTemplate() or evalOutput(). The Template Engine uses these mappings during template processing to dynamically transfer data values from the data source to the HTML output report.

Mapping allows the AppLogic to use the same template for multiple data sources with different column names, for a data source whose schema changes over time, or for memory-based data sources defined using a TemplateDataBasic object.

To create a template map, use the GXCreateTemplateMapBasic() method, as shown in the following example:

```
TemplateMapBasic map = GX.CreateTemplateMapBasic();
```

To provide application-specific special processing, the AppLogic can subclass TemplateMapBasic and override its getString() method to hook into the Template Engine generation process. For example, AppLogic can intercept and filter data from a database before the Template Engine processes it.

Package

com.kivasoft.applogic

Methods

| Method | Description |
|--------------|--|
| getString() | Resolves the id attribute specified in a GX markup tag in the template being processed by the Template Engine. This method is called by the get() method in the ITemplateMap interface. |
| put() | Maps the value assigned to the id attribute in the HTML template to another value. This method takes an IBuffer object (that contains a string expression) for the replacement value argument. |
| putString() | Maps the value assigned to the id attribute in the HTML template to another value. This method takes a string argument for the replacement value. |

Implements

ITemplateMap interface (deprecated)

Example

```
// Create template map
TemplateMapBasic map = new TemplateMapBasic();
[... create a query ...]
// map columns in table to tags in template
map.putString("ParentsSelect", selStr);
map.putString("NAME", myName);
map.putString("CATEGORY", catStr);
// Evaluate the return template using the column mappings
if(evalTemplate(HTML, (ITemplateData) null, map)==0)
    return result("");
```

```
else
    return result("Failed to Generate HTML");
```

Related Topics

evalTemplate() and evalOutput() in the AppLogic class (deprecated),
 TemplateDataBasic class (deprecated),
 ITemplateData interface (deprecated),
 ITemplateMap interface (deprecated)

getString()

Resolves the `id` attribute specified in a GX markup tag in the template being processed by the Template Engine. This method is called by the Template Engine.

Syntax

```
public String getString(
    String szExpr,
    IObject pData,
    IObject pMark)
```

szExpr In the current GX markup tag in the HTML template being processed, the name of the field, or placeholder, assigned to the `id` attribute. Must be an identical match (case-sensitive).

pData Specify null.

pMark Specify null.

Usage GX markup tags are used in an HTML template to identify where dynamic data appears in the output report. In the GX markup tags, the `id` attribute specifies any of the following items: the name of a flat query within a hierarchical query, a field in the hierarchical result set or TemplateDataBasic object, or an HTML template. The type of item specified in the `id` attribute depends on the `type` attribute that is specified in the same GX markup tag.

To provide application-specific special processing, an AppLogic can subclass the TemplateMapBasic class (deprecated) and override getString() to manipulate the Template Engine generation process. For example, an AppLogic can intercept and filter data from a database before the Template Engine processes it.

Rule An AppLogic should use `getString()` only to override it after subclassing the `TemplateMapBasic` class (deprecated).

Return Value A string that contains the value of the id mapping, or null for failure.

Example The following code shows how `getString()` in a custom template map class is overridden to recalculate the current time each time it is encountered in a template:

```
import com.kivasoft.*;
class myTMB extends TemplateMapBasic {
    public String getString(String key, data, mark)
    {
        if (key.equals("CURTIME"))
            return new Date().toString();
        return super.getString(key, data, mark);
    }
}
```

put()

Maps the value assigned to the id attribute in the HTML template to another value. This method takes an `IBuffer` object that contains a string expression for the replacement value.

Syntax

```
public int put(
    String szExpr,
    IBuffer pBuff)
```

szExpr In the GX markup tag in the HTML template, the name of the field, or placeholder, assigned to the id attribute. Must be an identical match (case-sensitive).

pBuff `IBuffer` object that contains the String expression to substitute for the specified template field name, such as:

- Calculated value, such as a number or date.
- Name of the column in the hierarchical result set that the Template Engine uses to process the template. In your template, the column name must begin with a "\$" character.

- Name of a field in the TemplateDataBasic object that the Template Engine uses to process the template. In your template, the field name must begin with a “\$” character.

Usage Use put() to add template field/data source pairs to the template map before calling evalTemplate() or evalOutput() in the AppLogic class.

- Tips**
- To create an IBuffer object that contains the string expression to pass to put(), use GX.CreateBufferFromString(). Alternatively, use putString() to pass a string directly.
 - The AppLogic can place the put() method call inside a loop to construct the field map iteratively. For example, the AppLogic could use this technique to populate a map from a file, line by line.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics evalTemplate() and evalOutput() in the AppLogic class (deprecated), TemplateDataBasic class (deprecated), ITemplateData interface (deprecated), ITemplateMap interface (deprecated)

putString()

Maps the value assigned to the id attribute in the HTML template to another value. This method takes a string argument for the replacement value.

Syntax

```
public int putString(
    String szExpr,
    String szData)
```

szExpr In the GX markup tag in the HTML template, the name of the field, or placeholder, assigned to the id attribute. Must be an identical match (case-sensitive).

szData The String expression to substitute for the specified template field name, such as:

- Calculated value, such as a number or date. Use the string.valueOf() methods to convert calculated values to a string.
- Name of the column in the hierarchical result set that the Template Engine uses to process the template. In your template, the column name must begin with a “\$” character.

- Name of a field in the TemplateDataBasic object that the Template Engine uses to process the template. In your template, the field name must begin with a "\$" character.

Usage Use putString() to add template field/data source pairs to the template map before calling evalTemplate() or evalOutput() in the AppLogic class.

Tip The AppLogic can place the putString() method call inside a loop to construct the field map iteratively. For example, the AppLogic could use this technique to populate a map from a file, line by line.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create template map
TemplateMapBasic map = new TemplateMapBasic();
[... create a query ...]
// map columns in table to tags in template
map.putString("ParentsSelect", selStr);
map.putString(ICatalogData.COL_NAME, myName);
map.putString(ICatalogData.COL_CATEGORYID, catStr);

// Evaluate the return template using the column mappings
if(evalTemplate(HTML, (ITemplateData) null, map)==0)
    return result("");
else
    return result("Failed to Generate HTML");
```

Related Topics evalTemplate() and evalOutput() in the AppLogic class (deprecated)

TemplateDataBasic class (deprecated)

ITemplateData interface (deprecated)

ITemplateMap interface (deprecated)

Util class (*deprecated*)

The Util class is deprecated and is provided for backward compatibility only. New applications developed using standard JDBC calls do not need the functionality provided by the Util class.

The Util class is a utility class that contains static methods for converting Java Date objects to Netscape Application Server date/time formats and IBuffer values to string. Like the methods in the Math and System classes in the Java Class Library, the methods in the Util class can be used anywhere regardless of whether an instance of the class exists or not.

You call the methods in the Util class by using the following convention: *Util.method*. The following example shows how you call `toString()`, a method in the Util class, to convert data in a returned IBuffer object to a string value:

```
String groupbyString;
groupbyString = Util.toString(qry.getGroupBy());
```

Package

com.kivasoft.util

Methods

| Method | Description |
|--------------------------------|---|
| <code>dateToDate()</code> | Converts a Java Date object and returns a string containing the date value in Netscape Application Server date format. |
| <code>dateToTime()</code> | Converts a Java Date object and returns a string containing the time value in Netscape Application Server time format. |
| <code>dateToTimeStamp()</code> | Converts a Java Date object and returns a string containing the date and time value in Netscape Application Server time stamp format. |
| <code>toString()</code> | Converts data in an IBuffer object to a string value. |

dateToDate()

Converts a Java Date object and returns a string containing the date value in the Netscape Application Server date format.

Syntax

```
public static String dateToDate(  
    Date date)
```

date Date object containing the date value to convert. The specified date must be a Java Date object.

Usage Use dateToDate() when working with dates and operations in the Data Access Engine (DAE).

Tip See the java.util.Date class for additional options for obtaining and formatting date and time values.

Return Value String representing the date portion of the Date object, or null for failure.

Example 1

```
Date startDate=new Date(String.valueOf(month)+"/1/"+year);  
Date endDate=new Date(String.valueOf(month)+"/"+numDays+"/ "+year+"  
23:59:59");  
log(month+"/"+ "+numDays+"/ "+year);  
log(startDate.toString()+" "+dateToDate(startDate));  
log(endDate.toString()+" "+dateToDate(endDate));
```

Example 2

```
// Get and display date portion of current date as a string.  
String todaysDate;  
todaysDate=dateToDate(new date());  
System.out.println("Today, in Netscape Application Server format, is " +  
todaysDate + ".");
```

Related Topics [dateToTime\(\)](#)

[dateToTimeStamp\(\)](#)

dateToTime()

Converts a Java Date object and returns a string containing the time value in the Netscape Application Server time format.

Syntax

```
public static String dateToTime(  
    Date date)
```

date Date object containing the time value to convert. The specified date must be a Java Date object.

Usage Use `dateToTime()` when working with time and operations in the Data Access Engine (DAE).

Return Value String representing the time portion of the Date object, or null for failure.

Tip See the `java.util.Date` class for additional options for obtaining and formatting date and time values.

Example 1

```
Date startDate=new Date(String.valueOf(month)+"/1/"+year);
Date endDate=new Date(String.valueOf(month)+"/"+numDays+"/ "+year+"
23:59:59");
log(month+"/"+numDays+"/ "+year);
log(startTime.toString()+" "+dateToTime(startDate));
log(endTime.toString()+" "+dateToTime(endDate));
```

Example 2

```
// Get and display time portion of current date as a string.
String timeRightNow;
timeRightNow=dateToTime(new date());
System.out.println("Time right now, in Netscape Application Server
format, is " + todaysDate + ".");
```

Related Topics `dateToDate()`
`dateToTimeStamp()`

dateToTimeStamp()

Converts a Java Date object and returns a string containing the date and time value in the Netscape Application Server time stamp format.

Syntax `public static String dateToTimeStamp(
Date date)`

date Date object containing the value to convert. The specified date must be a Java Date object.

Usage Use `dateToTimeStamp()` when working with dates and times, as well as operations in the Data Access Engine (DAE).

Tip See the `java.util.Date` class for additional options for obtaining and formatting date and time values.

Return Value String representing the date and time portions of a date.

Example 1

```
Date startDate=new Date(String.valueOf(month)+"/1/"+year);
Date endDate=new Date(String.valueOf(month)+"/"+numDays+"/ "+year+"
23:59:59");
log(month+"/ "+numDays+"/ "+year);
log(startTime.toString()+" "+dateToTimeStamp(startDate));
log(endTime.toString()+" "+dateToTimeStamp(endDate));
```

Example 2

```
// Get and display time portion of current date as a string.
String dateTimeRightNow;
dateTimeRightNow=dateToTimeStamp(new date());
System.out.println("Date and time right now, in Netscape Application
Server format, is " + dateTimeRightNow + ".");
```

Related Topics [dateToDate\(\)](#)
[dateToTime\(\)](#)

toString()

Converts data in an IBuffer object to a string value.

Syntax `public static String toString(
IBuffer buffer)`

buffer IBuffer object containing the value to convert.

Usage Use `toString()` to convert the IBuffer objects returned by the `get**()` methods in the IQuery interface (deprecated) to string values.

Return Value String representing the data in an IBuffer object.

Related Topics [IBuffer interface \(deprecated\)](#)
[IQuery interface \(deprecated\)](#)

Interfaces

This chapter provides reference material on the interfaces in the Netscape Application Server Foundation Class Library.

The following interfaces are included in this chapter (see next page):

HttpServletRequest2 interface
HttpSession2 interface
IAppEvent interface (deprecated)
IAppEventMgr interface
IAppEventObj interface
IBuffer interface (deprecated)
ICallableStmt interface (deprecated)
ICallerContext interface
IColumn interface (deprecated)
IContext interface
IDataConn interface (deprecated)
IDataConnSet interface (deprecated)
IEnumObject interface
IError interface (deprecated)
IHierQuery interface (deprecated)
IHierResultSet interface (deprecated)
IListRowSet interface
ILock interface
IMailbox interface
IObject interface (deprecated)
IOrder interface (deprecated)
IPreparedQuery interface (deprecated)
IQuery interface (deprecated)
IResultSet interface (deprecated)
IRowSet2 interface
ISequence interface (deprecated)
ISequenceMgr interface (deprecated)
IServerContext interface
IServletErrorHandler interface
ISession2 interface (deprecated)
ISessionIDGen interface (deprecated)
IState2 interface
IStreamBuffer interface (deprecated)
ITable interface (deprecated)
ITemplateData interface (deprecated)
ITemplateMap interface (deprecated)
ITile interface (deprecated)
ITrans interface (deprecated)
IVallList interface (deprecated)

HttpServletRequest2 interface

This interface extends the standard `javax.servlet.http.HttpServletRequest` interface.

Although anyone developing an application for NAS can use `HttpServletRequest2`, this interface is typically used in components generated by Netscape Application Builder. `HttpServletRequest2` provides methods for handling servlet errors, as well as providing additional support for servlets.

One method in particular, the `getAppLogic()` method, is useful to developers outside the NAB environment. Through the `getAppLogic()` method, the `HttpServletRequest2` interface supports servlet access to `AppLogics`, allowing applications to call methods on `AppLogics`.

Package

`com.netscape.server.servlet.extension`

Methods

| Method | Description |
|--|---|
| <code>convertITemplateDataToResultSet()</code> | Creates a <code>ResultSet</code> wrapper for an <code>ITemplateData</code> object. |
| <code>dispatchAction()</code> | Calls a method corresponding to a form-action in a servlet. |
| <code>formActionHandlerExists()</code> | Determines whether the servlet has form-actions defined on it. |
| <code>getAppLogic()</code> | Returns a handle to the <code>AppLogic</code> instance (<code>ServletRunner</code>) that served this request. |
| <code>getDefaultTemplate()</code> | Retrieves the name of the file that handles output. |
| <code>getErrorCodes()</code> | Retrieves a vector of error codes. |
| <code>getErrorMsgs()</code> | Retrieves a vector of error messages. |
| <code>getErrorVars()</code> | Retrieves a vector of error variables. |
| <code>getHttpSessionBean()</code> | Retrieves an instance of a session object that is defined by the programmer. |
| <code>getServletErrorHandler()</code> | Retrieves the object that handles validation errors. |
| <code>setDefaultTemplate()</code> | Sets the default template to another file. |
| <code>setServletErrorHandler()</code> | Sets the <code>IServletErrorHandler</code> that is used to process errors. |
| <code>validate()</code> | Validates input parameters and session variables. |

Related Topics

`IServletErrorHandler` interface,
Chapter 13, "Taking Advantage of NAS Features" in *Programmer's Guide (Java)*

`convertITemplateDataToResultSet()`

Creates a `ResultSet` wrapper for an `ITemplateData` object.

Syntax `public static ResultSet convertITemplateDataToResultSet(`

```
String groupName,
ITemplateData templateData)
```

groupName The group name of the specified ITemplateData.

templateData The ITemplateData to be wrapped.

Usage The `convertITemplateDataToResultSet()` method takes an ITemplateData object and wraps it so that it conforms to the specifications of a JDBC ResultSet object.

Use this method only if you have HTML templates that were developed for a previous version of NAS, and you want to run them in the JSP engine.

Rules Hierarchical ITemplateData objects are not supported, so do not specify one as a parameter.

Return Value A ResultSet object.

dispatchAction()

Calls a method corresponding to a form-action in a servlet.

Syntax

```
public abstract int dispatchAction(
    HttpServletRequest response,
    HttpServletRequest servlet) throws ServletException, IOException
```

response The HttpServletRequest object.

servlet The HttpServletRequest object on which the actionHandler will be invoked.

Usage Use this method to handle form actions. For example, if an application user presses a button in a web page form, the `dispatchAction()` method calls the button handler method that corresponds to the specific form and action.

The form, action, and corresponding handler are defined by the servlet developer in the servlet's NTV file.

Tip It is useful to call `formActionHandlerExists()` before `dispatchAction()` to determine whether the servlet has form-actions defined on it.

Return Value Returns `NO_ERROR` (a value of 0) if the method succeeds; otherwise, returns `ERROR_NO_DISPATCH_HANDLER`. (a value of 1), which means that dispatching cannot be done. If an event handler exists and is called, then `dispatchAction()` returns that handler's return value.

Related Topics `formActionHandlerExists()`

formActionHandlerExists()

Determines whether the servlet has form-actions defined on it.

Syntax `public abstract boolean formActionHandlerExists()`

Usage This method accesses the NTV list and, by doing so, determines whether the servlet has form-actions defined on it. This information is useful to the `dispatchAction()` method, so you typically call `formActionHandlerExists()` before `dispatchAction()`.

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Return Value Returns true if form-actions are defined on the servlet.

Related Topics `dispatchAction()`

getAppLogic()

Returns a handle to the AppLogic instance (ServletRunner) that served this request.

Syntax `public abstract AppLogic getAppLogic()`

Usage Use this method when you want to access the ServletRunner AppLogic. The `getAppLogic()` method lets developers call any AppLogic methods.

Tip Deprecated AppLogic methods should not be called. For example, calling methods that stream data, such as `streamResult()`, `streamResultBinary()`, and `streamResultHeader()`, may conflict with similar methods in `HTTPResponse` that also stream data.

Return Value An AppLogic object.

Related Topics AppLogic class

getDefaultTemplate()

Retrieves the name of the file that handles output.

Syntax `public abstract String getDefaultTemplate()`

Usage In some cases, a servlet's NTV file indicates a default servlet or JSP file that handles output. If so, calling `getDefaultTemplate()` retrieves this NTV setting.

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Return Value A String value representing the name of the default template.

Related Topics `setDefaultTemplate()`

getErrorCodes()

Retrieves a vector of error codes.

Syntax `public abstract Vector getErrorCodes()`

Return Value A vector of error codes that correspond to the input variables that failed validation. A code is associated with each type of data validated, as summarized in the following table:

| Data to Validate | Validation Rule | Description |
|----------------------------|---------------------------|---|
| Number | VALIDATE_NUMBER | Data is numerical. |
| Integer | VALIDATE_INTEGER | Data is an integer. |
| Positive integer | VALIDATE_POSITIVE_INTEGER | Data is a positive integer. |
| Alphabetic | VALIDATE_ALPHABETIC | Data is alphabetic, a-z and/or A-Z. |
| US phone number | VALIDATE_US_PHONE | Data consists only of 10 digits and optionally the characters (,), and -. |
| International phone number | VALIDATE_INTL_PHONE | Data consists only of numbers and the characters (,), +, and -. |
| Email | VALIDATE_EMAIL | Data is in the format <i>a@b.c</i> |
| Social Security Number | VALIDATE_SSN | Data consists only of 9 digits and optionally the character -. |
| Date | VALIDATE_DATE | Data is in the format "MM-DD-YY" or "MM-DD-YYYY". Month, day, and year are validated accordingly. |

| Data to Validate | Validation Rule | Description |
|------------------|---------------------|--|
| Day | VALIDATE_DAY | Data is an integer between 1 and 31 inclusive. |
| Month | VALIDATE_MONTH | Data is an integer between 1 and 12 inclusive. |
| Year | VALIDATE_YEAR | Data is an integer between 1 and 99 inclusive, or between 1000 and 9999 inclusive. |
| US zipcode | VALIDATE_US_ZIPCODE | Data consists of only 5 or 9 digits and optionally the character -. |

Related Topics Chapter 13, “Taking Advantage of NAS Features,” in the *Programmer’s Guide (Java)*.

getErrorMsgs()

Retrieves a vector of error messages.

Syntax `public abstract Vector getErrorMsgs()`

Return Value A vector of error messages that correspond to the input variables that failed validation. A message is associated with each type of data validated, as summarized in the following table:

| Validation Rule | Error Message |
|---------------------------|-----------------------------------|
| VALIDATE_NUMBER | Wrong number format! |
| VALIDATE_INTEGER | Wrong integer format! |
| VALIDATE_POSITIVE_INTEGER | Wrong positive integer format! |
| VALIDATE_ALPHABETIC | Wrong alphabetic format! |
| VALIDATE_US_PHONE | Wrong US phone format! |
| VALIDATE_INTL_PHONE | Wrong international phone format! |
| VALIDATE_EMAIL | Wrong email format! |
| VALIDATE_SSN | Wrong social security format! |
| VALIDATE_DATE | Wrong date format! |
| VALIDATE_DAY | Wrong day format! |

| Validation Rule | Error Message |
|---------------------|------------------------|
| VALIDATE_MONTH | Wrong month format! |
| VALIDATE_YEAR | Wrong year format! |
| VALIDATE_US_ZIPCODE | Wrong zip code format! |

Related Topics Chapter 13, “Taking Advantage of NAS Features,” in the *Programmer’s Guide (Java)*.

getErrorVars()

Retrieves a vector of input variables.

Syntax `public abstract Vector getErrorVars()`

Return Value A vector of the names of input variables that failed to validate.

Related Topics Chapter 13, “Taking Advantage of NAS Features,” in the *Programmer’s Guide (Java)*.

getHttpSessionBean()

Retrieves an instance of a session object that is defined by the programmer.

Syntax 1 Use this syntax in most situations.

```
public abstract HttpSession getHttpSessionBean()
```

Syntax 2 Use this syntax to explicitly indicate whether to create the session or not.

```
public abstract HttpSession getHttpSessionBean(
    boolean create)
```

create Supply a value of true if the session is to be created; otherwise, specify false.

Usage The `getHttpSessionBean()` method retrieves the `HttpSession` or `HttpSession2` object that is an instance of the class designated by the `httpSessionBeanClass` setting. This setting is defined in the `SessionInfo` section of an application’s `appInfo.ntv` file. This setting allows application developers to provide bean-like `HttpSession` implementations.

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Return Value An HttpSession or HttpSession2 object representing an instance of the class designated by HttpSessionBeanClass.

Related Topics getSession() in the javax.servlet.http.HttpServletRequest interface

getServletErrorHandler()

Retrieves the object that handles validation errors.

Syntax `public abstract IServletErrorHandler getServletErrorHandler()`

Usage This method is used to retrieve the IServletErrorHandler object that handles errors that occur during validation. You can retrieve the object elsewhere if you need to call the included functionality.

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Return Value The IServletErrorHandler object.

Related Topics IServletErrorHandler interface

setDefaultTemplate()

Sets the default template to another file.

Syntax `public abstract void setDefaultTemplate(
String template)`

template The new name of the default template; the name applies only for this invocation of the servlet.

Usage The default template is defined in a servlet's NTV file. However, in some cases it's useful to reset the default template to another file. To do so, call setDefaultTemplate(). To retrieve the name of the current default template, call getDefaultTemplate().

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Related Topics getDefaultTemplate()

setServletErrorHandler()

Sets the `IServletErrorHandler` that is used to process errors.

Syntax

```
public abstract void setServletErrorHandler(
    IServletErrorHandler handler)
```

handler The error handler to be set.

Usage A servlet error handler is always set on a request object by default. However, you may want to implement your own, so the `setServletErrorHandler()` method is provided to allow that.

This method sets the `IServletErrorHandler` that is used to process errors that happen during validation (and possibly elsewhere). To retrieve the `IServletErrorHandler`, call `getServletErrorHandler()`.

Tip This method appears in code generated by Netscape Application Builder. If you are not using NAB, you typically will not need to call this method.

Related Topics [getServletErrorHandler\(\)](#)

validate()

Validates input parameters and session variables.

Syntax 1 Use this version to validate all input parameters and session variables listed in the servlet's NTV file. This version also streams out an error on failure.

```
public abstract boolean validate(
    HttpServletRequest response)
    throws ServletException, IOException
```

Syntax 2 Use this version to validate specific input parameters and session variables (or those listed in the servlet's NTV file). This version also streams out an error on failure.

```
public abstract boolean validate(
    String params[],
    String sessionVars[],
    HttpServletRequest response)
    throws ServletException, IOException
```

Syntax 3 Use this version to validate specific input parameters and session variables (or those listed in the servlet's NTV file). No error streaming occurs.

```
public abstract boolean validate(
    String params[],
    String sessionVars[])
```

Syntax 4 Use this version to validate all input parameters and session variables listed in the servlet's NTV file. No error streaming occurs.

```
public abstract boolean validate()
```

response The HttpServletResponse object.

params The array of parameters to validate. Specify NULL to validate all input parameters listed in the NTV file.

sessionVars The array of session variables to validate. Specify NULL to validate all session variables listed in the NTV file.

Usage Use this method whenever you want to validate parameters. There are four ways to invoke the validate() method. One version validates all input and session variables listed in a servlet's NTV file. Another version validates a specified array of input parameters or session variables. For each of these two versions, you can either ignore failure conditions or stream an error on failure.

When validate() is called and a validation error is detected, validate() then calls either of two ServletException methods: handleInputValueError() or handleSessionVariableError(). The previous two methods might return a positive number, meaning that a real error occurred and is queued into the error-specific vectors. If this happens, then streamError() is called once before validate() returns (assuming the validate() call is one of the two variants that streams errors).

The validate() method passes in one of the following error types as input to the two error handler methods, handleInputValueError() or handleSessionVariableError():

| Error Type | Value | Error because data must be ... |
|---------------|-------|--------------------------------|
| ERROR_NUMBER | 5 | a number. |
| ERROR_INTEGER | 6 | an integer. |

| Error Type | Value | Error because data must be ... |
|------------------------|-------|---|
| ERROR_POSITIVE_INTEGER | 7 | a positive integer. |
| ERROR_ALPHABETIC | 8 | alphabetic characters (a-z, A-Z, or both). |
| ERROR_US_PHONE | 9 | a phone number containing at most 10 digits and optional characters (,), and -. |
| ERROR_INTL_PHONE | 10 | a phone number containing only digits and optional characters, (,), +, and -. |
| ERROR_EMAIL | 11 | an address of the form a@b.c. |
| ERROR_SSN | 12 | a Social Security Number containing 9 digits and an optional - character. |
| ERROR_DATE | 13 | a date of the form MM-DD-YY or MM-DD-YYYY. |
| ERROR_DAY | 14 | an integer between 1 and 31 inclusive. |
| ERROR_MONTH | 15 | an integer between 1 and 12 inclusive. |
| ERROR_YEAR | 16 | an integer between 1 and 99 inclusive or between 1000 and 9999 inclusive. |
| ERROR_ZIP | 17 | a ZIP code containing either 5 digits or 9 digits, and an optional - character. |

Return Value Returns true if the validation was successful; otherwise, returns false.

Related Topics [IServletErrorHandler interface](#)

HttpSession2 interface

The HttpSession2 interface is used within JSPs and servlets to share session state with AppLogics.

Netscape Application Server already supports `javax.servlet.http.HttpSession` as a standard interface to NAS sessions. But the application server also provides `HttpSession2`, a NAS-specific interface. `HttpSession2` gives servlets direct access to NAS sessions. Therefore, servlet programmers can use `HttpSession2` to share sessions between AppLogics and servlets.

Sharing sessions is useful when you want to migrate an application from NAS 2.x to NAS 4.0. When migrating an application, one of the tasks is to rewrite AppLogics into servlets. Furthermore, when you rewrite AppLogics, you typically need to use NAS-specific servlet interfaces, such as `HttpSession2` and `HttpServletRequest2`. The resulting servlet is nonstandard; however, the alternate approach—mixing AppLogics and standard servlets—is not recommended.

In servlets, a session is an instance of `HttpSession`. But in AppLogics, session data is an `IValList` object. An AppLogic stores integers, strings, and blobs (byte arrays) in a session, whereas a servlet stores serializable objects in a session. As a result, there is no immediate mapping between what an AppLogic stores and what a servlet stores in a session (except for strings).

The `HttpSession2` interface solves the issue of sharing session data. `HttpSession2` provides methods for storing and retrieving integers, strings, blobs, and user login data—methods that parallel what an AppLogic developer uses. In this way, `HttpSession2` enables sessions to work back and forth across AppLogics and servlets.

`HttpSession2` provides `loginSession()` and `logoutSession()` for servlets to share the AppLogic session API. These two methods are typically used with `isAuthorized()`, as is done for AppLogics. Servlets are also registered with an access control list, so that a secure session established in an AppLogic can be used in a servlet, and vice versa.

Package

`com.netscape.server.servlet.extension`

Methods

| Method | Description |
|------------------------------|--|
| <code>getBytes()</code> | Returns the byte array defined by the specified name in the session. |
| <code>getInt()</code> | Returns the integer defined by the specified name in the session. |
| <code>getString()</code> | Returns the string defined by the specified name in the session. |
| <code>isAuthorized()</code> | Checks whether the current user has a specified permission. |
| <code>loginSession()</code> | Logs an authorized user into a session with a secured application. |
| <code>logoutSession()</code> | Removes a user's association with a session. |
| <code>putBytes()</code> | Defines a name in the session to have a specified byte array value. |
| <code>putInt()</code> | Defines a name in the session to have a specified integer value. |
| <code>putString()</code> | Defines a name in the session to have a specified String value. |

Related Topics

Chapter 12, "Writing Secure Applications" in *Programmer's Guide (Java)*

getBytes()

Returns the byte array defined by the specified name in the session.

Syntax

```
public abstract byte[] getBytes(
    String name)
```

name The name whose value is to be returned.

Return Value The byte array defined by name in the session, or null if name is not defined.

Related Topics `putBytes()`

getInt()

Returns the integer defined by the specified name in the session.

Syntax

```
public abstract int getInt(
    String name)
```

name The name whose value is to be returned.

Return Value The integer defined by name in the session, or -1 if name is not defined.

Related Topics putInt()

getString()

Returns the string defined by the specified name in the session.

Syntax

```
public abstract String getString(
    String name)
```

name The name whose value is to be returned.

Return Value The string defined by name in the session, or null if name is not defined.

Related Topics putString()

isAuthorized()

Checks whether the current user has a specified permission.

Syntax

```
public abstract boolean isAuthorized(
    String acl,
    String permission)
```

acl The access control list in which to check for the permission.

permission The permission to check for.

Usage Use isAuthorized() in portions of the code where application security is enforced through Access Control Lists (ACLs). This method lets an application check a specified ACL to determine whether a user has permission to execute a servlet (or AppLogic) or to perform a particular action. The application can use the result of isAuthorized() as a condition in an If statement. It can, for example, return a message to users who are denied access to a servlet (or AppLogic).

Each ACL is defined in the registry and maps users to privileges such as read and write. Application developers should obtain the list of registered ACLs, users and groups from the server administrator who created these items. ACLs are created through the Enterprise Administrator tool or through the kreg tool.

Rule Before calling `isAuthorized()`, the application must create a session. The user must also be logged in with `loginSession()`.

Return Value Returns true if the authorization check succeeds; otherwise, returns false.

Related Topics `loginSession()`

loginSession()

Logs an authorized user into a session with a secured application.

Syntax

```
public abstract boolean loginSession(  
    String user,  
    String password)
```

user The login user name.

password The user password.

Usage The `loginSession()` method logs the named user in the session, using the given password. Logging in associates the user with the session so that the application can control authorization of AppLogic and servlet access.

Call `loginSession()` after creating or retrieving a user session. `loginSession()` checks the passed in login name and password against the user names and passwords stored in the Netscape Application Server (the administrator sets up and manages this information) and logs the user into the session if the login name and password are valid.

If login is successful, a security credential object is created and associated with the session. The server checks this security credential object each time it receives an AppLogic or servlet request, and verifies if the user has execute permission for the AppLogic or servlet.

Using `loginSession()` in conjunction with `isAuthorized()`, an application can ensure that only authorized users can take certain actions, such as executing AppLogics or servlets.

Tip The server administrator creates users and passwords and manages access to AppLogics, servlets, and specified resources, such as sales or forecast reports. During the development and debugging phases, application developers can use the `ldapmodify` tool to create users, groups, and ACLs in the LDIF file. These tasks cannot be done programmatically.

Return Value Returns true if the login is successful.

Related Topics `isAuthorized()`, `logoutSession()`

logoutSession()

Removes a user's association with a session.

Syntax `public abstract int logoutSession()`

Usage AppLogics or servlets call `loginSession()` to log into a session with a secured application. If `loginSession()` was called, you must call `logoutSession()` when the user exits the application or the secured portion of it.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `isAuthorized()`, `loginSession()`

putBytes()

Defines a name in the session to have a specified byte array value.

Syntax `public abstract void putBytes(
 String name,
 byte[] value)`

name The name to be defined.

value The byte array value to assign to name.

Related Topics `getBytes()`

putInt()

Defines a name in the session to have a specified integer value.

Syntax `public abstract void putInt(
 String name,
 int value)`

name The name to be defined.

value The integer value to assign to name.

Related Topics [getInt\(\)](#)

putString()

Defines a name in the session to have a specified String value.

Syntax

```
public abstract void putString(  
    String name,  
    String value)
```

name The name to be defined.

value The String value to assign to name.

Related Topics [getString\(\)](#)

IAppEvent interface (*deprecated*)

IAppEvent is deprecated and is provided for backward compatibility only. New applications should use the NAS API's two replacement interfaces: IAppEventMgr and IAppEventObj.

The IAppEvent interface represents the defined events an application supports. An AppLogic can define events that are triggered at a specified time or times or when triggered explicitly.

Currently, an AppLogic can execute two actions when an event is triggered:

- Run a specified AppLogic
- Send an email

Events are stored persistently in the Netscape Application Server, and are removed only when your application explicitly deletes them. They are typically used to schedule routine administrative tasks, such as making back-ups or getting statistics.

The IAppEvent interface defines methods for registering, triggering, enabling, disabling and deleting events. To create an instance of the IAppEvent interface, use the getAppEvent() method in the AppLogic class.

Package

com.kivasoft

Methods

| Method | Description |
|-----------------|--|
| deleteEvent() | Removes a registered event from Netscape Application Server. |
| disableEvent() | Disables a registered event. |
| enableEvent() | Enables a registered event. |
| enumEvents() | Enumerates through the list of registered events. |
| queryEvent() | Returns the properties of a registered event. |

| Method | Description |
|-----------------|--|
| registerEvent() | Registers a named event for use in applications. |
| setEvent() | Triggers a registered event. |

Example

The following example shows AppLogic code that registers two application events:

- The first event runs the RepGenAgent AppLogic at 5 AM everyday
- The second event emails a report generated by RepGenAgent at 6 AM everyday

```
package GXApp.appevent;
import java.lang.*;
import java.util.*;
import java.io.*;
import com.kivasoft.*;
import com.kivasoft.applogic.*;
import com.kivasoft.util.*;
import com.kivasoft.types.*;
import com.kivasoft.appevent.*;

public class ReportAgent extends AppLogic
{
    static final java.lang.String eventName1 = "RepGenEvent";
    static final java.lang.String eventName2 = "ReportEvent";

    public int execute()
    {
        // Create IValLists to pass information
        // for appevent registration of the events
        IValList eventOutput;
        IValList eventInput1 = GX.CreateValList();
        IValList eventInput2 = GX.CreateValList();

        if ((eventInput1 == null) || (eventInput2 == null))
            return streamResult("Cannot create ValList<br>");

        // Get the appevent manager
```

```

IAppEvent appEvent = getAppEvent();

if (appEvent == null)
    return streamResult("Cannot get AppEvent<br>");

// Add the RepGenAgent appevent name to the vallist
eventInput1.setValString(GX_AE_RE_KEY_NAME.GX_AE_RE_KEY_NAME,
eventName1);

// Set the appevent state to be enabled
eventInput1.setValInt(GX_AE_RE_KEY_STATE.GX_AE_RE_KEY_STATE,
GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ENABLED);

// Set the appevent time to be 05:00:00 hrs everyday
eventInput1.setValString(GX_AE_RE_KEY_TIME.GX_AE_RE_KEY_TIME,
"5:0:0 */*/*");

// Set the appevent action to run
// the RepGenAgent applogic
eventInput1.setValString(GX_AE_RE_KEY_NREQ.GX_AE_RE_KEY_NREQ,
"GUIDGX-{620CB09B-1A1D-1315-AD23-0800207B918B}");

// Register the event
if (appEvent.registerEvent(eventName1, eventInput1) !=
GXE.SUCCESS)
    return streamResult("Cannot register RepGenEvent<br>");

// Add the ReportAgent appevent name to the vallist
eventInput2.setValString(GX_AE_RE_KEY_NAME.GX_AE_RE_KEY_NAME,
eventName2);

// Set the appevent state to be enabled
eventInput2.setValInt(GX_AE_RE_KEY_STATE.GX_AE_RE_KEY_STATE,
GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ENABLED);

// Set the appevent time to be 06:00:00 hrs everyday
eventInput2.setValString(GX_AE_RE_KEY_TIME.GX_AE_RE_KEY_TIME,
"6:0:0 */*/*");

// Set the appevent action to send e-mail
eventInput2.setValString(GX_AE_RE_KEY_MTO.GX_AE_RE_KEY_MTO,
"report@acme.com");

```

```
// The content of the e-mail is in /tmp/report-file
eventInput2.setValString(GX_AE_RE_KEY_MFILE.GX_AE_RE_KEY_
MFILE, "/tmp/report-file");

// The e-mail host running the SMTP server is mailsvr
eventInput2.setValString(GX_AE_RE_KEY_MHOST.GX_AE_RE_KEY_
MHOST, "mailsvr.acme.com");

// The sender's e-mail address is admin@acme.com
eventInput2.setValString(GX_AE_RE_KEY_SADDR.GX_AE_RE_KEY_
SADDR, "admin@acme.com");

// Register the event
if (appEvent.registerEvent(eventName2, eventInput2) !=
GXE.SUCCESS)
    return streamResult("Can not register ReportEvent<br>");
return streamResult("Successfully Registered RepGenEvent and
ReportEvent<br>");
    }
}
```

Related Topics

`getAppEvent()` method in the `AppLogic` class

`IAppEventMgr` interface

`IAppEventObj` interface

`IValList` interface

`deleteEvent()`

Removes a registered event from the Netscape Application Server.

Syntax `public int deleteEvent(
String pEventName)`

pEventName The name of the registered event to delete.

Usage Use `deleteEvent()` to remove an event that is no longer required. To temporarily stop a event from being triggered, use `disableEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `disableEvent()`
`registerEvent()`

disableEvent()

Disables a registered event.

Syntax

```
public int disableEvent(
    String pEventName)
```

pEventName The name of the registered event to disable.

Usage Use `disableEvent()` to temporarily stop an event from being triggered. The event is disabled until it is enabled with `enableEvent()`. To remove an event from the Netscape Application Server permanently, use `deleteEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `deleteEvent()`
`enableEvent()`
`registerEvent()`

enableEvent()

Enables a registered event.

Syntax

```
public int enableEvent(
    String pEventName)
```

pEventName The name of the registered event to enable.

Usage Use `enableEvent()` to prepare a specified event for activation. Call `enableEvent()` after you register an event with `registerEvent()`, or to enable a trigger that was disabled with `disableEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics disableEvent()
 registerEvent()

enumEvents()

Returns the list of registered events.

Syntax public IEnumObject enumEvent()

Usage Use enumEvents() to get information on all the registered events. The IEnumObject object returned by enumEvents() contains a set of IVallList objects, one per event. Each IVallList contains the properties assigned to the event when it was registered with registerEvent().

Tip Use the methods in the IEnumObject interface to iterate through the contents of the returned IEnumObject object.

Example The following AppLogic code shows how to use enumEvents() to get information on all the registered events and save it to a report:

```
// Open /tmp/report-file for writing the report
FileOutputStream outFile = null;
try {
    outFile = new FileOutputStream("/tmp/report-file");
} catch (IOException e) {
}
if (outFile == null)
    return streamResult("Can not open /tmp/report-file<br>");

ObjectOutputStream p = null;
try {
    p = new ObjectOutputStream(outFile);
} catch (IOException e) {
}
if (p == null)
    return streamResult("Cannot create ObjectOutputStream<br>");

// get appevent manager
IAppEvent appEvent = getAppEvent();

// Get the Enumeration object for all registered appevents
IEnumObject enumObj = appEvent.enumEvents();
```

```

// Retrieve the count of registered appevents
int count = enumObj.enumCount();
try {
    p.writeObject("Number of Registered Events: ");
    p.writeInt(count);
} catch (IOException e) {
    return streamResult("Failed to write to report file<br>");
}

enumObj.enumReset(0);

while (count > 0) {
    IObject vListObj = enumObj.enumNext();
    if (vListObj instanceof IValList) {
        IValList vList = (IValList)vListObj;

        String name =
            vList.getValString(GX_AE_RE_KEY_NAME.GX_AE_RE_KEY_NAME);
        try {
            p.writeObject("\nDefinitions for AppEvent: ");
            p.writeObject(name);
            p.writeObject("\n");
        } catch (IOException e) {
            return streamResult("Failed to write to report file<br>");
        }

        // Reset the next GXVAL to retrieve
        // from ValList to be the first one
        vList.resetPosition();

        // Iterate through all the GXVALs in the vallist
        // and print them

```

Return Value IEnumObject that contains the list of events, or null for failure.

Related Topics [getAppEvent\(\)](#) method in the AppLogic class

[IValList](#) interface

queryEvent()

Returns the properties of a registered event.

Syntax

```
public IList queryEvent(  
    String pEventName)
```

pEventName The name of the registered event to enable.

Usage When an AppLogic calls registerEvent(), it can specify any of the following:

- The initial state—enable or disabled—of the event
- The time the event is to be triggered
- The AppLogic to execute when the event is triggered
- The email to send when the event is triggered

Use queryEvent() to get the properties that were specified for a specific event.

Return Value IList object that contains information about the event.

Related Topics registerEvent()

registerEvent()

Registers a named event for use in applications.

Syntax

```
public int registerEvent(  
    String pEventName,  
    IList pValList)
```

pEventName The name of the event to register.

pValList The IList object that specifies the properties of the event. The following table lists the keys and values you can specify:

| Key | Value |
|--|---|
| GX_AE_RE_KEY_NAME. GX_AE_RE_KEY_NAME | A string representing the name of the event. If specified, the name must be the same one specified as the pEventName parameter. |
| GX_AE_RE_KEY_STATE. GX_AE_RE_KEY_STATE | A variable that specifies the initial state of the event: GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ DISABLED GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ ENABLED |
| GX_AE_RE_KEY_TIME. GX_AE_RE_KEY_TIME | The time at which the event will be triggered. Use the following format: hh:mm:ss W/DD/MM hh: 0 -23 mm: 0 - 59 ss: 0 - 59 W (day of the week): 0 - 6 with 0 = Sunday. DD (day of the month): 1 - 31 MM (month): 1 - 12 Each of these fields may be either an asterisk (meaning all legal values) or a list of elements separated by commas. An element is either a number or two numbers separated by a minus sign indicating an inclusive range. For example, 2, 5 - 7:0:0 5/*/* means the event is triggered at 2 AM, 5AM, 6 AM and 7 AM every Friday. The specification of days can be made by two fields: day of the month (DD) and day of the week (W). If both are specified, both take effect. For example, 1:0:0 1/15/* means the event is triggered at 1 AM every Monday, as well as on the fifteenth of each month. To specify days by only one field, set the other field to *. |
| GX_AE_RE_KEY_NREQ. GX_AE_RE_KEY_NREQ | The AppLogic to execute when the event is triggered. Use the following format: GUIDGX-{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}?Param1=ABC&Param2=123 |
| GX_AE_RE_KEY_MFILE. GX_AE_RE_KEY_MFILE* | The name of the file that contains the body of an email message. |
| GX_AE_RE_KEY_MTO. GX_AE_RE_KEY_MTO* | A comma separated list of users to send the email to. |

| Key | Value |
|--|-----------------------------------|
| GX_AE_RE_KEY_MHOST. GX_AE_RE_KEY_MHOST* | The name of the SMTP mail server. |
| GX_AE_RE_KEY_SADDR. GX_AE_RE_KEY_SADDR* | The sender's email address. |

* You must specify all of these items if sending email when the event is triggered.

Usage Use `registerEvent()` to define each event your application will use. You can specify that a triggered event sends an email, or runs an `AppLogic`, or both.

Return Value `GXE.SUCCESS` if the method succeeds.

Example The following example shows how to define and register an application event:

```
static final java.lang.String eventName1 = "RepGenEvent";

// Get the appevent manager
IAppEvent appEvent = getAppEvent();

// Create IValList to pass information for
// registration of an event
IValList eventInput1 = GX.CreateValList();

// Add the RepGenAgent appevent name to the vallist
eventInput1.setValString(GX_AE_RE_KEY_NAME.GX_AE_RE_KEY_NAME,
eventName1);

// Set the appevent state to be enabled
eventInput1.setValInt(GX_AE_RE_KEY_STATE.GX_AE_RE_KEY_STATE,
GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ENABLED);

// Set the appevent time to be 05:00:00 hrs everyday
eventInput1.setValString(GX_AE_RE_KEY_TIME.GX_AE_RE_KEY_TIME,
"5:0:0 */*/*");

// Set the appevent action to run an AppLogic
eventInput1.setValString(GX_AE_RE_KEY_NREQ.GX_AE_RE_KEY_NREQ,
"GUIDGX-{620CB09B-1A1D-1315-AD23-0800207B918B}");

// Register the event
```

```
if (appEvent.registerEvent(eventName1, eventInput1) != GXE.SUCCESS)
    return streamResult("Cannot register RepGenEvent<br>");
```

Related Topics enableEvent()

setEvent()

getAppEvent() method in the AppLogic class

IValList interface

setEvent()

Triggers a registered event.

Syntax

```
public int setEvent(
    String pEventName,
    int dwOverrideFlag,
    IValList pValList)
```

pEventName The name of the event to trigger.

dwOverrideFlag Specify 0 (zero) to trigger the event with the previously specified actions. To override the defined actions, you can specify the following:

- GX_AE_SE_OR_FLAG.GX_AE_SE_ACTION_NOMAIL if you don't want to send email when the event is triggered.
- GX_AE_SE_OR_FLAG.GX_AE_SE_ACTION_NOREQ if you don't want to run an AppLogic when the event is triggered.

pValList The IValList object that specifies the event properties you want to override. Specify null to use the properties already defined for the event. The following table lists the keys and values you can specify:

| Key | Value |
|---|--|
| GX_AE_RE_KEY_NAME. GX_AE_RE_KEY_NAME | A string representing the name of the event. If specified, the name must be the same one specified as the pEventName parameter. |
| GX_AE_RE_KEY_STATE. GX_AE_RE_KEY_STATE | A variable that specifies the initial state of the event: GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_DISABLED GX_AE_RE_ES_FLAG.GX_AE_RE_EVENT_ENABLED |

| Key | Value |
|--|---|
| GX_AE_RE_KEY_TIME. GX_AE_RE_KEY_TIME | The time at which the event will be triggered. Use the following format: hh:mm:ss W/DD/MM hh: 0 -23 mm: 0 - 59 ss: 0 - 59 W (day of the week): 0 - 6 with 0 = Sunday. DD (day of the month): 1 - 31 MM (month): 1 - 12 Each of these fields may be either an asterisk (meaning all legal values) or a list of elements separated by commas. An element is either a number or two numbers separated by a minus sign indicating an inclusive range. For example, 2, 5 - 7:0:0 5/*/* means the event is triggered at 2 AM, 5AM, 6 AM and 7 AM every Friday. The specification of days can be made by two fields: day of the month (DD) and day of the week (W). If both are specified, both take effect. For example, 1:0:0 1/15/* means the event is triggered at 1 AM every Monday, as well as on the fifteenth of each month. To specify days by only one field, set the other field to *. |
| GX_AE_RE_KEY_NREQ. GX_AE_RE_KEY_NREQ | The AppLogic to execute when the event is triggered. Use the following format: GUIDGX-{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}?Param1=ABC&Param2=123 |
| GX_AE_RE_KEY_MFILE. GX_AE_RE_KEY_MFILE* | The name of the file that contains the body of an email message. |
| GX_AE_RE_KEY_MTO. GX_AE_RE_KEY_MTO* | A comma separated list of users to send the email to. |
| GX_AE_RE_KEY_MHOST. GX_AE_RE_KEY_MHOST* | The name of the SMTP mail server. |
| GX_AE_RE_KEY_SADDR. GX_AE_RE_KEY_SADDR* | The sender's email address. |

* You must specify all of these items if sending email when the event is triggered.

Usage Use `setEvent()` to trigger a registered event immediately. This is useful for testing purposes.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics registerEvent()
getAppEvent() method in the AppLogic class
IVallList interface

IAppEvent interface (deprecated)

IAppEventMgr interface

Application components can define events that are either triggered at a specified time or triggered explicitly. Events are stored persistently in the Netscape Application Server, and are removed only when your application explicitly deletes them. Events are typically used to schedule routine administrative tasks, such as making back-ups or getting statistics.

NAS uses two new interfaces to support events:

- The IAppEventMgr interface manages application events. This interface defines methods for creating, registering, triggering, enabling, disabling, enumerating, and deleting events.
- The IAppEventObj interface represents the defined events an application supports. This interface defines methods not only for getting or setting attributes of an event, but also for adding, deleting, or enumerating actions of the event.

IAppEventMgr and IAppEventObj should be used in new or migrated applications. Existing NAS applications can continue using the deprecated IAppEvent interface, which supports the previous model for application events.

Attributes and Actions

For each event, you define associated attributes and actions. Attributes determine the following characteristics:

- the event's state (enabled or disabled)
- the execution mode (concurrent or serial) of the event's actions
- the time at which to trigger the event

When an event is triggered, it performs one or more of the following types of actions:

- executes a specified servlet.
- executes a specified AppLogic.
- sends an email message.

Features of Application Event Support

Support for application events includes the following:

- Added functionality
 - Execution of multiple actions of any type. (IAppEvent supports only one action of each type.)
 - In addition to executing an AppLogic and sending email, a triggered event can now execute a servlet as one of the supported action types.
 - Synchronous or asynchronous triggering of events. (IAppEvent supports only synchronous triggering.)
 - Execution of actions in the same order they are registered.
 - Execution of actions either concurrently or serially.
 - Support for passing an input IValList object to triggered events.

- Different interfaces

Previously, application events were represented by an IValList object, and you used the IAppEvent interface to manage the events. Now an application event is represented by an IAppEventObj, and you use IAppEventMgr to manage and control the events.

- Separate actions and attributes

Previously, attributes and actions were not distinguished. They were all treated as event properties and specified within a single IValList object. Now attributes are described by entries in one IValList object, and each action is represented by its own additional IValList object.

IAppEventObj has methods for getting or setting attributes and for adding, deleting, or enumerating actions.

Accessing and Creating Application Events

To access an IAppEventMgr object, use the GetAppEventMgr() method in the GXContext class:

```
IAppEventMgr com.kivasoft.dlm.GXContext.GetAppEventMgr(  
    IContext context);
```

The context parameter is an IContext object, which provides access to Netscape Application Server services. For information about obtaining this IContext object, see the GXContext class or the IContext interface.

After creating the IAppEventMgr object, you can create an application event (an instance of IAppEventObj) by calling createEvent() on the IAppEventMgr object.

Registering Events

After creating an application event, you can set its attributes and add actions using methods on the IAppEventObj. Then, register the application event by calling registerEvent() on the manager object.

Package

com.kivasoft

Methods

| Method | Description |
|------------------|--|
| createEvent() | Creates an empty application event object. |
| deleteEvent() | Removes a registered event from Netscape Application Server. |
| disableEvent() | Disables a registered event. |
| enableEvent() | Enables a registered event. |
| enumEvents() | Enumerates through the list of registered events. |
| getEvent() | Retrieves the IAppEventObj for a registered event. |
| registerEvent() | Registers a named event for use in applications. |
| triggerEvent() | Triggers a registered event. |

Related Topics

GetAppEventMgr() in the GXContext class,
 IValList interface (deprecated),
 IAppEventObj interface

Chapter 13, “Taking Advantage of NAS Features” in *Programmer’s Guide (Java)*

createEvent()

Creates an empty application event object.

Syntax `public IAppEventObj createEvent(
String pEventName)`

pEventName The name of the event to create.

Usage Use `createEvent()` to create an empty `IAppEventObj` object. You can use methods of the `IAppEventObj` interface to set attributes and actions on the returned object.

Changes to the event object do not take effect until it is registered with the manager object, through a call to `registerEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `getEvent()`
`registerEvent()`

deleteEvent()

Removes a registered event from Netscape Application Server.

Syntax `public int deleteEvent(
String pEventName)`

pEventName The name of the registered event to delete.

Usage Use `deleteEvent()` to remove an event that is no longer required. The specified event is removed from NAS.

To temporarily stop an event from being triggered, use `disableEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `disableEvent()`
`registerEvent()`

disableEvent()

Disables a registered event.

Syntax `public int disableEvent(
String pEventName)`

pEventName The name of the registered event to disable.

Usage Use `disableEvent()` to temporarily stop an event from being triggered. The event is disabled until it is enabled with `enableEvent()`. To permanently remove an event from the registry, use `deleteEvent()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `deleteEvent()`
`enableEvent()`
`registerEvent()`

enableEvent()

Enables a registered event.

Syntax `public int enableEvent(
String pEventName)`

pEventName The name of the registered event to enable.

Usage Use `enableEvent()` to enable an event. A given event could have been disabled in either of two ways: by a previous call to `disableEvent()` or by initially registering the event using a disabled state attribute.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `disableEvent()`
`registerEvent()`

enumEvents()

Enumerates through the list of registered events.

Syntax `public IEnumObject enumEvents()`

Usage Use `enumEvents()` to get information on all the registered events. The `IEnumObject` object returned by `enumEvents()` contains a set of `IAppEventObj` objects, one per event. Each `IAppEventObj` contains the attributes and actions that were assigned to the event when it was registered with `registerEvent()`.

Tip Use the methods in the `IEnumObject` interface to iterate through the contents of the returned `IEnumObject` object.

Example The following `AppLogic` code shows how to use `enumEvents()` to get information on all the registered events and save it to a report:

```
// Open /tmp/report-file for writing the report
FileOutputStream outFile = null;
try {
    outFile = new FileOutputStream("/tmp/report-file");
} catch (IOException e) {
}
if (outFile == null)
    return streamResult("Can not open /tmp/report-file<br>");

ObjectOutputStream p = null;
try {
    p = new ObjectOutputStream(outFile);
} catch (IOException e) {
}
if (p == null)
    return streamResult("Cannot create ObjectOutputStream<br>");

// get appevent manager
IAppEventMgr appEventMgr = GetAppEventMgr();

// Get the Enumeration object for all registered appevents
IEnumObject enumObj = appEventMgr.enumEvents();

// Retrieve the count of registered appevents
int count = enumObj.enumCount();
try {
    p.writeObject("Number of Registered Events: ");
    p.writeInt(count);
} catch (IOException e) {
    return streamResult("Failed to write to report file<br>");
}
```

```

}

enumObj.enumReset(0);

IObject eventObj = enumObj.enumNext();
while ((eventObj = enumObj.enumNext()) != null) {
    if (eventObj instanceof IAppEventObj) {
        IAppEventObj appEventObj = (IAppEventObj)eventObj;

        // print each appEvent

        // get the name of the appevent
        String name = appEventObj.getName();
        try {
            p.writeObject("\nDefinitions for AppEvent: ");
            p.writeObject(name);
            p.writeObject("\n");
        } catch (IOException e) {
            return streamResult("Failed to write to report file<br>");
        }

        // print the attributes..
        IValList attrs = appEventObj.getAttributes();
        attrs.resetPosition();
        // Iterate through all the GXVALs in the attr s valllist
        // and print them
        ...
        ...
        ...

        // enumerate through the actions
        enumActions = appEventObj.enumActions();

        // Retrieve the count of registered actions for this event
        count = enumActions.enumCount();
        try {
            p.writeObject("Number of Actions: ");
            p.writeInt(count);
        } catch (IOException e) {
            return streamResult("Failed to write ActionCount to report file");
        }
    }
}

```

```

enumActions.enumReset(0);
IObject obj ;
while ((obj = enumActions.enumNext()) != null) {
    // print each action
    if (obj instanceof IValList) {
        IValList action = (IValList)obj;

        action.resetPosition();
        // Iterate through all the GXVALs in the vallist
        // and print them
        ...
        ...
        ...
    }
}
}
}
}

```

Return Value IEnumObject that contains the list of events, or null for failure.

Related Topics IEnumObject interface

getEvent()

Retrieves the IAppEventObj for a registered event.

Syntax public IAppEventObj getEvent(
String pEventName)

pEventName The name of the registered event.

Usage After calling getEvent(), you can call methods on the returned IAppEventObj. For example, you can query the object by calling getAttributes() or enumActions(), or you can modify the object by calling setAttributes().

Return Value IAppEventObj for the specified event.

Related Topics registerEvent()

registerEvent()

Registers a named event for use in applications.

Syntax `public int registerEvent(
IAppEventObj appEventObj)`

appEventObj The event object whose attributes and actions have been set.

Usage After an application event object is created with `createEvent()`, you define its attributes and actions using methods of the `IAppEventObj` interface. Then you use `registerEvent()` to register the specified event object. Registration commits the changed attributes and actions to the server and to the registry. If an event object already exists for the given name, the existing object is deleted and replaced with the specified object.

Return Value `GXE.SUCCESS` if the method succeeds.

Example The following example shows how to define and register an application event:

```
static final java.lang.String eventName1 = "RepGenEvent";

// get the appevent manager
IAppEventMgr appEventMgr = GXContext.GetAppEventMgr(context);

// create a appevent object
IAppEventObj appEventObj = appEventMgr.createEvent(eventName1);

// create ValList for attributes.
IValList attrs = GX.CreateValList();

// set the Action Mode to Serial for serial-execution of actions.
attrs.setValInt(GXConstants.GX_AE2_RE_KEY_ACTION_MODE,
GX_AE2_RE_SA_FLAG.GX_AE2_RE_ACTION_SERIAL);

// set the appevent time to be 05:00:00 hrs everyday
attrs.setValString(GXConstants.GX_AE2_RE_KEY_TIME, "5:0:0 */*/*");

// set the attributes
appEventObj.setAttributes(attrs);

// create ValLists for actions (2 applogic newrequest and 2 servlet).
IValList action1 = GX.CreateValList();
IValList action2 = GX.CreateValList();
IValList action3 = GX.CreateValList();
IValList action4 = GX.CreateValList();
```

```

// set action1 to run an appLogic
action1.setValString(GXConstants.GX_AE2_RE_KEY_NREQ,
    "GUIDGX-{620CB09B-1A1D-1315-AD23-0800207B918B}");

// set action1 to run another appLogic
action2.setValString(GXConstants.GX_AE2_RE_KEY_NREQ,
    "GUIDGX-{60A36CC0-9F69-11D2-9907-0060973797BF}");

// set action2 to run a servlet
action3.setValString(GXConstants.GX_AE2_RE_KEY_SERVLET,
    "TxReportServlet");

// set action3 to run another servlet
action4.setValString(GXConstants.GX_AE2_RE_KEY_SERVLET,
    "SummaryReportServlet");

// add actions in the order we want them to be executed
appEventObj.addAction(action1);
appEventObj.addAction(action2);
appEventObj.addAction(action3);
appEventObj.addAction(action4);

// Register the event
if (appEventMgr.registerEvent(eventName1, appEventObj) != GXE.SUCCESS)
    return streamResult("Cannot register RepGenEvent<br>");

```

Related Topics [enableEvent\(\)](#)

[triggerEvent\(\)](#)

triggerEvent()

Triggers a registered event.

Syntax

```

public int triggerEvent(
    String pEventName,
    IValList pValList,
    boolean syncFlag)

```

pEventName The name of the event to trigger.

pValList The IValList object that specifies the input that is passed to the triggered event and its actions.

syncFlag The boolean flag that indicates whether the event is to be triggered synchronously (value is true) or asynchronously (value is false).

Usage Use `triggerEvent()` to trigger a registered event. When you specify the `pValList` parameter, a copy of this `IValList` object is passed as input to all actions registered with the application event.

| If the action is ... | Then <code>pValList</code> is ... |
|----------------------------|---|
| an <code>AppLogic</code> . | passed as input to that <code>AppLogic</code> . |
| an email message. | simply ignored. |
| a servlet. | passed to the servlet as the <code>valIn</code> of the underlying <code>AppLogic</code> . |

Use the `syncFlag` parameter to determine synchronous or asynchronous execution. Typical usage is to set `syncFlag` to false, which provides asynchronous execution and better application performance. When `syncFlag` is false, the event is triggered, and the method call returns immediately, without waiting for the actions to finish executing.

If `syncFlag` is true, then the method call does not return immediately. Instead, the call blocks until the event is triggered and all actions have executed. In some cases, it may be desirable for actions to finish executing before returning control to the application.

Actions are triggered in the same order in which they were added to the application event object.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `registerEvent()`

IAppEventObj interface

See the IAppEventMgr interface for details on IAppEventObj.

Package

com.kivasoft

Methods

| Method | Description |
|------------------|---|
| addAction() | Appends an action to an ordered list of actions. |
| deleteActions() | Deletes all actions added to this IAppEventObj. |
| enumActions() | Enumerates the actions added to this IAppEventObj. |
| getAttributes() | Retrieves the list of attributes of an IAppEventObj. |
| getName() | Retrieves the name of the IAppEventObj. |
| setAttributes() | Sets a list of attribute values for the IAppEventObj. |

Related Topics

IAppEventMgr interface

Chapter 13, “Taking Advantage of NAS Features” in *Programmer’s Guide (Java)*

addAction()

Appends an action to an ordered list of actions.

Syntax `public int addAction(
 IValList action)`

action The input IValList object that defines the action to add. When an event is triggered, actions are executed in the same order in which they were added. The entries in this IValList object vary from one action type to another.

The keys and values you can specify are as follows. Note that string constants are available in the class `com.kivasoft.types.GXConstants`.

For AppLogics:

| Key | Value |
|---|--|
| <code>GXConstants.GX_AE2_RE_KEY_NREQ</code> | The AppLogic to execute when the event is triggered. Use the following format: <code>GUIDGX-{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXX}?Param1=ABC&Param2=123</code> . The parameters and their values are passed as input to the events. |

For email:

To send email when the event is triggered, all of the following items must be specified.

| Key | Value |
|--|--|
| <code>GXConstants.GX_AE2_RE_KEY_MFILE</code> | The name of the file that contains the body of an email message. |
| <code>GXConstants.GX_AE2_RE_KEY_MTO</code> | A comma separated list of users to send the email to. |
| <code>GXConstants.GX_AE2_RE_KEY_MHOST</code> | The name of the SMTP mail server. |
| <code>GXConstants.GX_AE2_RE_KEY_SADDR</code> | The sender's email address. |

For servlets:

| Key | Value |
|--|---|
| <code>GXConstants.GX_AE2_RE_KEY_SERVLET</code> | The name of the servlet to be executed when the event is triggered. Use the following format: <code>appName/ServletName?Param1=ABC&Param2=123</code> . Parameters and their values are passed as input to the events. The only required item is the servlet name. The application name and parameters are optional. |

Usage Use the `addAction()` method after creating an application event object (by calling `createEvent()` on the `IAppEventMgr` object). After you change an event (for example, by adding or deleting actions or by setting attributes), you must register the event in order for the changes to take effect.

To list the added actions, use `enumActions()`. To delete all actions, use `deleteActions()`.

Return Value `GXE.SUCCESS` if the method succeeds.

deleteActions()

Deletes all actions added to this `IAppEventObj`.

Syntax `public int deleteActions()`

Usage Use this method to remove all actions associated with this `IAppEventObj`.

Return Value `GXE.SUCCESS` if the method succeeds.

enumActions()

Enumerates the actions added to this `IAppEventObj`.

Syntax `public IEnumObject enumActions()`

Usage Use this method to obtain a list of actions that have been added to this `IAppEventObj`. Each entry in the returned `IEnumObject` is an `IValList` object representing an action.

Return Value `IEnumObject` that contains the list of actions, or null for failure.

getAttributes()

Retrieves the list of attributes of an `IAppEventObj`.

Syntax `public IValList getAttributes()`

Usage Call this method after calling `setAttributes()`.

Return Value IValList object that contains the list of attributes, or null for failure.

Related Topics setAttributes()

getName()

Retrieves the name of the IAppEventObj.

Syntax `public String getName()`

pName A pointer to an input buffer.

nName The size of the input buffer.

Usage The name of an IAppEventObj is set by calling createEvent() on the IAppEventMgr object. After creating an application event object, use the getName() method to retrieve the name.

Return Value A string representing the name of the application event object, or null for failure.

setAttributes()

Sets a list of attribute values for the IAppEventObj.

Syntax `public int setAttributes(
IValList attrList)`

attrList The input IValList object that specifies the attributes. The keys and values you can specify are as follows. Note that string constants are available in the class com.kivasoft.types.GXConstants.

- GXConstants.GX_AE2_RE_KEY_STATE
A variable that specifies the initial state of the event. This key is optional and has the following possible values:
 - GXConstants.GX_AE2_RE_EVENT_DISABLED
 - GXConstants.GX_AE2_RE_EVENT_ENABLED (the default)
- GXConstants.GX_AE2_RE_KEY_TIME
An optional key that specifies the time at which the event will be triggered. Use the following format:
 - hh:mm:ss W/DD/MM

- hh: 0 - 23
- mm: 0 - 59
- ss: 0 - 59
- W (day of the week): 0 - 6 with 0 = Sunday.
- DD (day of the month): 1 - 31
- MM (month): 1 - 12

Each of these fields may be either an asterisk (meaning all legal values) or a list of elements separated by commas. An element is either a number or two numbers separated by a minus sign indicating an inclusive range. For example, 2, 5 - 7:0:0 5/*/* means the event is triggered at 2 AM, 5AM, 6 AM and 7 AM every Friday.

The specification of days can be made by two fields: day of the month (DD) and day of the week (W). If both are specified, both take effect. For example, 1:0:0 1/15/* means the event is triggered at 1 AM every Monday, as well as on the fifteenth of each month. To specify days by only one field, set the other field to *.

- GXConstants.GX_AE2_RE_KEY_ACTION_MODE

An optional key that specifies whether actions are to be executed concurrently (at the same time) or in series (one after another). In serial execution, each action finishes executing before the next one starts, and execution occurs in the same order in which the actions were added.

This key has the following possible values:

- GXConstants.GX_AE2_RE_ACTION_SERIAL
- GXConstants.GX_AE2_RE_ACTION_CONCURRENT (the default)

Usage Use the `setAttributes()` method after creating an application event object (by calling `createEvent()` on the `IAppEventMgr` object). After you change an event (for example, by adding or deleting actions or by changing attributes), you must register the event in order for the changes to take effect.

Tip None of the attributes are required to be set. The default state is enabled, and the default action mode is concurrent.

To retrieve the list of attributes that are set, use `getAttributes()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `getAttributes()`

IBuffer interface (*deprecated*)

The IBuffer interface is deprecated and is provided for backward compatibility only. New applications developed according to the servlet-JSP programming model do not need the functionality provided by IBuffer.

The IBuffer interface represents a block of memory. Input arguments and output value(s) of methods are sometimes stored in IBuffer objects. For example, the `get**()` methods in the IQuery interface return values in an IBuffer object.

IBuffer provides methods for specifying and obtaining the size of the memory block, obtaining its starting address, and copying data to it.

To create an instance of the IBuffer interface, use the `GX.CreateBuffer()` method. To create and initialize an IBuffer object with string contents, use `GX.CreateBufferFromString()`.

Package

`com.kivasoft`

Methods

| Method | Description |
|---------------------------|---|
| <code>alloc()</code> | Specifies the size of the memory block, in bytes. |
| <code>getAddress()</code> | Returns a copy of the buffer contents. |
| <code>getSize()</code> | Returns the size of the memory block, in bytes. |
| <code>setData()</code> | Copies data to a memory block. |

`alloc()`

Specifies the size of the memory block, in bytes.

Syntax `public int alloc(
int nSize)`

nSize Size of the memory block, in bytes.

Usage After creating a memory buffer with the `GX.CreateBuffer()` function, use `alloc()` to specify its size.

Subsequent calls to `getSize()` return the size that AppLogic specified when it called `alloc()`.

- Rules**
- If the AppLogic creates its own new IBuffer object, it must first specify the size of the memory block by calling `alloc()` before using other methods in the interface.
 - AppLogic can call `alloc()` only once.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
String str = "Hello World";
byte tmp[] = new byte[12];
str.getBytes(0, 11, tmp, 0);

IBuffer buff;

buff = GX.CreateBuffer();
buff.alloc(128);
buff.setData(tmp, 12);

// The following example is an alternate to the
// previous one. It uses GX.CreateBufferFromString()
// instead of GX.CreateBuffer().

IBuffer buff;
buff = GX.CreateBufferFromString("Hello World");
```

Related Topics `getAddress()`

`getAddress()`

Returns a copy of the buffer contents.

Syntax `public byte[] getAddress()`

Usage Use `getAddress()` to get a copy of the contents in a buffer.

Return Value A copy of the buffer contents.

Related Topics `alloc()`

getSize()

Returns the size of the memory block, in bytes.

Syntax `public int getSize()`

Usage Use `getSize()` to determine the length of the memory buffer that the `AppLogic` specified when it called `alloc()`.

Rule Before calling `getSize()`, `AppLogic` must first specify the size of the memory block by calling `alloc()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `getAddress()`

`setData()`

setData()

Copies data to a memory block.

Syntax `public int setData(
 byte[] pData,
 int nDataLen)`

pData The data to copy to the memory buffer.

nDataLen The length, in bytes, of the data to copy to the memory buffer.

Usage Use `setData()` to copy data to a memory buffer. The buffer can then be passed to a method, such as the `setValPieceByOrd()` method in the `ITable` interface, that accepts data values in a buffer object.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
String str = "Hello World";
byte tmp[] = new byte[12];
str.getBytes(0, 11, tmp, 0);

IBuffer buff;

buff = GX.CreateBuffer();
buff.alloc(128);
```

IBuffer interface (deprecated)

```
buff.setData(tmp, 12);
```

```
table.setValPieceByOrd(1, buff, 12);
```

Related Topics [getAddress\(\)](#)

[getSize\(\)](#)

ICallableStmt interface (*deprecated*)

ICallableStmt is deprecated and is provided for backward compatibility only. New applications should use the `java.sql.CallableStatement` interface from the JDBC Core API.

The ICallableStmt interface provides a standard way to call stored procedures in any database server. A stored procedure is a block of SQL statements stored in a database. Stored procedures provide centralized code for manipulating data and reduce the amount of data that needs to be sent to the client side of an application. They are typically used to execute database operations, for example, modify, insert, or delete records.

To call a stored procedure from an AppLogic, use the ICallableStmt object. The ICallableStmt interface defines methods for executing a stored procedure or function, and setting and getting parameter values to and from a stored procedure.

To create an instance of the ICallableStmt interface, use `prepareCall()` in the `IDataConn` interface.

Package

`com.kivasoft`

Methods

| Method | Description |
|----------------------------------|---|
| <code>close()</code> | Releases the callable statement. |
| <code>execute()</code> | Executes the stored procedure called by the <code>CallableStatement</code> object. |
| <code>executeMultipleRS()</code> | Executes a stored procedure, called by the <code>ICallableStmt</code> object, that can return multiple result sets. |
| <code>getMoreResults()</code> | Checks if there is a result set to retrieve. This method is valid only if you used <code>executeMultipleRS()</code> , not <code>execute()</code> , to execute a stored procedure called by the <code>ICallableStmt</code> object. |
| <code>getParams()</code> | Returns the value of the stored procedure's output parameter or parameters. |

| Method | Description |
|-----------------------------|--|
| <code>getResultSet()</code> | Retrieves a result set. This method is valid only if you used <code>executeMultipleRS()</code> (instead of <code>execute()</code>) to execute a stored procedure called by the <code>ICallableStmt</code> object. |
| <code>setParams()</code> | Specifies the parameter values to pass to the stored procedure. |

Related Topics

`prepareCall()` in the `IDataConn` interface (deprecated)

`close()`

Releases the callable statement.

Syntax `public int close()`

Usage Use `close()` to release a callable statement object after the `AppLogic` has finished processing the results returned by the stored procedure. You must release the callable statement object so that the data connection is available to process other commands.

Return Value `GXE.SUCCESS` if the method succeeds.

`execute()`

Executes the stored procedure called by the `ICallableStmt` object.

Syntax `public IResultSet execute(
int flags,
IValList params,
ITrans trans,
IValList props);`

flags

- For synchronous operations, the default, specify 0 (zero) or `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC`.
- For asynchronous operations, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC`.

params IValList object that contains parameters to pass to the callable statement. If you use `setParams()` instead to specify the parameters, specify null here.

trans ITrans object that contains the transaction associated with this callable statement, or null for no transaction.

props IValList object that contains properties, or null for no properties. This parameter applies only if the callable statement returns a result set. Informix stored procedures, for example, return out parameter values only as a result set. Sybase, DB2, and MS SQL Server stored procedures also support the return of a result set. Multiple result sets, however, is not supported.

After instantiating an object of the IValList interface, set any of the following properties:

- `RS_BUFFERING` turns on result set buffering when set to “TRUE” or “YES.”
- `RS_INIT_ROWS` specifies the initial size of the buffer, in number of rows. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` and result set buffering will be turned off.
- `RS_MAX_ROWS` specifies the maximum number of rows for the buffer. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` and result set buffering will be turned off.
- `RS_MAX_SIZE` specifies the maximum number of bytes for the buffer.

If `RS_BUFFERING` is enabled and if the optional parameters are not specified, the global values in the registry are used instead.

Usage Use `execute()` to run a callable statement that has been created with `prepareCall()` in the `IDataConn` interface. If the stored procedure called by the `ICallableStmt` object can return multiple result sets, use `executeMultipleRS()` instead.

If the stored procedure called by the `ICallableStmt` object contains parameters, instantiate an `IValList` object and use `setValString()` or `setValInt()` in the `IValList` interface to specify the parameter values to pass to the stored procedure.

After creating and setting up the `IValList` object, pass it to `execute()` or `setParams`. If you use `setParams()` to pass parameters to the stored procedure, specify `NULL` for the `params` parameter in `execute()`.

Rule When accessing a stored procedure on Sybase or MS SQL Server, input parameter names specified in the call must be prefixed with the ampersand (&) character, for example, ¶m1. Other database drivers accept the ampersand, as well, as the colon (:) character. For all database drivers, input/output and output parameter names are prefixed with the colon (:) character, for example, :param2.

Return Value IResultSet object, or null for failure (such as an invalid parameter).

Example

```
//Write command to call stored procedure
String theProc = "{call myProc1(&p1, :p2)}";
IQuery myquery;
myquery = createQuery();
myquery.setSQL(theProc);

//Prepare the callable statement for execution
ICallableStmt myStmt;
myStmt = conn_rtest.prepareCall(0, myquery, null, null);

//Set the in parameter value
IValList inParams = GX.CreateValList();
inParams.setValInt("&p1", 6210603);
//Set the out parameter value to any integer
inParams.setValInt(":p2", 0);

//Run the callable statement
myStmt.execute(0, inParams, null, null);

//Get the stored procedure's output value
outParams = myStmt.getParams(0);
```

Related Topics [prepareCall\(\)](#) in the [IDataConn](#) interface (deprecated)

[getParams\(\)](#)

[setParams\(\)](#)

executeMultipleRS()

Executes a stored procedure, called by the ICallableStmt object, that can return multiple result sets.

Syntax `public int executeMultipleRS(`

```

    int dwFlags,
    IValList pParams,
    ITrans pTrans,
    IValList pProps);

```

dwFlags

Specify 0.

pParams IValList object that contains parameters to pass to the callable statement. If no parameters are required, pass in an empty IValList. If you use setParams() instead to specify the parameters, specify null here.

pTrans ITrans object that contains the transaction associated with this callable statement, or null for no transaction.

pProps IValList object that contains properties, or null for no properties.

After instantiating an object of the IValList interface, set any of the following properties:

- **RS_BUFFERING** turns on result set buffering when set to “TRUE” or “YES.”
- **RS_INIT_ROWS** specifies the initial size of the buffer, in number of rows. If the result set size exceeds this setting, a fetchNext() call will return the error GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED and result set buffering will be turned off.
- **RS_MAX_ROWS** specifies the maximum number of rows for the buffer. If the result set size exceeds this setting, a fetchNext() call will return the error GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED and result set buffering will be turned off.
- **RS_MAX_SIZE** specifies the maximum number of bytes for the buffer.

If **RS_BUFFERING** is enabled and if the optional parameters are not specified, the global values in the registry are used instead.

Usage Use executeMultipleRS() to run a callable statement that returns multiple result sets. The callable statement should already have been created with prepareCall() in the IDataConn interface.

If the stored procedure called by the ICallableStmt object contains parameters, instantiate an IValList object and use setValString() or setValInt() in the IValList interface to specify the parameter values to pass to the stored procedure.

After creating and setting up the `IValList` object, pass it to `executeMultipleRS()` or `setParams()`. If you use `setParams()` to pass parameters to the stored procedure, specify `NULL` for the `pParams` parameter in `executeMultipleRS()`.

Rule When accessing a stored procedure on Sybase or MS SQL Server, input parameter names specified in the call must be prefixed with the ampersand (&) character, for example, `¶m1`. Other database drivers accept the ampersand, as well, as the colon (:) character. For all database drivers, input/output and output parameter names are prefixed with the colon (:) character, for example, `:param2`.

Tip The difference between `execute()` and `executeMultipleRS()` is that `execute()` can return only a single result set. If you're not sure how many results sets, if any, a stored procedure returns, use `executeMultipleRS()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
//Write command to call stored procedure
String proccall = "{call multiRSproc()}";
IQuery qryobj = GX.createQuery();
qryobj.setSQL(proccall);

//Prepare the callable statement for execution
ICallableStmt stmt = connobj.PrepareCall(0, qryobj, null, null);

//Create the IValList to pass to the stored procedure
IValList inparms = GX.CreateValList();

//Run the callable statement
stmt.executeMultipleRS(0, inparms, null, null);

//Check if there is a result set
if (stmt.getMoreResults())
{
    //Get the result set
    IResultSet rsobj = stmt.getResultSet();
    while (rsobj.fetchNext()) {
        if (rsobj.getValueInt(1) == 100) {
            System.out.println("Found record 100");
        }
    }
}
//Check if there is another result set
```

```

if (stmt.getMoreResults()) {
    rsobj = stmt.getResultSet();
    while (rsobj.fetchNext()) {
        if (rsobj.getValueString(2) == 'George') {
            System.out.println("Found record George");
        }
    }
}
}

```

Related Topics `prepareCall()` in the `IDataConn` interface (deprecated)

`getMoreResults()`

`getResultSet()`

getMoreResults()

Checks if there is a result set to retrieve. This method is valid only if you used `executeMultipleRS()` (instead of `execute()`) to execute a stored procedure called by the `ICallableStmt` object.

Syntax `public boolean getMoreResults()`

Usage If you used `executeMultipleRS()` to execute a stored procedure that returns multiple results sets, use `getMoreResults()` in conjunction with `getResultSet()` to check if there is a result set before retrieving it.

If there is a current result set with unretrieved rows, `getMoreResults()` discards the current result set and makes the next result set available.

Return Value True if there is a result set.

Example

```

//Run the callable statement
stmt.executeMultipleRS(0, inparms, null, null);

//Check if there is a result set
if (stmt.getMoreResults())
{
    //Get the result set
    IResultSet rsobj = stmt.getResultSet();
    while (rsobj.fetchNext()) {
        if (rsobj.getValueInt(1) == 100) {
            System.out.println("Found record 100");
        }
    }
}

```

```
    }  
  }  
}  
//Check if there is another result set  
if (stmt.getMoreResults()) {  
    rsobj = stmt.getResultSet();  
    while (rsobj.fetchNext()) {  
        if (rsobj.getValueString(2) == 'George') {  
            System.out.println("Found record George");  
        }  
    }  
}
```

Related Topics [prepareCall\(\)](#) in the [IDataConn](#) interface (deprecated)

[executeMultipleRS\(\)](#)

[getResultSet\(\)](#)

getParams()

Returns the value of the stored procedure's output parameter or parameters.

Syntax `public IValList getParams(
 int dwFlags);`

dwFlags Specify 0 (zero).

Usage Some stored procedures return output parameters. If the stored procedure your callable statement executes returns output parameters, use `getParams()` to get the values.

The `getParams()` method returns the values in an `IValList` object. The key names associated with the values are the parameter names as specified in the query that was passed to the `prepareCall()` method

Tip Informix stored procedures return output parameters in a result set. This result set is returned by `execute()` or `executeMultipleRS()`. The `getParams()` method, therefore, does not apply to Informix stored procedures.

Return Value `IValList` object, or null for failure.

Related Topics [prepareCall\(\)](#) in the [IDataConn](#) interface (deprecated)

execute()

setParams()

getResultSet()

Retrieves a result set. This method is valid only if you used executeMultipleRS() (instead of execute()) to execute a stored procedure called by the ICallableStmt object.

Syntax public IResultSet getResultSet()

Usage If you used executeMultipleRS() to execute a stored procedure that returns multiple results sets, use getResultSet() in conjunction with getMoreResults() to retrieve the results sets.

Return Value IResultSet object, or null if there is no result set.

Example

```
//Run the callable statement
stmt.executeMultipleRS(0, inparms, null, null);

//Check if there is a result set
if (stmt.getMoreResults())
{
    //Get the result set
    IResultSet rsobj = stmt.getResultSet();
    while (rsobj.fetchNext()) {
        if (rsobj.getValueInt(1) == 100) {
            System.out.println("Found record 100");
        }
    }
}

//Check if there is another result set
if (stmt.getMoreResults()) {
    rsobj = stmt.getResultSet();
    while (rsobj.fetchNext()) {
        if (rsobj.getValueString(2) == 'George') {
            System.out.println("Found record George");
        }
    }
}
```

Related Topics prepareCall() in the IDataConn interface (deprecated)

executeMultipleRS()

getMoreResults()

setParams()

Specifies the parameter values to pass to the stored procedure.

Syntax

```
public int setParams(  
    int dwFlags,  
    IValList pParams);
```

dwFlags Specify 0 (zero). For internal use only.

pParams IValList object that contains the parameters to pass to the stored procedure. You must set all parameters required by the stored procedure. If you don't, a runtime error will occur when execute() is called. If you use setParams(), specify NULL for the pParams parameter in execute().

Usage If the stored procedure the callable statement executes accepts input parameters, use setParams() to pass the parameter or parameter values. The alternative is to pass the parameter values with the execute() method. Parameters passed to execute() supersede parameters specified with setParams().

For both setParams() and execute(), you pass the parameter values in an IValList object.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics prepareCall() in the IDataConn interface (deprecated)

execute()

getParams()

ICallerContext interface

The ICallerContext interface manages programmatic security from within a servlet. ICallerContext provides two methods that override equivalent methods in the standard javax.ejb.EJBContext interface.

From within EJBs, do not use ICallerContext. Use javax.ejb.EJBContext instead, to maintain the portability of the bean.

Typically ICallerContext is used together with the IServerContext interface.

Package

com.netscape.server

Methods

The ICallerContext interface is described as follows:

```
public interface ICallerContext
{
    public java.security.Identity getCallerIdentity();
    public boolean isCallerInRole(java.security.Identity role);
}
```

getCallerIdentity() returns the Identity object that identifies the caller.

The isCallerInRole() method returns true if the caller has the given role, where the role parameter describes the java.security.Identity of the role to be tested.

Neither of the specifications for servlets and EJBs describe a standard way of creating an instance of java.security.Identity. To create an instance within a NAS 4.0 application, use the following method from the IServerContext interface:

```
public java.security.Identity createIdentityByString(
    String identity)
```

Examples

Example 1 The following sample code demonstrates the use of programmatic security from a servlet:

```
// from within a servlet
```

```

com.netscape.server.IServerContext netscapeCtx;
ServletContext ctx = getServletContext();
netscapeCtx = (com.netscape.server.IServerContext) ctx;

com.netscape.server.ICallerContext callerCtx;
callerCtx = netscapeCtx.getCallerContext();

Identity id = callerCtx.getCallerIdentity();

if(id == null)
    System.out.println("Servlet invoked by anonymous user");
else
    System.out.println("Servlet invoked by user " + id.getName());

```

Example 2 The following sample code demonstrates the use of programmatic security from a servlet:

```

// from within a servlet
com.netscape.server.IServerContext netscapeCtx;
ServletContext ctx = getServletContext();
netscapeCtx = (com.netscape.server.IServerContext) ctx;

com.netscape.server.ICallerContext callerCtx;
Identity managers = netscapeCtx.createIdentityByString("managers");

if(callerCtx.isCallerInRole(managers))
    // caller is a member of the group managers
else
    // caller is not a manager

```

Example 3 The following sample code demonstrates the use of programmatic security from a bean.

Both `SessionContext` and `EntityContext` inherit from `javax.ejb.EJBContext`. The container will invoke `setSessionContext()` or `setEntityContext()` on your bean and provide you with an instance before any business methods are executed.

```

// within a bean

javax.ejb.SessionContext m_ctx;

// method on javax.ejb.EJBContext
Identity id = m_ctx.getCallerIdentity();

```

In addition, the `isCallerInRole()` method, available from `ICallerContext` and `EJBContext`, can be used to test for membership.

Related Topics

`com.kivasoft.applogic.AppLogic` class (deprecated),
`com.kivasoft.dlm.GXContext` class,
`com.kivasoft.IContext` interface,
`com.netscape.server.IServerContext` interface

`javax.ejb.EJBContext` interface

Chapter 12, “Writing Secure Applications” in *Programmer’s Guide (Java)*

IColumn interface *(deprecated)*

IColumn is deprecated and is provided for backward compatibility only. New applications should use the interfaces `java.sql.DatabaseMetaData` or `java.sql.ResultSetMetaData` from the JDBC Core API.

The IColumn interface represents a column definition in a table. IColumn provides methods for obtaining descriptive information about a table column from the database catalog, which contains the column definition. Column attributes include the column name, precision, scale, size, table, and data type.

IColumn is part of the Data Access Engine (DAE) service.

To create an instance of this interface, use one of the following methods:

- `getColumn()` or `getColumnByOrd()` in the `IHierResultSet` interface (deprecated)
- `getColumn()`, `getColumnByOrd()`, or `enumColumns()` in the `ITable` interface (deprecated)
- `getColumn()`, `getColumnByOrd()`, or `enumColumns()` in the `IResultSet` interface (deprecated)

The following example shows creating an IColumn object:

```
ITable tbl = conn.getTable("Products");
IColumn col = tbl.getColumnByOrd(1);
```

Package

`com.kivasoft`

Methods

| Method | Description |
|--------------------------------|--|
| <code>getName()</code> | Returns the name of the column or alias. |
| <code>getNullsAllowed()</code> | Returns true if null values are allowed in the column. |
| <code>getPrecision()</code> | Returns the precision, which is the maximum length or maximum number of digits, of the column. |

| Method | Description |
|-------------------------|---|
| <code>getScale()</code> | Returns the scale, which is the number of digits to the right of the decimal point, of the column of type double. |
| <code>getSize()</code> | Returns the maximum length, in number of bytes, allowed for a value in this column. |
| <code>getTable()</code> | Returns the table object in which this column exists. |
| <code>getType()</code> | Returns the data type of the column. |

Example 1

The following example shows how to iterate through a table to get the names and types of the columns:

```
String htmlString;
IColumn col;
ITable tbl = conn.getTable("Products");

htmlString += "<h2>Products Table</h2>";
tbl.enumColumnReset();

while ((col = tbl.enumColumns()) != null) {
    htmlString += "Column Name = ";
    htmlString += col.getName();
    htmlString += ", Column Type = ";
    htmlString += col.getType();
    htmlString += "<br>";
};
return result(htmlString)
```

Example 2

The following example goes through all columns in a Products table and constructs an HTML string showing catalog information about each column:

```
ITable tbl = conn.getTable("Products");
htmlString += "<h2>Products Table:</h2>";

tbl.enumColumnReset();
IColumn col = tbl.enumColumns();
int loopcnt = 1;
```

```

while (col != null) {
    htmlString += "Table Name = ";
    htmlString += col.getTable().getName();
    htmlString += "<br>";
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    htmlString += ", Column Type=";
    htmlString += col.getType();
    htmlString += "<br>";
    htmlString += "Nulls Allowed (T/F) = ";
    htmlString += col.getNullsAllowed();
    htmlString += "<br>";
    htmlString += "Max Size = ";
    htmlString += col.getSize();
    htmlString += "<br>";
    htmlString += "Precision = ";
    htmlString += col.getPrecision();
    htmlString += "<br>";

    if (col.getType() == GX_DA_DATA_TYPES.GX_DA_TYPE_DOUBLE){
        htmlString += "Scale = ";
        htmlString += col.getScale();
        htmlString += "<br>";
    }
    htmlString += "<br>";

    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());
}
}

```

Related Topics

`getColumn()` or `getColumnByOrd()` in the `IHierResultSet` interface (deprecated)

`getColumn()`, `getColumnByOrd()`, or `enumColumns()` in the `ITable` interface (deprecated)

`getColumn()`, `getColumnByOrd()`, or `enumColumns()` in the `IResultSet` interface (deprecated)

getName()

Returns the name of the column or alias.

Syntax `public String getName()`

Usage Use `getName()` when the name of the column is unknown and is required for subsequent operations.

- Tips**
- For computed columns in a query, specify aliases so that using `getName()` returns the alias name. Otherwise, the column can be identified only by ordinal position.
 - Do not rely on the case of the returned name. It might be all uppercase or mixed case, depending on the database.

Return Value String representing the name of the column, or null for failure (such as insufficient memory).

Example The following example shows how to iterate through a table to get the names of columns:

```

ITable tbl = conn.getTable("Products");
tbl.enumColumnReset();

htmlString += "<h2>Products Table:</h2>";
IColumn = tbl.enumColumns();
int loopcnt;
loopcnt = 1;

while (col != null) {
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());
}
}

```

getNullsAllowed()

Determines whether null values are allowed in the column.

Syntax `public boolean getNullsAllowed()`

Usage A column may require data values. Use `getNullsAllowed()` if this information is unknown to determine, for subsequent operations, whether nulls are allowed or not.

Tip For numeric columns that allow NULLs, the value is usually zero (0) in the column if a NULL is inserted. For more information, see your database vendor's documentation.

Return Value True if the column allows nulls, or false if the column is defined as NOT NULL (requiring data values).

Example The following example shows how to iterate through a table and return the column names, as well as whether null values are allowed in each column:

```

ITable tbl = conn.getTable("Products");
tbl.enumColumnReset();

htmlString += "<h2>Products Table:</h2>";

IColumn col = tbl.enumColumns();
int loopcnt;
loopcnt = 1;

while (col != null) {
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    htmlString += "Nulls Allowed (T/F) = ";
    htmlString += col.getNullsAllowed();
    htmlString += "<br>";
    htmlString += "<br>";
    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());

```

```
    }
}
```

getPrecision()

Returns the precision, which is the maximum length or maximum number of digits, of the column.

Syntax `public int getPrecision()`

Usage Use `getPrecision()` when the precision of the column is unknown and is required for subsequent operations.

Return Value An `int` value representing the maximum length or maximum number of digits of the column, or zero for failure (such as the precision is unknown).

Example The following example shows how to iterate through a table and return the column names, as well as the precision value of each column:

```
ITable tbl = conn.getTable("Products");
tbl.enumColumnReset();

htmlString += "<h2>Products Table:</h2>";

IColumn col = tbl.enumColumns();
int loopcnt;
loopcnt = 1;

while (col != null) {
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    htmlString += "Precision = ";
    htmlString += col.getPrecision();
    htmlString += "<br>";
    htmlString += "<br>";
    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());
}
```

```
}
```

getScale()

Returns the scale, which is the number of digits to the right of the decimal point, of a column of type double.

Syntax `public int getScale()`

Usage Use `getScale()` when the scale of the column is unknown and is required for subsequent operations.

- Rules**
- Use `getScale()` with numeric columns, including SQL DECIMAL, NUMERIC, and FLOAT data types.
 - The value returned from `getScale()` depends on the data type of the column. For example, it returns zero (0) for integers. For more information, see your database server documentation.
 - For computed columns in a result set, the value returned from `getScale()` depends on the data type of the evaluated expression.

Return Value An int value representing the fixed number of digits to the right of the decimal point, or zero if unknown or not applicable.

getSize()

Returns the maximum length, in number of bytes, allowed for a value in this column.

Syntax `public int getSize()`

Usage Use `getSize()` when the maximum allowable length of the column is unknown and is required for subsequent operations. Note that `getSize()` does not return the actual size of data in the column.

- Rules**
- The value returned from `getSize()` depends on the data type of the column. For more information, see your database server documentation.
 - For computed columns in a result set, the value returned from `getSize()` depends on the data type of the evaluated expression.

Return Value An int value representing the maximum length of the column, or zero for failure.

Example The following example shows how to iterate through a table and return the column names, as well as the maximum allowable length of each column:

```

ITable tbl = conn.getTable("Products");
tbl.enumColumnReset();

htmlString += "<h2>Products Table:</h2>";

IColumn col = tbl.enumColumns();
int loopcnt;
loopcnt = 1;

while (col != null) {
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    htmlString += "Max Size = ";
    htmlString += col.getSize();
    htmlString += "<br>";
    htmlString += "<br>";
    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());
}

```

getTable()

Returns the table object in which this column exists.

Syntax `public ITable getTable()`

Usage Use `getTable()` when the table definition of the column is unknown and is required for subsequent operations. For result set columns, this method returns a table object, which is a description of the columns in the result set.

Return Value ITable object representing the table, or null for failure.

Example

```
// Walk through all columns in Products table and construct
// an HTML string showing the table name for each column
ITable tbl = conn.getTable("Products");
tbl.enumColumnReset();
htmlString += "<h2>Products Table:</h2>";
IColumn col = tbl.enumColumns();
int loopcnt;
loopcnt = 1;
while (col != null) {
    htmlString += "Table Name = ";
    htmlString += col.getTable().getName();
    htmlString += "<br>";
    htmlString += "Column Name=";
    htmlString += col.getName();
    htmlString += "<br>";
    htmlString += "<br>";
    col = tbl.enumColumns();
    loopcnt++;
};
return result(htmlString + stdResFooter());
}
```

Related Topics ITable interface (deprecated)

getType()

Returns the data type of the column.

Syntax public int getType()

Use getType() when the data type of the column is unknown and is required for subsequent operations.

Return Value An int value corresponding to one of the static variables, listed next, in the GX_DA_DATA_TYPES class.

| | |
|---------------------|-------------------|
| GX_DA_TYPE_ERROR | GX_DA_TYPE_TIME |
| GX_DA_TYPE_BINARY | GX_DA_TYPE_DOUBLE |
| GX_DA_TYPE_DATETIME | GX_DA_TYPE_LONG |
| GX_DA_TYPE_DATE | GX_DA_TYPE_STRING |

```

Example // Pulls a particular column value from the result set
private static String getColumnString(IResultSet res, String colName) {

    // Input parameter error checking
    if((rs==null)|| (rs.getRowNumber()==0)|| (colName==null)) return null;

    int colOrd=rs.getColumnOrdinal(colName);
    IColumn col;

    if((col=rs.getColumnByOrd(colOrd))==null) return null;
    String valStr=null;

    // Switch type
    switch(col.getType()) {
        case GX_DA_DATA_TYPES.GX_DA_TYPE_STRING:
            valStr = rs.getValueString(colOrd);
            break;
        case GX_DA_DATA_TYPES.GX_DA_TYPE_LONG:
            valStr=String.valueOf(rs.getValueInt(colOrd));
            break;
        case GX_DA_DATA_TYPES.GX_DA_TYPE_DATE:
        case GX_DA_DATA_TYPES.GX_DA_TYPE_DATETIME:
        case GX_DA_DATA_TYPES.GX_DA_TYPE_TIME:
            valStr = rs.getValueDateString(colOrd);
            break;
        case GX_DA_DATA_TYPES.GX_DA_TYPE_DOUBLE:
            valStr = String.valueOf(rs.getValueDouble(colOrd));
            break;
        default: // Unknown type, so error out
            // Fall thru to the return. Note that valStr is null;
    };
    return valStr;
}

```

IContext interface

In NAS applications, some public methods require an IContext object as a parameter. The IContext interface itself has no public methods. You do not create or destroy IContext objects, but you can obtain them in several ways.

Package

com.kivasoft

Examples

The following examples describe different ways to obtain a context.

- Example 1** From an AppLogic, an instance of this context is available as a member variable `context` within the superclass `com.kivasoft.applogic.AppLogic`. The following code is used from within an AppLogic method:

```
com.kivasoft.IContext kivaContext;
kivaContext = this.context;
```

- Example 2** From a servlet, the standard servlet context can be cast to `IServerContext`, and from there, a `com.kivasoft.IContext` instance can be obtained. The servlet code would look like this:

```
ServletContext ctx = getServletContext();
com.netscape.server.IServerContext sc;

// legal cast within NAS
sc = (com.netscape.server.IServerContext) ctx;
com.kivasoft.IContext kivaContext = sc.getContext();
```

- Example 3** As an alternative to Example 2, a caller can access the underlying AppLogic instance from a servlet and obtain the context there, as described in Example 1 for AppLogics. The servlet code would look like this:

```
HttpServletRequest req;
HttpServletRequest2 req2;
req2 = (HttpServletRequest2) req; // legal cast within NAS
AppLogic al = req2.getAppLogic();
com.kivasoft.IContext kivaContext;
kivaContext = al.context;
```

Example 4 From a bean, the standard `javax.ejb.SessionContext` or `javax.ejb.EntityContext` can be cast to an `IServerContext`, and from there, a `com.kivasoft.IContext` instance can be obtained. In a bean, the code would look like this:

```

    javax.ejb.SessionContext m_ctx;
    .
    .
    .
    com.netscape.server.IServerContext sc;
    // legal cast within NAS
    sc = (com.netscape.server.IServerContext) m_ctx;
    com.kivasoft.IContext kivaContext;
    kivaContext = sc.getContext();

```

Example 5 From a Java extension, an instance of the context is supplied to the `init()` method of your extension, as shown by the following code:

```

    public int init(IObject obj) {
        com.kivasoft.IContext kivaContext = (com.kivasoft.IContext) obj;
        .
        .
        .
    }

```

Related Topics

[com.kivasoft.applogic.AppLogic class \(deprecated\)](#),
[com.kivasoft.dlm.GXContext class](#),
[com.netscape.server.ICallerContext interface](#),
[com.netscape.server.IServerContext interface](#)

Chapter 13, “Taking Advantage of NAS Features” in *Programmer’s Guide (Java)*

IDataConn interface (*deprecated*)

IDataConn is deprecated and is provided for backward compatibility only. New applications should use the `java.sql.Connection` interface from the JDBC Core API.

The IDataConn interface represents a connection to a relational data source. IDataConn provides methods for preparing a query, executing a query, identifying table(s) to work with, and closing the connection explicitly. In addition, the data connection object is used in other operations for interacting with a data source.

IDataConn is part of the Data Access Engine (DAE) service. To create an instance of the IDataConn interface, use `createDataConn()` in the `AppLogic` class (deprecated), as shown in the following example:

```
IDataConn conn;
if((conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
"CATALOG", "CATALOG", "steve", "pass7878")) == null)
. . .
```

Package

`com.kivasoft`

Methods

| Method | Description |
|-------------------------------|---|
| <code>closeConn()</code> | Explicitly closes a database connection. |
| <code>createTrigger()</code> | Creates a new trigger object in the specified table. |
| <code>disableTrigger()</code> | Disables a trigger associated with a specified table. This feature is supported by Oracle databases only. |
| <code>dropTrigger()</code> | Removes a trigger from a specified table. |
| <code>enableTrigger()</code> | Enables a trigger for a specified table. This feature is supported by Oracle databases only. |
| <code>executeQuery()</code> | Executes a flat query on the data connection. |
| <code>getConnInfo()</code> | Returns database and user information about the current database connection. |

| Method | Description |
|-----------------------------|---|
| <code>getConnProps()</code> | Returns registry information about the current database connection. |
| <code>getDriver()</code> | Returns the identifier of the data source driver that the current database connection is using. |
| <code>getTable()</code> | Returns the table definition object for the specified table. |
| <code>getTables()</code> | Returns an <code>IVallList</code> of database tables or views that are available to the specified user. |
| <code>prepareCall()</code> | Creates an <code>ICallableStmt</code> object that contains a call to a stored procedure. |
| <code>prepareQuery()</code> | Prepares a flat query object for subsequent execution. |
| <code>setConnProps()</code> | Specifies registry values for the current database connection. |

Related Topics

`createDataConn()` in the `AppLogic` class (deprecated)

`getDataConn()` in the `ITable` interface (deprecated)

`addRow()`, `deleteRow()`, and `updateRow()` in the `ITable` interface (deprecated)

closeConn()

Explicitly closes the database connection.

Syntax

```
public int closeConn(
    int dwFlags)
```

dwFlags Specify 0, or `GX_DA_CLOSECONN_FLAGS.GX_DA_UNBIND_TRANS`, which explicitly unbinds a physical connection from a transaction.

Usage The Data Access Engine performs certain housekeeping tasks, such as shutdown and cleanup, automatically and intermittently. Use `closeConn()` to explicitly close a database connection and release system resources, such as when memory is low. Calling `closeConn()` breaks the virtual connection to the database and puts the physical connection back into the database connection cache.

- Rules**
- Closing the database connection changes the state of the IDataConn object to closed.
 - Close a database connection only after the AppLogic no longer needs it. A run-time error will occur if subsequent operations attempt to use a data connection object that has already been closed.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
IDataConn conn;
if((conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
"CATALOG", "CATALOG", "steve", "pass7878")) == null)
{
    // Cannot connect - return error message
    result("Failed to connect to Catalog db");
    return null;
};
// Connected - return the data connection object
// used for subsequent operations on the database
return conn;
};
. . . perform database operations . . .
// Explicitly close the connection
int closeResult;
closeResult=conn.closeConn(0);
```

Related Topics createDataConn() in the AppLogic class (deprecated)

createTrigger()

Creates a new trigger object in the specified table.

Syntax

```
int createTrigger(
    String pTable,
    String pName,
    String pCondition,
    String pOptions,
    String pSQLBlock);
```

pTable The table on which the trigger is defined. You can specify the name of the owner as a prefix to the table name, for example, "jim.myTable".

pName The name of the trigger object to create.

pCondition The condition that determines whether or not the SQL procedure (defined in the `pSQLBlock` parameter) executes. For example, you can specify that the SQL procedure executes only if a column contains a specific value:

```
"FOR EACH ROW WHEN(city = 'San Francisco')"
```

pOptions The row operations that determine when the trigger executes. For example, you can specify that the trigger be activated BEFORE or AFTER an INSERT, UPDATE, and/or DELETE operation:

```
"AFTER INSERT, UPDATE"
```

pSQLBlock The definition of the SQL block to execute when the trigger goes into effect. Refer to your database documentation for information on the SQL block format.

Usage A trigger is a SQL procedure associated with a table. It is automatically activated when a specified row operation, such as INSERT, UPDATE, and DELETE, is issued against the table. Use `createTrigger()` to specify the table and the data modification command that should activate the trigger, and the action or actions the trigger is to take.

- Tips**
- For specific information on supported trigger options and conditions, refer to the description of triggers in your database documentation.
 - After creating a trigger, enable it by calling `enableTrigger()`. The following are exceptions to the rule:
 - Sybase does not support the enabling or disabling of triggers.
 - Oracle automatically enables a trigger when the trigger is created; you can optionally call `enableTrigger()`, but it will have no effect.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
IDataConn conn;
conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
    "personnelDB", "personnelDB", "sandra", "pass7878");
conn.createTrigger("employees", "ProcessNew",
    "FOR EACH ROW WHEN(title='Director')",
    "AFTER INSERT", "[SQL instruction here]");
conn.enableTrigger("employees", "ProcessNew");
```

Related Topics `disableTrigger()`

`dropTrigger()`

enableTrigger()

disableTrigger()

Disables a trigger associated with a specified table. This feature is supported by Oracle databases only.

Syntax

```
public int disableTrigger(
    String pTable,
    String pName);
```

pTable The table in which the trigger is located.

pName The name of the trigger to disable.

Usage Use `disableTrigger()` to temporarily stop a trigger from being activated. The trigger is disabled until it is enabled with `enableTrigger()`. To remove a trigger from a table permanently, use `dropTrigger()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `createTrigger()`
`dropTrigger()`
`enableTrigger()`

dropTrigger()

Removes a trigger from a specified table.

Syntax

```
public int dropTrigger(
    String pTable,
    String pName);
```

pTable The table on which the trigger is defined.

pName The name of the trigger to remove.

Usage Use `dropTrigger()` to delete a trigger that is no longer required. To temporarily stop a trigger from being activated, use `disableTrigger()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `createTrigger()`

`disableTrigger()`

`enableTrigger()`

enableTrigger()

Enables a trigger for a specified table. This feature is supported by Oracle databases only.

Syntax

```
public int enableTrigger(  
    String pTable,  
    String pName);
```

pTable The table on which the trigger is defined.

pName The name of the trigger to enable.

Usage Use `enableTrigger()` to prepare a specified trigger for activation. Call `enableTrigger()` after you create a trigger with `createTrigger()`, or to enable a trigger that was disabled with `disableTrigger()`.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics `createTrigger()`; `disableTrigger()`
`dropTrigger()`

executeQuery()

Executes a flat query on the data connection.

Syntax

```
public IResultSet executeQuery(  
    int dwFlags,  
    IQuery pQuery,  
    ITrans pTrans,  
    IValList pProps)
```

dwFlags Specifies flags used to execute this query.

- For synchronous operations, the default, specify zero or `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC`.
- For asynchronous operations, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC`.

- To activate result set buffering, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING`.

The AppLogic can pass both result set buffering and either synchronous or asynchronous queries as the flags parameter, as shown in the following example:

```
(GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC |
GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING)
```

pQuery IQuery object that contains the flat query object to execute.

pTrans ITrans object that contains the transaction to which this query applies, or null.

pProps IVallist object that contains query properties, or null for no properties. After instantiating an object of the IVallist interface, set any of the following properties:

- `RS_BUFFERING` turns on result set buffering when set to “TRUE”.
- `RS_INIT_ROWS` specifies the initial size of the buffer, in number of rows. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED`.
- `RS_MAX_ROWS` specifies the maximum number of rows for the buffer. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED`.
- `RS_MAX_SIZE` specifies the maximum number of bytes for the buffer.

If `RS_BUFFERING` is enabled and if the optional parameters are not specified, the global values in the registry are used instead.

- Rules**
- Before calling `executeQuery()`, AppLogic must create a query by first calling `createQuery()` in the AppLogic class (deprecated) to create the IQuery object, then using methods in the IQuery interface (deprecated) to define the query.
 - If the query is part of a transaction, before calling `executeQuery()`, the AppLogic must first create the ITrans transaction object using `createTrans()` in the AppLogic class (deprecated), then begin the transaction using `begin()` in the ITrans interface (deprecated), and then specify the ITrans object as a parameter when calling `executeQuery()`.

Return Value IResultSet object containing the result of the query, or null for failure (such as invalid tables or columns, or an invalid data comparison). If the result set is empty, calling `getRowNumber()` from the IResultSet interface (deprecated) returns zero.

Example 1

```
// Create the flat query object
IQuery qry=createQuery();

// Set up the query
qry.setTables("CTLcust");
qry.setFields("CustomerID, Customer");
qry.setWhere("Customer"+"="+String.valueOf(custId));

// Execute the query
IResultSet rs=conn.executeQuery(0, qry, null, null);
// Check for a non empty result
if((rs!=null)&&(rs.getRowNumber(>0))
    return result("Sorry, this user ("+
        firstName+" "+lastName+") already exists");
// Otherwise, process the result set
```

Example 2

```
// Set up result set buffering for query
IValList props;
props = GX.CreateValList();
// Turn on result set buffering
props.setValString("RS_BUFFERING", "TRUE");
// Specify the maximum number of rows to buffer
props.setValInt("RS_MAX_ROWS", 50);
IQuery qry = createQuery();
. . . define query properties . . .
// Attempt to execute query with result set buffering
IResultSet rs = conn.executeQuery(0, qry, null, props);
```

Related Topics [createDataConn\(\)](#) in the AppLogic class (deprecated)

[IQuery interface](#) (deprecated)

[IResultSet interface](#) (deprecated)

[ITrans interface](#) (deprecated)

[IValList interface](#)

getConnInfo()

Returns database and user information about the current database connection.

Syntax `public IList getConnInfo()`

Usage When the client code calls the `createDataConn()` method in the `AppLogic` class to create a connection between the client and the specified database, it passes the following parameters: `flags`, `driver`, `datasource`, `database`, `username`, and `password`. Once a data connection has been established, you can call `getConnInfo()` to return the `datasource`, `database`, `user`, and `password` values.

Tip To return the driver value, use `getDriver()`.

Return Value `IList` object, or null for failure.

getConnProps()

Returns registry information about the current database connection.

Syntax `public IList getConnProps()`

Usage Use `getConnProps()` to get database connection information that the Netscape Application Server administrator set through the Enterprise Administrator. The information is returned in an `IList` object that contains the following keys and values:

| Key | Value |
|----------------------|--|
| "cache_free_entries" | An integer indicating the number of slots set for free connections. |
| "cache_alloc_size" | An integer indicating the initial number of slots in the connection cache. |
| "conn_db_vendor" | A string that identifies the database vendor, for example, "Oracle" or "Sybase." |

The `getConnProps()` method might return other information depending on the database being used.

Applications typically use the database vendor information in conditional code that executes differently depending on the type of database.

Return Value IValList object, or null for failure.

Related Topics setConnProps()

getDriver()

Returns the identifier of the data source driver that the current database connection is using.

Syntax `public int getDriver()`

Usage When the client code calls the createDataConn() method in the AppLogic class to create a connection between the client and the specified database, it passes the following parameters: flags, driver, datasource, database, username, and password. Once a data connection has been established, you can call various methods in the IDataConn interface to return the values that were passed to createDataConn().

Call getDriver() to return the driver information.

Tip To return the datasource, database, user, and password values, use getConnInfo().

Return Value An int value corresponding to one of the static variables in the GX_DA_DAD_DRIVERS class.

| | |
|------------------------------|----------------------------|
| GX_DA_DRIVER_ODBC | GX_DA_DRIVER_SYBASE_CTLIB |
| GX_DA_DRIVER_MICROSOFT_JET | GX_DA_DRIVER_MICROSOFT_SQL |
| GX_DA_DRIVER_INFORMIX_SQLNET | GX_DA_DRIVER_INFORMIX_CLI |
| GX_DA_DRIVER_INFORMIX_CORBA | GX_DA_DRIVER_DB2_CLI |
| GX_DA_DRIVER_ORACLE_OCI | GX_DA_DRIVER_DEFAULT |

getTable()

Returns the table definition object for the specified table.

Syntax `public ITable getTable(
String szTable)`

szTable Name of the table to request. This can include the schema name, for example, "jim.myTable." Do not use patterns or wildcards.

Usage Use `getTable()` for the following reasons:

- To change data in the table using methods in the `ITable` interface (deprecated) to insert, update, and delete rows.
- When the schema of a table is unknown, to obtain information about the table definition from the database catalog, such as table name, table columns, data connection, and so on.

Rule The `AppLogic` usually calls `getTable()` only once to obtain a table definition. Subsequent calls return a separate `ITable` object that represents the same table. Each `AppLogic` can call `getTable()` and operate on its own copy of the table definition.

- Tips**
- If the table name is unknown, use `getTables()` to retrieve an `IValList` of tables in the data source, then use methods in the `IValList` interface and the `Val` class to iterate through the table names obtained and determine which table to retrieve.
 - To obtain additional information about individual columns, use the `IColumn` interface (deprecated).

Return Value `ITable` object, or null for failure (such as an invalid table name).

Example

```
ITable table = dbConn.getTable("CTLcust");
if(table==null) return result("Can't find the table: "+"CTLcust");
// Otherwise, process the table columns
int cCustId = table.getColumnOrdinal("CustomerID");
int cFirst = table.getColumnOrdinal("FirstName");
. . .
```

Related Topics `ITable` interface (deprecated)

`createDataConn()` in the `AppLogic` class (deprecated)

`Val` class

`IValList` interface

getTables()

Returns an `IValList` of database tables or views that are available to the specified user.

Syntax

```
public IValList getTables(  
    String szQualifier,  
    String szOwner,  
    String szTable)
```

szQualifier Specify null. Driver-dependent.

szOwner Specify null, or a schema name, which returns tables for that schema.

szTable Table or view name with wildcards, or null for all tables. Wildcards must be in the format supported by the data source. For example, you can use search patterns using the following characters:

- underscore (`_`) for single characters
- percent sign (`%`) for any sequence of zero or more characters

Usage Use `getTables()` when the list of available tables on the data source is unknown. The `AppLogic` can obtain a subset of available tables by specifying wildcards in the table name.

- Rules**
- The `AppLogic` must be logged in with sufficient privileges to obtain a list of tables from the database. For more information, see your database server documentation.
 - The `AppLogic` must specify a valid table name, view name, or name pattern. Aliases and synonyms are not supported for security reasons.

Tip Use methods in the `IValList` interface and the `Val` class to iterate through the table names obtained and determine which table(s) to work with. Thereafter, use `use` to access each table.

Return Value `IValList` object containing a list of table names, or null for failure (such as if none are found to match the search expression).

Related Topics `ITable` interface (deprecated)

`createDataConn()` in the `AppLogic` class (deprecated)

IValList interface

prepareCall()

Creates an ICallableStmt object that contains a call to a stored procedure.

Syntax

```
public ICallableStmt prepareCall(
    int dwFlags,
    IQuery pQuery,
    ITrans pTrans,
    IValList pProps);
```

dwFlags Specify 0.

pQuery The IQuery object that contains the call to a stored procedure. The stored procedure call should have been specified with the setSQL() method in the IQuery interface.

pTrans ITrans object that contains the transaction associated with this callable statement, or null for no transaction. This same ITrans object must then be passed to the execute() method of the ICallableStmt interface.

pProps Specify null.

Usage Use prepareCall() to create a ICallableStmt object that contains a call to a stored procedure. After creating the callable statement, run it by calling execute() in the ICallableStmt interface.

- Rules**
- Before calling prepareCall(), the AppLogic must create a query by first calling createQuery() in the AppLogic class (deprecated) to create the IQuery object, then using the setSQL() method in the IQuery interface (deprecated) to define the call to a stored procedure.
 - When accessing a stored procedure on Sybase or MS SQL Server, input parameter names must be prefixed with the ampersand (&) character, for example, ¶m1. Other database drivers accept the ampersand, as well as, the colon (:) character. For all database drivers, input/output and output parameter names are prefixed with the colon (:) character, for example, :param2.

Example

```
// Create the database connection.
IDataConn conn_rtest = createDataConn(0,
GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT,
/* Datasource name */ "ksample",
```

```

/* Database name    */ " ",
/* userName        */ "kdemo",
/* password        */ "kdemo");

//Write command to call stored procedure
String theProc = "{call myProc1(&p1, :p2)}";
IQuery myquery;
myquery = createQuery();
myquery.setSQL(theProc);

//Prepare the callable statement for execution
ICallableStmt myStmt;
myStmt = conn_rtest.prepareCall(0, myquery, null, null);

// Set parameters and run the callable statement

```

Return Value ICallableStmt object, or null for failure.

Related Topics ICallableStmt interface (deprecated)

prepareQuery()

Prepares a flat query object for subsequent execution.

Syntax

```

public IPreparedQuery prepareQuery(
    int dwFlags,
    IQuery pQuery,
    ITrans pTrans,
    IValList pProps)

```

dwFlags Specify 0.

pQuery IQuery object that contains the query or statement to execute.

pTrans ITrans object that contains the transaction to which this query applies, or null. This same object must then be passed to the execute() method of the IPreparedQuery interface.

pProps Specify null.

Usage Use prepareQuery() to prepare the query, then execute the prepared query using execute() in the IPreparedQuery interface (deprecated). An application can also use prepareQuery() with result set buffering to pre-fetch result set data efficiently from a back-end database.

Rule Before calling `prepareQuery()`, `AppLogic` must create a query by first calling `createQuery()` in the `AppLogic` class (deprecated) to create the `IQuery` object, then using methods in the `IQuery` interface (deprecated) to define the query.

Return Value `IPreparedQuery` object, or null for failure.

Example

```
// Create the data connection
IDataConn conn;
conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT,
"Orders", "Orders", "user", "password");

// Create the flat query and prepared query objects
IQuery qry = createQuery();
IPreparedQuery pqry;
IVallList params;
params = GX.CreateVallList();

// Set up the INSERT statement
qry.setSQL("INSERT INTO TABLE Products (ProductName, QuantityPerUnit)
VALUES (:name, :quant)");

// Prepare the flat query
pqry = conn.prepareQuery(0, qry, null, null);

// Specify a set of query parameters, then execute
params.setValString(":name", "Chicken Dumplings");
params.setValString(":quant", "48 packages");
IResultSet rs1 = pqry.execute(0, params, null, null);
. . . process rs1. . .

// Specify different set of query parameters, then execute
params.setValString(":name", "Rice Noodles");
params.setValString(":quant", "96 packages");
IResultSet rs2 = pqry.execute(0, params, null, null);
. . . process rs2. . .
```

Related Topics `IPreparedQuery` interface (deprecated)

`IQuery` interface (deprecated)

`ITrans` interface (deprecated)

`IVallList` interface

createDataConn() in the AppLogic class (deprecated)

setConnProps()

Specifies registry values for the current database connection.

Syntax `public int setConnProps(
 IValList pProps)`

pProps A pointer to the IValList object that contains the connection properties to set in the registry. Use the following defined key names for the connection properties:

| Key | Value |
|----------------------|--|
| "cache_free_entries" | An integer indicating the number of slots set for free connections. |
| "cache_alloc_size" | An integer indicating the initial number of slots in the connection cache. |

Usage Use setConnProps() to override database connection properties that the Netscape Application Server administrator set through the Enterprise Administrator. To get the current connection properties programmatically, call getConnProps().

Return Value GXE.SUCCESS if the method succeeds.

Related Topics getConnProps()

IDataConnSet interface (*deprecated*)

IDataConnSet is deprecated and is provided for backward compatibility only. New applications should use the JDBC API to provide similar functionality.

The IDataConnSet interface represents a collection of data connections and associated query names. It is used in conjunction with loading a query file.

Use IDataConnSet when loading a hierarchical query from a file. The AppLogic first establishes a data connection with each database on which any queries will be run. Next, the AppLogic calls createDataConnSet() in the AppLogic class (deprecated) to create an empty IDataConnSet object, then populates this object with query name / data connection pairs.

In this way, the AppLogic can use parameterized queries and select and assign data connections dynamically at runtime. Finally, the AppLogic calls loadHierQuery() in the AppLogic class (deprecated) to create the hierarchical query object.

IDataConnSet is part of the Data Access Engine (DAE) service.

To create an instance of the IDataConnSet interface, use createDataConnSet() in the AppLogic class (deprecated), as shown in the following example:

```
IDataConnSet connSet;
connSet = createDataConnSet();
```

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Methods

| | |
|-----------|---|
| addConn() | Associates a query name with a data connection object and adds it to the IDataConnSet object. |
|-----------|---|

Related Topics

createDataConnSet() in the AppLogic class (deprecated)

addConn()

Associates a query name with a data connection object and adds it to the IDataConnSet object.

Syntax

```
public int addConn(  
    String pQueryName,  
    IDataConn pConn)
```

pQueryName Name of a query in the query file.

pConn Name of the data connection object representing an active connection with the data source on which the query will be run.

- Rules**
- Every named query in the query file must have a corresponding named query in the IDataConnSet object.
 - The AppLogic must first create the data connection object using createDataConn() in the AppLogic class (deprecated).
 - Duplicate query names are not permitted.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
IDataConnSet connSet;  
connSet = createDataConnSet();  
// Specify query / db connection pairs  
connSet.addconn("employee", conn_empDB);  
connSet.addconn("sales", conn_salesDB);  
IHierQuery hqry;  
// Load the GXQ file with the db connection set  
hqry = loadHierQuery("employeeReport.gxq",connSet, 0, null);  
// Run the report  
evalTemplate("employeeReport.html", hqry);
```

Related Topics createDataConnSet() in the AppLogic class (deprecated)

IEnumObject interface

The IEnumObject interface represents an enumeration object that contains IObject instances. Some methods that return a list of objects, such as enumEvents() in the IAppEventMgr interface, return an IEnumObject object.

The IEnumObject interface defines methods for counting and accessing the IObject instances in an IEnumObject.

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Methods

| Method | Description |
|-------------|--|
| enumCount() | Returns the number of IObject instances in an IEnumObject. |
| enumNext() | Returns the next IObject instance in an IEnumObject. |
| enumReset() | Resets to the first IObject instance in an IEnumObject. |

Related Topics

enumEvents() in the IAppEventMgr interface

enumCount()

Returns the number of IObject instances in an IEnumObject.

Syntax `public int enumCount()`

Usage Use enumCount() to determine the number of objects to process before iterating through the IObject instances in the IEnumObject.

Return Value The number of objects in an IEnumObject.

Example In the following example, `enumEvents()` returns all the application events registered with the Netscape Application Server in an `IEnumObject`. The `enumCount()` method is used in conjunction with `enumNext()` and `enumReset()` to access objects in the `IEnumObject`.

```
// suppose appEventMgr holds a valid reference to
//      an IAppEventMgr instance

// Get the Enumeration object for all registered appevents
IEnumObject enumObj = appEventMgr.enumEvents();

// Retrieve the count of registered appevents
int count = enumObj.enumCount();
try {
    p.writeObject("Number of Registered Events: ");
    p.writeInt(count);
} catch (IOException e) {
    return streamResult("Failed to write to report file<br>");
}

// Reset to the first object in the enumeration object
enumObj.enumReset(0);

// Iterate through all the enumeration instances
while (count > 0) {

// Process the objects.
}
```

Related Topics `enumEvents()` in the `IAppEventMgr` interface

`enumNext()`

`enumReset()`

`enumNext()`

Returns the next `IObject` instance in an `IEnumObject`.

Syntax `public IObject enumNext()`

Usage Use `enumNext()` in conjunction with `enumCount()` and `enumReset()` to iterate through an `IEnumObject`.

Return Value `GXE.SUCCESS` if the method succeeds.

Example In the following example, `enumEvents()` returns all the application events registered with the Netscape Application Server in an `IEnumObject`. The `enumNext()` method is used in conjunction with `enumCount()` and `enumReset()` to access objects in the `IEnumObject`.

```
// Suppose appEventMgr holds a valid reference to AppEvent Manager

// Get the Enumeration object for all registered appevents
IEnumObject enumObj = appEventMgr.enumEvents();

// Retrieve the count of registered appevents
int count = enumObj.enumCount();
try {
    p.writeObject("Number of Registered Events: ");
    p.writeInt(count);
} catch (IOException e) {
    return streamResult("Failed to write to report file<br>");
}

// Reset to the first object in the enumeration object
enumObj.enumReset(0);

// Iterate through all the enumeration instances
while (count > 0) {
    IObject vListObj = enumObj.enumNext();
    if (vListObj instanceof IAppEventObj) {
        IAppEventObj vAppEventObj = (IAppEventObj)vListObj;

        // process the appevent
    }
}
```

Related Topics `enumEvents()` in the `IAppEventMgr` interface

`enumCount()`

`enumReset()`

enumReset()

Resets to the first IObject instance in an IEnumObject.

Syntax `public int enumReset(
int dwFlags)`

dwFlags Specify 0.

Usage Use enumReset() before iterating through an IEnumObject. Doing so ensures that iteration begins at the first IObject instance in the IEnumObject.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Retrieve the count of objects in the IEnumObject
int count = enumObj.enumCount();

// Reset to the first object in the enumeration object
enumObj.enumReset(0);

// Iterate through all the enumeration instances
while (count > 0) {
    IObject vListObj = enumObj.enumNext();
    // Process the objects
```

Related Topics enumEvents() in the IAppEventMgr interface

enumCount()

enumNext()

IError interface (*deprecated*)

IError is deprecated and is provided for backward compatibility only. New applications should use JDBC exceptions instead. For example, the `java.sql` package provides exceptions such as `BatchUpdateException`, `DataTruncation`, `SQLException`, and `SQLWarning`.

The IError interface represents an error code object that consists of a code and a corresponding error message that originates from a facility, such as an operating system or a database. In this release, IError handles database errors only.

Use the methods in the IError interface to get error codes and messages returned by a database.

The IError interface is implemented by the `IDataConn` object. To use it, cast `IDataConn` to the IError interface, as shown in the following example:

```
IDataConn conn;
conn = createDataConn(...);
IError error;
error = (IError) conn;
```

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Methods

| Method | Description |
|---------------------------------|---|
| <code>getErrorCode()</code> | Returns the current error code as a string. |
| <code>getErrorCodeNum()</code> | Returns the current error code as a number. |
| <code>getErrorMessage()</code> | Returns the message associated with the current error code. |
| <code>getErrorFacility()</code> | Returns a description of the facility that generated an error code. |

getErrorCode()

Returns the current error code as a string.

Syntax `public String getErrorCode()`

Usage Use `getErrorCode()` after a database operation, such as running a stored procedure or executing a query, to retrieve the error code for debugging or error-handling purposes. The following is an example of a returned error code: "ORA-03130".

Tip For ODBC, the error codes usually consist of the ODBC error code and the database error code separated by a space, for example, "S1000 1017". Sometimes just the ODBC error code, such as "S1000", is returned.

Return Value The current error code as a string.

Related Topics `getErrorCodeNum()`
`getErrorMessage()`
`getErrorFacility()`

getErrorCodeNum()

Returns the current error code as a number.

Syntax `public int getErrorCodeNum()`

Usage Use `getErrorCodeNum()` after a database operation, such as running a stored procedure or executing a query, to retrieve the error code for debugging or error-handling purposes.

Return Value The current error code as a number. If the error code cannot be converted to a number, `getErrorCodeNum()` returns null. For example, an error code that contains letters, such as "S1000", cannot be converted to a number.

Related Topics `getErrorCode()`
`getErrorMessage()`
`getErrorFacility()`

getErrorMessage()

Returns the message associated with the current error code.

Syntax `public String getErrorMessage(
String pCode)`

pCode Specify any string.

Usage Use `getErrorMessage()` after a database operation, such as running a stored procedure or executing a query, to retrieve the message associated with the current error code. The AppLogic can then display the message to users. The following is an example of a returned error message: "[ODBC][Visigenic driver][S1000]Connection attempt failed".

Return Value The message associated with the current error code.

Related Topics `getErrorCode()`
`getErrorCodeNum()`
`getErrorFacility()`

getErrorFacility()

Returns a description of the facility that generated an error code.

Syntax `public String getErrorFacility()`

Usage Use `getErrorFacility()` after a database operation, such as running a stored procedure or executing a query, to get information on which driver generated the current error code. The following is an example of a description returned by `getErrorFacility()`: "ODBC DAD".

Return Value The description of the facility that generated the current error code.

Related Topics `getErrorCode()`
`getErrorCodeNum()`
`getErrorMessage()`

IError interface (deprecated)

IHierQuery interface (*deprecated*)

IHierQuery is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing IHierQuery functionality in existing applications, see the *Migration Guide*.

The IHierQuery interface represents a hierarchical query. IHierQuery provides methods for retrieving hierarchical information organized in nested levels of detail, as in the following example:

```
Asia           170
  China        110
  Japan         60
Europe         80
  France        70
  Portugal     10
```

A hierarchical query combines multiple flat queries organized in cascading, parent-child relationships. Each query is an IQuery object containing data selection criteria. The IHierQuery object contains the definition of the hierarchical structure of parent-child relationships among IQuery objects.

To use a hierarchical query, the AppLogic first creates each individual query and defines its selection criteria. Next, it creates the IHierQuery object and calls addQuery() repeatedly to add a child query to a parent query for each level of detail in the hierarchical query.

After the hierarchical query is constructed, the AppLogic calls its execute() method to run the hierarchical query on the target data source and retrieve a hierarchical result set in an IHierResultSet object.

Alternatively, the AppLogic can load a hierarchical query stored in a file. For more information, see loadHierQuery() and createDataConnSet() in the AppLogic class (deprecated).

To create an instance of the IHierQuery interface, use createHierQuery() in the AppLogic class (deprecated), as shown in the following example:

```
IHierQuery hqry;
hqry = createHierQuery();
```

Package

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Methods

| Method | Description |
|------------|---|
| addQuery() | Adds a child query to a parent query, defining an additional level of detail in the hierarchical query. |
| delQuery() | Removes a child query from its parent query. |
| execute() | Executes a hierarchical query and returns a hierarchical result set. |

Example 1

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
qry.setFields("loginName, Password, AccessLevel");
qry.setOrderBy("LoginName");

// Create the hierarchical query used for template processing
IHierQuery hqry = createHierQuery();

// Add the flat query object and data connection to hqry
hqry.addQuery(qry, conn, "USERS", "", "");

// Pass hierarchical query to evalTemplate() for reporting
if(evalTemplate("apps/template/userinfo.html", hqry)==0)
    return result("");
else
    return result("Failed to Generate HTML");
}
```

Example 2

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
```

```

qry.setFields("loginName, Password, AccessLevel")
query.setWhere("UserId"+"="+wantedUser.hashCode());

// Create the hierarchical query
IHierQuery hgry = createHierQuery();
hgry.addQuery(qry, conn, "USERS", "", "");

// Execute the hierarchical query
IHierResultSet hrs = hgry.execute(0, 0, null);

// Process rows in result set . . .
if(hrs.getRowNumber("USERS")!=0)

```

Related Topics

createHierQuery() in the AppLogic class (deprecated)

addQuery()

Adds a child query to a parent query, defining an additional level of detail in the hierarchical query.

Syntax

```

public int addQuery(
    IQuery pQuery,
    IDataConn pConn,
    String szAlias,
    String szParent,
    String szJoin)

```

pQuery IQuery object that contains the flat query object to append as a child to the parent query.

pConn IDataConn object that contains the data connection where the child query will be executed. Each flat query in the hierarchical query can retrieve data from a different data source.

szAlias Name used to uniquely identify this child query in the query hierarchy. AppLogic must specify a child name that is unique within the hierarchical query.

szParent Name of the parent query to contain this child query. Use an empty string ("") for the highest level in the hierarchical query. When adding a child query to an existing parent query, the specified parent name must have already been specified in a previous `addQuery()` call.

szJoin Join clause used to specify a join for this query, defining the relationship between a field in the child query and a field in the parent query. Use an empty string for the highest level in the hierarchical query. Use the following Netscape-compliant syntax for the join clause:

```
"ParentQuery.table.column='childQuery.table.column' "
```

Optionally, you can specify the schema:

```
"ParentQuery.schema.table.column='childQuery.schema.table.column' "
```

Note The only difference between the Netscape Application Server and SQL join syntax is that, with Netscape, you prepend the clause with the query name.

To refer to a field name in the parent query, include the parent query name before the field name, as shown in the following example, in which CITY is the name of the parent query:

```
hqr.addQuery(qryEMP, conn, "EMP", "CITY", "EMP.employee.city = 'CITY.city' ");
```

Use the AND and OR operators to specify additional join conditions. Use parentheses to specify the order of precedence in complex join criteria.

Usage Use `addQuery()` when constructing the hierarchical query to define the hierarchical relationships among child and parent queries. The number of nested levels, and thus the number of `addQuery()` calls, is limited only by system resources.

- Rules**
- The AppLogic must first create the data connection using `createDataConn()` in the AppLogic class (deprecated).
 - The AppLogic must then create the specified child query using `createQuery()` in the AppLogic class (deprecated). A separate child query must exist for every level of data.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLusers");
qry.setFields("loginName, Password, AccessLevel")
```

```

qry.setOrderBy("LoginName");

// Create the hierarchical query used for template processing
IHierQuery hqry = createHierQuery();

// Add the flat query object and data connection to hqry
hqry.addQuery(qry, conn, "USERS", "", "");

// Pass hierarchical query to evalTemplate() for reporting
if(evalTemplate("apps/template/userinfo.html", hqry)==0)
    return result("");
else
    return result("Failed to Generate HTML");
}

```

Example 2

```

// Create the City flat query
IQuery qryCTY;
qryCTY = createQuery();
qryCTY.setTables("emp");
qryCTY.setFields("city, Sum(salary) as sumsalary");
qryCTY.setGroupBy("city");

// Create the Employee flat query
IQuery qryEMP;
qryEMP = createQuery();
qryEMP.setTables("emp");
qryEMP.setFields("name, salary, city");

IHierQuery hqry;
hqry = createHierQuery();
// Add both queries to the hierarchical query object
hqry.addQuery(qryCTY, conn, "CTY", "", "");
hqry.addQuery(qryEMP, conn, "EMP", "CTY", "EMP.emp.city = 'CTY.city'");
// Run the report
evalTemplate("GXApp/EmpTrack/Templates/report.html", hqry);
return result(null);

```

Related Topics [createHierQuery\(\) in the AppLogic class \(deprecated\)](#)

[IQuery interface \(deprecated\)](#)

[IDataConn interface \(deprecated\)](#)

delQuery()

Removes a child query from its parent query.

Syntax `public int delQuery(
 String szName)`

szName Name of the child query to remove.

Usage Use `delQuery()` to remove a child query that is no longer needed. Any children of the deleted child query are also removed.

Rule The specified child query must exist in the hierarchical query.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create the City flat query
IQuery qryCTY;
qryCTY = createQuery();
qryCTY.setTables("emp");
qryCTY.setFields("city, Sum(salary) as sumsalary");
qryCTY.setGroupBy("city");

// Create the Employee flat query
IQuery qryEMP;
qryEMP = createQuery();
qryEMP.setTables("emp");
qryEMP.setFields("name, salary, city");

IHierQuery hqry;
hqry = createHierQuery();
// Add both queries to the hierarchical query object
hqry.addQuery(qryCTY, conn, "CTY", "", "");
hqry.addQuery(qryEMP, conn, "EMP", "CTY", "EMP.emp.city = 'CTY.city'");

// Execute the hierarchical query
IHierResultSet hrs = hqry.execute(0, 0, null);
if(hrs.getRowNumber("USERS")!=0)
    // Process rows in result set . . .

// Remove child query from hierarchical query
hqry.delQuery("qryEMP");
```

```
// Pass parent query to evalTemplate() for reporting
if(evalTemplate("apps/template/ctySumm.html", hgry)==0)
    return result("");
else
    return result("Failed to Generate HTML");
}
```

Related Topics createHierQuery() in the AppLogic class (deprecated)

loadHierQuery() in the AppLogic class (deprecated)

execute()

Executes a hierarchical query and returns a hierarchical result set.

Syntax

```
public IHierResultSet execute(
    int dwFlags,
    int dwTimeout,
    IValList pProps)
```

dwFlags Specifies flags used to execute this hierarchical query.

- For synchronous operations, the default, specify zero or `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC`.
- For asynchronous operations, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC`.
- To activate result set buffering, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING`.

The AppLogic can pass both result set buffering and either synchronous or asynchronous queries as the flags parameter, as shown in the following example:

```
(GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC |
GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING).
```

dwTimeout Specify 0 (zero).

pProps IValList object that contains query properties, or null for no properties. After instantiating an object of the IValList interface, set any of the following properties:

- `RS_BUFFERING` turns on result set buffering when set to "TRUE".
- `RS_INIT_ROWS` specifies the initial size of the buffer, in number of rows. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED`.
- `RS_MAX_ROWS` specifies the maximum number of rows for the buffer. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED`.
- `RS_MAX_SIZE` specifies the maximum number of bytes for the buffer.

If `RS_BUFFERING` is enabled and if the optional parameters are not specified, the global values in the registry are used instead..

Usage After constructing a hierarchical query using `addQuery()`, the `AppLogic` uses `execute()` to execute the query on the database server. Results are returned in a hierarchical result set.

Rule `AppLogic` must first construct the hierarchical query using `addQuery()`.

Return Value `IHierResultSet` object that contains the result set of the hierarchical query, or null for failure (such as invalid parameters).

Example

```
// Create the flat query
IQuery qry = createQuery();
qry.setTables("CTLUsers");
qry.setFields("loginName, Password, AccessLevel")
query.setWhere("UserId"+"="+wantedUser.hashCode());

// Create the hierarchical query
IHierQuery hqry = createHierQuery();
hqry.addQuery(qry, conn, "USERS", "", "");

// Execute the hierarchical query
IHierResultSet hrs = hqry.execute(0, 0, null);

// Process rows in result set
if(hrs.getRowNumber("USERS")>0)
. . .
```

Related Topics `createHierQuery()` in the `AppLogic` class (deprecated)
`loadHierQuery()` in the `AppLogic` class (deprecated)

IHierResultSet interface (deprecated)

IValList interface

IHierResultSet interface (*deprecated*)

IHierResultSet is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing IHierResultSet functionality in existing applications, see the *Migration Guide*.

The IHierResultSet interface represents a hierarchical result set retrieved by a hierarchical query. IHierResultSet provides methods to iterate through rows in the hierarchical result set and retrieve information about each row. Alternatively, an AppLogic can process hierarchical result sets by passing them directly to the Template Engine using evalOutput() in the AppLogic class (deprecated).

IHierResultSet is part of the Data Processing Engine (DPE) service. To create an instance of IHierResultSet, use execute() in the IHierQuery interface (deprecated), as shown in the following example:

```
IHierResultSet hrs
hrs = hqry.execute(0, 0, null);
```

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Methods

| Method | Description |
|------------------|---|
| count() | Returns the total number of rows retrieved so far from the data source for the specified child query. |
| getColumn() | Returns the column definition for the column with the specified name in the specified child query. |
| getColumnByOrd() | Returns the column definition for the column in the specified ordinal position for the specified child query. |
| getResultSet() | Returns the result set for a specified child query. |
| getRowNumber() | Returns the number of the current row for the specified child query in the hierarchical result set. |

| Method | Description |
|-----------------------------------|---|
| <code>getValueDateString()</code> | Returns the value of a Date type column, as a string, from the specified child query in the result set. |
| <code>getValueDouble()</code> | Returns the value of a double type column from the specified child query in the result set. |
| <code>getValueInt()</code> | Returns the value of an int type column from the specified child query in the result set. |
| <code>getValueString()</code> | Returns the value of a string type column from the specified child query in the result set. |
| <code>moveNext()</code> | Moves to the next row for the specified child query in the result set. |
| <code>moveTo()</code> | Moves to the specified row for the specified child query in the result set. |

Example

The following code runs a hierarchical query and with the returned hierarchical result set, checks a user's access level to determine which listbox options to display:

```
// Create the hierarchical query
IHierQuery hqry = createHierQuery();
hqry.addQuery(qry, conn, "USERS", "", "");

// Execute the query
IHierResultSet hrs = hqry.execute(0, 0, null);

TemplateMapBasic map = new TemplateMapBasic();

// Determine whether result returned match
if(hrs.getRowNumber("USERS")==0)
    return result("No user matches loginname: "+wantedUser);
String access=hrs.getValueString("USERS", "AccessLevel");
String selAdmin, selNormal;
if(access.compareTo("AccessAdmin")==0)
{
    selAdmin="<option selected>"+"AccessAdmin"+"</option>\n";
    selNormal="<option>Normal</option>\n";
}
}
```

```

else
{
    selAdmin="<option>"+"AccessAdmin"+"</option>\n";
    selNormal="<option selected>Normal</option>\n";
}
String select="<select
name=accessControlLevel>\n"+selNormal+selAdmin+"</select>";

TemplateMapBasic tMap=new TemplateMapBasic();
tMap.put("ACCESS", select);

int ers = evalTemplate(template, (ITemplateData) hrs, tMap);
if (ers==0)
    return result("");
else
    return result("Failed to Generate HTML");
}

```

Related Topics

createHierQuery() in the AppLogic class (deprecated)

IHierQuery interface (deprecated)

count()

Returns the total number of rows retrieved so far from the data source for the specified child query.

Syntax public int count(
 String qryName)

qryName Name of the child query that generated the result set.

Usage Use count() to return the current number of rows processed so far in the result set. If iterating through rows in a result set that has been completely returned, use count() to determine the current maximum number of rows to process.

Tip If result set buffering is enabled, the AppLogic can use count() to find the current number of rows in the buffer.

Rule The specified child query must exist in the result set.

Return Value An int value representing the number of rows in the result set retrieved so far, or zero for failure (such as an invalid child query name).

Example

```
// Create the hierarchical query
IHierQuery hqry = createHierQuery();
hqry.addQuery(qry, conn, "USERS", "", "");
// Execute the query
IHierResultSet hrs = hqry.execute(0, 0, null);
// Determine whether result returned match
if(hrs.count("USERS")==0)
    return result("No user matches loginname: "+wantedUser);
String access=hrs.getValueString("USERS", "AccessLevel");
```

Related Topics createHierQuery() in the AppLogic class (deprecated)

IHierQuery interface (deprecated)

getColumn()

Returns the column definition for the column with the specified name in the specified child query.

Syntax

```
public IColumn getColumn(
    String qryName,
    String colName)
```

qryName Name of the child query that generated the result set.

colName Name of the column. Must *not* be qualified with the schema name or table name (if necessary, use column alias to ensure that the colName is unambiguous).

Usage Use getColumn() when the data definition of the column is unknown and is required for subsequent operations. The AppLogic can then use methods in the IColumn interface (deprecated) to obtain descriptive information about a table column from the database catalog, such as the column name, precision, scale, size, table, and data type.

- Rules**
- The specified child query must exist in the result set.
 - The specified column name must exist in the result set.

- Tips**
- Use getColumnByOrd() instead when the column position is known but its name is unknown.

- Columns that are the result of query expressions or formulas, such as `invoice.count * product.price`, should have a column alias in the result set. AppLogic can call `setFields()` in the IQuery interface (deprecated) to specify field aliases using the "as" keyword.

Return Value IColumn object containing information from the retrieved column, or null for failure (such as an invalid child query name or column name).

Example

```
// Obtain column information for UserID field
IColumn col;
col = hrs.getColumn("USERS", "UserID")
. . . process column info using IColumn methods . . .
```

Related Topics `createHierQuery()` in the AppLogic class (deprecated)

IHierQuery interface (deprecated)

IColumn interface (deprecated)

getColumnByOrd()

Returns the column definition for the column in the specified ordinal position for the specified child query.

Syntax

```
public IColumn getColumnByOrd(
    String qryName,
    int colIndex)
```

qryName Name of the child query that generated the result set.

colIndex Ordinal position of a column in the result set. The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Usage Use `getColumnByOrd()` when the data definition of the column is unknown and is required for subsequent operations. AppLogic can then use methods in the IColumn interface (deprecated) to obtain descriptive information about a table column from the database catalog, such as the column name, precision, scale, size, table, and data type.

- Rules**
- The specified child query must exist in the result set.
 - The specified column position must exist in the result set.

Tip Use `getColumn()` instead when the column name is known but its ordinal position is unknown.

Return Value IColumn object containing information from the retrieved column, or null for failure (such as an invalid child query name or column name).

Example

```
// Obtain column information for UserID field
IColumn col1, col2, col3, col4;
col1 = hrs.getColumnByOrd("USERS", 1)
col2 = hrs.getColumnByOrd("USERS", 2)
col3 = hrs.getColumnByOrd("USERS", 3)
col4 = hrs.getColumnByOrd("USERS", 4)
. . . process column info using IColumn methods . . .
```

Related Topics createHierQuery() in the AppLogic class (deprecated)

IHierQuery interface (deprecated)

IColumn interface (deprecated)

getResultSet()

Returns the result set for a specified child query.

Syntax

```
public IResultSet getResultSet(
    String qryName)
```

qryName Name of the child query that generated the result set to retrieve.

Usage Use getResultSet() to retrieve and manipulate a particular child result set in the hierarchical result set. The AppLogic can then use methods in the IResultSet interface (deprecated) to get data from the result set columns.

Rule The specified child query must exist in the result set.

Return Value IResultSet object , or null for failure (such as an invalid child query name).

Example

```
// Look up list of customers matching criteria from database
IHierResultSet hrs = lookupCustomer(ssn, lastName, firstName, acctNum);

if (hrs == null)
{
    return handleOBSYSTEMError("Could not retrieve database results");
}
// Check the result set to see if any customers are found
IResultSet rs = hrs.getResultSet("SelCusts");
```

getRowNumber()

Returns the number of the current row for the specified child query in the hierarchical result set.

Syntax `public int getRowNumber(
String qryName)`

qryName Name of the child query that generated the result set.

Usage When iterating through rows in a child set, use `getRowNumber()` to keep track of the number of rows processed.

Rule The specified child query must exist in the result set.

Return Value An int value representing the current row number in the child result set, or zero if the result set is empty or for failure (such as an invalid row or query name). The number of the first row in the result set is 1, the second row is 2, and so on. If zero is returned the first time `AppLogic` calls `getRowNumber()`, that means the result set is empty for the specified child query.

Example

```
// Create the hierarchical query
IHierQuery hqry = createHierQuery();

hqry.addQuery(qry, conn, "USERS", "", "");

// Execute the query
IHierResultSet hrs = hqry.execute(0, 0, null);

TemplateMapBasic map = new TemplateMapBasic();
// Determine whether result returned match

if(hrs.getRowNumber("USERS")==0)
    return result("No user matches loginname: "+wantedUser);
String access=rs.getValueString("USERS", "AccessLevel");
String selAdmin, selNormal;
if(access.compareTo("AccessAdmin")==0)
{
    selAdmin="<option selected>"+"AccessAdmin"+"</option>\n";
    selNormal="<option>Normal</option>\n";
}
}
```

```
else
{
    selAdmin="<option>"+"AccessAdmin"+"</option>\n";
    selNormal="<option selected>Normal</option>\n";
}
String select="<select
name=accessControlLevel>\n"+selNormal+selAdmin+"</select>";
TemplateMapBasic tMap=new TemplateMapBasic();
tMap.put("ACCESS", select);
int ers = evalTemplate(template, (ITemplateData) rs, tMap);
if (ers==0)
    return result("");
else
    return result("Failed to Generate HTML");
}
```

Related Topics createHierQuery() in the AppLogic class (deprecated)

IHierQuery interface (deprecated)

getValueDateString()

Returns the value of a Date type column, as a string, from the specified child query in the result set.

Syntax public String getValueDateString(
 String qryName,
 String colName)

qryName Name of the child query that generated the result set.

colName Name of the column from which to retrieve the date.

Usage Use getValueDateString() to retrieve date values from the result set for subsequent processing. The following is an example of the format in which getValueDateString() returns a date:

```
Jan 26 1998 12:35:00
```

Rule The specified column must be a Date, Date Time, or Time data type.

Return Value The date value as a string, or null for failure (such as an invalid column number or data type mismatch).

Related Topics getValueDouble()

getValueInt()

getValueString()

getValueDouble()

Returns the value of a double type column from the specified child query in the result set.

Syntax

```
public double getValueDouble(
    String qryName,
    String colName)
```

qryname Name of the child query that generated the result set.

colName Name of the column from which to retrieve the double value.

Usage Use `getValueDouble()` to retrieve decimal, floats, real, numeric, and double values from the result set for subsequent processing.

Rule The specified column must be a double data type.

Return Value A double value, or zero for failure (such as an invalid column number or data type mismatch).

Related Topics `getValueDateString()`

`getValueInt()`

`getValueString()`

getValueInt()

Returns the value of an int type column from the specified child query in the result set.

Syntax

```
public int getValueInt(
    String qryName,
    String colName)
```

qryname Name of the child query that generated the result set.

colName Name of the column from which to retrieve the value.

Usage Use `getValueInt()` to retrieve int or long values from the result set for subsequent processing.

Rule The specified column must be an int or long data type.

Return Value An int value, or zero for failure (such as an invalid column number or data type mismatch).

Related Topics `getValueDateAsString()`
`getValueDouble()`
`getValueString()`

getValueString()

Returns the value of a string type column from the specified child query in the result set.

Syntax

```
public String getValueString(  
    String qryName,  
    String colName)
```

qryname Name of the child query that generated the result set.

colName Name of the column from which to retrieve the value.

Usage Use `getValueString()` to retrieve string values from the result set for subsequent processing.

Rule The specified column must be a String data type.

Return Value A String value, or null for failure (such as an invalid column number or data type mismatch).

Related Topics `getValueDateAsString()`
`getValueDouble()`
`getValueInt()`

moveNext()

Moves to the next row for the specified child query in the result set.

Syntax

```
public int moveNext(  
    String qryName)
```

qryName Name of the child query that generated the result set.

Usage Use `moveNext()` when iterating through rows in the result set to retrieve the contents of the next sequential row.

Rule The specified child query must exist in the result set.

Return Value An int value for success (zero) or failure (non-zero, such as reaching the end of the result set). If the current row is the last row in the result set, calling `moveNext()` returns a non-zero int.

Related Topics `createHierQuery()` in the `AppLogic` class (deprecated)
`IHierQuery` interface (deprecated)

moveTo()

Moves to the specified row for the specified child query in the result set.

Syntax

```
public moveTo(  
    String qryName,  
    int nRow)
```

qryName Name of the child query that generated the result set.

nRow Number of the row in the result set to move to. The number of the first row in the result set is 1, the second row is 2, and so on.

Usage Use `moveTo()` to move the internal cursor to a specific row in the result set, skipping over rows to be excluded from processing.

- Rules**
- The specified child query must exist in the result set.
 - The specified row number must exist in the result set.
 - If `RS_BUFFERING` is turned on, `AppLogic` can move forward and backwards in the result set. However, if `RS_BUFFERING` is not turned on, `AppLogic` can move forward to subsequent rows only. `AppLogic` cannot return to rows that have been processed previously.

Tip For certain database drivers, this operation may be very slow and should be avoided if possible.

IHierResultSet interface (deprecated)

Return Value An int value for success (zero), or failure (non-zero, such as an invalid row number).

Related Topics createHierQuery() in the AppLogic class (deprecated)
IHierQuery interface (deprecated)

IListRowSet interface

IListRowSet is an extension to the `javax.sql.RowSet` interface that provides the methods necessary to populate a listbox in a JSP. Although anyone developing a NAS application can use `IListRowSet`, this interface is typically used in components generated by Netscape Application Builder.

IListRowSet replaces the `IListDataSet` interface from NAB 3.0.

Package

`com.netscape.server.servlet.extension`

Methods

| Method | Description |
|---------------------------------|--|
| <code>addListItem()</code> | Adds an item to a list. |
| <code>setListSelection()</code> | Sets the item that appears as the default selection in a list. |

Related Topics

`com.netscape.server.servlet.extension.IRowSet2` interface,
`javax.sql.RowSet` interface

`addListItem()`

Adds an item to a list.

Syntax `public abstract void addListItem(String label, String value)`

label The label for the list entry; this is not necessarily the name of the item as it appears in the list.

value The value assigned to the label.

Usage Use `addListItem()` with `setListSelection()` when working with an `IListRowSet` to create a selection list or a group of radio buttons.

Example The following code fragment creates a data set as a list:

```
IListRowSet ds = BaseUtils.createListRowSet(request, response, "myList");
ds.addListItem("Star Trek", "1");
ds.addListItem("Babylon 5", "2");
ds.addListItem("Red Dwarf", "3");
ds.addListItem("Crusade", "4");
ds.setListSelection("2"); // Babylon 5 is the default selection
```

To display this list on a web page, you might create a JSP containing the following code:

```
<SELECT NAME="TVShow">
%gx type=title id=myList%
<OPTION VALUE="%gx type=cell id=myList.value% %/gx%"
%gx
type=cell
id=myList.isEqualToExpression(
    myList.value=myList.ListSelection)%SELECTED
%/gx%
>

%gx type=cell id=myList.label%%/gx%
%/gx%
</SELECT>
```

setListSelection()

Sets the item that appears as the default selection in a list.

Syntax public abstract void setListSelection(String value)

value The value (not the label) in the list that appears as the default selection.

Usage Use setListSelection() with addListItem() when working with data sets to create a selection list or a group of radio buttons.

ILock interface

The ILock interface provides concurrency control for objects operating in a multithreaded environment (for example, in applications that use distributed state).

AppLogics use locks to protect objects during concurrent operations. For example, state and session nodes implement this interface. Applications that access state or session data concurrently must synchronize using the methods in this interface.

A lock has the following attributes:

- A lock mode. You can specify an exclusive or shared lock. An exclusive lock prevents other threads from accessing a locked object. You can also use the lock mode to specify that an operation may continue even if the desired locking mode is not available.
- A caller ID. This setting provides a unique identifier for the caller that places or removes a lock. The identifier is an array of bytes.

The ILock interface defines methods for locking and unlocking objects. It also defines a method for changing the lock mode.

Package

com.kivasoft

Methods

| Method | Description |
|---------------------------|---|
| <code>changeMode()</code> | Changes the lock mode of a currently locked object. This method is not available for the lock interface implemented by state and session objects. |
| <code>lock()</code> | Locks an object. |
| <code>unlock()</code> | Unlocks a previously locked object. |

`changeMode()`

Changes the lock on an object.

Note This method is not supported for locks on state and session nodes. State and session support only one lock mode, `GXLOCK_EXCL`, which cannot be changed.

Syntax

```
public int changeMode(
    int dwOldMode,
    int dwNewMode,
    byte[] pID,
    int nSize);
```

dwOldMode Current lock mode applied to an object. The mode is one of `GXLOCK_EXCL` (exclusive lock) or `GXLOCK_SHARE` (shared lock).

dwNewMode New locking mode, one of `GXLOCK_EXCL` (exclusive lock) or `GXLOCK_SHARE` (shared lock). Optionally, the mode may also include `GXLOCK_NOBLOCK` if the operation should be allowed to continue if the desired locking mode is not available. If `GXLOCK_NOBLOCK` is not specified, then a thread is blocked if the desired locking mode is not available.

pID ID of the caller requesting the change to the lock. This value is read only.

nSize Size of the identifier.

Usage Use `changeMode()` to change a lock on an object.

Return Value An integer indicating success or failure of the lock mode change operation.

lock()

Locks an object.

Syntax

```
public int lock(
    int dwFlags,
    byte[] pID,
    int nSize);
```

dwFlags Locking mode, one of GXLOCK_EXCL (exclusive lock) or GXLOCK_SHARE (shared lock). Optionally, the mode may also include GXLOCK_NOBLOCK if the operation should be allowed to continue if the desired locking mode is not available. If GXLOCK_NOBLOCK is not specified, then a thread is blocked if the desired locking mode is not available.

GXLOCK_EXCL is the only mode currently supported for locking a state or session node. You cannot specify GXLOCK_NOBLOCK for state and session nodes.

pID ID of the caller requesting the lock. This value is a byte array. For state and session objects that implement the locking interface, you can pass in a null value for pID because these implementations automatically use the ID of the calling thread for pID.

nSize Size of the identifier.

Usage Use lock() to lock an object.

Rules When you lock certain kinds of nodes, the following rules apply:

- After locking a parent state node, do not create or delete a child node under it.
- After locking a state or session node, do not delete the node.

Return Value An integer indicating success or failure of the lock operation.

Example The following code shows how to lock and unlock a state node:

```
IState2 marketnews = cacheroot.getStateChild("mktnews");
if (marketnews == null)
    return;

// we expect marketnews state node to be accessed concurrently
// let's lock it

ILock l = null;
```

```

int ret;
if (marketnews instanceof ILOCK)
{
    l = (ILOCK)marketnews;
    ret = l.lock(GXLOCK.GXLOCK_EXCL, null, 0);
    if (ret != GXE.SUCCESS)
    {
        log("lock error");
        return;
    }
}
else
{
    log("IState2 object doesn't implement the ILOCK interface");
    return;
}
if (l == null)
    return;

// we now have the node locked in exclusive mode
// ..... do work .....
// and unlock the node

ret = l.unlock(GXLOCK.GXLOCK_EXCL, null, 0);
if (ret != GXE.SUCCESS)
    log("unlock error");

```

Related Topics AppLogic or ISession2 classes

unlock()

Unlocks a previously locked object.

Syntax

```

public int unlock(
    int dwFlags,
    byte[] pID,
    int nSize);

```

dwFlags The locking mode previously used to lock the object, either GXLOCK_EXCL (exclusive lock), or GXLOCK_SHARE (shared lock).

GXLOCK_EXCL is the only mode currently supported for unlocking a state or session node.

pID The ID of the caller that requests lock removal. This value is a byte array. The ID must match the ID with which you set the lock.

Usually you pass in the ID of the executing thread that requests the lock. For state and session objects that implement the locking interface, you can pass in a null value for pID because these implementations automatically use the ID of the calling thread for pID.

nSize Size of the identifier.

Usage Use `unlock()` to remove a lock on an object.

Return Value An integer indicating success or failure of the unlock operation.

Example The following code shows how to lock and unlock a state node:

```

IState2 marketnews = cacheroot.getStateChild("mktnews");
if (marketnews == null)
    return;

// we expect marketnews state node to be accessed concurrently
// let's lock it

ILock l = null;
int ret;
if (marketnews instanceof ILock)
{
    l = (ILock)marketnews;
    ret = l.lock(GXLOCK.GXLOCK_EXCL, null, 0);
    if (ret != GXE.SUCCESS)
    {
        log("lock error");
        return;
    }
}
else
{
    log("IState2 doesn't implement the ILock interface");
    return;
}
if (l == null)
    return;

// we now have the node locked in exclusive mode
// .... do work .....
// and unlock the node

ret = l.unlock(GXLOCK.GXLOCK_EXCL, null, 0);
if (ret != GXE.SUCCESS)
    log("unlock error");

```

Related Topics AppLogic or ISession2 classes

IMailbox interface

The IMailbox interface represents an electronic mailbox used for communicating with incoming and outgoing electronic mail. IMailbox provides methods for opening and closing a mailbox, as well as for receiving and sending mail messages. You must have access to either an SMTP or POP mail server.

To create an instance of the IMailbox interface, use `createMailbox()` in the `AppLogic` class (deprecated), as shown in the following example:

```
IMailbox mb = createMailbox("SMTPHostName", "myUserName",
    "pass7878", "myEmailAddr@myOrg.com");
```

Package

`com.kivasoft`

Methods

| Method | Description |
|------------------------------|---|
| <code>close()</code> | Closes an open electronic mailbox session. |
| <code>open()</code> | Opens a session with the mail server. |
| <code>retrieve()</code> | Retrieves unread electronic mail messages from the inbox. |
| <code>retrieveCount()</code> | Counts the number of available unread electronic mail messages in the inbox. |
| <code>retrieveReset()</code> | Resets the status of retrieved messages in the mailbox from read to unread and abandons (rolls back) any message deletions. |
| <code>send()</code> | Sends an electronic mail message to one or more mail addresses. |

Related Topics

`createMailbox()` in the `AppLogic` class (deprecated)

Chapter 13, "Taking Advantage of NAS Features" in *Programmer's Guide (Java)*

close()

Closes an open electronic mailbox session.

Syntax `public int close()`

Usage Use `close()` to close a mailbox session and commit changes on the mail server, if applicable. If sessions are open on both the POP and SMTP server, `close()` terminates both sessions.

Closing a session does not terminate the `IMailbox` object. The `AppLogic` can later reopen a session using `open()`.

Rule The `AppLogic` can only close a mailbox session that is open.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
// Define the string parameters that will be passed
// to IMailbox methods
String sendhost = "smtp.kivasoft.com";
String recvhost = "pop.kivasoft.com";
String user = "eugene";
String pswd = "eugenesSecretPassword";
String useraddr = "eugene@kivasoft.com";
String sendTo[] = {"friend@otherhost.net", null};
String mesg = "Hi Friend, How are you?";

public void sendMail()
{
    // Create an IMailbox instance
    IMailbox sendMB;
    sendMB = createMailbox(sendhost, user, pswd, useraddr);

    if (sendMB != null) // sendMB successfully created
    {
        // Open a session with the mail server
        if (sendMB.open(GX_MBOX_OPEN_FLAG.OPEN_SEND)== GXE.SUCCESS)
        {
            // Send a mail message
            sendMB.send(sendTo,mesg);

            // Close the mailbox session
            sendMB.close();
        }
    }
}
```

```

    }
}
}

```

Related Topics `open()`

`createMailbox()` in the `AppLogic` class (deprecated)

`open()`

Opens a session with the mail server.

Syntax `public int open(
int dwFlag)`

dwFlag Access level used to open the mailbox. Specify one of the following options:

- `GX_MBOX_OPEN_FLAG.OPEN_RECV` to receive emails. Sets up a session with the POP server only.
- `GX_MBOX_OPEN_FLAG.OPEN_SEND` to send emails. Sets up a session with the SMTP server only.
- `GX_MBOX_OPEN_FLAG.OPEN_SEND | GX_MBOX_OPEN_FLAG.OPEN_RECV` to send and receive emails.

Usage Use `open()` to explicitly open a session with the mail server after instantiating the `IMailbox` object. Alternatively, the `AppLogic` can open a session after having closed a previous session using `close()`.

Depending on the setting of the `dwFlag` parameter, `open()` starts a session on the SMTP server only, on the POP server only, or on both servers at once (two separate sessions).

Rule The `AppLogic` must call `open()` before calling other methods.

Tip To conserve system resources, use only the access level you need. For example, if the `AppLogic` will only be sending electronic mail messages, specify `GX_MBOX_OPEN_FLAG.OPEN_SEND`, not `GX_MBOX_OPEN_FLAG.OPEN_SEND | GX_MBOX_OPEN_FLAG.OPEN_RECV`.

Return Value `GXE.SUCCESS` if the method succeeds.

Example `// Define the string parameters that will be passed`

```

// to IMailbox methods
String sendhost = "smtp.kivasoft.com";
String recvhost = "pop.kivasoft.com";
String user = "eugene";
String pswd = "eugenesSecretPassword";
String useraddr = "eugene@kivasoft.com";
String sendTo[] = {"friend@otherhost.net", null};
String mesg = "Hi Friend, How are you?";

public void sendMail()
{
    // Create an IMailbox instance
    IMailbox sendMB;
    sendMB = createMailbox(sendhost, user, pswd, useraddr);

    if (sendMB != null) // sendMB successfully created
    {
        // Open a session with the mail server
        if (sendMB.open(GX_MBOX_OPEN_FLAG.OPEN_SEND))
        {
            // Send a mail message
            sendMB.send(sendTo, mesg);

            // Close the mailbox session
            sendMB.close();
        }
    }
}

```

Related Topics [send\(\)](#)

[createMailbox\(\)](#) in the AppLogic class (deprecated)

retrieve()

Retrieves electronic mail messages from the inbox.

Syntax `public IVallist retrieve(
 boolean bLatest,
 boolean bDelete)`

bLatest Specify true to retrieve the latest unread messages. Specify false to retrieve all messages in the inbox.

bDelete Specify true to delete retrieved messages when the mailbox session is closed. Specify false to leave the retrieved messages on the mail server.

Usage Use `retrieve()` to get unread messages from the inbox. Once retrieved, messages are marked as `READ`.

Rule To use `retrieve()`, the `AppLogic` must have first opened the mailbox session using `open()` and have specified either `GX_MBOX_OPEN_FLAG.OPEN_RECV` or `GX_MBOX_OPEN_FLAG.OPEN_SEND` | `GX_MBOX_OPEN_FLAG.OPEN_RECV` as the `dwFlag` parameter.

Tip `AppLogic` can use `retrieveReset()` to undo changes (deletes, read flags) to messages in the inbox.

Return Value `IValList` that contains the retrieved messages, or null for failure.

Example

```
// Create mailbox object to connect to a POP mail server
IMailbox recvMB;

public void recvMail()
{
    // Only check messages received after the last open
    BOOL Latest = true;

    // Remove retrieved messages from the mail server
    BOOL Delete = true;

    // Create an IMailbox instance
    IMailbox recvMB;
    recvMB = createMailbox(recvhost, user, pswd, useraddr);

    if (recvMB != null)
    {
        if (recvMB.open(GX_MBOX_OPEN_FLAG.OPEN_RECV))
        {
            // Count the number of new messages
            int numMsgs = recvMB.retrieveCount();
            if(numMsgs > 0)
            {
                IValList msgList;
                // Retrieve the new messages
```



```

{
    // Only check messages received after the last open
    BOOL Latest = true;

    // Remove retrieved messages from the mail server
    BOOL Delete = true;

    // Create an IMailbox instance
    IMailbox rcvMB;
    rcvMB = createMailbox(rcvhost, user, pswd, useraddr);

    if (rcvMB != null)
    {
        if (rcvMB.open(GX_MBOX_OPEN_FLAG.OPEN_RECV))
        {
            // Count the number of new messages
            int numMsgs = rcvMB.retrieveCount();
            if(numMsgs > 0)
            {
                IValList msgList;
                // Retrieve the new messages
                msgList = rcvMB.retrieve(Latest,Delete);

                // Use IValList methods to iterate through
                // the returned IValList. The keys in the
                // IValList are the message numbers. The
                // values are the email messages as strings
            }
            rcvMB.close();
        }
    }
}

```

Related Topics `open()`
`retrieve()`
`createMailbox()` in the `AppLogic` class (deprecated)

retrieveReset()

Resets the status of retrieved messages in the mailbox from read to unread and abandons (rolls back) any message deletions.

Syntax `public int retrieveReset()`

Usage Use `retrieveReset()` to undo any changes made as a result of retrieving inbox messages with `retrieve()`.

- Rules**
- To use `retrieveReset()`, the `AppLogic` must have first opened the mailbox session using `open()` and have specified either `GX_MBOX_OPEN_FLAG.OPEN_RECV` or `GX_MBOX_OPEN_FLAG.OPEN_SEND | GX_MBOX_OPEN_FLAG.OPEN_RECV` as the `dwFlag` parameter.
 - Before calling `retrieveReset()`, the `AppLogic` must first call `retrieve()`.
 - To abandon changes made with `retrieve()`, `AppLogic` must call `retrieveReset()` before calling `close()` or terminating the session.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `open()`

`retrieve()`

`createMailbox()` in the `AppLogic` class (deprecated)

send()

Sends an electronic mail message to one or more mail addresses.

Syntax `public int send(
 String[] ppTo,
 String pMesg)`

ppTo A list of email addresses, to which you want to send e-mail. The address or addresses must be supplied in a null-terminated array.

pMesg Text of the electronic mail message. Use Internet mail formatting conventions for specifying advanced features in the message text, such as CC: or BCC: addresses, the Subject header, uuencode, MIME attachments, receipt notification, and so on. For syntax specifications, see your POP and SMTP protocol documentation.

- Rules**
- To use `send()`, the `AppLogic` must have first opened the mailbox session using `open()` and have specified either `GX_MBOX_OPEN_FLAG.OPEN_SEND` or `GX_MBOX_OPEN_FLAG.OPEN_SEND | GX_MBOX_OPEN_FLAG.OPEN_RECV` as the `dwFlag` parameter.
 - The specified addresses must be valid Internet mail addresses.
 - The specified message text must follow POP and SMTP protocol conventions.

Tip The `send()` method automatically includes the FROM: address that the `AppLogic` specified in the `pUserAddr` parameter of `createMailbox()` in the `AppLogic` class (deprecated).

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
// Define the string parameters that will be passed
// to IMailbox methods
String sendhost = "smtp.kivasoft.com";
String rcvhost = "pop.kivasoft.com";
String user = "eugene";
String pswd = "eugenesSecretPassword";
String useraddr = "eugene@kivasoft.com";
String sendTo[] = {"friend@otherhost.net", null};
String mesg = "Hi Friend, How are you?";

public void sendMail()
{
    // Create an IMailbox instance
    IMailbox sendMB;
    sendMB = createMailbox(sendhost, user, pswd, useraddr);

    if (sendMB != null) // sendMB successfully created
    {
        // Open a session with the mail server
        if (sendMB.open(GX_MBOX_OPEN_FLAG.OPEN_SEND))
```

IMailbox interface

```
    {  
        // Send a mail message  
        sendMB.send(sendTo,mesg);  
  
        // Close the mailbox session  
        sendMB.close();  
    }  
}
```

Related Topics

open(),
retrieve()

createMailbox() in the AppLogic class (deprecated)

IObject interface (*deprecated*)

The IObject interface is not necessary in the new application model. This interface is deprecated and is provided for backward compatibility only.

The IObject interface is the base interface for all Netscape Application Server Java interfaces. Generally, NAS applications do not use this interface directly; they use the specialized derived interfaces instead.

Package

com.kivasoft

IObject interface (deprecated)

IOrder interface (*deprecated*)

IOrder is deprecated and is provided for backward compatibility only. New applications developed according to the servlet-JSP programming model do not need the functionality provided by IOrder.

The IOrder interface represents the current processing status of an asynchronous operation. IOrder provides methods for obtaining the status and return code of an asynchronous operation.

To run an asynchronous database operation, the AppLogic must specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC` as the flags parameter in any of the following methods:

- `executeQuery()` in the `IDataConn` interface (deprecated)
- `addRow()`, `deleteRow()`, or `updateRow()` in the `ITable` interface (deprecated)

To create an instance of the IOrder interface for an asynchronous query, use `getOrder()` in the `IResultSet` interface (deprecated), as shown in the following example:

```
IResultSet rs;  
IOrder ord  
ord=rs.getOrder();
```

Package

`com.kivasoft`

Methods

| | |
|-------------------------|---|
| <code>getState()</code> | Returns the processing status of the asynchronous operation on the database server: active, done, canceled, or unknown. |
|-------------------------|---|

Related Topics

`executeQuery()` in the `IDataConn` interface (deprecated)

`getOrder()` in the `IResultSet` interface (deprecated)

GX.WaitForOrder()

getState()

Returns the processing status of the asynchronous operation.

Syntax `public getStateIOrder getState()`

Usage Use `getState()` to return status information to use in error-handling code.

Return Value A `getStateIOrder` object with three variables, each containing status and result code values. The three variables are described in the following table:

| Variable | Description |
|------------------------|--|
| <code>pdwState</code> | Contains one of the following status codes: <ul style="list-style-type: none">• <code>GXORDER_STATE_ACTIVE</code>• <code>GXORDER_STATE_CANCEL</code>• <code>GXORDER_STATE_DONE</code>• <code>GXORDER_STATE_UNKNOWN</code> |
| <code>pdwResult</code> | Contains the result code of an asynchronous database operation when the operation is done or canceled. |
| <code>pGuess</code> | Contains the estimate about the current completion percentage of the operation. |

Example

```
Orders[] = new IOrder[1];
int nOrder;

Orders[0] = newRequestAsync(asyncGUIDStr, valIn, valOut);
if (Orders[0] != null)
{
    log("Successfully invoked async AppLogic\n");

    // wait for async applogic to finish (max 100 seconds)
    nOrder = GX.WaitForOrder(Orders, context, 100);
    if (nOrder >= 0)
    {
        return result("Error in executing async request:
            order wait returned an error");
    }
}
```

```
else
{
    getStateIOrder state = Orders[0].getState();
    if (state == null || state.pdwResult != GXE.SUCCESS)
        return result("Error in executing async
            request");
}
}
else
{
    log("Failed to invoke async AppLogic\n");
}
```

Related Topics [executeQuery\(\)](#) in the [IDataConn](#) interface (deprecated)
[getOrder\(\)](#) in the [IResultSet](#) interface (deprecated)
[GX.WaitForOrder\(\)](#)

IPreparedQuery interface *(deprecated)*

IPreparedQuery is deprecated and is provided for backward compatibility only. New applications should use the `java.sql.PreparedStatement` interface from the JDBC Core API.

The IPreparedQuery interface represents a prepared flat query. An IPreparedQuery object contains a SQL statement that has been compiled. This is what makes a statement “prepared.” An AppLogic uses a prepared query when it needs to execute a SQL statement multiple time with different parameters.

For example, if an AppLogic runs an INSERT statement several times, each time with a different set of values to insert into the table, using a prepared query involves the following steps:

1. Prepare (compile) the INSERT statement with placeholder parameters whose values will be specified later.
2. Specify a set of parameter values.
3. Execute the prepared query.
4. Specify another set of parameter values.
5. Execute the prepared query.

By preparing the SQL statement, the database needs to compile the statement only once. Without prepared statements, the database must recompile each statement every time it is executed, which is less efficient.

To create an instance of the IPreparedQuery interface, use `prepareQuery()` in the IDataConn interface (deprecated), as shown in the following example:

```
IPreparedQuery pqry;  
pqry = conn.prepareQuery(0, qry, null, null);
```

Package

`com.kivasoft`

Methods

| Name | Description |
|-------------|--|
| execute() | Executes a prepared query. |
| setParams() | Specifies the parameters and flags for a prepared query. |

Example

```
// Create the data connection
IDataConn conn;
conn = createDataConn(0,GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT,
"Orders", "Orders", "user", "password");
// Create the flat query and prepared query objects
IQuery qry = createQuery();
IPreparedQuery pqry;
IResultSet rs1, rs2;
// Set up the INSERT statement
qry.setSQL("INSERT INTO TABLE Products (ProductName, QuantityPerUnit)
VALUES (:name, :quant)");
// Prepare the flat query
pqry = conn.prepareQuery(0, qry, null, null);
// Specify a set of query parameters, then execute
IValList params = GX.CreateValList()
params.setValString(":name", "Chicken Dumplings");
params.setValString(":quant", "48 packages");
rs1 = pqry.execute(0, params, null, null);
. . . process rs1 . . .
// Specify different set of query parameters, then execute
params.setValString(":name", "Rice Noodles");
params.setValString(":quant", "96 packages");
rs2 = pqry.execute(0, params, null, null);
. . . process rs2 . . .
```

Related Topics

prepareQuery() in the IDataConn interface (deprecated)

execute()

Executes a prepared query.

Syntax

```
public IResultSet execute(
    int dwFlags,
    IValList pParams,
    ITrans pTrans,
    IValList pProps)
```

dwFlags Specifies flags used to execute this prepared query. To activate result set buffering, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING`. Otherwise, specify zero.

pParams `IValList` object that contains parameters to pass to the prepared query. Parameters are used to execute the query.

pTrans `ITrans` object that contains the transaction associated with this query, or null for no transaction.

pProps `IValList` object that contains query properties, or null for no properties. After instantiating an object of the `IValList` interface, set any of the following properties:

- `RS_BUFFERING` turns on result set buffering when set to "TRUE".
- `RS_INIT_ROWS` specifies the initial size of the buffer, in number of rows. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` and result set buffering will be turned off.
- `RS_MAX_ROWS` specifies the maximum number of rows for the buffer. If the result set size exceeds this setting, a `fetchNext()` call will return the error `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` and result set buffering will be turned off.
- `RS_MAX_SIZE` specifies the maximum number of bytes for the buffer.

If `RS_BUFFERING` is enabled and if the optional parameters are not specified, the global values in the registry are used instead.

Usage Use `execute()` to run a prepared query. If the command contains parameters, instantiate an `IValList` object and use `setValString()` or `setValInt()` in the `IValList` interface to specify the parameter values to pass to the command.

Return Value `ResultSet` object, or null for failure (such as an invalid parameter).

Example 1

```
// Create the data connection
IDataConn conn;
conn = createDataConn(0,GX_DA_DAD_DRIVERS.GX_DA_DRIVER_DEFAULT,
"Orders", "Orders", "user", "password");
// Create the flat query and prepared query objects
IQuery qry = createQuery();
IPreparedQuery pqry;
ResultSet rs;
// Set up the INSERT statement
qry.setSQL("INSERT INTO TABLE Products (ProductName, QuantityPerUnit)
VALUES (:name, :quant)");
// Prepare the flat query
pqry = conn.prepareQuery(0, qry, null, null);
// Specify a set of query parameters, then execute
IValList params = GX.CreateValList();
params.setValString(":name", "Chicken Dumplings");
params.setValString(":quant", "48 packages");
rs = pqry.execute(0, params, null, null);
. . . process result set . . .
// Specify different set of query parameters, then execute
params.setValString(":name", "Rice Noodles");
params.setValString(":quant", "96 packages");
rs = pqry.execute(0, params, null, null);
. . . process result set . . .
```

Example 2

```
// Set up result set buffering for prepared query
// . . . data connection and flat query already set up . . .
IPreparedQuery pqry;
IValList props;
props = GX.CreateValList();
// Turn on result set buffering
props.setValString("RS_BUFFERING", "TRUE");
// Specify the maximum number of rows to buffer
props.setValInt("RS_MAX_ROWS", 50);
pqry = conn.prepareQuery(0, qry, null, props);
params.setValString(":name", "Chicken Dumplings");
params.setValString(":quant", "48 packages");
```

```

IResultSet rs
rs = pqry.execute(GX_DA_EXECUTEQUERY_FLAGS.GX_DA_RS_BUFFERING, params,
null, null);
. . . process result set . . .

```

Related Topics IVallList interface (deprecated)
 ITrans interface (deprecated)
 prepareQuery() in the IDataConn interface (deprecated)

setParams()

Specifies the parameters for a prepared query.

Syntax public int setParams(
 int dwFlags
 IVallList pParams)

dwFlags Specify zero (0).

pParams Pointer to an IVallList object that contains parameters to pass to the prepared query.

Usage To pass parameters to the prepared query using setParams(), you must pass NULL for the pParams parameter in execute().

Return Value GXE.SUCCESS if the method succeeds.

Related Topics IVallList interface (deprecated)
 ITrans interface (deprecated)
 prepareQuery() in the IDataConn interface (deprecated)

`IPreparedQuery` interface (deprecated)

IQuery interface (*deprecated*)

IQuery is deprecated and is provided for backward compatibility only. New applications should use the `java.sql.Statement` interface from the JDBC Core API. Note that IQuery is independent of a database connection, whereas JDBC's `Statement` interface is derived from a connection.

The IQuery interface represents a flat query. IQuery provides methods for specifying and obtaining the criteria used to select data from a data source. The AppLogic uses IQuery member methods to specify all parts of the SQL SELECT statement, including the SELECT, FROM, GROUP BY, HAVING, ORDER BY, and WHERE clauses.

To run a flat query, the AppLogic performs the following steps:

1. Creates an IQuery object using `createQuery()` in the AppLogic class (deprecated).
2. Specifies query criteria using methods in the IQueryinterface.
3. Executes the query, passing the loaded IQuery object to `executeQuery()` in the IDataConn interface (deprecated).
4. Processes the result set using methods in the IResultSet interface (deprecated).

The AppLogic can also use IQuery methods to obtain information about query criteria when the criteria are unknown. Before executing the query on the data source, the AppLogic can evaluate and, if necessary, dynamically change the query criteria.

To create an instance of the IQuery interface, use the `createQuery()` method in the AppLogic class, as shown in the following example:

```
IQuery qry;  
qry = createQuery();
```

Package

`com.kivasoft`

Methods

| Method | Description |
|---------------------------|--|
| <code>getFields()</code> | Returns a comma-separated list of arbitrary SQL expressions or columns to be included in the result set of the query. |
| <code>getGroupBy()</code> | Returns the GROUP BY clause of the query. |
| <code>getHaving()</code> | Returns the HAVING clause of the query. |
| <code>getOrderBy()</code> | Returns the ORDER BY clause of the query. |
| <code>getSQL()</code> | Returns the SQL pass-through statement associated with the query. |
| <code>getTables()</code> | Returns a comma-separated list of tables in the FROM clause of the query. |
| <code>getWhere()</code> | Returns the WHERE clause of the query. |
| <code>setFields()</code> | Specifies the list of columns and computed fields to be included in the result set of the query. Required method when writing a query. |
| <code>setGroupBy()</code> | Specifies the GROUP BY clause of the query, determining how rows are grouped and calculated. |
| <code>setHaving()</code> | Specifies the HAVING clause of the query, determining which aggregate rows qualify for inclusion in the result set. |
| <code>setOrderBy()</code> | Specifies the ORDER BY clause of the query, determining how rows are sorted in the result set. |
| <code>setSQL()</code> | Specifies the SQL statement to be passed directly to the data source. |
| <code>setTables()</code> | Specifies the FROM clause of the query, identifying one or more tables to be queried. Required method when writing a query. |
| <code>setWhere()</code> | Specifies the WHERE clause of the query, determining which rows qualify for inclusion in the result set. |

Example 1

```
// Create the flat query object
IQuery qry=createQuery();

// Set up the query
qry.setTables("CTLcust");
qry.setFields("CustomerID, Customer");
qry.setWhere("Customer"+"="+String.valueOf(custId));
```

```

// Execute the query
IDataConn conn = ...;
ResultSet rs=conn.executeQuery(0, qry, null, null);

// Check for a non empty result
if((rs!=null)&&(rs.getRowNumber())>0)
    return result("Sorry, this user ("+
        firstName+" "+lastName+") already exists");
. . . process the result set . . .

```

Example 2

```

// Create a database connection
IDataConn conn;

if((conn = openBugDB())==null) return 0;
// Pull all the parms we need from the valIn

if((wantedUser = valIn.getValString("WantedUser"))==null)
    return result("Missing information from form.");

// Create the flat query object
IQuery qry = createQuery();

// Set up query conditions
qry.setTables("CTLUsers");
qry.setFields("Name, Password, UserType, AccessLevel, Email, ExtID");
query.setWhere("UserID"+"="+wantedUser.hashCode());
. . . execute the query . . .

```

Related Topics

`createQuery()` in the `AppLogic` class (deprecated)

`executeQuery()` in the `IDataConn` interface (deprecated)

`ResultSet` interface (deprecated)

getFields()

Returns a comma-separated list of arbitrary SQL expressions or columns to be included in the result set of the query.

Syntax `public IBuffer getFields()`

Usage In a SQL SELECT statement, the first clause specifies the SELECT keyword as well as the list of columns to be retrieved in the result set.

Use `getFields()` when the requested columns in a query are unknown, such as when using a query from another source. The AppLogic can analyze this list to determine the names of the columns as well as the order in which they will appear in the result set. Before executing or re-executing the query, the AppLogic can evaluate and, if necessary, dynamically change columns and column order in the query by calling `setFields()`.

- Tips**
- To use a query obtained from another source such as a file, the AppLogic can call `getFields()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The AppLogic can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a String.

Return Value An IBuffer object that contains a comma-separated list of columns that the query defines for the result set, starting with the first column and proceeding sequentially, left to right.

Example

```
// Get the columns specified in the query's SELECT clause
String qryFields;
qryFields = Util.toString(qry.getFields());
```

Related Topics `createQuery()` in the AppLogic class (deprecated)

getGroupBy()

Returns the GROUP BY clause of the query.

Syntax `public IBuffer getGroupBy()`

Usage In a SQL SELECT statement, the GROUP BY clause specifies rows to summarize into aggregate rows using column functions (such as SUM or MAX) or column names.

Use `getGroupBy()` when the GROUP BY clause of the query is unknown, such as when using a query from another source. Before executing the query, the `AppLogic` can evaluate and, if necessary, dynamically change the GROUP BY clause by calling `setGroupBy()`.

- Tips**
- To use a query obtained from another source such as a file, the `AppLogic` can call `getGroupBy()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The `AppLogic` can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a `String`.

Return Value An `IBuffer` object that contains the GROUP BY clause of the query, or null for failure.

Example

```
// Obtain the GROUP BY clause specified in the query
String qryGroup;
qryGroup = Util.toString(qry.getGroupBy());
```

Related Topics `createQuery()` in the `AppLogic` class (deprecated)

getHaving()

Returns the HAVING clause of the query.

Syntax `public IBuffer getHaving()`

Usage In a SQL SELECT statement, the HAVING clause specifies which of the aggregate rows returned by the GROUP BY clause are selected for the result set.

Use `getHaving()` when the HAVING clause of the query is unknown, such as when using a query from another source. Before executing the query, the `AppLogic` can evaluate and, if necessary, dynamically change the HAVING clause by calling `setHaving()`.

- Tips**
- To use a query obtained from another source such as a file, the AppLogic can call `getHaving()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The AppLogic can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a String.

Return Value An IBuffer object that contains the HAVING clause of the query, or null for failure.

Example

```
// Obtain the HAVING clause specified in the query
String qryHaving;
qryHaving = Util.toString(qry.getHaving());
```

Related Topics `createQuery()` in the AppLogic class (deprecated)

getOrderBy()

Returns the ORDER BY clause of the query.

Syntax `public IBuffer getOrderBy()`

Usage In a SQL SELECT statement, the ORDER BY clause specifies one or more columns by which rows in the result set are sorted, as well as whether they appear in ascending or descending ASCII order.

Use `getOrderBy()` when the ORDER BY clause of the query is unknown, such as when using a query from another source. Before executing the query, the AppLogic can evaluate and, if necessary, dynamically change the ORDER BY clause by calling `setOrderBy()`.

Rule Some database vendors have restrictions on the ordering and usage of ORDER BY clauses. Read your database vendor's documentation carefully and test queries to ensure that they return the desired results.

- Tips**
- To use a query obtained from another source such as a file, the AppLogic can call `getOrderBy()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The AppLogic can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.

- Use `Util.toString()` to convert the contents of the returned memory buffer into a `String`.

Return Value An `IBuffer` object that contains the `ORDER BY` clause of the query, or null for failure.

Example

```
// Obtain the ORDER BY clause specified in the query
String qryOrder;
qryOrder = Util.toString(qry.getOrderBy());
```

Related Topics `createQuery()` in the `AppLogic` class (deprecated)

getSQL()

Returns the SQL pass-through statement associated with the query.

Syntax `public IBuffer getSQL()`

Usage Use `getSQL()` when the query string is unknown, such as when using a query from another source. Before executing the query, the `AppLogic` can dynamically change the SQL statement by calling `setSQL()`.

Rule If a query is set using `setSQL()` as well as the `setXXXX()` methods, the `setSQL()` string will be executed, not the string specified by `setXXXX()`.

- Tips**
- To use a query obtained from another source such as a file, the `AppLogic` can call `getSQL()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The `AppLogic` can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a `String`.

Return Value An `IBuffer` object that contains the SQL pass-through statement of the query (as a single concatenated string), or null for failure.

Example

```
// Obtain the SELECT statement specified in the query
String qrySelect;
qrySelect = Util.toString(qry.getSQL());
```

Related Topics `createQuery()` in the `AppLogic` class (deprecated)

getTables()

Returns a comma-separated list of tables in the FROM clause of the query.

Syntax `public IBuffer getTables()`

Usage In a SQL SELECT statement, the FROM clause specifies one or more source tables, views, or table aliases to search in the query. In Netscape Application Builder, the AppLogic can obtain table names only.

Use `getTables()` when the FROM clause of the query is unknown, such as when using a query from another source. Before executing the query, the AppLogic can evaluate and, if necessary, dynamically change the FROM clause by calling `setTables()`.

- Tips**
- To use a query obtained from another source such as a file, the AppLogic can call `getTables()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The AppLogic can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a String.

Return Value An IBuffer object that contains the FROM clause of the query, or null for failure.

Example

```
// Obtain the FROM clause specified in the query
String qryFrom;
qryFrom = Util.toString(qry.getTables());
```

Related Topics `createQuery()` in the AppLogic class (deprecated)

getWhere()

Returns the WHERE clause of the query.

Syntax `public IBuffer getWhere()`

Usage In a SQL SELECT statement, the WHERE clause specifies the search condition and determines which rows in the table are selected for the result set.

Use `getWhere()` when the WHERE clause of the query is unknown, such as when using a query from another source. Before executing the query, the `AppLogic` can evaluate and, if necessary, dynamically change the WHERE clause by calling `setWhere()`.

- Tips**
- To use a query obtained from another source such as a file, the `AppLogic` can call `getWhere()` and other `getXXXX()` member methods to test the query statement before submitting it to the server for processing. The `AppLogic` can then use the `setXXXX()` member methods to change the statement and avoid lengthy queries or syntax errors.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a `String`.

Return Value An `IBuffer` object that contains the WHERE clause of the query, or null for failure.

Example

```
// Obtains the WHERE clause specified in the query
String qryWhere;
qryWhere = Util.toString(qry.getWhere());
```

Related Topics `createQuery()` in the `AppLogic` class (deprecated)

setFields()

Specifies the list of columns and computed fields to be included in the result set of the query. Required method when writing a query.

Syntax

```
public int setFields(
    String szFields)
```

szFields List of field names, separated by commas, or an asterisk (*) to include all fields. Extra whitespace characters are ignored. Use the AS keyword to specify field aliases. Defaults to all fields (*).

Usage In a SQL SELECT statement, the first clause specifies the SELECT keyword as well as the list of columns and computed fields to be retrieved in the result set. The `AppLogic` can specify field aliases using the AS keyword in the `setFields()` parameter list.

A computed field is the result of an expression using either of the following kinds of expressions:

- **Mathematical functions**, including SQL string, numeric, time, date, system, and data type conversion functions and mathematical operators
- **Aggregate functions**, including SUM, COUNT, MIN, MAX, AVG, to summarize values per column across a group of rows. These functions are commonly used in conjunction with the GROUP BY clause, which the AppLogic can specify using setGroupBy().

- Rules**
- Use ANSI 92 SQL-compliant syntax for the field list.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.
 - Any specified column names must appear in one of the tables specified in setTables(). Table qualified names are permitted, such as "prod.name, emp.name".

Tip For computed fields, use the AS keyword so that the AppLogic can process the column in the result set by alias name.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Create the flat query object
IQuery qry = createQuery();
// Set up query conditions
qry.setTables("CTLusers");
// Specify list of fields to retrieve in the result set
qry.setFields("Name, Password, UserType, AccessLevel, Email, ExtID as ID");
query.setWhere("UserID"+"="+wantedUser.hashCode());
query.setOrderBy("Name");
. . . execute the query . . .
```

Example 2

```
// Specify result set fields, specifying alias for calculation
qry.setFields("ProdID, ProdPrice * ProdQty AS ExtPrice");
```

Example 3

```
// Parentheses specify mathematical operator precedence
qry1.setFields("(product.price * invoice.quantity) / 100 as total, invoice.id");
qry2.setFields("invoice.id, product.price * 0.06 as tax");
```

Example 4

```
// COUNT and SUM aggregate functions and alias name for result
qry1.setFields("COUNT(invoice.id) as totalSold");
qry2.setFields("SUM(city.population) as urbanPopulation");
```

Related Topics createQuery() in the AppLogic class (deprecated)

setGroupBy()

Specifies the GROUP BY clause of the query, determining how rows are grouped and calculated.

Syntax public int setGroupBy(
String szGroupBy)

szGroupBy GROUP BY clause of the query, using standard SQL syntax.

Usage In a SQL SELECT statement, the GROUP BY clause specifies rows to combine using column functions (such as SUM or MAX) or column names. Such groupings are called aggregate rows, which are single rows in a result set that combine data from a group of database rows with one or more column values in common.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the GROUP BY clause.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
IQuery query=createQuery();
qry.setTables("CTLinvoice,CTLcust,CTLinvprod,CTLcatalog");
qry.setFields("FirstName, LastName, BillAddr1, BillAddr2,
    BillCity, BillState, BillZip,
    count(*) as Visits",
    sum(Quantity) as ProductsBought,
    sum(quantity*price) as AmountSpent,
    quantity/count(*) as ProdsPerVisit,
    sum(quantity*price/count(*) as spentPerVisit")
qry.setWhere("Customer=CustomerId and Invoice=InvoiceId and
    Product=ProductId and
    datePlaced >= start and datePlaced"<=end");
// Group customers by first name
qry.setGroupBy("FirstName");
qry.setOrderBy("Visits desc");
. . . run query . . .
```

Related Topics createQuery() in the AppLogic class (deprecated)

setHaving()

Specifies the HAVING clause of the query, determining which aggregate rows qualify for inclusion in the result set.

Syntax `public int setHaving(
 String szGroupBy)`

szGroupBy HAVING clause of the query, using standard SQL syntax.

Usage The HAVING clause is used in conjunction with the aggregate functions (SUM, AVG, and so on) and the GROUP BY clause. In a SQL SELECT statement, the HAVING clause specifies a condition that determines which aggregate rows are selected for the result set. The HAVING clause restricts the number of aggregate rows retrieved in the result set. If unspecified, all aggregate rows will be retrieved.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the HAVING clause.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.
- Tips**
- The order in which you specify a HAVING clause, in relation to other query clauses, may affect which records are retrieved in the result set. See your RDBMS server documentation for more information.
 - To improve the AppLogic performance, be sure to specify a HAVING or WHERE clause to avoid retrieving rows unnecessarily, especially for large tables.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Set condition on aggregate rows to an  
// average amount > 1000  
qry.setHaving("AverageAmt > 1000");
```

Related Topics createQuery() in the AppLogic class (deprecated)

setOrderBy()

Specifies the ORDER BY clause of the query, determining how rows are sorted in the result set.

Syntax `public int setOrderBy(
 String szOrderBy)`

szOrderBy ORDER BY clause of the query, using standard SQL syntax. Supports the ASC and DESC keywords for sorting.

Usage In a SQL SELECT statement, the ORDER BY clause specifies one or more columns by which rows in the result set are sorted. The AppLogic can also specify whether records appear in ascending (the default) or descending ASCII order using the ASC and DESC keywords, respectively.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the ORDER BY clause.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.
 - Any specified column names must appear in one of the columns specified in `setFields()`.
 - Some database vendors have restrictions on the ordering and usage of ORDER BY clauses. Read your database vendor's documentation carefully and test queries to ensure that they return the desired results.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
IQuery qry=createQuery();
qry.setTables("CTLinvoice,CTLcust,CTLinprod,CTLcatalog");
qry.setFields("FirstName, LastName, BillAddr1, BillAddr2,
    BillCity, BillState, BillZip,
    count(*) as Visits",
    sum(Quantity) as ProductsBought,
    sum(quantity*price) as AmountSpent,
    quantity/count(*) as ProdsPerVisit,
    sum(quantity*price/count(*) as spentPerVisit")
qry.setWhere("Customer=CustomerId and Invoice=InvoiceId and
    Product=ProductId and
    datePlaced >= start and datePlaced <= end");
qry.setGroupBy("FirstName");
```

```
// Sorts rows in result set by number of visits
// in descending order
qry.setOrderBy("Visits desc");
. . . run query . . .
```

Related Topics createQuery() in the AppLogic class (deprecated)

setSQL()

Specifies the SQL statement to be passed directly to the data source.

Syntax public int setSQL(
String szSQL)

szSQL SQL statement, using standard SQL syntax, to execute on the target data source. Specify a single, concatenated string. Do not use semicolon (;) characters or other vendor-specific statement delimiters.

Usage The AppLogic can use setSQL() as an alternative to using other Netscape Application Builder methods, such as constructing queries, inserting, updating, and deleting rows, and managing transactions. The AppLogic can also use setSQL() to run specialized SQL statements, such Data Definition Language (DDL) commands, Data Control Language (DCL) commands, and so on.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the SQL statement.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.
 - The AppLogic must be logged in with sufficient privileges to permit any operations requested in the passed-through SQL statement.
 - If inserting or updating rows in a table, the AppLogic must specify values that are valid. For example, the AppLogic cannot omit specifying a value for any column defined as NOT NULL and without a DEFAULT value, such as keys.
 - Using setSQL() overrides all previous calls to setXXXX() member methods for this query object. If a query is set using setSQL() as well as the setXXXX() methods, the setSQL() string will be executed, not the string specified by setXXXX().

- If the statement is part of a transaction, the AppLogic must first create an instance of the ITrans interface (deprecated) using createTrans() in the AppLogic class (deprecated). The AppLogic must then call begin() before executing the statement and, after executing the statement, call commit() or rollback() as appropriate.

Tip To determine whether a column is defined as NOT NULL, use getNullsAllowed() in the IColumn interface (deprecated).

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Pass SELECT statement to setSQL()
IQuery qry = createQuery();

qry.setSQL("SELECT empName, empSalary FROM employees WHERE empSalary >
10000");

IResultSet rs=conn.executeQuery(0, query, null, null);
if(rs!=null) rs.flush();
    System.out.println("Writing to database");
```

Example 2

```
// Pass INSERT command to setSQL()
qry.setSQL("INSERT into employees (empSalary) values (29)");
```

Example 3

```
// Pass UPDATE command to setSQL()
qry.setSQL("UPDATE employees SET empSalary = 12000 WHERE empSalary =
10000");
```

Example 3

```
// Pass DELETE command to setSQL()
qry.setSQL("DELETE FROM employees WHERE empSalary < 10000");
```

Related Topics createQuery() in the AppLogic class (deprecated)

Vendor documentation regarding SQL programming for the specific data source that is the target of the SQL statement.

setTables()

Specifies the FROM clause of the query, identifying one or more tables to be queried. Required method when writing a query.

Syntax

```
public int setTables(
    String szTables)
```

szTables List of table names separated by commas. Whitespace characters are ignored.

Usage In a SQL SELECT statement, the FROM clause specifies one or more source tables, views, or table aliases to search in the query. In Netscape Application Builder, the AppLogic can specify table names only.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the FROM clause.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.
 - The AppLogic can specify table names but not table aliases or view names.
 - The AppLogic can use the same table several times in a query. To do so, specify a different alias name each time the table is used.

Example 1

```
// Specify invoice, customer, invoice, and catalog tables
IQuery qry=createQuery();
qry.setTables("CTLinvoice,CTLcust,CTLinvprod,CTLcatalog");
qry.setFields("FirstName, LastName, BillAddr1, BillAddr2,
              BillCity, BillState, BillZip,
              count(*) as Visits",
              sum(Quantity) as ProductsBought,
              sum(quantity*price) as AmountSpent,
              quantity/count(*) as ProdsPerVisit,
              sum(quantity*price/count(*) as spentPerVisit")
qry.setWhere("Customer=CustomerId and Invoice=InvoiceId and
             Product=ProductId and
             datePlaced >= start and datePlaced <= end");
qry.setGroupBy("FirstName");
```

Example 2

```
// Specify same table, using as keyword, for different users
qry.setTables("customer, customer as cust2")
```

Related Topics [createQuery\(\) in the AppLogic class \(deprecated\)](#)

setWhere()

Specifies the WHERE clause of the query, determining which rows qualify for inclusion in the result set.

Syntax `public int setWhere(`

```
String szWhere)
```

szWhere WHERE clause of the query, using standard SQL syntax.

Usage In a SQL SELECT statement, the WHERE clause specifies the search condition and determines which rows in the table are selected for the result set. The WHERE clause restricts the number of rows retrieved in the result set. If unspecified, all rows in the source table will be retrieved.

- Rules**
- Use ANSI 92 SQL-compliant syntax for the WHERE clause.
 - Use implementation-specific SQL syntax extensions only on data sources that support them. Using extensions may compromise portability across platforms.

Tip To improve AppLogic performance, be sure to specify a HAVING or WHERE clause to avoid retrieving rows unnecessarily, especially for large tables.

Return Value GXE.SUCCESS if the method succeeds.

Example 1

```
// Obtain user info from the user database
IQuery query=createQuery();
qry.setTables("CTLcust");
qry.setFields("FirstName, LastName, BillAddr1, BillAddr2,
             BillCity, BillState, BillZip");
qry.setWhere("CustomerId"+"="+cusId+" and
            "+ "Password"+"='"+password+"'");
IResultSet rs=conn.executeQuery(0, qry, null, null);
if((rs==null)|| (rs.getRowNumber()==0))
. . . process result set . . .
```

Example 2

```
// Specify WHERE clause for two different queries
qry1.setWhere("urbanPopulation >= 1000000");
qry2.setWhere("region = 'West' or region = 'East'");
```

Related Topics createQuery() in the AppLogic class (deprecated)

ResultSet interface (*deprecated*)

ResultSet is deprecated and is provided for backward compatibility only. New applications should use the ResultSet interface from the JDBC Core API.

The ResultSet interface represents the results of a flat query. ResultSet provides methods to iterate through rows in the result set and retrieve data from each row. To retrieve data from the result set, the AppLogic uses methods tailored for specific column types. For example, if retrieving data from a string column, use getValueString(). If retrieving binary data, use getValueBinary().

To process hierarchical result sets, use methods in the IHierResultSet interface (deprecated) or evalTemplate() in the AppLogic class (deprecated) instead.

ResultSet is part of the Data Access Engine (DAE) service.

To create an instance of the ResultSet interface, use executeQuery() in the IDataConn interface (deprecated) or execute() in the IPreparedStatement interface (deprecated), as shown in the following example:

```
ResultSet rs;
rs = conn.executeQuery(0, qry, null, null);
```

Package

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Methods

| Method | Description |
|-------------------|---|
| close() | Releases the connection used by the result set. |
| enumColumnReset() | Resets the column enumeration to the first column in the result set. |
| enumColumns() | Returns the definition of the next column in the result set. |
| fetchNext() | Retrieves the next row in the result set. |
| getColumn() | Returns the column definition of the column with the specified name. |
| getColumnByOrd() | Returns the column definition for the column in the specified ordinal position. |

| Method | Description |
|-------------------------------------|---|
| <code>getColumnOrdinal()</code> | Returns the ordinal position of the column with the specified name. |
| <code>getNumColumns()</code> | Returns the number of columns in the result set. |
| <code>getOrder()</code> | For asynchronous queries, returns an <code>IOrder</code> object used for obtaining the current status of the query. |
| <code>getRowNumber()</code> | Returns the number of the current row in the result set. |
| <code>getStatus()</code> | Returns the processing status of the asynchronous database operation on the database server. |
| <code>getValueBinary()</code> | Returns the value of a <code>BINARY</code> column from the current row in the result set. |
| <code>getValueBinaryPiece()</code> | Returns the value of a <code>LONGBINARY</code> column from the current row in the result set. |
| <code>getValueDateAsString()</code> | Returns the value of a <code>Date</code> type column from the current row in the result set. |
| <code>getValueDouble()</code> | Returns the value of a <code>double</code> type column from the current row in the result set. |
| <code>getValueInt()</code> | Returns the value of an <code>int</code> type column from the current row in the result set. |
| <code>getValueSize()</code> | Returns the cumulative number of bytes that have been fetched from a column in the current row of the result set. |
| <code>getValueString()</code> | Returns the value of a <code>String</code> type column from the current row in the result set. |
| <code>getValueText()</code> | Returns the value of a <code>TEXT</code> column from the current row in the result set. |
| <code>getValueTextPiece()</code> | Returns the value of a <code>LONGTEXT</code> column from the current row in the result set. |
| <code>moveTo()</code> | Moves to the specified row in the result set. |
| <code>rowCount()</code> | Returns the total number of rows retrieved thus far from the data source. |
| <code>wasNull()</code> | Checks if the value of a column is null or not. |

Example

The following code copies the data from all the rows in a result set into a log file:

```
do {
    int invID
    double invTotal;
    String invCustomer;
    Date invDate
    invID = rs.getValueInt(1);
    invDate = rs.getValueDate(2);
    invTotal = rs.getValueDouble(3);
    invCustomer = rs.getValueString(4);
    Log("Invoice   : " + String.valueOf(invID));
    Log(" Date     : " + String.valueOf(invDate));
    Log(" Total    : " + String.valueOf(invTotal));
    Log(" Customer : " + invCustomer);
} while (rs.fetchNext() == 0);
```

Related Topics

`executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

close()

Releases the connection used by the result set.

Syntax `public int close(
 int dwFlags)`

dwFlags Specify 0 (zero). Internal use only.

Usage Call `close()` to release a connection used by a result set object when the connection is no longer required. An AppLogic should release unused connections to prevent bottlenecks, especially for applications that support many concurrent users, or that access heavily-used databases.

Tip After calling `close()`, release the result set object by calling the `GX.Release()` method.

Return Value GXE.SUCCESS if the method succeeds.

enumColumnReset()

Resets the column enumeration to the first column in the result set.

Syntax `public int enumColumnReset()`

Usage Use `enumColumnReset()` before iterating through and retrieving columns in a result set. The `enumColumnReset()` method ensures that column retrieval starts from the first column.

Thereafter, use `enumColumns()` to retrieve each column sequentially. Each `enumColumns()` call returns an `IColumn` object for the next column.

Return Value GXE.SUCCESS if the method succeeds.

Example The following code enumerates columns in a result set and creates an HTML page that displays the name and type of the columns:

```
String htmlString;
IColumn col;

ResultSet rs = conn.executeQuery(0, query, null, null);
htmlString += "<h2>Products Table</h2>";
rs.enumColumnReset();
while ((col = rs.enumColumns()) != null) {
    htmlString += "Column Name = ";
    htmlString += col.getName();
    htmlString += ", Column Type = ";
    htmlString += col.getType();
    htmlString += "<br>";
};
return result(htmlString)
```

Related Topics

enumColumns()

Returns the definition of the next column in the result set.

Syntax `public IColumn enumColumns()`

Usage Use `enumColumns()` when the column definition is unknown and required for subsequent operations. The AppLogic can use the returned `IColumn` object to determine characteristics of the column, such as its name, data type, size, whether nulls are allowed, and so on.

Before iterating through columns, the AppLogic should call `enumColumnReset()` to ensure that `enumColumns()` starts with the first column in the table. Each subsequent `enumColumns()` call moves to the next sequential column in the result set and retrieves its column definition in an `IColumn` object.

- Tips**
- The columns might not be returned in the order in which they are defined in the database catalog.
 - Test for null to determine when the last column has been retrieved.

Return Value `IColumn` object containing the next column of data, or null for failure (such as no more columns in the table).

Example The following code enumerates columns in a result set and creates an HTML page that displays the name and type of the columns:

```
String htmlString;
IColumn col;

ResultSet rs = conn.executeQuery(0, query, null, null);
htmlString += "<h2>Products Table</h2>";
rs.enumColumnReset();
while ((col = rs.enumColumns()) != null) {
    htmlString += "Column Name = ";
    htmlString += col.getName();
    htmlString += ", Column Type = ";
    htmlString += col.getType();
    htmlString += "<br>";
};
return result(htmlString)
```

Related Topics `IColumn` interface (deprecated)

fetchNext()

Retrieves the next row in the result set.

Syntax `public int fetchNext()`

Usage Use `fetchNext()` when iterating through rows in the result set to retrieve the contents of the next sequential row and put them in the row buffer for subsequent processing (if `RS_BUFFERING` has been turned ON).

If result set buffering was activated, `fetchNext()` checks the buffer first before fetching the result set from the actual data source. For more information about result set buffering, see the description of the `props` parameter of `executeQuery()` in the `IDataConn` interface (deprecated).

- Tips**
- If the AppLogic needs to iterate through the result set more than once, be sure to start with the first row again by calling `moveTo()` and specifying row number 1. This works only when buffering is enabled.
 - If result set buffering is enabled, the AppLogic can use `moveTo()` to go to any row in the buffer.

Return Value `GXE.SUCCESS` if the method succeeds. The AppLogic can test for the following return values:

- `GX_DA_FETCHNEXT_RESULTS.GX_DA_END_OF_FETCH` indicates that the end of the result set has been reached.
- `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` indicates that the buffer size has been exceeded. When the buffer is exceeded, subsequent rows are still fetched and still buffered, but `GX_DA_FETCHNEXT_RESULTS.GX_DA_BUFFER_EXCEEDED` is returned for each overflow row.

Example The following code copies the data from all the rows in a result set into a log file:

```
do {
    int invID
    double invTotal;
    String invCustomer;
    Date invDate
    invID = rs.getValueInt(1);
    invDate = rs.getValueDate(2);
    invTotal = rs.getValueDouble(3);
    invCustomer = rs.getValueString(4);
    Log("Invoice   : " + String.valueOf(invID));
    Log(" Date     : " + String.valueOf(invDate));
    Log(" Total    : " + String.valueOf(invTotal));
    Log(" Customer : " + invCustomer);
```

```
} while (rs.fetchNext() == 0);
```

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

getColumn()

Returns the column definition of the column with the specified name.

Syntax

```
public IColumn getColumn(
    String colName)
```

colName Name of a column or column alias (such as computed columns) in the result set, or an empty string if no alias is specified for the computed column.

Usage Use `getColumn()` when the data definition of the column is unknown and is required for subsequent operations. The `AppLogic` can then use methods in the `IColumn` interface (deprecated) to obtain descriptive information about a table column from the database catalog, such as the column name, precision, scale, size, table, and data type.

- Tips**
- Use `getColumnByOrd()` instead when the column position is known but its name is unknown.
 - Columns that are the result of query expressions or formulas, such as `invoice.count * product.price`, should have a field alias for the column in the result set. Otherwise, the `AppLogic` can refer to the column only by its ordinal position. The `AppLogic` calls `setFields()` in the `IQuery` interface (deprecated) to specify field aliases.

Return Value `IColumn` object, or null for failure (such as an invalid column name).

Example

```
// Determine whether the column name is valid
IColumn col;
if((col=rs.getColumn("CustID"))==null)
    return null;
// otherwise, process column using IColumn methods ...
```

Related Topics `IColumn` interface (deprecated)

`executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

getColumnByOrd()

Returns the column definition for the column in the specified ordinal position.

Syntax `public IColumn getColumnByOrd(
 int colIndex)`

colIndex Ordinal position of a column in the result set. The ordinal position of the first column in the result set is 1, the second column is 2, and so on. The ODBC maximum is 255 columns.

Usage Use `getColumnByOrd()` when the name of the column is unknown and is required for subsequent operations. The AppLogic can then use methods in the `IColumn` interface (deprecated) to obtain descriptive information about a table column from the database catalog, such as the column name, precision, scale, size, table, and data type.

Tip Use `getColumn()` instead when the column name is known but its ordinal position is unknown.

Return Value `IColumn` object, or null for failure (such as an invalid column position).

Example

```
// Determine whether the column position is valid
IColumn col;
if((col=rs.getColumnByOrd(colOrd))==null)
    return null;
// otherwise, process column using IColumn methods . . .
```

Related Topics `IColumn` interface (deprecated)

`executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

getColumnOrdinal()

Returns the ordinal position of the column with the specified name.

Syntax `public int getColumnOrdinal(
 String szColumn)`

szColumn Name of a column in the result set.

Usage Use `getColumnOrdinal()` when the ordinal position of the column is unknown but is required for subsequent operations. For example, the ordinal position of a column is a required parameter value for the `getValue**()` methods, such as `getValueString()` and `getValueInt()`.

Return Value An int value representing the ordinal position of the specified column, or zero for failure (such as an invalid column name). The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Example

```
// Execute the query
IResultSet rs=conn.executeQuery(0, query, null, null);

// Check for a non empty result
if((rs!=null)&&(rs.getRowNumber())>0)
    return result("Sorry, this user already exists");

// Get the ordinal positions of named columns
int cCustId = rs.getColumnOrdinal("CustomerId");
int cFirst = rs.getColumnOrdinal("FirstName");
int cLast = rs.getColumnOrdinal("LastName");
int cPassword = rs.getColumnOrdinal("Password");
int cAddr1 = rs.getColumnOrdinal("BillAddr1");
int cAddr2 = rs.getColumnOrdinal("BillAddr2");
int cCity = rs.getColumnOrdinal("BillCity");
int cState = rs.getColumnOrdinal("BillState");
int cZip = rs.getColumnOrdinal("BillZip");
int cEmail = rs.getColumnOrdinal("Email");
int cPhone = rs.getColumnOrdinal("Phone");
if((cCustId*cFirst*cLast*cPassword*cAddr1*cAddr2*cCity*cState*cZip*cEmail*cPhone)==0)
    return result("Can't map columns");
```

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

getNumColumns()

Returns the number of columns in the result set.

Syntax `public int getNumColumns()`

Usage Use `getNumColumns()` if the number of columns in the result set is unknown and required for subsequent operations. For example, when iterating through columns in the result set, the `AppLogic` can use this information to specify the maximum number of iterations.

Return Value An `int` value representing the number of columns, or zero for failure.

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)

`getOrder()`

For asynchronous queries, returns an `IOrder` object used for obtaining the current status and return value of the query.

Syntax `public IOrder getOrder()`

Usage Use `getOrder()` to create an `IOrder` object that the `AppLogic` can use to return status information about an asynchronous query.

Rule The query must be run asynchronously. To run an asynchronous query, the `AppLogic` must specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC` as the `dwFlags` parameter in `executeQuery()` in the `IDataConn` interface (deprecated).

- Tips**
- The `AppLogic` can determine the status of the query (active, done, cancelled, or unknown) using `getState()` in the `IOrder` interface (deprecated).
 - Alternatively, use `WaitForOrder()` in the `GX` class (deprecated), which waits until the asynchronous operation is done, to determine the processing status of an asynchronous query.

Return Value `IOrder` object representing the status and return value of the asynchronous query, or null for failure (such as when the query is synchronous).

Related Topics `IOrder` interface (deprecated)

`executeQuery()` in the `IDataConn` interface (deprecated)

`getRowNumber()`

Returns the number of the current row in the result set.

Syntax `public int getRowNumber()`

Usage When iterating through rows in the result set, use `getRowNumber()` to keep track of the number of rows processed.

Return Value An int value representing the number of the current row, or zero for an empty result set or failure (such as an invalid row). The number of the first row in the result set is 1, the second row is 2, and so on. If zero is returned the first time the AppLogic calls `getRowNumber()`, that means the result set is empty.

Example

```
// Execute the query
IResultSet rs = conn.executeQuery(0, qry, null, null);
// Test for an empty result set
if((rs==null)||rs.getRowNumber()==0)
    return result("Customer does not exist");
```

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)
`execute()` in the `IPreparedQuery` interface (deprecated)

getStatus()

Returns the processing status of the asynchronous database operation on the database server.

Syntax `public int getStatus()`

Usage Use `getStatus()` to return status information to use in error-handling code.

Return Value One of the following:

| Value | Description |
|------------------------------------|--|
| <code>GXORDER_STATE_ACTIVE</code> | The asynchronous database operation is still being processed. |
| <code>GXORDER_STATE_CANCEL</code> | The asynchronous database operation has been cancelled. |
| <code>GXORDER_STATE_DONE</code> | The asynchronous database operation has been completely processed. |
| <code>GXORDER_STATE_UNKNOWN</code> | The status of the asynchronous database operation is unknown. |

getValueBinary()

Returns the value of a BINARY column in the current row of the result set.

Syntax

```
public byte[] getValueBinary(  
    int Ordinal)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

Usage Use `getValueBinary()` to retrieve binary data of which the total size is equal to or smaller than 64Kb. If the value of the data is larger than 64Kb, use `getValueBinaryPiece()`.

Rule The data type of the column must be BINARY, VARBINARY, or equivalent database type.

Tip If the value of the data is of type LONGBINARY, use `getValueBinaryPiece()`.

Return Value A byte array for success, or null for failure (such as an invalid column number or data type mismatch).

getValueBinaryPiece()

Returns the value of a LONGBINARY column in the current row from the result set.

Syntax

```
public byte[] getValueBinaryPiece(  
    int Ordinal,  
    int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

nLength The requested length of the data, in bytes. Up to 64Kb.

Usage Use `getValueBinaryPiece()` to retrieve binary data of which the total size is larger than 64K. Such binary data must be retrieved in 64K increments. Therefore, you might use `getValueBinaryPiece()` several times to retrieve large amounts of data.

- Rules**
- The data type of the column must be longvarbinary or equivalent database vendor binary type.
 - You cannot call `getValueBinaryPiece()` for a row after you call `fetchNext()`.
- Tips**
- To determine the total size of the binary data that has been retrieved, use `getValueSize()`.
 - To retrieve binary data of which the total size is less than 64Kb, use `getValueBinary()`.

Return Value A byte array for success, or null for failure (such as an invalid column number or data type mismatch).

Example The following example shows how to retrieve BLOBs from a database:

```
IQuery    query = null;
IResultSet rs    = null;

query = createQuery();

query.setTables("blobtable");
query.setFields("blobcol");

rs = conn.executeQuery(0, query, null, null);

if (rs != null && rs.getRowNumber() > 0)
{
    byte    BlobChunk[];
    int    expectSize, gotSize;
    expectSize = 65535;

    BlobChunk = rs.getValueBinaryPiece(1, expectSize);
    gotSize = rs.getValueSize(1);

    if (gotSize == expectSize)
        System.out.println("got a full chunk," +
            "size = "+gotSize);
    else
        System.out.println("got a partial chunk," +
            "size = "+gotSize);

    rs.close(0);
}
```

getValueDateString()

Returns the value of a Date type column, as a string, from the current row in the result set.

Syntax `public String getValueDateString(
int colIndex)`

colIndex Ordinal position of a column in the result set. The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Usage Use `getValueDateString()` to retrieve date values from the result set for subsequent processing. The following is an example of the format in which `getValueDateString()` returns a date:

```
Jan 26 1998 12:35:00
```

Rule The specified column must be a Date, Date Time, or Time data type.

Return Value The date value as a string, or null for failure (such as an invalid column number or data type mismatch).

Example

```
ResultSet rs=conn.executeQuery(0, qry, null, null);
// Check input parameters
if((rs==null)|| (rs.getRowNumber()==0)|| (colName==null))
    return null;
int colOrd=rs.getColumnOrdinal(colName);
IColumn col;
if((col=rs.getColumnByOrd(colOrd))==null)
    return null;
String valStr=null;
// Switch type
switch(col.getType()) {
    case GX_DA_DATA_TYPES.GX_DA_TYPE_STRING:
        valStr = rs.getValueString(colOrd);
        break;
    case GX_DA_DATA_TYPES.GX_DA_TYPE_LONG:
        valStr=String.valueOf(rs.getValueInt(colOrd));
        break;
    case IGX_DA_DATA_TYPES.GX_DA_TYPE_DATE:
        valStr=rs.getValueDateString(colOrd);
        break;
```

```

        case GX_DA_DATA_TYPES.GX_DA_TYPE_DOUBLE:
            valStr=String.valueOf(rs.getValueDouble(colOrd));
            break;
        default:
    };
    return valStr;

```

getValueDouble()

Returns the value of a double type column from the current row in the result set.

Syntax `public double getValueDouble(
int colIndex)`

colIndex Ordinal position of a column in the result set. The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Usage Use `getValueDouble()` to retrieve decimal, floats, real, numeric, and double values from the result set for subsequent processing.

Rule The specified column must be a double data type.

Return Value A double value, or zero for failure (such as an invalid column number or data type mismatch).

Example 1 The following code retrieves data from a result set:

```

// Execute the query
rs = conn.executeQuery(0, query, null, null);
if((rs==null)|| (rs.getRowNumber()==0))
{
    // It does not exist, so remove it from the basket
    session.removeProduct(product, this);
    continue;
}
// Retrieve values from the result set
String prodName=
rs.getValueString(rs.getColumnOrdinal("ProdName"));
double price;
price = rs.getValueDouble(rs.getColumnOrdinal("Price"));

```

Example 2 The following code copies the data from all the rows in a result set into a log file:

```
do {
    int invID
    double invTotal;
    String invCustomer;
    Date invDate
    invID = rs.getValueInt(1);
    invDate = rs.getValueDate(2);
    invTotal = rs.getValueDouble(3);
    invCustomer = rs.getValueString(4);
    Log("Invoice   : " + String.valueOf(invID));
    Log(" Date     : " + String.valueOf(invDate));
    Log(" Total    : " + String.valueOf(invTotal));
    Log(" Customer : " + invCustomer);
} while (rs.fetchNext() == 0);
```

getValueInt()

Returns the value of an int type column from the current row in the result set.

Syntax `public int getValueInt(
int colIndex)`

colIndex Ordinal position of a column. The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Usage Use `getValueInt()` to retrieve int or long values from the result set for subsequent processing.

Rule The specified column must be an int or long data type.

Return Value An int value, or zero for failure (such as an invalid column number or data type mismatch).

Example 1 The following code retrieves data from a result set:

```
// Execute the query
ResultSet rs=conn.executeQuery(0, query, null, null);
// Check the results
if((rs==null)|| (rs.getRowNumber(>0))
{
```

```
// Pull the current inventory and name for the product
int prodInv=
rs.getValueInt(rs.getColumnOrdinal("COL_INVENTORY"));
String prodName=
rs.getValueString(rs.getColumnOrdinal("COL_PRODNAME"));
```

Example 2 The following code copies the data from all the rows in a result set into a log file:

```
do {
    int invID
    double invTotal;
    String invCustomer;
    Date invDate
    invID = rs.getValueInt(1);
    invDate = rs.getValueDate(2);
    invTotal = rs.getValueDouble(3);
    invCustomer = rs.getValueString(4);
    Log("Invoice   : " + String.valueOf(invID));
    Log(" Date     : " + String.valueOf(invDate));
    Log(" Total    : " + String.valueOf(invTotal));
    Log(" Customer : " + invCustomer);
} while (rs.fetchNext() == 0);
```

getValueSize()

Returns the cumulative number of bytes that have been fetched from a column in the current row of the result set.

Syntax `public int getValueSize(
int colIndex);`

colIndex Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

Usage Use `getValueSize()` during data retrieval to check the size of the BLOB column that has been retrieved. When the AppLogic first calls `getValueSize()` before calling `getValueBinaryPiece()` to retrieve the value of a LONGBINARY column, `getValueSize()` returns 0.

Each subsequent `getValueSize()` call during data retrieval returns the cumulative size of the data that has been retrieved.

Return Value An integer value representing the number of bytes retrieved from a column, or a negative number for failure.

Related Topics `getValueBinaryPiece()`

getValueString()

Returns the value of a String type column from the current row in the result set.

Syntax `public String getValueString(
int colIndex)`

colIndex Ordinal position of a column in the result set. The ordinal position of the first column in the result set is 1, the second column is 2, and so on.

Usage Use `getValueString()` to retrieve String values from the result set for subsequent processing.

Rule The specified column must be a String data type.

Return Value A String value, or null for failure (such as an invalid column number or data type mismatch).

Example 1 The following code retrieves data from a result set:

```
// Execute the query
rs = conn.executeQuery(0, query, null, null);
if((rs==null)|| (rs.getRowNumber()==0))
{
    // It does not exist, so remove it from the basket
    session.removeProduct(product, this);
    continue;
}
// Retrieve values from the result set
String prodName=
rs.getValueString(rs.getColumnOrdinal("ProdName"));
double price=
rs.getValueDouble(rs.getColumnOrdinal("Price"));
```

Example 2 The following code copies the data from all the rows in a result set into a log file:

```
do {
    int invID
    double invTotal;
```

```

String invCustomer;
Date invDate
invID = rs.getValueInt(1);
invDate = rs.getValueDate(2);
invTotal = rs.getValueDouble(3);
invCustomer = rs.getValueString(4);
Log("Invoice   : " + String.valueOf(invID));
Log(" Date     : " + String.valueOf(invDate));
Log(" Total    : " + String.valueOf(invTotal));
Log(" Customer : " + invCustomer);
} while (rs.fetchNext() == 0);

```

getValueText()

Returns the value of a TEXT column in the current row from the result set.

Syntax `public String getValueText(
int Ordinal)`

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

Usage Use `getValueText()` to retrieve TEXT data of which the total size is equal to or smaller than 64K.

Rule The data type of the column must be TEXT or database equivalent.

Tips

- To determine the actual size of the TEXT data, use `getValueSize()`.
- If the value of the data is of type LONGTEXT, use `getValueTextPiece()`.

Return Value A String object, or null for failure (such as an invalid column number or data type mismatch).

getValueTextPiece()

Returns the value of a LONGTEXT column in the current row from the result set.

Syntax `public String getValueTextPiece(
int Ordinal)`

```
int Ordinal,  
int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

nLength The requested length of the data, in bytes. Up to 64Kb.

Usage Use `getValueTextPiece()` to retrieve LONGTEXT data. LONGTEXT values must be retrieved in 64K increments, therefore, you must use `getValueTextPiece()` repeatedly to retrieve the data.

Rules

- The data type of the column must be LONGTEXT or database equivalent.
- Call `getValueTextPiece()` until you get all the data before calling `fetchNext()` again.

Tips

- To determine the actual size of the LONGTEXT data, use `getValueSize()`. The actual size of the data determines the number of times you need to call `getValueTextPiece()`.
- For data of type TEXT, use `getValueText()`.

Return Value A String object, or null for failure (such as an invalid column number or data type mismatch).

moveTo()

Moves to the specified row in the result set.

Syntax

```
public int moveTo(  
    int nRow)
```

nRow Number of the row in the result set to move to. The number of the first row in the result set is 1, the second row is 2, and so on.

Usage Use `moveTo()` to move the internal cursor to a specific row in the result set, skipping over rows to be excluded from processing. In addition, if `RS_BUFFERING` is ON, after iterating through all rows in a result set, the `AppLogic` can return to the first row in the result set in preparation for the next iteration.

Rules

- The specified row number must exist in the result set.

- If row buffering is not enabled for the result set, the AppLogic can move forward to subsequent rows only. The AppLogic cannot return to rows that have been processed previously.

Tip Use `rowCount()`, if the database driver supports it, to obtain the maximum number of rows in the result set.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

rowCount()

Returns the total number of rows retrieved thus far from the data source.

Syntax `public int rowCount()`

Usage Use `rowCount()` to return the current number of rows processed so far in the result set. This method is useful for checking that data exists in the result set before processing the result set.

If iterating through rows in a result set that has been completely returned, use `rowCount()` to determine the current maximum number of rows to process.

Tip If result set buffering is enabled, the AppLogic can use `rowCount()` to find the current number of rows in the buffer.

Return Value An `int` value representing the total number of rows in the result set, or zero for failure (such as an empty result set or unable to retrieve any rows).

Example

```
do {
    htmlString += rs.getValueString(DESCRIPTION_COL);

    // Truncate the report after 10 rows.
    if (rs.rowCount() > 10)
        break;

} while (rs.fetchNext() == GXE_SUCCESS);
```

Related Topics `executeQuery()` in the `IDataConn` interface (deprecated)

`execute()` in the `IPreparedStatement` interface (deprecated)

wasNull()

Checks if the value of a column is null or not.

Syntax `public boolean wasNull(
 int Ordinal)`

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

Usage Use `wasNull()` to check if a column value is null or not. This method is useful for determining if a null return value is an error condition or if the column contained no value.

Return Value True if the column value is null, false if the value is not.

IRowSet2 interface

IRowSet2 is an extension to the `javax.sql.RowSet` interface. IRowSet2 includes a set of methods that are needed for some of the server's backend. In particular, this interface includes initialization methods and some "set" methods that associate a RowSet to a particular servlet request or servlet response.

Although anyone developing a NAS application can use IRowSet2, this interface is intended for use in components generated by Netscape Application Builder.

IRowSet2 replaces the `IDataSet` interface from NAB 3.0.

Package

`com.netscape.server.servlet.extension`

Methods

| Method | Description |
|-----------------------------|--|
| <code>getName()</code> | Retrieves the name under which the RowSet is stored in the <code>HttpServletRequest</code> object. |
| <code>init()</code> | Initializes the RowSet for execution. |
| <code>initMetaInfo()</code> | Initializes the RowSet to match specific metadata. |
| <code>setName()</code> | Sets the name of the RowSet. |
| <code>setRequest()</code> | Sets the request for this RowSet. |
| <code>setResponse()</code> | Sets the response for this RowSet. |

Related Topics

`javax.sql.RowSet` interface

getName()

Retrieves the name under which the RowSet is stored in the `HttpServletRequest` object.

Syntax `public abstract String getName()`

Usage Use `getName()` to retrieve the name of a RowSet. If the RowSet is built over the ITemplateData interface, then the retrieved name is also the group name.

Related Topics `setName()`,
`setAttribute()` in class `javax.servlet.http.HttpServletRequest`,
ITemplateData interface

init()

Initializes the RowSet for execution.

Syntax `public abstract void init()`

Usage Use `init()` to initialize the RowSet. For example, you can call `init()` to load a query from a file.

Related Topics `initMetaInfo()`,
DBRowSet class

initMetaInfo()

Initializes the RowSet to match specific metadata.

Syntax `public boolean initMetaInfo(
 OrderedHash metaData) throws SQLException`

metaData An OrderedHash of NTV properties. The RowSet will be initialized with these properties.

Usage Use `initMetaInfo()` to initialize a RowSet. This method is called by `BaseUtils.initRowSets()` when the RowSet is created.

The `metaData` parameter specifies the properties stored in a method in the NTV list. The properties specify the query file name, the query name, the connection name, and the input bindings for the query parameters. In this way, the RowSet is initialized so as to match the properties stored in the NTV-list method.

The `initMetaInfo()` method must be called when the RowSet is constructed; that is, before `init()`. For example, you can call `initMetaInfo()` to set the filename and query for a subsequent query-load.

Return Value Returns false if initialization fails.

setName()

Sets the name of the RowSet.

Syntax `public abstract void setName(
String newName)`

newName The name you want to call this RowSet.

Usage Use setName() to set the name of the RowSet. This method must be called when the RowSet is constructed. You can also use getName() to retrieve the name of the RowSet.

Note that the setName() method does not store the RowSet into the request under the name specified in this call.

Related Topics `getName()`

setRequest()

Sets the request for this RowSet.

Syntax `public abstract void setRequest(
HttpServletRequest request)`

request The HttpServletRequest object.

Usage Use setRequest() and setResponse() to set the request and response objects for this RowSet. These methods must be called when the RowSet is constructed. Calling these methods will associate the RowSet with a particular servlet request or servlet response.

Related Topics `setResponse()`

setResponse()

Sets the response for this RowSet.

Syntax `public abstract void setResponse(
HttpServletResponse response)`

response The HttpServletResponse object.

Usage Use `setRequest()` and `setResponse()` to set the request and response objects for this `RowSet`. These methods must be called when the `RowSet` is constructed. Calling these methods will associate the `RowSet` with a particular servlet request or servlet response.

Related Topics `setRequest()`

ISequence interface (*deprecated*)

ISequence is deprecated and is provided for backward compatibility only.

The ISequence interface represents a sequence in an underlying database. Sequences are implemented in the database server to provide unique, incremental numbers assigned to records in a database. For example, the AppLogic can create a customer ID sequence to generate customer IDs, or create a purchase order sequence to generate purchase order numbers.

The ISequence interface provides methods to determine the current sequence value or to increment to the next sequence value. Sequences are useful for many types of applications, such as order entry applications.

The ISequence interface is part of the Data Access Engine (DAE) service.

To create an instance of the ISequence interface, use createSequence() in the ISequenceMgr interface (deprecated), as shown in the following example:

```
IDataConn dc;
dc = createDataConn(...);
ISequenceMgr sm;
sm = (ISequenceMgr) dc;
ISequence seq;
seq = sm.createSequence(...);
```

Package

com.kivasoft

Methods

| Method | Description |
|--------------|--|
| drop() | Deletes the sequence from the database. |
| getCurrent() | Returns the current value in the sequence. |
| getNext() | Increments the sequence and returns its incremented value. |

Related Topics

`createSequence()` in the `ISequenceMgr` interface (deprecated)

drop()

Deletes the sequence from the database.

Syntax `public int drop();`

Usage Use `drop()` to remove a sequence from the database. Be careful when using this method. If the database implements the sequence as a field in a table, `drop()` will delete the entire table, not just the sequence field. If the database implements the sequence as an object, as does Oracle for example, `drop()` deletes only the sequence object.

Typically, once you start a sequence there is no reason to delete it. The sequence is normally used to create a permanent, unique numbering system for data in a database. However, you might use `drop()` if you are using the sequence mechanism to generate unique sequential numbers for a temporary programmatic purpose.

Return Value `GXE.SUCCESS` if the method succeeds

Related Topics `createSequence()` in the `ISequenceMgr` interface (deprecated)

getCurrent()

Returns the current value in the sequence.

Syntax `public int getCurrent();`

Usage Use `getCurrent()` to obtain the current value of the sequence without actually incrementing the sequence value.

Alternatively, use `getNext()` to increment the sequence and obtain its incremented value.

Rule For Oracle databases, the session must first call `getNext()` before it can call `getCurrent()`.

Tip Unlike `getNext()`, calling `getCurrent()` does not change the value of the sequence.

Return Value An int value representing the current value of the sequence, or -1 for failure.

Related Topics createSequence() in the ISequenceMgr interface (deprecated)

getNext()

Increments the sequence and returns its incremented value.

Syntax `public int getNext();`

Usage Use getNext() to increment and return the value of the sequence by the amount specified in the increment parameter in the createSequence() method in the ISequenceMgr interface (deprecated). The incrementation value is always a positive integer.

Alternatively, use getCurrent() to obtain the current value of the sequence without incrementing the sequence.

Return Value An int value representing the next (incremente)d value of the sequence, or -1 for failure.

- Rules**
- For Informix and Sybase databases, the session that creates the sequence must call getNext() at least once before any other session can call getSequence() in the ISequenceMgr interface (deprecated).
 - For Oracle databases, the session must first call getNext() before it can call getCurrent().

Tip Successive calls to getNext() return successive integers.

Example

```

IDataConn conn;
conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
    "salesDB", "salesDB", "steve", "pass7878");

// Cast the connection to an ISequenceMgr interface
// and set up the sequence
ISequence seq;
seq = ((ISequenceMgr) conn).createSequence("mySeq", "orders.ID", 100, 1,
    null)

// To start the sequence, call getNext().
int seqVal;
seqVal = seq.getNext();

```

ISequence interface (deprecated)

```
// Use the sequence number to perform the task for
// which you created it.
IQuery qry = createQuery();
qry.setSQL("INSERT into orders (ID) values (" + seqVal + "), " +
    "(cust) values (" + custname + ")");
```

Related Topics [createSequence\(\)](#) in the ISequenceMgr interface (deprecated)

ISequenceMgr interface (*deprecated*)

ISequenceMgr is deprecated and is provided for backward compatibility only.

The ISequenceMgr interface provides methods for creating and retrieving an ISequence object, which represents a sequence in an underlying database. Sequences provide unique, incremental numbers assigned to records in a database. After creating a sequence by calling createSequence(), the AppLogic can use methods in the ISequence interface (deprecated) to retrieve sequence values.

The ISequenceMgr interface is part of the Data Access Engine (DAE) service.

The ISequenceMgr interface is implemented by the IDataConn object. To use it, cast IDataConn to the ISequenceMgr interface, as shown in the following example:

```
IDataConn dc;
dc = createDataConn(...);
ISequenceMgr sm;
sm = (ISequenceMgr) dc;
```

Package

com.kivasoft

Methods

| Method | Description |
|------------------|---|
| createSequence() | Creates a new sequence object in the underlying database. |
| getSequence() | Returns an existing sequence object for the specified sequence name in the underlying database. |

Related Topics

ISequence interface (deprecated)

createSequence()

Creates a new sequence object in the underlying database.

Syntax

```
public ISequence createSequence(  
    String szName,  
    String szCol,  
    int dwStart,  
    int dwIncrement,  
    String szOptions);
```

szName Name of the sequence. The name can be simple (such as "mySeq") or qualified with the name of the database owner (such as "mary.mySeq").

szCol Name of the column in the database table to use if the database supports sequence column types. For more information, see your database vendor's documentation. If null, defaults to "SEQVAL".

dwStart Starting value of the sequence. Must be a positive integer.

dwIncrement Value by which to increment the sequence with each call to getNext(). Must be a positive integer. Defaults to one (1). Not all databases support this feature. For more information, see your database vendor's documentation.

szOptions Additional sequence creation options that are database vendor-specific:

- For Oracle, these are options to the "CREATE Sequence" command.
- For SQL Server (Sybase and Microsoft) databases, these are column options for the "CREATE Table" command.
- For Informix, no options exist.

For more information, see your database vendor's documentation.

Usage Use createSequence() to create a new ISequence object, representing an incremental number generator, with the specified starting value. The AppLogic can then use methods in the ISequence interface (deprecated) to obtain the current or next value of this sequence object.

Sequences provide unique, incremental numbers assigned to records in a database. For example, you can create a customer ID sequence to generate customer IDs, or create a purchase order sequence to generate purchase order numbers.

Tip For Oracle databases, `createSequence()` creates a sequence object. For Sybase, Informix, and Microsoft SQL Server databases, `createSequence()` creates a table object with a sequence column.

Return Value ISequence object, or null for failure (such as an invalid database connection).

Example

```

IDataConn conn;
conn = createDataConn(0, GX_DA_DAD_DRIVERS.GX_DA_DRIVER_ODBC,
    "salesDB", "salesDB", "steve", "pass7878");

// Cast the connection to an ISequenceMgr interface
// and set up the sequence
ISequence seq;
seq = ((ISequenceMgr) conn).createSequence("mySeq", "orders.ID", 100, 1,
    null)

// To start the sequence, call getNext().
int seqVal;
seqVal = seq.getNext();

// Use the sequence number to perform the task for
// which you created it.
IQuery qry = createQuery();
qry.setSQL("INSERT into orders (ID) values (" + seqVal + ")," +
    "(cust) values (" + custname + ")");

```

Related Topics ISequence interface (deprecated)

getSequence()

Returns an existing sequence object, for the specified sequence name, from the underlying database.

Syntax **szName** Name of the sequence. The name can be simple (such as "mySeq") or qualified with the name of the database owner (such as "mary.mySeq").

szCol Name of the column in the database table to use if the database supports sequence column types. For more information, see your database vendor's documentation. If null, defaults to "SEQVAL".

Usage Use `getSequence()` to obtain the `ISequence` object with the specified name in the underlying database. The `AppLogic` can then use methods in the `ISequence` interface (deprecated) to obtain the current or next value of this sequence object.

Sequences provide unique, incremental numbers assigned to records in a database. For example, you can create a customer ID sequence to generate customer IDs, or create a purchase order sequence to generate purchase order numbers.

- Rules**
- Use `createSequence()` to create the `ISequence` object.
 - The specified sequence name must be valid.
 - For Informix and Sybase databases, the session that creates the sequence must call `getNext()` at least once before any other session can call `getSequence()`.

Return Value `ISequence` object, or null for failure (such as an invalid sequence name).

Related Topics `ISequence` interface (deprecated)

IServerContext interface

The IServerContext interface provides a way to access NAS-specific server interfaces from within servlets or EJBs. From servlets, the standard servlet context can be cast to an IServerContext object. From EJBs, a javax.ejb.EJBContext object can be cast to an IServerContext.

IServerContext is often used together with the ICallerContext interface.

Package

com.netscape.server

Methods

| Method | Description |
|---------------------------|--|
| createIdentityByString() | Creates an instance of java.security.Identity. |
| getCallerContext() | Retrieves the com.netscape.server.ICallerContext object. |
| getContext() | Retrieves the com.kivasoft.IContext object. |

Related Topics

com.kivasoft.applogic.AppLogic class (deprecated),
 com.kivasoft.dlm.GXContext class,
 com.kivasoft.IContext interface,
 com.netscape.server.ICallerContext interface,

javax.ejb.EJBContext interface

Chapter 12, "Writing Secure Applications" in *Programmer's Guide (Java)*

createIdentityByString()

Creates an instance of java.security.Identity.

Syntax `public java.security.Identity createIdentityByString(
 String identity)`

identity The name to associate with the Identity object.

Usage Neither of the specifications for servlets and EJBs describe a standard way of creating an instance of `java.security.Identity`. The `createIdentityByString()` method overcomes this limitation. Use this method to create an `Identity` instance within a NAS 4.0 application.

Once you create the `Identity`, you can then (for example) pass it to a subsequent test for equality or use it as the role parameter of the `isCallerInRole()` method. The `isCallerInRole()` method is available in both `javax.ejb.EJBContext` and `com.netscape.server.ICallerContext`.

Return Value A `java.security.Identity` object with the given name.

getCallerContext()

Retrieves the `com.netscape.server.ICallerContext` object.

Syntax `public ICallerContext getCallerContext()`

Usage Use this method within servlets to identify the caller context.

Currently, the Servlet API specification provides no way to obtain the caller's principal from within a servlet. By contrast, the EJB specification defines the `javax.ejb.EJBContext.getCallerPrincipal()` method.

The `getCallerContext()` method is provided to add support for programmatic security from servlets. However, after this support is added to the Servlet API specification, the `getCallerContext()` method will be deprecated.

Return Value The `ICallerContext` object that identifies the caller context within the servlet.

getContext()

Retrieves the `com.kivasoft.IContext` object.

Syntax `public com.kivasoft.IContext getContext()`

Usage Use this method within servlets or EJBs. The `getContext()` method lets you access NAS-specific application modules or extensions that run in a pre-NAS-4.0 environment.

The retrieved `IContext` object is the old NAS 2.x style context. The `getContext()` method is especially useful when combined with the functions from the `com.kivasoft.dlm.GXContext` class.

Example Assume you have declared the following bean member variable containing SessionContext:

```
public transient javax.ejb.SessionContext m_ctx = null;
```

The following sample code shows a bean implementation method that needs to invoke some NAS 2.x functionality:

```
public invokeKivaMethod()
{
    // obtain 2.x style KIVA context from standard bean context

    com.netscape.server.IServerContext sc;
    // cast the standard servlet context or bean context
    //    to IServerContext
    sc = (com.netscape.server.IServerContext) m_ctx;

    // acquire 2.x style context
    com.kivasoft.IContext gxContext = sc.getContext();

    // Use the context with GXContext class to access 2.x functionality.
    // In this case, choose a logging operation
    com.kivasoft.dlm.GXContext.Log(
        gxContext,
        com.kivasoft.types.GXLOG.GXEVENTTYPE_INFORMATION,
        -1,
        "Send this informational message to server log");

    ...
}
```

Return Value The IContext object that identifies the context within the servlet or EJB.

IServletErrorHandler interface

The interface `com.netscape.server.servlet.extension.HttpServletRequest2` uses `IServletErrorHandler` to inform the user of validation errors or other types of errors.

Although anyone developing an application for NAS can use `IServletErrorHandler`, this interface is typically used in components generated by Netscape Application Builder.

Package

`com.netscape.server.servlet.extension`

Methods

| Method | Description |
|---|---|
| <code>handleInputValueError()</code> | Performs error handling for input parameter validation. |
| <code>handleSessionVariableError()</code> | Performs error handling for session validation. |
| <code>streamError()</code> | Sends a standard error as a data stream. |

handleInputValueError()

Performs error handling for input parameter validation.

Syntax

```
public abstract int handleInputValueError(
    HttpServletRequest request,
    String name,
    int errorType)
```

request The `HttpServletRequest` containing the invalid input.

name The parameter name that failed validation.

errorType An integer value identifying the error type. The error type is passed in by the `HttpServletRequest2.validate()` method. Values for possible error types are listed under the `validate()` method.

Usage Typically, the `handleInputValueError()` method is never called directly by the application programmer. Instead, this method is called by `HttpServletRequest2.validate()` for each error that is found during input parameter validation.

`handleInputValueError()` is called if a parameter fails its metadata-driven validation. You can use this method in one of several ways:

- Use the default handling. As an option, you can call `getServletErrorHandler()` on the request and delegate to the retrieved error handler instead.
- Use the default handling, but change the template to be streamed. This case is presented in Examples.
- Handle the error completely by yourself. This case is presented in Examples.

The default behavior of `handleInputValueError()` is to add values into three validation vectors. These vectors are listed in three methods of `HttpServletRequest2`: `getErrorCodes()`, `getErrorMsgs()`, and `getErrorVars()`.

To override the default behavior, implement `IServletErrorHandler` and implement `handleInputValueError()` to handle errors related to input parameter validation. Before calling `validate()`, call `setServletErrorHandler()` on the `HttpServletRequest2` object.

Tip It is recommended that you standardize error handling, so you may want to place error handling functionality in the default `BaseServlet`.

Return Value This method returns any of the following integer values:

| Value | When Is This Returned |
|--|--|
| SUCCESS | When everything works. |
| FAIL_STREAM_ERROR or any positive integer | When an error has occurred but no error has yet been streamed to the user; the caller of the method must stream an error. For example, the default implementation returns <code>ERROR_INPUT</code> (a value of 3). |
| FAIL_DONT_STREAM_ERROR or any negative integer | When an error has occurred and an error has been streamed to the user; the caller of the method should not stream anymore information. |

Example The following code fragment uses the default handling but changes the template that is streamed. Typically, you would create this code in an inner class of the servlet that uses the error handler.

```
public class foo implements IServletErrorHandler
{
// The old error handler
    IServletErrorHandler m_old

// Store the old servlet error handler somewhere
    public foo (HttpServletRequest2 request)
    {
        m_old = request.getServletErrorHandler();
    }

// Handle the error as before, but set additional information
    public int handleInputValueError(
        HttpServletRequest request,
        String name,
        int errorType)
    {
        m_old.handleInputValueError(request, name, errorType);
        request.setAttribute("AddlInfo", "name failed");
        return FAIL_STREAM_ERROR;
    }

// Not interested in session variables,
// so just delegate to the old handler
    public int handleSessionVariableError(
        HttpServletRequest request,
        String name,
        int errorType)
    {
        return m_old.handleSessionVariableError(request, name, errorType);
    }

// Handle the validation error appropriately
    public int streamError(
        HttpServletRequest request,
        HttpServletResponse response,
        Object errorSrc,
        int errorType)
```

```

    {
        if (errorType == ERROR_VALIDATION_FAILED)
        {
            BaseUtils.includeJSP(request, response, "MyErrorTemplate.jsp");
            return FAIL_DONT_STREAM_ERROR;
        }
        else
        {
            // handle the other errors by delegation
            return m_old.streamError(request, response, errorSrc, errorType)
        }
    }
}

```

In your servlet, you call the `validate()` method after setting the error handler that `validate()` will use when it reports errors:

```

...
IServletErrorHandler handler = new foo((HttpServletRequest2)request);
((HttpServletRequest2)request).setServletErrorHandler(handler);
...
request.validate(response)

```

Related Topics `handleSessionVariableError()`,
`HttpServletRequest2` interface

handleSessionVariableError()

Performs error handling for session validation.

Syntax `public abstract int handleSessionVariableError(
 HttpServletRequest request,
 String name,
 int errorType)`

request The `HttpServletRequest` containing the invalid session.

name The parameter name that failed validation.

errorType Unused.

Usage Typically, the `handleSessionVariableError()` method is never called directly by the application programmer. Instead, this method is called by `HttpServletRequest2.validate()` for each error that is found during session validation.

`handleSessionVariableError()` is called if a session variable fails its metadata-driven validation. You can use this method in one of several ways:

- Use the default handling. As an option, you can call `getServletErrorHandler()` on the request and delegate to the retrieved error handler instead.
- Use the default handling, but change the template to be streamed.
- Handle the error completely by yourself.

The default behavior of `handleSessionVariableError()` is to add values into three validation vectors. These vectors are listed in three methods of `HttpServletRequest2`: `getErrorCodes()`, `getErrorMsgs()`, and `getErrorVars()`.

To override the default behavior, implement `IServletErrorHandler` and implement `handleSessionVariableError()` to handle errors related to session validation. Before calling `validate()`, call `setServletErrorHandler()` on the `HttpServletRequest2` object.

Tip It is recommended that you standardize error handling, so you may want to place error handling functionality in the default `BaseServlet`.

Return Value This method returns any of the following integer values:

| Value | When Is This Returned |
|--|--|
| SUCCESS | When everything works. |
| FAIL_STREAM_ERROR or any positive integer | When an error has occurred but no error has yet been streamed to the user; the caller of the method must stream an error. For example, the default implementation returns <code>ERROR_SESSION</code> (a value of 2). |
| FAIL_DONT_STREAM_ERROR or any negative integer | When an error has occurred and an error has been streamed to the user; the caller of the method should not stream anymore information. |

Examples See `handleInputValueError()` for examples.

Related Topics `handleInputValueError()`,
`HttpServletRequest2` interface

streamError()

Sends a standard error as a data stream.

Syntax

```
public abstract int streamError(
    HttpServletRequest request,
    HttpServletResponse response,
    Object errorSource,
    int errorType) throws IOException, ServletException
```

request The HttpServletRequest object.

response The HttpServletResponse object.

errorSource The object containing information about the source of the error.

errorType An integer value identifying the error type to report. Specify one of the following values:

| Error Code | Value | Action |
|-------------------------|-------|--|
| ERROR_NO_SUCH_TEMPLATE | 0 | For this errorType, set errorSource to the name of the template that could not be found. |
| ERROR_EXCEPTION_THROWN | 1 | For this errorType, set errorSource to the exception that was thrown. |
| ERROR_VALIDATION_FAILED | 2 | For this errorType, the errorSource is unspecified. |
| ERROR_TEMPLATE_FAILED | 3 | For this errorType, set errorSource to the name of the template that failed. |

Usage Typically, the streamError() method is called directly by the application programmer as well as by HttpServletRequest2.validate() for validation errors. In particular, only the variants of validate() that stream an error will call the streamError() method. This applies to the two variants of validate() that take an HttpServletResponse object.

In addition, streamError() may be called by BaseUtils.initRowSets() when an exception occurs, or streamError() may be called by programmer-defined code.

To override the default behavior, implement `IServletErrorHandler` and implement `streamError()` to define the template or exception to stream when a validation error (or other type of error) occurs. Before calling `validate()`, call `setServletErrorHandler()` on the `HttpServletRequest2` object.

Return Value This method returns any of the following integer values. By default, `FAIL_DONT_STREAM_ERROR` is returned.

| Value | When Is This Returned |
|-------------------------------------|--|
| <code>SUCCESS</code> | When everything works. |
| <code>FAIL_STREAM_ERROR</code> | When an error has occurred but no error has yet been streamed to the user; the caller of the method must stream an error. |
| <code>FAIL_DONT_STREAM_ERROR</code> | When an error has occurred and an error has been streamed to the user; the caller of the method should not stream anymore information. |

Related Topics [HttpServletRequest2 interface](#)

ISession2 interface (*deprecated*)

The ISession2 interface is deprecated and is provided for backward compatibility only. New applications should use the methods provided by the standard `javax.servlet.http.HttpSession` interface. In addition, NAS provides the `HttpSession2` interface, an extension to `HttpSession` that supports applications that must call `AppLogics`.

For more information, see Chapter 11, “Creating and Managing User Sessions,” in the *Programmer’s Guide (Java)* or the *Migration Guide*.

The ISession2 interface represents a session between a user and an application. `AppLogics` use sessions to store information about each user’s interaction with the application. For example, a login `AppLogic` might create a session object to store the user’s login name and password. This session data is then available to other `AppLogics` in the application.

Session data is stored in a distributed state layer in the Netscape Application Server, so that the data is available even when the server destroys the `AppLogic` when it has finished executing. Storing the session data in the distributed state layer also enables `AppLogics` running in different clusters or servers to access the data.

A session has the following attributes, which are set when the `AppLogic` creates a session:

- A unique ID. You can specify an ID, or use the default ID the system generates.
- An association with an application. This setting enables the Netscape Application Server to determine which `AppLogics` have access to the session data.
- A timeout value. You can specify if the session is automatically destroyed after a specified time. If you don’t specify a timeout value (`timeout = 0`), the session is destroyed when you call the `destroySession()` method in the `AppLogic` class.
- Scope. You can specify if the session data is available at the local, cluster, or enterprise-wide level.

The ISession2 interface defines methods for setting and retrieving data in a session. It also defines methods for retrieving the attributes—ID, associated application, timeout value, and scope—of a session.

To create an instance of the ISession2 interface, use the `createSession()` method in the `AppLogic` class.

If your application requires a custom session object, for example, to support additional methods, you can subclass the `Session2` class (deprecated) and define your own methods.

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Methods

| Method | Description |
|----------------------------------|--|
| <code>getSessionApp()</code> | Returns the name of the application associated with the session. |
| <code>getSessionData()</code> | Returns session data. |
| <code>getSessionFlags()</code> | Returns the flags associated with the session when it was created. |
| <code>getSessionID()</code> | Returns the session ID. |
| <code>getSessionTimeout()</code> | Returns the session's timeout value in seconds. |
| <code>saveSession()</code> | Saves changes to a session. |
| <code>setSessionData()</code> | Sets session data. |

`getSessionApp()`

Returns the name of the application associated with the session.

Syntax `public String getSessionApp()`

Usage Use `getSessionApp()` to retrieve the name of the application associated with the session. All `AppLogics` in an application have access to the same session data.

Return Value A string representing the application name, or null for failure.

Example The following code shows how to create a session and get the name of the application associated with the session:

```
ISession2 sess;
//Create a session and associate it with myApp application
sess=createSession(GXSESSION.GXSESSION_DISTRIB,
                  0, "myApp", null, null);

//Get the application name associated with the session
//getSessionApp() should return "myApp"
String appname;
appname = sess.getSessionApp();
if (appname == null)
    return result("getSessionApp returned error");
log("Session application name:" + appname);
```

Related Topics createSession() in the AppLogic class

getSessionData()

Returns session data.

Syntax public IList getSessionData()

Usage Use getSessionData() to retrieve session data for processing. Data is returned in an IList object. This method retrieves the contents that were last saved in the distributed store with saveSession(). Use methods in the IList interface to iterate through and access items in the IList object.

Return Value IList object containing the session information, or null for failure.

Example

```
public class OBSession extends Object
{
    protected ISession2 systemSession;
    public IList sessionValList = null;

    public OBSession(ISession2 app_session)
    {
        systemSession = app_session;

        // Retrieve session data
        sessionValList = systemSession.getSessionData();
    }
}
```

```

    }
    // Method for retrieving the user name from session data
    public String getUsername()
    {
        // Return the userName value
        return sessionValList.getValString("userName");
    }

```

Related Topics createSession() in the AppLogic class

getSessionFlags()

Returns the flags associated with the session when it was created.

Syntax public int getSessionFlags()

Usage Use getSessionFlags() to retrieve the flags that were specified when the session was created with createSession(). The following table describes the valid session flags, which are static variables in the GXSESSION class:

| Flag | Description |
|--------------------------|--|
| GXSESSION_LOCAL | The session is visible to the local process only. |
| GXSESSION_CLUSTER | The session is visible to all AppLogics within the cluster. |
| GXSESSION_DISTRIB | The session is visible to all AppLogics in the enterprise environment. |
| GXSESSION_TIMEOUT_CREATE | The session expires <i>n</i> seconds from the time the node was created. |

Return Value The flags listed in the previous table.

Example The following code shows how to create a session and get the associated flags:

```

ISession2 sess;
//Create a session with distributed scope
sess=createSession(GXSESSION.GXSESSION_DISTRIB,
                  0, "myApp", null, null);

//Get the flag assigned to the session
//getSessionFlag() should return GXSESSION_DISTRIB
int flag;

```

```
flag = sess.getSessionFlags();
log("Session flag:" + flag);
```

Related Topics `createSession()` in the `AppLogic` class

getSessionID()

Returns the session ID.

Syntax `public String getSessionID()`

Usage Use `getSessionID()` to retrieve the unique ID associated with a session.

Return Value A string representing the session ID, or null for failure.

Example The following code shows how to create a session and get the session ID:

```
ISession2 sess;
//Create a session using the default ID generator
sess=createSession(GXSESSION.GXSESSION_DISTRIB,
                  0, "myApp", null, null);

//Get the session ID
String sessid;
sessid = sess.getSessionID();
if (sessid == null)
    return result("getSessionID returned error");
log("Session ID:" + sessid);
```

Related Topics `createSession()` in the `AppLogic` class

getSessionTimeout()

Returns the session's timeout value in seconds.

Syntax `public int getSessionTimeout()`

Usage Use `getSessionTimeout()` to find out if a session is terminated after a specified time, or if it needs to be terminated explicitly. A timeout value of 0 means the session ends when it is explicitly terminated with the `destroySession()` method.

Return Value Integer representing the timeout value in seconds.

Example The following code shows how to create a session and get session's timeout value:

```
ISession2 sess;
//Create a session with no timeout value
sess=createSession(GXSESSION.GXSESSION_DISTRIB,
                  0, "myApp", null, null);

//Get the timeout value
//getSessionTimeout() should return 0
int timeout;
timeout = sess.getSessionTimeout();
log("Session timeout value:" + timeout);
```

Related Topics createSession() in the AppLogic class

saveSession()

Saves changes to a session.

Syntax `public int saveSession(
int dwFlags)`

dwFlags Specify 0 (zero).

Usage Use saveSession() to ensure changes are saved in the distributed state storage area, which stores the session information for subsequent use if any other AppLogic objects are invoked within the same session.

- Tips**
- The AppLogic needs to call the saveSession() method in the AppLogic class at least once to set a cookie, which passes the session ID between the Web browser and Netscape Application Server. The saveSession() method in the ISession2 interface only saves data to the distributed state store, whereas saveSession() in the AppLogic class saves data to the distributed state store *and* sets a cookie.
 - The AppLogic should call saveSession() to save changes after updating session data with setSessionData() or after modifying the IVallList returned by getSessionData().
 - To improve performance, keep smaller amounts of information in the session.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics createSession() and saveSession() in the AppLogic class

setSessionData()

Updates session with specified data.

Syntax

```
public int setSessionData(  
    IValList pSessionData)
```

pSessionData The IValList object containing the session data to set.

Usage Use setSessionData() to write or update session data. Session data is stored in a distributed state layer in the Netscape Application Server, making session data accessible to distributed server processes.

- Tips**
- The AppLogic should call saveSession() to save changes after updating session data with setSessionData().
 - To improve performance, keep smaller amounts of information in the session.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics createSession() in the AppLogic class

ISessionIDGen interface (*deprecated*)

The ISessionIDGen interface is deprecated and is provided for backward compatibility only. New applications should use the interface `javax.servlet.http.HttpSession` and the servlet programming model. For more information, see Chapter 11, “Creating and Managing User Sessions,” in the *Programmer’s Guide (Java)*.

The ISessionIDGen interface represents a session ID generator. The session-related methods in the `AppLogic` class take an ISessionIDGen object as a parameter. By default, Netscape Application Server uses the ISessionIDGen object to generate a session ID when an `AppLogic` creates a new session with the `createSession()` method in the `AppLogic` class.

The session ID—based on a 64-bit number—uniquely identifies a session between a user and an application. In a Web-based application, session IDs are passed between the Web browser and Netscape Application Server to verify user sessions as users traverse the application. For non-browser clients, session IDs are tracked on the server.

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Related Topics

`createSession()` and `getSession()` in the `AppLogic` class (deprecated)

ISession2 interface (deprecated)

IState2 interface

The IState2 interface represents a node, or state object, in the State tree. A state tree is a hierarchical data storage mechanism. It is used primarily for storing application data that needs to be distributed across server processes and clusters. For example, the session data your application creates and maintains is stored in nodes of a state tree.

Use a state tree in your application if it needs to maintain and share data in a multi-server environment running load-balanced application components. A node has the following attributes:

- A name. Nodes on the same level of the state tree must have unique names, but not otherwise.
- Contents in the form of an IVallList.
- A timeout value. You can specify if the content of the node automatically expires after a specified time. If you don't specify a timeout value (timeout = 0), the content is saved until the node is deleted explicitly.
- Scope. You can specify if the node data is available at the local, cluster, or enterprise-wide level.

The IState2 interface defines methods for creating and deleting nodes, setting and retrieving node contents, and retrieving the attributes of a node.

To create a state tree, use the following methods:

- `getStateTreeRoot()` method in the AppLogic class to create the root node.
- `createStateChild()` in this interface to create the child nodes.

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Methods

| Method | Description |
|-----------------------------------|---|
| <code>createStateChild()</code> | Creates a child node under the node on which this method is called. |
| <code>deleteStateChild()</code> | Deletes a child node. |
| <code>getStateChild()</code> | Gets a specified child node. |
| <code>getStateChildCount()</code> | Gets the count of children nodes. |
| <code>getStateContents()</code> | Gets the contents of the node. |
| <code>getStateFlags()</code> | Gets the flags assigned to the node when it was created. |
| <code>getStateName()</code> | Returns the name of the node. |
| <code>getStateTimeout()</code> | Returns the node's timeout value in seconds. |
| <code>saveState()</code> | Saves updates to the node contents. |
| <code>setStateContents()</code> | Sets node contents. |

`createStateChild()`

Creates a child node under the node on which this method is called.

Syntax

```
public IState2 createStateChild(
    String pName,
    int Timeout,
    int dwFlags)
```

pName The name of the child node. If a child node with the given name already exists, this method returns an error.

Timeout The unit of timeout is seconds. The meaning of timeout depends on the timeout flag specified in `dwFlags`. A value of 0 means the contents of the node is saved until deleted explicitly. You can assign a non-zero timeout value only to child nodes that are leaf nodes. Parent nodes can only have a timeout value of 0.

dwFlags Specify one of the following flags, or 0 to use the default system settings:

- `GXSTATE.GXSTATE_LOCAL` to make the node visible to the local process only.
- `GXSTATE.GXSTATE_CLUSTER` to make the node visible to all application components within the cluster.
- `GXSTATE.GXSTATE_DISTRIB` to make the node visible to all application components in the enterprise environment.
- `GXSTATE.GXSTATE_TIMEOUT_CREATE` to specify that the contents of the node expires *n* seconds from the time the node was created.

The default scope is distributed and the default timeout is 60 seconds from the time the node was last accessed.

Usage Use `createStateChild()` to add a child node to a state tree. The application component should already have created the root node of the tree with `getStateTreeRoot()` in the `AppLogic` class.

To create a new child node in a particular position of the tree, traverse the tree until you reach the node that will be the parent of the new child node. Then call `createStateChild()`.

- Rules**
- The scope of a parent node must be the same as or greater than the scope of its child nodes. For example, if the scope of a child node is set to the cluster level, its parent node must be set to either the cluster or distributed level.
 - Parent nodes can only have a timeout value of 0.
- Tips**
- To traverse the state tree to find the desired location in which to create a new child node, use `getStateChild()`. Each successive call to `getStateChild()` descends one level in the tree.

Return Value An `IState2` object, or null for failure.

Example The following code shows how to create a child node if it doesn't already exist:

```
IState2 tree = getStateTreeRoot(GXSTATE.GXSTATE_DISTRIB, "Grammy");

if (tree!=null)
{
    IState2 child = tree.getStateChild("Best Female Vocal");
    if (child == null)
    {
```

```
child = tree.createStateChild("Best Female Vocal", 0,
    GXSTATE.GXSTATE_DISTRIB);
```

deleteStateChild()

Deletes a child node from a state tree.

Syntax `public int deleteStateChild(
String pName)`

pName The name of the child node to delete.

Usage Use `deleteStateChild()` to delete a child node from a state tree when your application no longer needs it. A child node can be deleted only from its parent node. For example, if the state tree has three levels and you want to delete a node at the third level, traverse the tree until you find its parent node at the second level. Then call `deleteStateChild()` to delete a specific node

Rule You can delete a parent node only after deleting its child nodes.

Tip To traverse the state tree to find the parent node of the child node to delete, use `getStateChild()`. Each successive call to `getStateChild()` descends one level in the tree.

Return Value `GXE.SUCCESS` if the method succeeds.

getStateChild()

Gets a specified child node.

Syntax `public IState2 getStateChild(
String pName)`

pName The name of the child node to get.

Usage Use `getStateChild()` to retrieve a node whose content you want to get or update. Your application component can also use `getStateChild()` to traverse a state tree to find the parent node of child nodes to add or delete.

Return Value An `IState2` object, or null for failure.

getStateChildCount()

Gets the count of children nodes.

Syntax `public int getStateChildCount(
int dwFlags) // parameter is currently unused.`

Usage Use this method to return the number of children at any given state node.

Return Value An integer representing the number of children.

getStateContents()

Gets the contents of the node.

Syntax `public IValList getStateContents()`

Usage Use `getStateContents()` to retrieve the contents of the node, or to check if the node contains contents before setting values in the node. This method retrieves the contents that were last saved in the distributed store with `saveState()`.

- Tips**
- To traverse the state tree to find a specific node, use `getStateChild()`. Each successive call to `getStateChild()` descends one level in the tree.
 - If you update the contents of a node with `setStateContents()` but do *not* save the contents in the distributed store with `saveState()`, `getStateContents()` will not return the content set with `setStateContents()`. It will return the contents that were last saved.

Return Value An `IValList` object that contains the contents, or null for failure.

getStateFlags()

Gets the flags assigned to the node when it was created.

Syntax `public int getStateFlags()`

Usage Use `getStateFlags()` to retrieve the flag that represents the node's scope, lifetime, and timeout criteria. This flag is specified when the state node is created. The following table describes the valid session flags, which are static variables in the `GXSTATE` class:

| Flag | Description |
|-------------------------------------|---|
| <code>GXSTATE_LOCAL</code> | The node is visible to the local process only. |
| <code>GXSTATE_CLUSTER</code> | The node is visible to all application components within the cluster. |
| <code>GXSTATE_DISTRIB</code> | The node is visible to all application components in the enterprise environment. |
| <code>GXSTATE_TIMEOUT_CREATE</code> | The contents of the node expires <i>n</i> seconds from the time the node was created. |

Return Value One of the flags listed in the previous table.

getStateName()

Returns the name of the node.

Syntax `public String getStateName()`

Usage Use `getStateName()` when the name of the node is unknown and is required for subsequent operations.

Return Value A string value representing the name of the current node.

getStateTimeout()

Returns the node's timeout value in seconds.

Syntax `public int getStateTimeout()`

Usage Use `getStateTimeout()` in conjunction with `getStateFlags()` to determine if and when the contents of the node expires. A timeout value of 0 means the node contents are saved until the node is deleted explicitly.

Return Value Integer representing the timeout value in seconds.

saveState()

Saves updates to the node contents.

Syntax

```
public int saveState(
    int dwFlags)
```

dwFlags Specify 0 (zero). Internal use only.

Usage Use `saveState()` after you set or change the contents of a node. This method flushes the node contents into the distributed store.

Tip The `getStateContents()` method retrieves the contents that were last saved in the distributed store with `saveState()`. Therefore, if you update the contents of a node with `setStateContents()`, but do *not* call `saveState()`, `getStateContents()` will not return the content set with `setStateContents()`.

Return Value GXE.SUCCESS if the method succeeds.

setStateContents()

Sets node contents.

Syntax

```
public int setStateContents(
    IValList pContents)
```

pContents `IValList` of values to set in the current node.

Usage Use `setStateContents()` to update the contents of a node.

Tips

- To traverse the state tree to find the child node to update, use `getStateChild()`. Each successive call to `getStateChild()` descends one level in the tree.

- Call `saveState()` after you set or change the contents of a node. This method flushes the node contents into the distributed store. If you call `setStateContents()` several times before calling `saveState()`, only the value from the last `setStateContents()` call is saved.
- The `getStateContents()` method retrieves the contents that were last saved in the distributed store with `saveState()`. Therefore, if you update the contents of a node with `setStateContents()`, but do *not* call `saveState()`, `getStateContents()` will not return the content set with `setStateContents()`.

Return Value GXE.SUCCESS if the method succeeds.

Example The following code shows how to create a child node and set its contents:

```
IState2 tree = getStateTreeRoot(GXSTATE.GXSTATE_DISTRIB, "Grammy");

if (tree!=null)
{
    IState2 child = tree.getStateChild("Best Female Vocal");
    if (child == null)
    {
        child = tree.createStateChild("Best Female Vocal", 0,
            GXSTATE.GXSTATE_DISTRIB);
    }
    if (child != null)
    {
        IValList val = GX.CreateValList();
        val.setValString("winner", "Whitney Houston");
        val.setValString("runner up", "Barbara Streisand");
        child.setStateContents(val);
        child.saveState(0);
    }
}
```

IStreamBuffer interface (*deprecated*)

The IStreamBuffer interface is deprecated and is provided for backward compatibility only. New applications developed according to the servlet-JSP programming model do not need the functionality provided by the IStreamBuffer interface.

The IStreamBuffer interface represents a buffer for capturing streamed output during template processing. Use a stream buffer if your AppLogic needs to manipulate the data before sending it to another AppLogic. For example, the AppLogic can collect the data in a stream buffer, then parse it or save it to a file.

To capture the data in a stream buffer, use the `evalOutput()` method in the AppLogic class and pass in an IStream object. To manipulate the data in the stream buffer, use the `getStreamData()` method in this interface.

To create an instance of the IStreamBuffer interface, use the `GX.CreateStreamBuffer()` method.

Package

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Method

| | |
|------------------------------|---|
| <code>getStreamData()</code> | Returns an array of byte values from the stream buffer. |
|------------------------------|---|

`getStreamData()`

Returns an array of byte values from the stream buffer.

Syntax `public byte[] getStreamData(
int flags)`

flags Specify 0 (zero).

Usage Use `getStreamData()` to retrieve the contents of the stream buffer that was captured during streamed template processing. The AppLogic can then manipulate the data as needed.

Rule Call `getStreamData()` after `evalOutput()` in the `AppLogic` class. The `evalOutput()` method captures output in the stream buffer if the `AppLogic` passes in an `IStream` object.

Return Value Array of byte values, or null for failure.

Related Topics `evalOutput()` in the `AppLogic` class (deprecated)

ITable interface (*deprecated*)

ITable is deprecated and is provided for backward compatibility only. New applications should use the `java.sql.DatabaseMetaData` interface from the JDBC Core API.

The ITable interface represents the definition of a table that is part of a relational data source. ITable provides methods to perform the following types of operations:

- Add, update, and delete rows in the table.
- Obtain information about table attributes as they are defined in the database catalog. Table attributes include the table name, table columns, data connection, and so on. To obtain additional information about individual columns, use the methods in the IColumn interface (deprecated).

The ITable interface is part of the Data Access Engine (DAE) service.

To create an instance of the ITable interface, use `getTable()` in the `IDataConn` interface (deprecated) or `getTable()` in the `IColumn` interface (deprecated).

Each call to `getTable()` returns a new ITable object rather than returning an existing table object.

Package

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Methods

| Method | Description |
|--------------------------------|---|
| <code>addRow()</code> | Inserts a new row in the table. |
| <code>allocRow()</code> | Allocates a new, empty row buffer, replacing the previous row buffer if one exists. |
| <code>deleteRow()</code> | Deletes one or more rows in the table. |
| <code>enumColumnReset()</code> | Resets the column enumeration to the first column in the table. |
| <code>enumColumns()</code> | Returns the definition of the next column in the table. |

| Method | Description |
|------------------------------------|---|
| <code>getColumn()</code> | Returns the definition of a column with the specified name. |
| <code>getColumnByOrd()</code> | Returns the definition of the column in the specified ordinal position. |
| <code>getColumnOrdinal()</code> | Returns the ordinal position of the column specified by name. |
| <code>getDataConn()</code> | Returns the data connection object associated with the data source in which the table is defined. |
| <code>getName()</code> | Returns the name of the table. |
| <code>getNumColumns()</code> | Returns the number of columns in the table object. |
| <code>setValueBinary()</code> | Specifies a BINARY value of a column in the row buffer. |
| <code>setValueBinaryPiece()</code> | Specifies a LONG BINARY value of a column in the row buffer. |
| <code>setValueDateString()</code> | Specifies the Date value of a column in the row buffer. |
| <code>setValueDouble()</code> | Specifies the double value of a column in the row buffer. |
| <code>setValueInt()</code> | Specifies the int value of a column in the row buffer. |
| <code>setValueString()</code> | Specifies the String value of a column in the row buffer. |
| <code>setValueText()</code> | Specifies a TEXT value of a column in the row buffer. |
| <code>setValueTextPiece()</code> | Specifies a LONGTEXT value of a column in the row buffer. |
| <code>updateRow()</code> | Modifies one or more rows in the table with the contents of the row buffer. |

Example

```
// Add a new user to the User table
ITable tbl = conn.getTable("CTLUser");
tbl.allocRow();
tbl.setValueInt(tbl.getColumnOrdinal("UserID"), nameParm.hashCode());
tbl.setValueString(tbl.getColumnOrdinal("AccessLevel"), aclStr);
tbl.setValueString(tbl.getColumnOrdinal("LoginName"), nameParm);
tbl.setValueString(tbl.getColumnOrdinal("Password"), passwordParm);
tbl.setValueDate(tbl.getColumnOrdinal("AddDate"), addDateParm);
tbl.setValueDouble(tbl.getColumnOrdinal("LoginTime"), TimeParm);
if(tbl.addRow(0, null) == 0)
    return result(valOut, "User added");
```

```
else
    return result(valOut, "Failed to add the user");
```

addRow()

Inserts a new row in the table.

Syntax

```
public int addRow(
    int dwFlags,
    ITrans pTrans)
```

dwFlags Specifies one of the following flags used to execute this insert operation:

- For synchronous operations, the default, specify zero or `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC`.
- For asynchronous operations, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC`.

pTrans ITransobject that contains the transaction associated with this insert operation, or null.

Usage Use `addRow()` to insert a new record into a table.

- Rules**
- Before adding a row, the AppLogic must first call `allocRow()` to create a row buffer.
 - Next, the AppLogic must specify data values for the new row by calling any of the `setValueXXX()` methods, such as `setValueString()` or `setValueBinary()`.
 - The AppLogic must specify a value for any column defined as NOT NULL and without a DEFAULT value, such as keys.
 - The AppLogic must be logged into the database with sufficient privileges to insert records in the target table.
 - If the insert operation is part of a transaction, the AppLogic must first create an instance of the ITrans interface (deprecated) using `createTrans()` in the AppLogic class (deprecated). The AppLogic must then call `begin()` before executing the statement and, after executing the statement, call `commit()` or `rollback()` as appropriate.

- Tips**
- To determine whether a column is defined as NOT NULL, use `getNullsAllowed()` in the `IColumn` interface (deprecated).
 - Alternatively, the `AppLogic` can insert records by passing a SQL INSERT statement using `setSQL()` in the `IQuery` interface (deprecated). The statement must comply with ANSI 92 SQL syntax.

Return Value An int value indicating success (zero) or failure (non-zero, such as an invalid transaction object).

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
OBTransactionType.");
}

// Look up column ordinals for table
int transTypeCol = table.getColumnOrdinal("transType");
int postDateCol  = table.getColumnOrdinal("postDate");
int acctNumCol   = table.getColumnOrdinal("acctNum");
int amountCol    = table.getColumnOrdinal("amount");

// Create transaction object
ITrans transferTrans = createTrans();
if (transferTrans == null)
{
    return handleOBSystemError("Could not start transaction");
}
transferTrans.begin();
int rc;

// Allocate row in table for new entry
table.allocRow();
table.setValueString(acctNumCol, fromAcct);
table.setValueInt(transTypeCol, OBDBDefs.TRANSTYPE_WITHDRAWAL);
table.setValueDateString(postDateCol, transDateString);
table.setValueDouble(amountCol, amount.doubleValue() * -1.0);

// Add the row to the table
rc = table.addRow(0, transferTrans);
transferTrans.commit(0);
```

Related Topics ITrans interface (deprecated)

allocRow()

Allocates a new, empty row buffer, replacing the previous row buffer if one exists.

Syntax `public int allocRow()`

Usage Use `allocRow()` to allocate a new row buffer before adding or updating records in a table. The row buffer is a virtual representation of a row in the target table, including all column definitions. The `AppLogic` writes data values to the row buffer first, then writes the contents of the row buffer to either a new record using `addRow()` or to one or more existing records using `updateRow()`.

- Rules**
- The `AppLogic` must call `allocRow()` before specifying column values with a `setValueXXX()` method.
 - The `AppLogic` must call `allocRow()` every time before calling `addRow()` or `updateRow()`.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
OBTransactionType.");
}

// Look up column ordinals for table
int transTypeCol = table.getColumnOrdinal("transType");
int postDateCol  = table.getColumnOrdinal("postDate");
int acctNumCol   = table.getColumnOrdinal("acctNum");
int amountCol    = table.getColumnOrdinal("amount");

// Create transaction object
ITrans transferTrans = createTrans();
if (transferTrans == null)
{
    return handleOBSystemError("Could not start transaction");
}
```

```
transferTrans.begin();
int rc;

// Allocate row in table for new entry
table.allocRow();
table.setValueString(acctNumCol, fromAcct);
table.setValueInt(transTypeCol, OBDBDefs.TRANSTYPE_WITHDRAWAL);
table.setValueDateString(postDateCol, transDateString);
table.setValueDouble(amountCol, amount.doubleValue() * -1.0);

// Add the row to the table
rc = table.addRow(0, transferTrans);
```

deleteRow()

Deletes one or more rows in the table.

Syntax

```
public int deleteRow(
    int dwFlags,
    String szWhere,
    ITrans pTrans)
```

dwFlags Specifies one of the following flags used to execute this delete operation:

- For synchronous operations, the default, specify zero or `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC`.
- For asynchronous operations, specify `GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC`.

szWhere Selection criteria expression for one or more rows to delete. The syntax is the same as the SQL WHERE clause, only without the WHERE keyword. Use ANSI 92-compliant syntax. If an empty string is specified, all rows in the table are deleted.

pTrans ITrans object that contains the transaction associated with this delete operation, or null.

- Rules**
- The AppLogic must be logged into the database with sufficient privileges to delete records in the target table.

- If the delete operation is part of a transaction, the AppLogic must first create an instance of the ITrans interface (deprecated) using createTrans() in the AppLogic class (deprecated). The AppLogic must then call begin() before executing the statement and, after executing the statement, call commit() or rollback() as appropriate.

Tip Alternatively, the AppLogic can delete records by passing a SQL DELETE statement using setSQL() in the IQuery interface (deprecated), then executing the query. The statement must comply with ANSI 92 SQL syntax.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
ITable tbl=conn.getTable("CTLcatalog");
if(tbl==null)
    return result("Cannot find table: "+"CTLcatalog");
// Otherwise, delete the row with product specified in prodStr
tbl.deleteRow(0, "ProductID"+"="+prodStr, null);
```

Related Topics ITrans interface (deprecated)

enumColumnReset()

Resets the column enumeration to the first column in the table.

Syntax public int enumColumnReset()

Usage Use enumColumnReset() before iterating through and retrieving columns in a table. enumColumnReset() ensures that column retrieval starts from the first column.

Thereafter, use enumColumns() to retrieve each column sequentially. Each enumColumns() call returns an IColumn object for the next column.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
String htmlString;
IColumn col;
ITable tbl = conn.getTable("Products");
htmlString += "<h2>Products Table</h2>";
tbl.enumColumnReset();
while ((col = tbl.enumColumns()) != null) {
    htmlString += "Column Name = ";
    htmlString += col.getName();
    htmlString += ", Column Type = ";
```

```

        htmlString += col.getType();
        htmlString += "<br>";
    };
    return result(htmlString)

```

enumColumns()

Returns the definition of the next column in the table.

Syntax `public IColumn enumColumns()`

Usage Use `enumColumns()` when the column definition is unknown and required for subsequent operations. The `AppLogic` can use the returned `IColumn` object to determine characteristics of the column, such as its name, data type, size, whether nulls are allowed, and so on.

Before iterating through columns, the client code should call `enumColumnReset()` to ensure that `enumColumns()` starts with the first column in the table. Each subsequent `enumColumns()` call moves to the next sequential column in the table and retrieves its column definition in an `IColumn` object.

- Tips**
- The columns might not be returned in the order in which they are defined in the database catalog.
 - Test for null to determine when the last column has been retrieved.

Return Value `IColumn` object containing the next column of data, or null for failure (such as no more columns in the table).

Example

```

String htmlString;
IColumn col;
ITable tbl = conn.getTable("Products");
htmlString += "<h2>Products Table</h2>";
tbl.enumColumnReset();
while ((col = tbl.enumColumns()) != null) {
    htmlString += "Column Name = ";
    htmlString += col.getName();
    htmlString += ", Column Type = ";
    htmlString += col.getType();
    htmlString += "<br>";
};
return result(htmlString)

```

Related Topics IColumn interface (deprecated)

getColumn()

Returns the definition of a column with the specified name.

Syntax

```
public IColumn getColumn(
    String szColumn)
```

szColumn Name of the column to retrieve.

Usage Use `getColumn()` when the column definition is unknown but its name is known. The `AppLogic` can use the `IColumn` object to determine other characteristics about the column, such as its data type, size, whether nulls are allowed, and so on.

Rule The specified column name must exist in the table.

Return Value `IColumn` object for the specified column, or null for failure (such as an invalid column name).

Example

```
ITable tbl = conn.getTable("Products");
// Obtain column definitions
IColumn colProd = tbl.getColumn("ProductId")
IColumn colCat = tbl.getColumn("CategoryId")
IColumn colPrdName = tbl.getColumn("ProductName")
IColumn colPrice = tbl.getColumn("Price")
. . . manipulate columns using IColumn methods . . .
```

Related Topics IColumn interface (deprecated)

getColumnByOrd()

Returns the definition of the column in the specified ordinal position.

Syntax

```
public IColumn getColumnByOrd(
    int Ordinal)
```

Ordinal Ordinal number (position) of the column in the table. The first column is 1, the second column is 2, and so on.

Usage Use `getColumnByOrd()` when the column definition is unknown but its position in the table is known, such as when iterating through columns in the table. The `AppLogic` can use the `IColumn` object to determine other characteristics about the column, such as its name, data type, size, whether nulls are allowed, and so on.

Rule The specified column number must exist in the table.

- Tips**
- Column positions in a table may change between different table objects.
 - Columns are not guaranteed to be in the same order in which the database lists them.
 - To iterate through columns in a table using `getColumnByOrd()`, call `getNumColumns()` to determine the maximum number of columns in the table, then proceed sequentially through each column using `getColumnByOrd()`, beginning with column 1, through the last column.
 - Alternatively, call `enumColumnReset()` to start with the first column in the table, then call `enumColumns()` repeatedly through the last column.

Return Value `IColumn` object for the specified column, or null for failure (such as an invalid column number).

Example

```
// Obtain information about all columns in the table
ITable tbl = conn.getTable("Products");
int i = 1;
int maxCols = tbl.getNumColumns();
for (i <= maxCols; i++) {
    IColumn col = tbl.getColumnByOrd(i);
    . . . manipulate column using IColumn methods . . .
}
```

Related Topics `IColumn` interface (deprecated)

`getColumnOrdinal()`

Returns the ordinal position of the column specified by name.

Syntax `public int getColumnOrdinal(
 String szColumn)`

szColumn Name of the column.

Usage Use `getColumnOrdinal()` when the ordinal position of a column is unknown and is required for subsequent operations. For example, the ordinal position of a column is a required parameter value for the `setValue**()` methods, such as `setValueString()` and `setValueInt()`.

Rule The specified column name must exist in the table.

Return Value An int value representing the ordinal position of the specified column, or zero for failure (such as an invalid column name). The first column is 1, the second column is 2, and so on.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
OBTransactionType.");
}

// Look up column ordinals for table
int transTypeCol = table.getColumnOrdinal("transType");
int postDateCol = table.getColumnOrdinal("postDate");
int acctNumCol = table.getColumnOrdinal("acctNum");
int amountCol = table.getColumnOrdinal("amount");
```

Related Topics IColumn interface (deprecated)

getDataConn()

Returns the data connection object associated with the data source in which the table is defined.

Syntax `public IDataConn getDataConn()`

Usage Use `getDataConn()` when the data connection associated with the table is unknown and is required for subsequent operations.

Tip The `IDataConn` object that `getDataConn()` returns may not be equal (`==`) to the `IDataConn` object that `createDataConn()`, in the `AppLogic` class (deprecated), returned.

Return Value `IDataConn` object for the table, or null for failure.

Related Topics `IDataConn` interface (deprecated)

getName()

Returns the name of the table.

Syntax `public String getName()`

Usage Use `getName()` when the name of the table is unknown and is required for subsequent operations.

Return Value Name of the table represented by the `ITable` object, or null for failure (such as a memory allocation error).

getNumColumns()

Returns the number of columns in the table object.

Syntax `public int getNumColumns()`

Usage Use `getNumColumns()` when the number of columns defined in the table is unknown and is required for subsequent operations. When iterating through columns in a table, the `AppLogic` can use this information to specify the maximum number of iterations.

Return Value An `int` value representing the number of columns in the table object, or zero for failure (such as a table with no columns defined).

Example

```
// Obtain information about all columns in the table
ITable tbl = conn.getTable("Products");
int i = 1;
int maxCols = tbl.getNumColumns();
for (i <= maxCols; i++) {
    IColumn col = tbl.getColumnByOrd(i);
    . . . manipulate column using IColumn methods . . .
}
```

setValueBinary()

Specifies a `BINARY` value of a column in the row buffer.

Syntax

```
public int setValueBinary(
    int Ordinal,
    byte[] pValue,
    int nOffset,
    int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

pValue A byte array expression to assign to the column.

nOffset Number of bytes to skip from the beginning of the byte array. This value specifies the starting point within the array.

nLength Number of bytes to set for the byte array.

Usage Use `setValueBinary()` for BINARY data of which the total size is equal to or smaller than 64K.

- Rules**
- The `AppLogic` must call `allocRow()` before attempting to write to the row buffer.
 - The data type of the column must be BINARY or VARBINARY, or database equivalent.

Tip Use `setValueBinaryPiece()` for LONGBINARY, LONGVARBINARY, or equivalent type values.

Return Value GXE.SUCCESS if the method succeeds.

setValueBinaryPiece()

Specifies a LONGBINARY value of a column in the row buffer.

Syntax

```
public int setValueBinaryPiece(
    int Ordinal,
    byte[] pValue,
    int nOffset,
    int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

pValue A byte array expression to assign to the column.

nOffset Number of bytes to skip from the beginning of the byte array. This value specifies the starting point within the array.

nLength Number of bytes to set for the byte array.

Usage Use `setValueBinaryPiece()` to specify `LONGBINARY` data. `LONGBINARY` data must be added in 64K increments, therefore, you must use `setValueBinaryPiece()` several times to add the data.

- Rules**
- The `AppLogic` must call `allocRow()` before attempting to write to the row buffer.
 - The data type of the column must be `LONGBINARY`, `LONGVARBINARY`, or database equivalent.
 - Must be called after `allocRow()` but before `addRow()` or `updateRow()`.

Tip Use `setValueBinary()` for `BINARY`, `VARBINARY`, or equivalent type values.

Return Value `GXE.SUCCESS` if the method succeeds.

setValueDateString()

Specifies the Date value of a column in the row buffer.

Syntax

```
public int setValueDateString(  
    int Ordinal,  
    String pValue)
```

Ordinal Ordinal number (position) of the target column in the table. The first column is 1, the second column is 2, and so on.

pValue A date expression to assign to the column. Use one of the following formats:

- "Fri Oct 10 14:35:59.999 PDT 1997"

The subseconds (,999 in the example) and time zone (PDT in the example) are optional.

- "1997-10-01 14:35:59.999"

The time is optional.

Rule The AppLogic must call `allocRow()` before attempting to write to the row buffer.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
OBTransactionType.");
}
// Look up a column ordinal
int postDateCol = table.getColumnOrdinal("postDate");

// Allocate a new row and set a datestring value
table.allocRow();
table.setValueDateStrings(postDateCol, transDateString);
```

setValueDouble()

Specifies the double value of a column in the row buffer.

Syntax

```
public int setValueDouble(
    int Ordinal,
    double nValue)
```

Ordinal Ordinal number (position) of the target column in the table. The first column is 1, the second column is 2, and so on.

nValue A double expression to assign to the column.

Rule The AppLogic must call `allocRow()` before attempting to write to the row buffer.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
```

```
{
    return handleOBSystemError("Could not access table
        OBTransactionType.");
}

// Look up a column ordinal
int amountCol = table.getColumnOrdinal("amount");

// Allocate a new row and set a double value
table.allocRow();
table.setValueDouble(amountCol, amount.doubleValue() * -1.0);
```

setValueInt()

Specifies the int value of a column in the row buffer.

Syntax `public abstract int setValueInt(
 int Ordinal,
 int nValue)`

Ordinal Ordinal number (position) of the target column in the table. The first column is 1, the second column is 2, and so on.

nValue An int expression to assign to the column.

Rule The AppLogic must call `allocRow()` before attempting to write to the row buffer.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
        OBTransactionType.");
}

// Look up a column ordinal
int transTypeCol = table.getColumnOrdinal("transType");
```

```
// Allocate a new row and set an Int value
table.allocRow();
table.setValueInt(transTypeCol, OBDBDefs.TRANSTYPE_WITHDRAWAL);
```

setValueString()

Specifies the String value of a column in the row buffer.

Syntax `public int setValueString(
 int Ordinal,
 String pValue)`

Ordinal Ordinal number (position) of the target column in the table. The first column is 1, the second column is 2, and so on.

pValue A String expression to assign to the column.

Rule The AppLogic must call `allocRow()` before attempting to write to the row buffer.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Get a table
ITable table = conn.getTable("OBTransaction");
if (table == null)
{
    return handleOBSystemError("Could not access table
        OBTransactionType.");
}
// Look up a column ordinal
int acctNumCol = table.getColumnOrdinal("acctNum");

// Allocate a new row and set a string value
table.allocRow();
table.setValueString(acctNumCol, fromAcct);
```

setValueText()

Specifies a TEXT value of a column in the row buffer.

Syntax

```
public int setValueText(  
    int Ordinal,  
    String pValue,  
    int nOffset,  
    int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

pValue A string expression to assign to the column.

nOffset Number of characters to skip from the beginning of the string.

nLength Number of characters to set.

Usage Use `setValueText()` for TEXT data, or database equivalent, of which the total size is equal to or smaller than 64K.

- Rules**
- The AppLogic must call `allocRow()` before attempting to write to the row buffer.
 - The data type of the column must be TEXT or database equivalent.

Tip Use `setValueTextPiece()` for LONGTEXT or equivalent type values.

Return Value GXE.SUCCESS if the method succeeds.

setValueTextPiece()

Specifies a LONG TEXT value of a column in the row buffer.

Syntax

```
public int setValueText(  
    int Ordinal,  
    String pValue,  
    int nOffset,  
    int nLength)
```

Ordinal Ordinal number (position) of the column in the table definition. The first column is 1, the second column is 2, and so on.

pValue A string expression to assign to the column.

nOffset Number of characters to skip from the beginning of the string.

nLength Number of characters to set.

Usage Use setValueTextPiece() for LONGTEXT data. LONGTEXT values must be added in 64K increments, therefore, you must call setValueTextPiece() repeatedly to add the data.

- Rules**
- The AppLogic must call allocRow() before attempting to write to the row buffer.
 - The data type of the column must be LONGTEXT or database equivalent.

Tip Use setValueText() for TEXT or equivalent type values.

Return Value GXE.SUCCESS if the method succeeds.

updateRow()

Modifies one or more rows in the table with the contents of the row buffer.

Syntax

```
public int updateRow(
    int dwFlags,
    String szWhere,
    ITrans pTrans)
```

dwFlags Specifies one of the following flags used to execute this update operation:

- For synchronous operations, the default, specify zero or GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_SYNC.
- For asynchronous operations, specify GX_DA_EXECUTEQUERY_FLAGS.GX_DA_EXEC_ASYNC.

szWhere Selection criteria expression for one or more rows to update. The syntax is the same as the SQL WHERE clause, only without the WHERE keyword. Use ANSI 92-compliant syntax. If an empty string is specified, all rows in the table are updated.

pTrans ITrans object that contains the transaction associated with this update operation, or null.

- Rules**
- Before modifying a row, the AppLogic must first call allocRow() to create the row buffer.

- Next, the AppLogic must specify data values for the new row by calling any of the following methods: setValueDateStrin(), setValueDouble(), setValueInt() , or setValueString().
- For tables defined with one or more UNIQUE keys, the AppLogic can perform a single-record update but not a multiple-record update.
- The AppLogic must specify a value for any column defined as NOT NULL and without a DEFAULT value, such as keys.
- The AppLogic must be logged into the database with sufficient privileges to update records in the target table.
- If the update operation is part of a transaction, the AppLogic must first create an instance of the ITrans interface (deprecated) using createTrans() in the AppLogic class (deprecated). The AppLogic must then call begin() before executing the statement and, after executing the statement, call commit() or rollback() as appropriate.

- Tips**
- The updateRow() method overwrites all columns in the target record(s) with the contents of the row buffer. Therefore, retrieve the row first using a query, assign the column values to the row buffer, then change only the column(s) you want to update.
 - To determine whether a column is defined as NOT NULL, use getNullsAllowed() in the IColumn interface (deprecated).
 - Alternatively, the AppLogic can update records by passing a SQL INSERT statement using setSQL() in the IQuery interface (deprecated). The statement must comply with ANSI 92 SQL syntax.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Obtain the definition for the Catalog table
ITable tbl=conn.getTable("CTLcatalog");
if(tbl==null)
    return result("Cannot find table: "+"CTLcatalog");
tbl.allocRow();
int cProductId=tbl.getColumnOrdinal("productId");
int cCategory=tbl.getColumnOrdinal("category");
int cName=tbl.getColumnOrdinal("name");
int cPrice=tbl.getColumnOrdinal("price");
int cDesc=tbl.getColumnOrdinal("desc");
int cImage1=tbl.getColumnOrdinal("image1");
```

```

int cTemplate=tbl.getColumnOrdinal("template");
int cInventory=tbl.getColumnOrdinal("inventory");
int cReorder=tbl.getColumnOrdinal("reorder");

if((cProductId*cCategory*cName*cPrice*cDesc*cImage1*cTemplate*cReorder)
==0)
return result("Cannot map columns on table:
"+"Catalog");
// Set up the table columns
tbl.setValueInt(cCategory, category);
tbl.setValueString(cName, name);
tbl.setValueDouble(cPrice, price);
tbl.setValueString(cDesc, desc);
tbl.setValueString(cImage1, image1);
tbl.setValueString(cTemplate, template);
tbl.setValueInt(cInventory, inventory);
tbl.setValueInt(cReorder, reorder);
if(option==ADD)
{
    valIn.setValString("productId", prodStr);
    tbl.setValueInt(cProductId, productId);
    tbl.addRow(0, null);
}
else
tbl.updateRow(0, "productId"+"="+prodStr, null);

```

Related Topics ITrans interface (deprecated)

ITable interface (deprecated)

ITemplateData interface (*deprecated*)

ITemplateData is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model, where similar functionality is provided through interfaces such as `java.sql.ResultSet` and `javax.sql.RowSet`.

For information about replacing ITemplateData functionality in existing applications, see the *Migration Guide*.

The ITemplateData interface represents a hierarchical source of data used for HTML template processing. ITemplateData provides methods for iterating through rows in a set of memory-based hierarchical data and retrieving column values.

To create an ITemplateData object, an AppLogic calls `GX.CreateTemplateDataBasic()`. The AppLogic populates the ITemplateData object with rows of hierarchical data, then passes this ITemplateDataBasic object as the data parameter in `evalTemplate()` or `evalOutput()` in the AppLogic class (deprecated). The Template Engine then draws upon the hierarchical data during template processing using methods in the ITemplateData interface.

The Template Engine normally processes the hierarchical template data internally. To provide application-specific special processing and hook into the template generation process, the AppLogic can subclass the `TemplateDataBasic` class (deprecated) and override the ITemplateData member methods.

Package

`com.kivasoft`

Methods

| Method | Description |
|-------------------------|--|
| <code>getValue()</code> | The Template Engine calls this method to dynamically retrieve the value of the specified field from the current row in the hierarchical template data. |
| <code>isEmpty()</code> | The Template Engine calls this method to determine whether the specified group in the hierarchical result set is empty (contains no rows). |

| Method | Description |
|------------|---|
| moveNext() | The Template Engine calls this method to retrieve the next row of the specified group in the hierarchical template data object. |
| setHint() | Placeholder method for future functionality. |

Example

```
// Determine whether AppLogic module is listed in project
TemplateDataBasic tdb;
tdb = GetProjectData();
if (tdb == null) {
    return false;
}
if (!tdb.isEmpty("MODULE")) {
    loopChild:
    do {
        String name;
        name = tdb.getValue("MODULENAME");
        if ((name != null) &&
            (name.compareTo(moduleName) == 0)) {
            GenerateReport("The AppLogic already exists.<br>"
                + "Please choose another name.", null, null);
            return false;
        }
    }
    while (tdb.moveNext("MODULE") == 0);
}
```

Related Topics

evalTemplate() and evalOutput() in the AppLogic class (deprecated)

TemplateDataBasic class (deprecated)

getValue()

The Template Engine calls this method to dynamically retrieve the value of the specified field from the current row in the hierarchical template data.

Syntax public IBuffer getValue(

```
String szExpr)
```

szExpr Name of a field in the template data object.

Usage The Template Engine calls `getValue()` to retrieve values from the hierarchical template data object for subsequent processing.

Rule The specified field name must exist in the template data object.

- Tips**
- When processing result sets, first call `isEmpty()` to determine whether rows were returned. Next, for each row in the result set, call `getValue()` to retrieve field values, then call `moveNext()` to move to the next row in the result set, until the end of the result set is reached.
 - Use methods in the `IBuffer` interface to manipulate the returned memory block.
 - Use `Util.toString()` to convert the contents of the returned memory buffer into a `String`.

Return Value An `IBuffer` object that contains the value of the specified field name, or null for failure (such as invalid field name).

Related Topics `evalTemplate()` and `evalOutput()` in the `AppLogic` class (deprecated)
`TemplateDataBasic` class (deprecated)

isEmpty()

The Template Engine calls this method to determine whether the specified group in the hierarchical result set is empty (contains no rows).

Syntax

```
public boolean isEmpty(  
    String group)
```

group Name of a group in the hierarchical result set.

Usage The Template Engine calls `isEmpty()` to test whether the specified group in the `ITemplateData` object contains any rows of data before processing individual fields using `getValue()`.

Rule The specified group name must exist in the hierarchical data set.

Tip When processing result sets, first call `isEmpty()` to determine whether rows were returned. Next, for each row in the result set, call `getValue()` to retrieve field values, then call `moveNext()` to move to the next row in the result set, until the end of the result set is reached.

Return Value True if the specified group is empty, and false if it contains rows of data or if the specified group name is invalid.

Related Topics `evalTemplate()` and `evalOutput()` in the `AppLogic` class (deprecated)
`TemplateDataBasic` class (deprecated)

moveNext()

The Template Engine calls this method to retrieve the next row of the specified group in the hierarchical template data object.

Syntax

```
public int moveNext(  
    String group)
```

group Name of a group to process in the hierarchical data of the template data object.

Usage The Template Engine calls `moveNext()` when iterating through rows in the template data object to retrieve the contents of the next sequential hierarchical row of data.

Rule The specified group name must exist in the hierarchical data set.

Tip When processing result sets, first call `isEmpty()` to determine whether rows were returned. Next, for each row in the result set, call `getValue()` to retrieve field values, then call `moveNext()` to move to the next row in the result set, until the end of the result set is reached.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `evalTemplate()` and `evalOutput()` in the `AppLogic` class (deprecated)
`TemplateDataBasic` class (deprecated)

setHint()

The `setHint()` method is a placeholder for future functionality. Currently, it is implemented to return 0. If you create a custom template data class that implements the `ITemplateData` interface, implement `setHint()` to return 0.

Syntax

```
public int setHint(  
    String group,  
    int flags,  
    int max,  
    IValList pVal)
```


ITemplateMap interface (*deprecated*)

ITemplateMap is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing ITemplateMap functionality in existing applications, see the *Migration Guide*.

The ITemplateMap interface represents a mapping between a template field specification and dynamic data used for HTML template processing. ITemplateMap provides the `get()` method for resolving the `id` attribute in a GX markup tag. Each `id` attribute contains a field name that can be mapped.

To create a field map, an AppLogic calls `GX.CreateTemplateMapBasic()`. The AppLogic then populates the field map using `put()`, in the `TemplateMapBasic` class (deprecated), for each field mapping, then passes this ITemplateMap object as the `map` parameter in `evalTemplate()` or `evalOutput()` in the AppLogic class (deprecated). When the Template Engine encounters a GX markup tag with the `id` attribute while processing the template, it calls `get()` in the ITemplateMap interface (deprecated) to resolve the name. The `get()` method, in turn, calls `getString()` in the `TemplateMapBasic` class (deprecated) to actually resolve the name.

To provide application-specific special processing, an AppLogic can subclass the `TemplateMapBasic` class (deprecated) and override the `getString()` method to hook into the Template Engine generation process. For example, the AppLogic can intercept and filter data from a database before the Template Engine processes it.

Package

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Method

| | |
|--------------------|---|
| <code>get()</code> | Resolves the <code>id</code> attribute specified in a GX markup tag in the template being processed by the Template Engine. This method is called by the Template Engine. |
|--------------------|---|

Related Topics

`evalTemplate()` and `evalOutput()` in the `AppLogic` class (deprecated)

`TemplateMapBasic` class (deprecated)

`ITemplateData` interface (deprecated)

`TemplateDataBasic` class (deprecated)

get()

Resolves the `id` attribute specified in a GX markup tag in the template being processed by the Template Engine. This method is called by the Template Engine.

Syntax

```
public IBuffer get(  
    String szExpr,  
    IObject pData,  
    IObject pMark)
```

szExpr In the current GX markup tag in the HTML template being processed, the name of the field, or placeholder, assigned to the `id` attribute. Must be an identical match (case-sensitive).

pData Specify null. Internal use only.

pMark Specify null. Internal use only.

Usage GX markup tags are used in an HTML template to identify where dynamic data appears in the output report. In the GX markup tags, the `id` attribute specifies any of the following items: the name of a flat query within a hierarchical query, a field in the hierarchical result set or `TemplateDataBasic` object, or an HTML template. The type of item specified in the `id` attribute depends on the `type` attribute that is specified in the same GX markup tag.

The Template Engine calls `get()` to resolve the `id` attribute specified in a GX markup tag in the template being processed by the Template Engine. The `get()` method, in turn, calls `getString()` in the `TemplateMapBasic` class (deprecated) to actually resolve the name. To provide application-specific special processing, an `AppLogic` can subclass the `TemplateMapBasic` class (deprecated) and override `getString()` to manipulate the Template Engine generation process. For example, an `AppLogic` can intercept and filter data from a database before the Template Engine processes it.

Return Value An IBuffer object that contains the value of the id mapping, or null for failure.

Related Topics evalTemplate() and evalOutput() in the AppLogic class (deprecated)

getString() in theTemplateMapBasic class (deprecated)

ITemplateData interface (deprecated)

TemplateDataBasic class (deprecated)

ITemplateMap interface (deprecated)

ITile interface (*deprecated*)

ITile is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing ITile functionality in existing applications, see the *Migration Guide*.

The ITile interface represents a tile, which is a record set that contains multiple records. A tile can also contain nested tiles. Organized like a hierarchical result set, a tile is returned by the `GX.ProcessOutput()` method.

AppLogics use ITile together with `GX.ProcessOutput()` when working with non-HTML results returned by another AppLogic. The following are the general steps for getting the tile:

1. A client AppLogic calls an AppLogic with `newRequest()`.
2. Through `newRequest()`, the client passes input and output `IValLists` to the called AppLogic. If the client is an AppLogic, it specifies the value "ocl" for the `gx_client_type` key in the input `IValList`.
3. The called AppLogic processes the request and sends back results using its output `IValList` or by calling `evalOutput()`.
4. The client calls the `GX.ProcessOutput()` method to process the results into an ITile object.
5. Using methods in the ITile interface, the client traverses the tile and retrieves values to populate user interface controls, such as text boxes or list boxes, on a form.

The tile corresponds to the structure specified by the `tile` and `cell` tags in the template file that the called AppLogic used when it called `evalOutput()`. The `tile` tag determines the tile or record set, and the `cell` tag, the values in each record.

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Methods

| Method | Description |
|-----------------------------------|---|
| <code>getTileChild()</code> | Returns the specified child tile. |
| <code>getTileValue()</code> | Returns the value of a specified field in a record. |
| <code>moveTileNextRecord()</code> | Moves to the next record in the tile. |
| <code>moveTileToRecord()</code> | Moves to a specific record in the tile. |

Example

The following example shows a template file used by a called AppLogic when generating output, and a section of a program that uses `GX.ProcessOutput()` and `ITile` methods to process the output:

GXML template file:

```
<gx type=tile id="PRODUCTS" max=100>
<gx type=cell id="PRODUCTS.Category"></gx>
<gx type=cell id="PRODUCTS.ProdName"></gx>
</gx>
<gx type=tile id="CATEGORIES" max=100>
<gx type=cell id="CATEGORIES.CategoryId"></gx>
</gx>
```

Code snippet:

```
// Call this AppLogic
hr = Conn.newRequest(guid, vIn, vOut, 0);
if (hr==GXE.SUCCESS)
{
    // Get the root tile from the output vallist
    ITile roottile = GX.ProcessOutput(null, 0, vOut);
    if (roottile != null)
    {
        String sval;
        ITile ptile;

        //Iterate over all products and print their names
        ptile = roottile.getTileChild("PRODUCTS");
        hr = GXE.SUCCESS;
```

```

System.out.println("Products:");
while (ptile != null && hr != GXE.FAIL)
{
    sval = ptile.getTileValue("PRODUCTS.ProdName");
    System.out.println("    " + sval);

    hr = ptile.moveTileNextRecord();
}

//Iterate over all categories and print their ids
ptile = roottile.getTileChild("CATEGORIES");
hr = GXE.SUCCESS;
System.out.println("Categories:");
while (ptile != null && hr != GXE.FAIL)
{
    sval = ptile.getTileValue("CATEGORIES.CategoryId");
    System.out.println("    " + sval);

    hr = ptile.moveTileNextRecord();
}
}
}

```

Related Topics

`newRequest()` and `evalOutput()` in the `AppLogic` class (deprecated)

`GX.ProcessOutput()`,
`IValList` interface (deprecated)

`getTileChild()`

Returns the specified tile.

Syntax `public ITile getTileChild(
 String name)`

name The name of the child tile in the tile. This name must match a name assigned to the `id` attribute of type `tile` in the template file.

Usage Use `getTileChild()` to retrieve a tile from which to get records and record values. Use it in conjunction with `moveTileNextRecord()` and `getTileValue()` to traverse the tile and retrieve record values. The client can call these methods in a loop until all values in a tile have been retrieved.

Return Value An `ITile` object, or null for failure.

Related Topics `getTileValue()`,
`moveTileNextRecord()`

`getTileValue()`

Returns the value of a specified field in a record.

Syntax

```
public String getTileValue(  
    String name)
```

name The name of the field in the current record. This name must match a name assigned to the `id` attribute of type `cell` in the template file.

Usage Use `getTileValue()` to retrieve values in a record. Use it in conjunction with `getTileChild()` and `moveTileNextRecord()` to traverse the tile and retrieve each value. The client can call these methods in a loop until all values in a tile have been retrieved.

Return Value The record value as a string.

Related Topics `getTileChild()`,
`moveTileNextRecord()`

`moveTileNextRecord()`

Moves to the next record in the tile.

Syntax

```
public int moveTileNextRecord()
```

Usage Use `moveTileNextRecord()` to go to the next record in a tile after retrieving values in the current record. Use the method in conjunction with `getTileChild()` and `getTileValue()` to traverse the tile and retrieve each value. The client can call these methods in a loop until all values in a tile have been retrieved.

Return Value `GXE.SUCCESS` if the method succeeds.

Related Topics `getTileChild()`,
`getTileValue()`

moveTileToRecord()

Moves to a specific record in the tile.

Syntax `public int moveTileNextRecord(
 int ord)`

ord The position of the record in the tile. The first record in a tile is 1, the second is 2, and so on.

Usage Use `moveTileToRecord()` when iterating through the tile multiple times. For example, after iterating through all the records, the `AppLogic` can return to the first record in preparation for the next iteration. If the tile contains many records, the `AppLogic` can also use `moveTileToRecord()` to display only several records at a time.

Return Value `GXE.SUCCESS` if the method succeeds.

ITile interface (deprecated)

ITrans interface (*deprecated*)

ITrans is deprecated and is provided for backward compatibility only. In new applications, either use XA transactions from the Java Transaction API (JTA), or set the appropriate autocommit mode on `java.sql.Connection`, an interface of the JDBC Core API.

The `ITrans` interface represents a transaction object used for subsequent transaction processing operations. `ITrans` provides operations for beginning, committing, and rolling back transactions.

After instantiating a transaction object, the `AppLogic` calls `begin()` to start the transaction. Next, the `AppLogic` performs any query, insert, update, or delete operations, passing the transaction object to the respective method in the `ITable` interface (deprecated). Finally, the `AppLogic` closes the transaction by calling either `commit()` to save all changes or `rollback()` to cancel them. Closing a transaction terminates the transaction object and releases system resources.

The calls that make up a transaction can be in any part of the code; they need not be consecutive. The commands in a transaction are united by the fact that they all have the same transaction object as a parameter.

An application can process several transactions simultaneously. Each transaction works with a different database connection object. Within a single transaction, however, all the commands must access a single database through a single connection object.

To create an instance of the `ITrans` interface, use `createTrans()` in the `AppLogic` class (deprecated), as shown in the following example:

```
ITrans trx = createTrans();
```

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Methods

| Method | Description |
|-------------------------|---|
| <code>begin()</code> | Starts the transaction. |
| <code>commit()</code> | Commits the transaction, saving any changes. |
| <code>rollback()</code> | Rolls back the transaction, abandoning any changes. |

Example

```
// Create and begin a transaction
ITrans trx=createTrans();
trx.begin();
// 1) Process the credit card
if(!processCreditCard(cusId, card, number, expirationDate, trx)) {
    trx.rollback();
    return result("Could not process the credit card information"); }
// 2) Process the invoice record
InfoHolder info=new InfoHolder();
if(!makeInvoiceRecord(cusId, number, trx, info)) {
    trx.rollback();
    return result("Could not create the invoice record"); };
// 3) Process products on the invoice
if(!makeInvoiceEntries(info.invoiceId, trx)) {
    trx.rollback();
    return result("Could not create the invoice product records"); };
// 4) Process optional shipping information
if(shippingInfo && !makeShippingRecord(info.invoiceId, trx, addr1,
addr2, city, state, zip)) {
    trx.rollback();
    return result("Could not create the shipping information record"); };
// 5) Process the inventory for each purchased product
if(!reduceProductInventory(trx)) {
    // Problem occurred - abandon everything
    trx.rollback();
return 0;
}
// No problem occurred - save everything
trx.commit(0);
```

Related Topics

`createTrans()` in the `AppLogic` class (deprecated)

`addRow()`, `updateRow()`, and `deleteRow()` in the `ITable` interface (deprecated)

begin()

Starts the transaction.

Syntax `public int begin()`

Usage Use `begin()` to start a transaction before performing any operations in the transaction. Subsequent operations belong to the current transaction until either `commit()` or `rollback()` is called.

- Rules**
- AppLogic must start the transaction explicitly using `begin()` before performing any query, insert, update, or delete operations associated with the transaction.
 - AppLogic must complete the transaction explicitly by calling `commit()` to save any changes to tables or `rollback()` to abandon them. If a database error occurs before either are called, the database server will roll back the transaction automatically.

Tip Use transactions judiciously to avoid locking conflicts. For example, avoid deadlocks by not using different open transactions on the same table.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create a transaction
ITrans updCustTrans = createTrans();

if (updCustTrans == null)
{
    return handleOBSystemError("Could not create transaction");
}

// Begin the transaction
updCustTrans.begin();
```

Related Topics `createTrans()` in the AppLogic class (deprecated)
`addRow()`, `updateRow()`, and `deleteRow()` in the ITable interface (deprecated)

commit()

Commits the transaction, saving any changes.

Syntax `public IObject commit(
int dwFlags)`

dwFlags Specify 0.

Usage Use `commit()` to commit a transaction and write unsaved changes to disk. `commit()` saves the changes, terminates the transaction object, and releases system resources.

- Rules**
- The AppLogic must start the transaction explicitly by calling `begin()` before any changes associated with the transaction can be committed.
 - The AppLogic must complete the transaction explicitly by calling `commit()` to save any changes to tables or `rollback()` to abandon them.
 - The AppLogic cannot reuse an ITrans object that has been committed. It must create a new one using `createTrans()` in the AppLogic class (deprecated).
- Tips**
- If an error occurs before the commit operation succeeds, the database server usually rolls back the transaction automatically.
 - The target database server may take time to process a commit request.

Return Value IObject object (for internal use only), or null for failure.

Example

```
// Update Customer record

rs = updCustPQuery.execute(0, custValList, updCustTrans, null);

if (rs == null)
{
    // Rollback transaction if the update operation failed
    updCustTrans.rollback();
    return handleOBSYSTEMError("Could not update Customer.");
}

// Commit the transaction if the update operation succeeded
updCustTrans.commit(0);

valIn.setValString("OUTPUTMESSAGE", "Successfully updated customer
record.");
```

Related Topics `createTrans()` in the AppLogic class (deprecated)

`addRow()`, `updateRow()`, and `deleteRow()` in the `ITable` interface (deprecated)

rollback()

Rolls back the transaction, abandoning any changes.

Syntax `public int rollback()`

Usage Many database servers buffer changes made during a transaction, then update the affected tables only after the commit request is received.

Rolling back a transaction terminates the transaction object and releases system resources.

- Rules**
- The `AppLogic` must start the transaction explicitly by calling `begin()` before any changes associated with the transaction can be rolled back.
 - The `AppLogic` must complete the transaction explicitly by calling `commit()` to save any changes to tables or `rollback()` to abandon them.
 - The `AppLogic` cannot reuse an `ITrans` object that has been rolled back. It must create a new one using `createTrans()` in the `AppLogic` class (deprecated).

Tip If an error occurs before the commit operation succeeds, the database server usually rolls back the transaction automatically.

Return Value `GXE.SUCCESS` if the method succeeds.

Example

```
IResultSet rs;
// Update User
rs = updUserPQuery.execute(0, userValList, updCustTrans, null);
if (rs == null)
{
    updCustTrans.rollback();
    return handleOBSystemError("Could not update User.");
}
```

Related Topics `createTrans()` in the `AppLogic` class (deprecated)

`addRow()`, `updateRow()`, and `deleteRow()` in the `ITable` interface (deprecated)

IVallList interface (*deprecated*)

IVallList is deprecated and is provided for backward compatibility only. New Java applications should use the standard servlet-JSP programming model.

For information about replacing IVallList functionality in existing applications, see the *Migration Guide*.

An IVallList represents a collection of GXVAL objects. This collection is not a sequential list, but an unordered set of GXVAL objects with no implied sequence or progression.

For Netscape Application Server-enabled AppLogics, input arguments and output value(s) are stored in IVallList objects. Every request to an AppLogic passes a list of input arguments, and every result from an AppLogic returns a list of output values. The AppLogic class (deprecated) defines two member variables, `valIn` and `valOut`, to contain the input arguments and output values, respectively, of AppLogic execution.

In an IVallList, values and objects are mapped to keys. The key name is the name of a GXVAL object. AppLogic code refers to GXVAL object in the IVallList by its key name. Key names are unique within each IVallList object.

The IVallList interface provides methods for adding, retrieving, removing, and counting GXVAL objects in the IVallList instance. Using methods in the IVallList interface, the AppLogic can test for input arguments and modify their contents for output values.

Keys may be passed to the AppLogic as a request from an HTML document or from another AppLogic module. In an HTML form, keys are often the field names defined in the form. In this way, the AppLogic can easily identify expected, common, or “well-known” keys, and the AppLogic can ignore irrelevant parameters.

For example, an AppLogic named `getLogin` might prompt users for their username and login, then pass this information, identified as “username” and “password”, to other AppLogics for processing. An AppLogic named `validateLogin` could retrieve the input parameters, find the values associated with the well-known keys “username” and “password”, then take action based on the data that the user entered (testing for its existence, performing a range or length check, looking up the combination in a password table, and so on).

To create an instance of the IVallList interface, use the `GX.CreateVallList()` method.

Package

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Methods

| Method | Description |
|-------------------------------|--|
| <code>count()</code> | Returns the number of GXVAL objects in the IVallList. |
| <code>getNextKey()</code> | Retrieves the key name of the next GXVAL object in the IVallList. |
| <code>getVal()</code> | Copies the specified GXVAL object from the IVallList. |
| <code>getValBLOB()</code> | Returns the specified BLOB object. |
| <code>getValBLOBSize()</code> | Returns the size of a BLOB IVallList object. |
| <code>getValByRef()</code> | Gets the specified GXVAL object in the IVallList. |
| <code>getValInt()</code> | Retrieves an integer value from the specified GXVAL object in the IVallList. |
| <code>getValString()</code> | Retrieves a string value from the specified GXVAL object in the IVallList. |
| <code>removeVal()</code> | Removes the specified GXVAL object from the IVallList. |
| <code>resetPosition()</code> | Resets the iterator position to the "first" GXVAL object in the IVallList. |
| <code>setVal()</code> | Adds a GXVAL object to the IVallList, or overwrites an existing one. |
| <code>setValBLOB()</code> | Adds a BLOB object to the IVallList object. |
| <code>setValByRef()</code> | Adds a GXVAL object to the IVallList, or overwrites an existing one. |
| <code>setValInt()</code> | Adds a GXVAL object of type integer to the IVallList, or overwrites an existing one. |
| <code>setValString()</code> | Adds a GXVAL object of type string to the IVallList, or overwrites an existing one. |

Related Topics

valIn and valOut in the AppLogic class (deprecated)

execute() in the AppLogic class (deprecated)

count()

Returns the number of GXVAL objects in the IVallList .

Syntax `public int count()`

Usage When the contents of an IVallList are unknown, an AppLogic can iterate through each GXVAL object to test, retrieve, and update information. Use count() to determine the maximum number of iterations needed to go completely through the IVallList.

Rule Do not add or remove GXVAL objects to or from the IVallList when iterating through the IVallList.

Tips

- Use count() in conjunction with getNextKey() and resetPosition() to iterate through the IVallList.
- Adding or deleting GXVAL objects changes the number of objects in a IVallList. Be sure to update the GXVAL object count after each add or delete operation.

Return Value An int value representing the number of GXVal objects in the IVallList, or zero for failure (such as the IVallList is empty).

Example

```
// Obtain the contents of the shopping basket
IVallList basket=session.getBasketContents();
// Determine whether basket is empty
if(basket.count()==0)
{
    // If basket contains items, process template to show
    if(evalTemplate(EMPTY_HTML, (ITemplateData) null, (ITemplateMap)
    null) ==0)
        return result("");
    else
// If basket is empty, just return message
return result("Failed to Generate HTML");
}
```

- Related Topics** getNextKey()
resetPosition()
valIn and valOut in the AppLogic class (deprecated)
execute() in the AppLogic class (deprecated)

getNextKey()

Retrieves the key name of the next GXVAL object in the IVallList.

Syntax `public String getNextKey()`

Usage When the contents of a IVallList are unknown, the AppLogic can iterate through each GXVAL object and retrieve its key name. The AppLogic can then take action based on this information, or use the key name in operations that retrieve, update, or remove GXVAL objects in the IVallList list.

Rule Do not add or remove GXVAL objects to or from the IVallList when iterating through the IVallList.

Tip Use getNextKey() in conjunction with count() and resetPosition() to iterate through the IVallList.

Return Value String representing the next retrieved key in the IVallList, or null for failure (such as if no other keys exist).

Example

```
// Returns the contents of the shopping basket
public synchronized IVallList getBasketContents()
{
    IVallList list = getVallList();
    IVallList ret = GX.CreateVallList();
    // Iterate through the contents of the shopping basket
    list.resetPosition();
    String key;
    while((key=list.getNextKey())!=null)
    {
        // Is this a desired key?
        if(key.startsWith(PROD))
        {
            // Obtain the product number from the item
            String prod = key.substring(PROD.length(),
                key.length());
        }
    }
}
```

```

        // Set the return IVaList appropriately
        ret.setVal(prod, list.getVal(key));
    }
}
ret.resetPosition();
return ret;

```

Related Topics `count()`
`resetPosition()`
`execute()` in the `AppLogic` class (deprecated)

getVal()

Copies the specified GXVAL object from the IVaList.

Syntax `public GXVAL getVal(
String pKey)`

pKey Key name of the GXVAL object to copy from the IVaList.

Usage Use `getVal()` if the data type of the GXVAL object is not known. Use `getValString()` instead for string objects, `getValInt()` for integer objects, and `getValBLOB()` for BLOB objects.

Rule The specified key name must currently exist in the IVaList.

Return Value New GXVAL object representing a copy of the GXVAL object specified by `pKey`, or null for failure (such as invalid keyname).

Example

```

// Returns the contents of the shopping basket
public synchronized IVaList getBasketContents()
{
    IVaList list = getValList();
    IVaList ret = GX.CreateValList();
    // Iterate through the contents of the shopping basket
    list.resetPosition();
    String key;
    while((key=list.getNextKey())!=null)
    {
        // Is this a desired key?
        if(key.startsWith(PROD))
        {

```

```
        // Obtain the product number from the item
        String prod=key.substring(PROD.length(),key.length());
        // Set the return IVallList appropriately
        ret.setVal(prod, list.getVal(key));
    }
}
ret.resetPosition();
return ret;
}
```

Related Topics getValBLOB(), getValInt(), and getValString() in the IVallList interface (deprecated)

valIn and valOut in the AppLogic class (deprecated)

execute() in the AppLogic class (deprecated)

getValBLOB()

Returns a specified BLOB object from the IVallList.

Syntax public byte[] getValBLOB(
String pKey)

pKey Key name of the GXVAL object that contains the BLOB value to retrieve.

Usage Use getValBLOB() when the type of a GXVAL object is a BLOB, but its value is not known and needed for subsequent operations. Use getValString() instead for string objects and getValInt() for integer objects. If the type of the GXVAL object is not known, use getVal().

Rule The data type must be TEXT, BINARY, VARBINARY, or database equivalent.

Return Value A byte array for success, or null for failure.

Related Topics getValBLOBSize() and setValBLOB() in the IVallList interface (deprecated)

getValBLOBSize()

Returns the size of a specified BLOB object in the IVallList.

Syntax public int getValBLOBSize(
String pKey)

pKey Key name of the GXVAL object that contains the BLOB.

Usage BLOB objects can be large. If you want to determine the size of a BLOB object before retrieving it, use `getValBLOBSize()`.

Rule The data type must be TEXT, BINARY, VARBINARY, or database equivalent.

Return Value An integer value for success, or zero for failure (such as datatype mismatch).

Related Topics `getValBLOB()`

getValByRef()

Gets the specified GXVAL object from the IVallList.

Syntax

```
public GXVAL getValByRef(
    string pKey)
```

pKey Key name of the GXVAL object to get from the IVallList.

Usage Use `getValByRef()` if the data type of the GXVAL object is not known, or if iterating through an IVallList to get each GXVAL object. Use `getValString()` instead for string objects, `getValInt()` for integer objects, and `getValBLOB()` for BLOB objects.

Return Value New GXVAL object representing a copy of the GXVAL object specified by `pKey`, or null for failure (such as invalid keyname).

Related Topics `getValBLOB()`, `getValInt()`, and `getValString()` in the IVallList interface (deprecated)

`valIn` and `valOut` in the AppLogic class (deprecated)

`execute()` in the AppLogic class (deprecated)

getValInt()

Retrieves an integer value from the specified GXVAL object in the IVallList.

Syntax

```
public int getValInt(
    String pKey)
```

pKey Key name of the GXVAL object from which to retrieve the integer value.

Usage Use `getValInt()` if the data type of the GXVAL object is known to be an integer. Otherwise, use `getValString()` instead for string objects, `getValBLOB()` for BLOB objects, or `getVal()` for objects of other types.

- Rules**
- The specified key name must currently exist in the IValList.
 - The data type of the specified GXVAL object must map to the enum value `GXVT_I4`.

Return Value An int value representing the value of the specified GXVAL object, or null for failure (such as invalid key name or data type mismatch).

Example

```
// Obtains the User ID from the Session's IValList
public int getUserId()
{
    return getValList().getValInt("UserId");
}
```

Related Topics `valIn` and `valOut` in the `AppLogic` class (deprecated)

`execute()` in the `AppLogic` class (deprecated)

getValString()

Retrieves a string value from the specified GXVAL object in the IValList.

Syntax

```
public String getValString(
    String pKey)
```

pKey Key name of the GXVAL object from which to retrieve the string value.

Usage Use `getValString()` when the data type of the GXVAL object is known to be a string. Otherwise, use `getValInt()` instead for integer objects, `getValBLOB()` for BLOB objects, or `getVal()` for objects of other types.

- Rules**
- The specified key name must currently exist in the IValList.
 - The data type of the specified GXVAL object must map to the enum value `GXVT_LPSTR`.

- Tips**
- An `AppLogic` can manipulate this retrieved value using member methods in the `String` class in the `java.lang` package.

Return Value A `String` representing the value of the GXVAL object, or null for failure (such as invalid key name or data type mismatch).

Example

```
// Obtain security information from the valIn IVaList
String nameParm = valIn.getValString("username");
String passwordParm = valIn.getValString("password");
String aclStr = valIn.getValString("accessControlLevel");

// Obtain the credit card info from the form
String cardStr=valIn.getValString("CreditCard");
String number=valIn.getValString("CreditCardNumber");
String month=valIn.getValString("ExpireMonth");
String year=valIn.getValString("ExpireYear");
```

Related Topics valIn and valOut in the AppLogic class (deprecated)
 execute() in the AppLogic class (deprecated)

removeVal()

Removes the specified GXVAL object from the IVaList.

Syntax `public int removeVal(
 String pKey)`

pKey Key name of the GXVAL object to remove from the IVaList.

Usage Use removeVal() to delete a GXVAL object that is no longer needed in the IVaList. For example, if the AppLogic contains overloaded methods, you might want to remove a GXVAL object to ensure that the proper method is executed.

- Rules**
- The specified key name must currently exist in the IVaList.
 - Do not remove GXVAL objects from the IVaList when iterating through the IVaList.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Empties the contents of the shopping basket
public synchronized void emptyBasket(Agent agent)
{
    IVaList list = getValList();
    while(true)
    {
        // Iterate over the contents
        list.resetPosition();
        String key;
```

```
boolean repeat=false;
while((key=list.getNextKey())!=null)
{
    // Is this a desired key?
    if(key.startsWith(PROD))
    {
        // Remove the Val object from the shopping cart
        list.removeVal(key); repeat=true; break;
    }
}
if(!repeat) break;
}
```

- Related Topics** setVal() and resetPosition() in the IVallList interface (deprecated)
- valIn and valOut in the AppLogic class (deprecated)
- execute() in the AppLogic class (deprecated)

resetPosition()

Resets the iterator position to the “first” GXVAL object in the IVallList.

Syntax public int resetPosition()

Usage When the contents of an IVallList are unknown, the AppLogic can iterate through each GXVAL object and retrieve its key name. Before iterating through the IVallList, the AppLogic needs to call resetPosition() once to ensure that iteration begins at the “first” GXVAL object in the IVallList.

Rule Do not add or remove GXVAL objects to or from the IVallList when iterating through the IVallList.

- Tips**
- The first GXVAL object is not necessarily the first one added to the IVallList.
 - Use resetPosition() in conjunction with count() and getNextKey() to iterate through the IVallList.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Returns the contents of the shopping basket
public synchronized IVallList getBasketContents()
{
    IVallList list=getValList();
```

```

IVallList ret = GX.CreateValList();
// Iterate through the contents of the shopping basket
list.resetPosition();
String key;
while((key=list.getNextKey())!=null)
{
    // Is this a desired key?
    if(key.startsWith(PROD))
    {
        // Obtain the product number from the item
        String prod = key.substring(PROD.length(),
                                   key.length());
        // Set the return IVallList appropriately
        ret.setVal(prod, list.getVal(key));
    }
}
ret.resetPosition();
return ret;
}

```

Related Topics `count()` and `getNextKey()` in the `IVallList` interface (deprecated)
`valIn` and `valOut` in the `AppLogic` class (deprecated)
`execute()` in the `AppLogic` class (deprecated)

setVal()

Copies a GXVAL object to the `IVallList` .

Syntax `public int setVal(
String pKey,
GXVAL pVal)`

pKey Key name of the GXVAL object to add to the `IVallList`.

pVal The GXVAL object, identified by `pKey`, to add to the `IVallList`.

Usage Use `setVal()` to add an existing GXVAL object to the `IVallList`. If a GXVAL object with the same key name already exists, `setVal()` overwrites it with the new one.

Rule Do not add new GXVAL objects to the `IVallList` when iterating through the `IVallList`.

Tip To add a new GXVAL object of type integer, string, or BLOB to the IVallList, use `setValInt()`, `setValString()`, or `setValBLOB()`, respectively.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Returns the contents of the shopping basket
public synchronized IVallList getBasketContents()
{
    IVallList list=getValList();
    IVallList ret = GX.CreateValList();
    // Iterate through the contents of the shopping basket
    list.resetPosition();
    String key;
    while((key=list.getNextKey())!=null)
    {
        // Is this a desired key?
        if(key.startsWith(PROD))
        {
            // Obtain the product number from the item
            String prod = key.substring(PROD.length(),
                                       key.length());
            // Set the return IVallList appropriately
            ret.setVal(prod, list.getVal(key));
        }
    }
    ret.resetPosition();
    return ret;
}
```

Related Topics `valIn` and `valOut` in the AppLogic class (deprecated)
`execute()` in the AppLogic class (deprecated)

setValBLOB()

Adds a BLOB object to the IVallList

Syntax `public int setValBLOB(
 String pKey,
 byte[] pBuff,
 int nBuffLen)`

pKey Key name of the GXVAL object to add to the IVallList.

pBuff The value of the BLOB object to add to the IVallList.

nBuffLen Number of bytes to set for the byte array. The first nBuffLen bytes in the array pBuff hold the value.

Usage Use setValBLOB() to add a GXVAL object that contains a BLOB value to the IVallList. If a GXVAL object with the same key name already exists, setValBLOB() overwrites it with the new one.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics getValBLOB()
getValBLOBSize()

setValByRef()

Copies a GXVAL object to the IVallList .

Syntax

```
public int setValByRef(
    String pKey,
    GXVAL pVal)
```

pKey Key name of the GXVAL object to add to the IVallList.

pVal The GXVAL object, identified by pKey, to add to the IVallList.

Usage Use setValByRef() to add an existing GXVAL object to the IGXVallList. If a GXVAL object with the same key name already exists, setValByRef() overwrites it with the new one.

Rule Do not add new GXVAL objects to the IVallList when iterating through the IVallList.

Tip To add a new GXVAL object of type integer, string, or BLOB to the IVallList, use setValInt(), setValString(), or setValBLOB(), respectively.

Return Value GXE.SUCCESS if the method succeeds.

Related Topics valIn and valOut in the AppLogic class (deprecated)
execute() in the AppLogic class (deprecated)

setValInt()

Adds a GXVAL object of type integer to the IValList.

Syntax

```
public int setValInt(  
    String pKey,  
    int nVal)
```

pKey Key name of the GXVAL object to create or overwrite.

nVal The integer value to assign to the GXVAL object identified by pKey.

Usage Use setValInt() to add a GXVAL object of type integer to the IValList. If a GXVAL object with the same key name already exists, setValInt() overwrites it with the new one.

Rules When iterating through existing GXVAL objects in the IValList, do not add new GXVAL objects to the IValList.

Tips To add a new GXVAL object of type string or BLOB to the IValList, use setValString() or setValBLOB(), respectively.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Specifies the User ID for the Session's IValList  
public void setUserId(int uid, Agent agent)  
{  
    getValList().setValInt("UserId", uid);  
    agent.saveSession();  
}
```

Related Topics valIn and valOut in the AppLogic class (deprecated)
execute() in the AppLogic class (deprecated)

setValString()

Adds a GXVAL object of type string to the IValList.

Syntax

```
public int SetValString(  
    String pKey,  
    String val)
```

pKey Key name of the GXVAL object to create or overwrite.

val The string value to assign to the GXVAL object identified by pKey.

Usage Use `setValString()` to add a GXVAL object of type string to the IVallList. If a GXVAL object with the same key name already exists, `setValString()` overwrites it with the new one.

Rules When iterating through existing GXVAL objects in the IVallList, do not add new GXVAL objects to the IVallList.

Tips To add a new GXVAL object of type integer or BLOB to the IVallList, use `setValInt()` or `setValBLOB()`, respectively.

Return Value GXE.SUCCESS if the method succeeds.

Example

```
// Create and IVallList and set string values
IVallList custValList = GX.CreateValList();
custValList.setValString(":ssn", ssn);
custValList.setValString(":userName", userName);
```

Related Topics `valIn` and `valOut` in the AppLogic class (deprecated)
`execute()` in the AppLogic class (deprecated)

IVallList interface (deprecated)

A

Return Codes

Many methods in the Netscape Server Foundation Class Library return error codes. These generic error codes are defined as static values in the GXE class. When testing for a returned error code, prefix the error code with the class name, as shown in the following example:

```
if (hr==GXE.SUCCESS)
```

The following table lists the error codes defined in the GXE class:

| Error code | Value |
|-------------------|------------|
| SUCCESS | 0x80240000 |
| ERROR | 0x80240001 |
| INVALID_ARG | 0x80240002 |
| INVALID_INTERFACE | 0x80240003 |
| NOT_SUPPORTED | 0x80240004 |
| EOF | 0x80240005 |
| READ_FAILED | 0x80240006 |
| WRITE_FAILED | 0x80240007 |
| ALLOC_FAILED | 0x80240008 |
| INVALID_NAME | 0x80240009 |
| INVALID_EXPR | 0x8024000a |

| Error code | Value |
|------------------|------------|
| INVALID_INDEX | 0x8024000b |
| TOO_SMALL | 0x8024000c |
| FAIL | 0x8024000d |
| NOINTERFACE | 0x8024000e |
| MEM_ALLOC_FAILED | 0x8024000f |

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