Oracle® Database Express Edition

Installation Guide

10*g* Release 2 (10.2) for Linux

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Welcome to *Oracle Database Express Edition Installation Guide for Linux*. This guide covers the following topics:

- Introduction
- Requirements
- Licensing Restrictions
- Installing Oracle Database XE Server
- Installing Oracle Database XE Client
- Starting Oracle Database XE
- Deinstalling Oracle Database XE
- Preserving Database Data Across Deinstall/Reinstall
- Reporting Security Vulnerabilities
- Oracle Database XE Character and Language Configurations
- Globalization Support: Configuring Locale and Character Sets with the NLS_LANG Parameter
- Known Issues
- Documentation Accessibility

> **Note:** The most up-to-date version of this installation guide is available from the Oracle Database Express Edition (Oracle Database XE) download page on Oracle Technology Network:
>
> `http://www.oracle.com/technology/xe/documentation`

1 Introduction

Oracle Database XE is easy to install. The installation has the following components:

- **Oracle Database XE Server:** The Oracle Database XE Server component provides both an Oracle database and tools for managing this database. It also includes the client component of Oracle Database XE, so that you can connect to the database from the same computer on which you installed the server component, and then administer the database and develop Java, .NET, PHP, and Oracle Application Express applications.

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- **Oracle Database XE Client:** You install the Oracle Database XE client component on remote computers from which you want to connect to Oracle Database XE. Oracle Database Client provides drivers, networking components, and tools that enable you to remotely administer the database and to develop Java, .NET, PHP, and Oracle Application Express applications. Use this installation executable only on remote computers—that is, only on computers on which you do not install Oracle Database XE Server.

  - computers

After you install Oracle Database XE, you can manage it by using the Oracle Database XE graphical user interface management console, described in *Oracle Database Express Edition 2 Day DBA*.

In addition, you can use PHP with Oracle Database XE. PHP is an open-source server-side embedded scripting language that is designed for Web development and can be embedded in HTML. You can use either of the following PHP products:

- **PHP:** Download and install from:

  `http://www.php.net`

  You can install PHP on either Oracle Database XE Server or Oracle Database XE Client.

- **Zend Core for Oracle:** Download and install from:

  `http://www.oracle.com/technology/tech/php/zendcore/index.html`

  Install Zend Core for Oracle on Oracle Database XE Server only. It is not supported on Oracle Database XE Client.

For more information on Oracle Database XE, visit the following Web sites:

- Oracle Database XE home page on Oracle Technology Network

  `http://www.oracle.com/technology/products/database/xe`

- Oracle Database XE Documentation Library

  `http://www.oracle.com/technology/xe/documentation`

- Discussion forum

  `http://www.oracle.com/technology/xe/forum`

  Before you can use the discussion forum, you need to register Oracle Database XE.

2 Requirements

This section covers the following topics:

- Software Requirements
- Permissions Requirement for Installing Oracle Database XE
- Web Browser Requirements
- Configuring Your Web Browser

2.1 Software Requirements

This section covers the following topics:

- System Requirements
- Server Component Swap Space Requirements
- Server Component Kernel Parameter Requirements

2.1.1 System Requirements

Table 1 provides system requirements for both Oracle Database XE Server and Oracle Database XE Client.

Table 1 Oracle Database XE Requirements

Requirement	Value
Operating system	One of the following: ■ Red Hat Enterprise Linux RHEL3 and RHEL4 ■ Suse SLES-9 ■ Fedora Core 4 ■ Red Flag DC Server 5.0/MIRACLE LINUX V4.0/Haansoft Linux 2006 Server (Asianux 2.0 Inside) ■ Debian 3.1
Network protocol	TCP/IP
RAM	**Server component:** 256 megabytes minimum, 512 megabytes recommended **Client component:** 256 megabytes
Disk space	**Server component:** Total: 1.5 gigabyte minimum **Client component:** 100 megabytes
Packages	Both of the following: ■ glibc – 2.3.2 ■ libaio – 0.3.96

2.1.2 Server Component Swap Space Requirements

Table 2 describes the swap space requirements for Oracle Database XE Server, depending on how much RAM your computer has.

Table 2 Swap Space Requirements for Oracle Database XE Server

Your Computer's RAM	Swap Space Needed
Between 0 and 256 megabytes	3 times the size of RAM
Between 256 and 512 megabytes	2 times the size of RAM
512 megabytes and greater	1024 megabytes of RAM

2.1.3 Server Component Kernel Parameter Requirements

The Oracle Database XE installation checks your system for the following kernel parameter settings. If the kernel parameters of your system are less than the

values listed in Table 3, then the installation will modify the kernel parameter setting to use the values in this table.

Table 3 Kernel Parameter Settings Required for Oracle Database XE

Kernel Parameter	Setting
semmsl	250
semmns	32000
semopm	100
semmni	128
shmmax	536870912
shmmni	4096
shmall	2097152
file-max	65536
ip_local_port_range	1024–65000

2.2 Permissions Requirement for Installing Oracle Database XE

You must have root permissions to install Oracle Database XE.

2.3 Web Browser Requirements

For both the server and client components of Oracle Database XE, ensure that the Web browsers you plan to use support JavaScript and the HTML 4.0 and CSS 1.0 standards. Ensure also that cookies are enabled. The following browsers meet this requirement:

- Netscape Navigator 7.2 or later
- Mozilla 1.7 or later
- Firefox 1.0 or later

Oracle Application Express does not support the Corel SVG Viewer.

2.4 Configuring Your Web Browser

Before you can run Oracle Database XE, you need to configure your Web browser so that it can connect to the Oracle Database XE Database Home Page.

- Configuring Netscape Navigator or Mozilla
- Configuring Firefox

2.4.1 Configuring Netscape Navigator or Mozilla

To configure Netscape Navigator or Mozilla to connect to the Oracle Database XE Database Home Page:

1. From the **Edit** menu, select **Preferences**.
2. Under Category, click the **Advanced** category to expand it, and then select **Proxies**.
3. If you are using a proxy server, add the following setting to the No Proxy For setting:

```
127.0.0.1
```

4. Click **OK**.

2.4.2 Configuring Firefox

To configure Firefox to connect to the Oracle Database XE Database Home Page:

1. Under the **Tools** menu, select **Options**.
2. From the General tab, select **Connection Settings**.
3. If you are using a proxy server, add the following setting to the No Proxy For setting:

   ```
   127.0.0.1
   ```

4. Click **OK**.

3 Licensing Restrictions

This section covers the following topics:

- Oracle Database XE CPU Limitations
- Oracle Database XE Installation and Execution Restrictions
- Oracle Database XE Server User Data Limitations
- Oracle Database XE Server RAM Limitation
- HTTPS Support

3.1 Oracle Database XE CPU Limitations

If Oracle Database XE Server is installed on a computer with more than one CPU (including dual-core CPUs), then it will consume, at most, processing resources equivalent to one CPU. For example, on a computer with two CPUs, if two Oracle database clients try to simultaneously execute CPU-intensive queries, then Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition will use both CPUs to efficiently process the queries. However, with Oracle Database XE Server, the Oracle database will process the queries at the rate of a single CPU even if concurrent processing on two CPUs would be faster. To use the full processing resources of your computer, upgrade to Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition.

3.2 Oracle Database XE Installation and Execution Restrictions

On a single computer, only one installation of the Oracle Database XE software can be performed. This does not affect any existing installation or new installations of Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition. In addition, users can run only one instance of the Oracle Database XE database on each individual computer. To run more than one Oracle Database server instance or install more than one copy of the database software, upgrade to Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition.

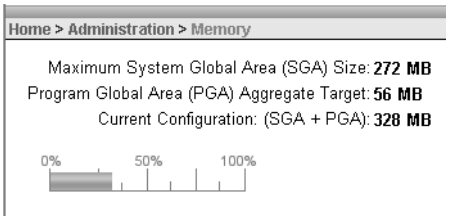
3.3 Oracle Database XE Server User Data Limitations

The maximum amount of user data in an Oracle Database XE Server database cannot exceed 4 gigabytes. If the user data grows beyond this limit, then an `ORA-12592` error will appear. To use more than 4 gigabytes of user data, upgrade to Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition.

3.4 Oracle Database XE Server RAM Limitation

The maximum amount of RAM that an Oracle Database XE Server database uses cannot exceed 1 gigabyte, even if more is available. Table 1, " Oracle Database XE Requirements" provides the minimum and recommended RAM that you should use. The exact amount of RAM that Oracle Database XE uses is the sum of the System Global Area (SGA) and the aggregate Program Global Area (PGA). To find this value, follow these steps after you have installed Oracle Database XE:

1. Click the **Main** menu (on Gnome) or the **K** menu (on KDE), select **Oracle Database 10g Express Edition**, and then select **Go to Database Home Page**.
2. In the Database Home Page, log in as `SYSTEM`.
3. Under Usage Monitor, click the **Memory** link.
4. Check the Current Configuration (SGA + PGA) setting:



For more information about managing memory, refer to *Oracle Database Express Edition 2 Day DBA*.

To use more than 1 gigabyte of RAM, upgrade to Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition.

3.5 HTTPS Support

HTTPS is not supported natively with the HTTP listener built into Oracle Database XE. If you want HTTPS support, use an alternative Web listener, such as Apache, that does provide HTTPS support, and provide proxies for the URLs provided by Oracle Database XE.

For information how you can manage security in Oracle Database XE, refer to *Oracle Database Express Edition 2 Day DBA*.

4 Installing Oracle Database XE Server

The Oracle Database XE Server installer creates both server and client components in one installation. If you plan to use Oracle Database XE as a standalone product, you only need to install this server component, not the client

component that is described under "Installing Oracle Database XE Client" on page 11.

This section covers the following topics:

- Procedure for Installing Oracle Database XE Server
- Performing a Silent Installation
- Setting the Oracle Database XE Server Environment Variables
- Compiling the Oracle ODBC Driver Demos
- Making Oracle Database XE Server Available to Remote Clients

4.1 Procedure for Installing Oracle Database XE Server

If you have an existing version of Oracle Database XE, you can save your data by exporting it to data files. After you install the new version of Oracle Database XE, you can import this data into the new database. For more information, see *Oracle Database Express Edition 2 Day DBA*.

To install Oracle Database XE Server:

1. Log on to your computer with root permissions.
2. Go to the following Web site:

   `http://www.oracle.com/technology/products/database/xe`
3. Click **Free Download** and follow the instructions to select and download the Linux version of Oracle Database XE Server.
4. Run one the following Oracle Database XE executables to either install or upgrade Oracle Database XE server:
   - For Linux operating systems that use Debian:
     - Universal character set: `oracle-xe-universal_10.2.0.1-1.0_i386.deb`
     - Western European character set: `oracle-xe_10.2.0.1-1.0_i386.deb`
   - For all other supported Linux operating systems:
     - Universal character set: `oracle-xe-univ-10.2.0.1-1.0.i386.rpm`
     - Western European character set: `oracle-xe-10.2.0.1-1.0.i386.rpm`

   For example, if you downloaded the `oracle-xe-universal_10.2.0.1-1.0_i386.deb` executable into a directory called `downloads`, you would enter the following command:

   ```
   $ dpkg -i downloads/oracle-xe-universal_10.2.0.1-1.0_i386.deb
   ```

   If you downloaded the `oracle-xe-univ-10.2.0.1-1.0.i386.rpm` executable, you would enter this command:

   ```
   $ rpm -ivh downloads/oracle-xe-univ-10.2.0.1-1.0.i386.rpm
   ```

   The installation displays a status of its progress.

5. When prompted, run the following command:

```
$ /etc/init.d/oracle-xe configure
```

6. Enter the following configuration information:
   - A valid HTTP port for the Oracle Database XE graphical user interface (the default is 8080)
   - A valid port for the Oracle database listener (the default is 1521)
   - A password for the `SYS` and `SYSTEM` administrative user accounts
   - Whether you want the database to start automatically when the computer starts

     If you enter `Yes`, then the database starts immediately

If you need to change the configuration settings, then you can do so by running the following command:

```
$ /etc/init.d/oracle-xe configure
```

To start the database manually, run this command:

```
$ /etc/init.d/oracle-xe start
```

To stop the database manually, use the following command:

```
$ /etc/init.d/oracle-xe stop
```

Note: You can find the database creation logs in `$ORACLE_HOME/config/log/*`.

4.2 Performing a Silent Installation

To perform a silent installation of Oracle Database XE Server, you need to create a response file and a wrapper shell script to perform the silent installation. The silent installation response file handles the configuration information

To perform a silent installation:

1. After downloading the installation executable (described under "Procedure for Installing Oracle Database XE Server" on page 7), create a response file that contains settings for the following values:
   - A valid HTTP port numeric value, so that you can connect to the Oracle Database XE graphical user interface
   - A valid listener numeric port value, so that you can connect to the Oracle Database XE database
   - A password value for the `SYS` and `SYSTEM` administrative user accounts
   - The `SYS` and `SYSTEM` password value again, to confirm it
   - Yes (y) or no (n), to specify whether you want to start Oracle Database XE automatically when the computer starts

   List only the values themselves, in the order shown as follows. For example:

   ```
   8080
   1521
   44gh992
   ```

```
44gh992
y
```

2. Create a wrapper shell script to perform the silent installation.

   It should contain commands similar to the following:

```
#!/bin/bash

rpm -ivh  /downloads/oracle-xe-univ-10.2.0.1-1.0.i386 > /xe_
logs/XEsilentinstall.log

/etc/init.d/oracle-xe configure <  /downloads/responsefile >> /xe_
logs/XEsilentinstall.log
```

3. Run the wrapper script.

   For details of the installation, see the `XEsilentinstall.log` file.

After you complete the silent installation, set the Oracle Database XE Server environment variables, which is described next.

> **Note:** You can find the database creation logs in `$ORACLE_HOME/config/log/*`.

4.3 Setting the Oracle Database XE Server Environment Variables

After you have installed and configured Oracle Database XE Server, users must set their environment before they use Oracle Database XE. They do not need to log on with root permissions to do so. Oracle Database XE provides a script that sets the necessary environment variables.

Follow these steps:

1. Go to the following directory:

   `/usr/lib/oracle/xe/app/oracle/product/10.2.0/server/bin`

2. Look for the following scripts:
   - `oracle_env.csh` (for C or tcsh shell)
   - `oracle_env.sh` (for Bourne, Bash, or Korn shell)
3. Run the appropriate script for your shell. For example:
   - Bourne, Bash, or Korn shell:

     ```
     $ . ./oracle_env.sh
     ```

   - C or tcsh shell:

     ```
     % source oracle_env.csh
     ```

You may also want edit your login or profile files so that these environment variables are set properly each time you log in or open a new shell.

For Bourne, Bash, or Korn shell, enter the following line into the `.bash_profile` (to log in) or `.bashrc` file (to open a new shell):

```
. /usr/lib/oracle/xe/app/oracle/product/10.2.0/server/bin/oracle_env.sh
```

For C or tcsh shell, enter the following line into the `.login` file (to log in) or `.cshrc` file (to open a new shell):

```
source /usr/lib/oracle/xe/app/oracle/product/10.2.0/server/bin/oracle_env.csh
```

4.4 Making Oracle Database XE Server Available to Remote Clients

After you install Oracle Database XE Server, its graphical user interface is only available from the local server, not remotely.

> **Security Note:** With remote HTTP access to Oracle Database XE, all information exchanged between the browser and the database is in clear text—that is, unencrypted—including database user names and passwords. If this is cause for concern, do not enable remote HTTP connection to the database.

If you want to use a Web browser, follow these steps:

1. Start Oracle Database XE.

   Click the **Application** menu (on Gnome) or the **K** menu (on KDE), then point to **Oracle Database 10g Express Edition**, and then **Go To Database Home Page**.

2. In the Database Login page, log in as `SYSTEM`, enter the password, and then click **Login**.
3. In the Oracle Database XE home page, click **Administration**.
4. Under Tasks, click **Manage HTTP Access**.
5. Under Manage HTTP Access, select **Available from local server and remove clients**.
6. Click **Apply Changes**.

If you prefer to use the SQL Command Line, follow these steps:

1. Start SQL*Plus and log in as `SYSTEM`:

   ```
   $ sqlplus system
   Enter password: SYSTEM_password
   ```

   Or, if you are logging in remotely:

   ```
   $ sqlplus system@xe_server_host_name
   Enter password: SYSTEM_password
   ```

2. At the SQL prompt, enter the following command:

   ```
   SQL> EXEC DBMS_XDB.SETLISTENERLOCALACCESS(FALSE);
   ```

For more information on enabling a remote connection to the Oracle Database XE database, see *Oracle Database Express Edition 2 Day DBA*.

4.5 Compiling the Oracle ODBC Driver Demos

If you plan to compile and run the Oracle ODBC Driver demos, then follow these steps:

1. If you do not have unixODBC DriverManager installed, then download it from the following Web site:

   `http://www.unixodbc.org/`

2. Set the `ODBCDM_HOME` environment variable to point to the directory where you installed DriverManager.

3. Run the following make file to compile the Oracle ODBC Driver demos:

   `make -f demo_xe.mk buildodbcdemo ODBCDM_HOME=`*`DriverManager_location`*

5 Installing Oracle Database XE Client

If you want to enable remote access to Oracle Database XE Server, install Oracle Database XE Client onto each client computer. You do not need to install Oracle Database XE Client onto the same computer as Oracle Database XE Server.

This section covers the following topics:

- Procedure for Installing Oracle Database XE Client
- Setting the Oracle Database XE Client Environment Variables
- Connecting to the Database from Oracle XE Client

5.1 Procedure for Installing Oracle Database XE Client

To install Oracle Database XE Client:

1. Log on to your computer as root.

2. Ensure that you have followed the instructions under "Installing Oracle Database XE Server" on page 6 to install and configure Oracle Database XE Server.

3. Go to the following Web site:

   `http://www.oracle.com/technology/xe`

4. Click **Downloads** and follow the instructions to download one of the following installation executables:

   - For Linux operating systems that use Debian: `oracle-xe-client_10.2.0.1-1.0_i386.deb`
   - For all other supported Linux operating systems: `oracle-xe-client-10.2.0.1-1.0.i386.rpm`

5. Run the executable to either install Oracle Database XE Client or upgrade to a newer version.

   For example, for Linux operating systems that use Debian, you would enter the following command:

   ```
   $ dpkg -i oracle-xe-client_10.2.0.1-1.0_i386.deb
   ```

   For all other Linux operating systems, you would enter this command:

   ```
   $ rpm -ivh oracle-xe-client-10.2.0.1-1.0.i386.rpm
   ```

   The installation will display a status of its progress.

5.2 Setting the Oracle Database XE Client Environment Variables

After you have installed and configured Oracle Database XE Client, users must set their environment before they use Oracle Database XE. They do not need to log on with root permissions to do so. Oracle Database XE provides a script that sets the necessary environment variables.

Follow these steps:

1. Go to the following directory:

   ```
   /usr/lib/oracle/xe/app/oracle/product/10.2.0/client/bin
   ```

2. Look for the following scripts:

   - `oracle_env.csh` (for C or tcsh shell)
   - `oracle_env.sh` (for Bourne, Bash, or Korn shell)

3. Run the appropriate script for your shell. For example:

   - Bourne, Bash, or Korn shell:

     ```
     $ . ./oracle_env.sh
     ```

   - C or tcsh shell:

     ```
     % source oracle_env.csh
     ```

You may also want edit your login or profile files so that these environment variables are set properly each time you log in or open a new shell.

For Bourne, Bash, or Korn shell, enter the following line into the `.bash_profile` (to log in) or `.bashrc` file (to open a new shell):

```
. /usr/lib/oracle/xe/app/oracle/product/10.2.0/client/bin/oracle_env.sh
```

For C or tcsh shell, enter the following line into the `.login` file (to log in) or `.cshrc` file (to open a new shell):

```
source /usr/lib/oracle/xe/app/oracle/product/10.2.0/client/bin/oracle_env.csh
```

5.3 Connecting to the Database from Oracle XE Client

To configure the connection to Oracle Database XE Server, refer to *Oracle Database Express Edition 2 Day DBA*.

6 Starting Oracle Database XE

After you have installed Oracle Database XE, the database is up and running and you can begin using it right away. To start using Oracle Database XE, you can go to the Database Home Page in the Oracle Database XE graphical user interface.

Follow these steps:

1. To access the Database Home Page, click the **Main** menu (on Gnome) or the **K** menu (on KDE), select **Oracle Database 10g Express Edition**, and then select **Go to Database Home Page**.

   If Oracle Database XE Server is installed on another computer, then you can access it from the following URL:

   ```
   http://host:port/apex/
   ```

In this URL:

- `host` is the host name or IP address of the computer where Oracle Database XE Server is installed. If Oracle Database XE Server is on your local computer, then you can enter `localhost` as the host name.

  Note that the URL in the browser by default points to the localhost IP address 127.0.0.1. If you want another user to access your Oracle Database XE installation, then provide the host name or IP address of your computer.

- `port` is the TCP port that the Oracle Database XE HTTP listener is listening on. The person installing Oracle Database XE set this port number during configuration. Normally it is set to 8080.

For example, if Oracle Database XE Server was installed on a computer with the host name `shobeen` with the default port number 8080, you would access the Database Home Page at this URL:

```
http://shobeen:8080/apex/
```

2. Log in to the database using the user name `SYSTEM`, and supply the password that you created during configuration.
3. To begin learning about Oracle Database XE, use the following documents:
   - *Oracle Database Express Edition Getting Started Guide* is a quick tutorial that gets you up and running using Oracle Database XE. You learn how to start Oracle Database XE and create a small application. To access this tutorial, click **Getting Started** on the Database Home Page.
   - *Oracle Database Express Edition 2 Day DBA* provides more detailed information on the best way to start using Oracle Database XE. To access this manual and the rest of the documentation set, click **Documentation** under External Links on the Database Home Page.

7 Deinstalling Oracle Database XE

When you deinstall Oracle Database XE, all components, including data files, the database, and the software, are removed. If you want to save your data files but remove the Oracle Database XE software and database, then first export the data by using one of the methods described in *Oracle Database Express Edition 2 Day DBA* before you deinstall.

Because the deinstallation process removes all files from the directory in which Oracle Database XE is installed, back up any files from the directory (if needed) before you deinstall.

This section covers the following topics:

- Deinstalling the Oracle Database XE Software
- Manually Removing Oracle Database XE

7.1 Deinstalling the Oracle Database XE Software

Follow these steps:

1. Log on with root privileges.

2. Run one of the following commands to deinstall the Western European character set version of Oracle Database XE:
   - For Linux operating systems that use Debian:
     ```
     $ dpkg -r oracle-xe
     ```
   - For all other supported Linux operating systems:
     ```
     $ rpm -e oracle-xe
     ```
3. Run one of the following commands to deinstall the Universal character set version of Oracle Database XE:
   - For Linux operating systems that use Debian:
     ```
     $ dpkg -r oracle-xe-universal
     ```
   - For all other supported Linux operating systems:
     ```
     $ rpm -e oracle-xe-univ
     ```
4. Run one of the following commands to deinstall Oracle Database XE Client:
   - For Linux operating systems that use Debian:
     ```
     $ dpkg -r oracle-xe-client
     ```
   - For all other supported Linux operating systems:
     ```
     $ rpm -e oracle-xe-client
     ```

7.2 Manually Removing Oracle Database XE

If the deinstallation is interrupted, follow these steps to manually remove Oracle Database XE from your computer:

1. Log in with root privileges.
2. Check your computer for existing Oracle Database XE packages.
   - For Linux operating systems that use Debian:
     ```
     $ dpkg -l oracle\* | grep ^i
     ```
   - For all other supported Linux operating systems:
     ```
     $ rpm -qa | grep oracle
     ```
3. Remove the packages using the same method described under "Deinstalling the Oracle Database XE Software" on page 13.

   Examples:

   ```
   $ dpkg -r oracle-xe-universal
   $ rpm -e oracle-xe-univ
   ```
4. Remove the directories that Oracle Database XE installed, if they haven't been removed already.

   These directories are:
   - `/usr/lib/oracle/xe`
   - `/etc/oratab`

- `/etc/init.d/oracle-xe`
- `/etc/sysconfig/oracle-xe`
- Installed documentation:
  - `/usr/share/doc/oracle_xe` (Oracle Database XE Server documentation)
  - `/usr/share/doc/oracle_xe_client` (Oracle Database XE Client documentation)

8 Preserving Database Data Across Deinstall/Reinstall

The following steps provide a method of preserving your database data when you deinstall and then reinstall *the same release* of Oracle Database XE Server. Refer to *Oracle Database Express Edition 2 Day DBA* for step details.

1. Create a directory in a location that is outside the standard Oracle Database XE directory structure. This directory will be the new location for the flash recovery area.

   For example, create the directory outside the `/usr/lib/oracle/xe` directory.

2. Move the flash recovery area to this new directory.

   See "Setting the Flash Recovery Area Location," in Chapter 6, for instructions.

3. Perform a complete backup of the database to the new flash recovery area by running the **Backup Database** command from the desktop.

   See "Backing Up the Database," in Chapter 11, for instructions. Ensure that you see the message Backup of the database succeeded before proceeding.

4. Deinstall Oracle Database XE, as explained in "Deinstalling Oracle Database XE" on page 13.

5. Install Oracle Database XE, as explained in "Installing Oracle Database XE Server" on page 6.

   Do not perform any backups until you complete the remaining steps in this procedure.

6. Run the **Restore Database** command from the desktop.

   See "Restoring and Recovering the Database," in Chapter 11, for instructions.

7. When the restore script prompts you for the flash recovery area location, enter the full path to the directory that you created in Step 1.

   The restore script restores the database from backup.

9 Reporting Security Vulnerabilities

If you find any security vulnerabilities with Oracle Database XE, then send a description of the problem to Oracle at the following e-mail address:

secalert_us@oracle.com

Include the following information in your e-mail:

- A complete description of the problem you encountered

- The version of Oracle Database XE you were using
- The platform on which you were running Oracle Database XE
- Any scripts or examples that may be helpful in tracking down the security problem

For more information on how Oracle handles security issues, visit:

`http://www.oracle.com/technology/deploy/security/index.html`

10 Oracle Database XE Character and Language Configurations

Oracle Database XE is available in two character set and language configurations:

- Western European
  - The database created using a single-byte Latin1 (`WE8MSWIN1252`) character set, which is suitable for storing Western European language data.
  - The Oracle Application Express user interface is available in English only.
  - Database error messages are available in Brazilian Portuguese, English, French, German, Italian, and Spanish.
- Universal
  - The database is created using a multibyte (`AL32UTF8`) character set, which is suitable for global data in any language.
  - The Oracle Application Express user interface and database error messages are available in Brazilian Portuguese, Chinese (Simplified and Traditional), English, French, German, Italian, Japanese, Korean, and Spanish.

"Globalization Support: Configuring Locale and Character Sets with the NLS_ LANG Parameter" on page 16 provides additional character and language information.

11 Globalization Support: Configuring Locale and Character Sets with the NLS_LANG Parameter

This section explains how to configure globalization settings for both the server and client components of Oracle Database XE. It covers the following topics:

- About the NLS_LANG Parameter
- Default Values for NLS_LANG
- Supported Character Sets
- Charmap and Oracle Character Set

11.1 About the NLS_LANG Parameter

Oracle provides globalization support that enables users to interact with a database in their preferred locale and character set settings. Setting the `NLS_`

LANG environment variable specifies locale behavior for Oracle software. It sets the language and territory used by the client application and the database server. It also sets the character set for entering and displaying data by a client program, such as SQL*Plus.

The NLS_LANG parameter uses the following format:

NLS_LANG = *LANGUAGE_TERRITORY.CHARACTER_SET*

This format is explained in the following table:

Parameter	Description
LANGUAGE	Specifies the language for displaying product messages, day names, and month names in SQL. *Oracle Database Globalization Support Guide* provides more information about languages.
TERRITORY	Specifies the cultural-specific conventions for date, number, time, and monetary formatting. *Oracle Database Globalization Support Guide* provides more information about territory conventions.
CHARACTER_SET	Specifies the encoding used by the client application, which is usually the character set of the source data being processed, and the character set used in displaying the output. "Supported Character Sets" on page 19 provides a list of supported character sets.

Oracle Database Globalization Support Guide provides information about the NLS_LANG parameter and Globalization Support initialization parameters.

11.2 Default Values for NLS_LANG

The locale setting of your Linux session affects how you should set your NLS_LANG parameter. Table 4 lists the different Linux languages and their default locale IDs, together with the corresponding NLS_LANG values.

Table 4 NLS_LANG Parameter Values for Linux Locales

Language	Locale ID	NLS_LANG
English (American)	en_US.UTF-8	AMERICAN_AMERICA.AL32UTF8
English (American)	en_US.ISO-8859-1	AMERICAN_AMERICA.WE8ISO8859P1
English (American)	en_US.ISO-8859-15	AMERICAN_AMERICA.WE8ISO8859P15
English (Australian)	en_AU.UTF-8	ENGLISH_AUSTRALIA.AL32UTF8
English (Australian)	en_AU.ISO-8859-1	ENGLISH_AUSTRALIA.WE8ISO8859P1
English (Australian)	en_AU.ISO-8859-15	ENGLISH_AUSTRALIA.WE8ISO8859P15
English (British)	en_GB.UTF-8	ENGLISH_UNITED KINGDOM.AL32UTF8

Table 4 (Cont.) NLS_LANG Parameter Values for Linux Locales

Language	Locale ID	NLS_LANG
English (British)	en_GB.ISO-8859-1	ENGLISH_UNITED KINGDOM.WE8ISO8859P1
English (British)	en_GB.ISO-8859-15	ENGLISH_UNITED KINGDOM.WE8ISO8859P15
English (Ireland)	en_IE.UTF-8	ENGLISH_IRELAND.AL32UTF8
English (Ireland)	en_IE.ISO-8859-1	ENGLISH_IRELAND.WE8ISO8859P1
English (Ireland)	en_IE.ISO-8859-15	ENGLISH_IRELAND.WE8ISO8859P15
German	de_DE.UTF-8	GERMAN_GERMANY.AL32UTF8
German	de_DE.ISO-8859-1	GERMAN_GERMANY.WE8ISO8859P1
German	de_DE.ISO-8859-15	GERMAN_GERMANY.WE8ISO8859P15
French	fr_FR.UTF-8	FRENCH_FRANCE.AL32UTF8
French	fr_FR.ISO-8859-1	FRENCH_FRANCE.WE8ISO8859P1
French	fr_FR.ISO-8859-15	FRENCH_FRANCE.WE8ISO8859P15
Italian	it_IT.UTF-8	ITALIAN_ITALY.AL32UTF8
Italian	it_IT.ISO-8859-1	ITALIAN_ITALY.WE8ISO8859P1
Italian	it_IT.ISO-8859-15	ITALIAN_ITALY.WE8ISO8859P15
Spanish	es_ES.UTF-8	SPANISH_SPAIN.AL32UTF8
Spanish	es_ES.ISO-8859-1	SPANISH_SPAIN.WE8ISO8859P1
Spanish	es_ES.ISO-8859-15	SPANISH_SPAIN.WE8ISO8859P15
Spanish (Mexico)	es_MX.UTF-8	MEXICAN SPANISH_MEXICO.AL32UTF8
Spanish (Mexico)	es_MX.ISO-8859-1	MEXICAN SPANISH_MEXICO.WE8ISO8859P1
Spanish (Mexico)	es_MX.ISO-8859-15	MEXICAN SPANISH_MEXICO.WE8ISO8859P15
Portuguese (Brazilian)	pt_BR.UTF-8	BRAZILIAN PORTUGUESE_BRAZIL.AL32UTF8
Portuguese (Brazilian)	pt_BR.ISO-8859-1	BRAZILIAN PORTUGUESE_ BRAZIL.WE8ISO8859P1
Portuguese (Brazilian)	pt_BR.ISO-8859-15	BRAZILIAN PORTUGUESE_ BRAZIL.WE8ISO8859P15
Japanese	ja_JP.EUC-JP	JAPANESE_JAPAN.JA16EUC
Japanese	ja_JP.UTF-8	JAPANESE_JAPAN.AL32UTF8
Korean	ko_KR.EUC-KR	KOREAN_KOREA.KO16KSC5601
Korean	ko_KR.UTF-8	KOREAN_KOREA.AL32UTF8
Chinese (simplified)	zh_CN.GB18030	SIMPLIFIED CHINESE_CHINA.ZHS32GB18030
Chinese (simplified)	zh_CN.UTF-8	SIMPLIFIED CHINESE_CHINA.AL32UTF8

Table 4 (Cont.) NLS_LANG Parameter Values for Linux Locales

Language	Locale ID	NLS_LANG
Chinese (traditional)	zh_TW.BIG5	TRADITIONAL CHINESE_TAIWAN.ZHT16BIG5
Chinese (traditional)	zh_TW.UTF-8	TRADITIONAL CHINESE_TAIWAN.AL32UTF8

11.3 Supported Character Sets

Table 5 lists the supported character sets in Oracle Database XE. The list is ordered alphabetically in each language group.

The character set AL16UTF16 can be used only as an NCHAR character set, and not as a database character set.

Table 5 Supported Character Sets

Name	Description
Asian	
JA16EUC	EUC 24-bit Japanese
JA16EUCTILDE	The same as JA16EUC except for the way that the wave dash and the tilde are mapped to and from Unicode
JA16SJIS	Shift-JIS 16-bit Japanese. The same as JA16SJISTILDE except for the way that the wave dash and the tilde are mapped to and from Unicode
JA16SJISTILDE	Microsoft Windows Code Page 932 Japanese
KO16KSC5601	KSC5601 16-bit Korean
KO16MSWIN949	Microsoft Windows Code Page 949 Korean
TH8TISASCII	Thai Industrial Standard 620-2533 - ASCII 8-bit
VN8MSWIN1258	Microsoft Windows Code Page 1258 8-bit Vietnamese
ZHS16CGB231280	CGB2312-80 16-bit Simplified Chinese
ZHS16GBK	GBK 16-bit Simplified Chinese
ZHS32GB18030	GB18030-2000
ZHT16BIG5	BIG5 16-bit Traditional Chinese
ZHT16HKSCS	Microsoft Windows Code Page 950 with Hong Kong Supplementary Character Set HKSCS-2001 (character set conversion to and from Unicode is based on Unicode 3.0)
ZHT16MSWIN950	Microsoft Windows Code Page 950 Traditional Chinese
ZHT32EUC	EUC 32-bit Traditional Chinese
European	
BLT8CP921	Latvian Standard LVS8-92(1) Windows/UNIX 8-bit Baltic
BLT8ISO8859P13	ISO 8859-13 Baltic
BLT8MSWIN1257	Microsoft Windows Code Page 1257 8-bit Baltic
BLT8PC775	IBM-PC Code Page 775 8-bit Baltic
CEL8ISO8859P14	ISO 8859-13 Celtic

Table 5 (Cont.) Supported Character Sets

Name	Description
CL8ISO8859P5	ISO 8859-5 Latin/Cyrillic
CL8KOI8R	RELCOM Internet Standard 8-bit Latin/Cyrillic
CL8KOI8U	KOI8 Ukrainian Cyrillic
CL8MSWIN1251	Microsoft Windows Code Page 1251 8-bit Latin/Cyrillic
EE8ISO8859P2	ISO 8859-2 East European
EL8ISO8859P7	ISO 8859-7 Latin/Greek
ET8MSWIN923	Microsoft Windows Code Page 923 8-bit Estonian
EE8MSWIN1250	Microsoft Windows Code Page 1250 8-bit East European
EL8MSWIN1253	Microsoft Windows Code Page 1253 8-bit Latin/Greek
EL8PC737	IBM-PC Code Page 737 8-bit Greek/Latin
EE8PC852	IBM-PC Code Page 852 8-bit East European
LT8MSWIN921	Microsoft Windows Code Page 921 8-bit Lithuanian
NE8ISO8859P10	ISO 8859-10 North European
NEE8ISO8859P4	ISO 8859-4 North and North-East European
RU8PC866	IBM-PC Code Page 866 8-bit Latin/Cyrillic
SE8ISO8859P3	ISO 8859-3 South European
US7ASCII	ASCII 7-bit American
US8PC437	IBM-PC Code Page 437 8-bit American
WE8ISO8859P1	ISO 8859-1 West European
WE8ISO8859P15	ISO 8859-15 West European
WE8MSWIN1252	Microsoft Windows Code Page 1252 8-bit West European
WE8PC850	IBM-PC Code Page 850 8-bit West European
WE8PC858	IBM-PC Code Page 858 8-bit West European
Middle Eastern	
AR8ADOS720	Arabic MS-DOS 720 Server 8-bit Latin/Arabic
AR8ASMO8X	ASMO Extended 708 8-bit Latin/Arabic
AR8ISO8859P6	ISO 8859-6 Latin/Arabic
AR8MSWIN1256	Microsoft Windows Code Page 1256 8-Bit Latin/Arabic
AZ8ISO8859P9E	ISO 8859-9 Latin Azerbaijani
IW8ISO8859P8	ISO 8859-8 Latin/Hebrew
IW8MSWIN1255	Microsoft Windows Code Page 1255 8-bit Latin/Hebrew
TR8MSWIN1254	Microsoft Windows Code Page 1254 8-bit Turkish
TR8PC857	IBM-PC Code Page 857 8-bit Turkish
WE8ISO8859P9	ISO 8859-9 West European & Turkish
Universal	
AL16UTF16	Unicode 4.0 UTF-16 Universal character set

Table 5 (Cont.) Supported Character Sets

Name	Description
AL32UTF8	Unicode 4.0 UTF-8 Universal character set
UTF8	Unicode 3.0 UTF-8 Universal character set, CESU-8 compliant

11.4 Charmap and Oracle Character Set

The character set mapping (charmap) of the locale ID assigned for each language may vary depending on the distribution and version of the Linux operating system. To determine the current character mapping, enter the following command in a shell:

```
% locale charmap
UTF-8
```

Table 6 lists each charmap with its corresponding Oracle character set. In general, you should update the *CHARACTER_SET* part of the NLS_LANG parameter according to the actual charmap of your Linux session.

Table 6 Mapping charmap to Oracle Character Set

Locale charmap	Oracle Character Set
UTF-8	AL32UTF8
ISO-8859-1	WE8ISO8859P1
ISO-8859-2	EE8ISO8859P2
ISO-8859-3	SE8ISO8859P3
ISO-8859-4	NEE8ISO8859P4
ISO-8859-5	CL8ISO8859P5
ISO-8859-6	AR8ISO8859P6
ISO-8859-7	EL8ISO8859P7
ISO-8859-8	IW8ISO8859P8
ISO-8859-9	WE8ISO8859P9
ISO-8859-13	BLT8ISO8859P13
ISO-8859-14	CEL8ISO8859P14
ISO-8859-15	WE8ISO8859P15
BIG5	ZHT16BIG5
BIG5-HKSCS	ZHT16HKSCS
CP1251	CL8MSWIN1251
CP1255	IW8MSWIN1255
EUC-JP	JA16EUC
EUC-KR	KO16KSC5601
EUC-TW	ZHT32EUC
GB18030	ZHS32GB18030
GB2312	ZHS16CGB231280

Table 6 (Cont.) Mapping charmap to Oracle Character Set

Locale charmap	Oracle Character Set
GBK	ZHS16GBK
TIS-620	TH8TISASCII

12 Known Issues

This section covers the following topics:

- Open Bugs and Known Issues
- Open Bugs and Known Issues Specific to Oracle Application Express
- Documentation Corrections and Additions

For the latest known issues and workarounds, as well as current Oracle Database XE documentation, visit

http://www.oracle.com/technology/products/database/xe

12.1 Open Bugs and Known Issues

This section covers the following open bugs and known issues:

- English and French Oracle Text Supplied Knowledge Bases Not Included
- Errors Accessing the Oracle Database XE Home Page
- Errors when Modifying HTTP Access
- ORA-12560: TNS: Protocol Adapter Errors
- Icons May Not Work on Some Linux Distributions
- Java Package Recommendations
- Oracle C++ Call Interface Compiler Support
- Oracle C++ Call Interface Compilation Errors

12.1.1 English and French Oracle Text Supplied Knowledge Bases Not Included

The Oracle Text English and French Supplied Knowledge Bases are not included in Oracle Database XE. As a result, the following functions are not available:

- Index creation using a BASIC_LEXER preference where INDEX_THEMES=YES
- SYNCing an index where INDEX_THEMES=YES
- CTX_DOC.THEME
- CTX_DOC.POLICY_THEME
- CTX_DOC.GIST
- CTX_DOC.POLICY_GIST
- CTX_QUERY.HFEEDBACK
- CTX_QUERY.EXPLAIN, if using ABOUT or THEMES with TRANSFORM
- CTX_DOC.SNIPPET (if using the ABOUT operator)
- CTX_DOC.POLICY_SNIPPET (if using the ABOUT operator)

- CONTAINS queries that use ABOUT or THEMES with TRANSFORM
- The Knowledge Base Extension Compiler, ctxkbtc
- Clustering and classification services, if themes are specified

If you try to use these functions, then the following error appears:

```
11446,0, "supplied knowledge base file %(1)s not installed"
```

Workaround: Upgrade to Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition.

12.1.2 Errors Accessing the Oracle Database XE Home Page

The following errors may appear when you try to access the Oracle Database XE home page:

```
403 Forbidden Error Message when accessing the Oracle Database Express
Edition home page

403 Forbidden - The following error occured: Access denied by access control
list.
```

There may be a problem with the default profile your browser is using.

Workaround: Configure your Web browser by following the instructions under "Configuring Your Web Browser" on page 4.

12.1.3 Errors when Modifying HTTP Access

The Manage HTTP Access page, available by selecting the **Manage HTTP Access** option on the Administration page, lets you control HTTP access to the database by selecting one of the following options:

- Available only from local server
- Available from local server and remote client

If you select either of these options and then click **Apply Changes**, one of the following may occur:

- An error saying that the page cannot be displayed (or a 404 error, depending on your browser)
- A delay, followed by a 500 server error or a blank page

You can disregard these occurrences. The option that you selected will be successfully applied.

Workaround: To avoid these occurrences, use SQL*Plus to enable or disable remote access. You can start SQL*Plus by selecting **Run SQL Command Line** from the **Oracle Database 10g Express Edition** menu. Then enter the following commands:

```
SQL> CONNECT SYS/AS SYSDBA (Or enter CONNECT SYSTEM)
Enter password: password
SQL> EXEC DBMS_XDB.SETLISTENERLOCALACCESS(FALSE); (To enable remote access)
SQL> EXEC DBMS_XDB.SETLISTENERLOCALACCESS(TRUE); (To disable remote access)
```

12.1.4 ORA-12560: TNS: Protocol Adapter Errors

If other Oracle client software is installed on the same computer as Oracle Database XE, ensure that you use the appropriate connect syntax for these clients

when trying to connect to Oracle Database XE. If you do not specify the appropriate connect syntax, then an "ORA-12560: TNS: protocol adapter error" message may appear.

before you install Oracle Database XE Server

12.1.5 Icons May Not Work on Some Linux Distributions

On some Linux distributions, icons may not work.

12.1.6 Java Package Recommendations

If you are using Fedora Core 4, do not use the Java `rpm` that Sun provides. This `rpm` file contains Provides that conflict with names used in packages that are part of Fedora Core 4. As a result, Sun Java could disappear from the installation during a package upgrade.

Workaround: Use either the `rpm` from `jpackage.org` or manually install the Sun Java tarball into `/opt`. To ensure stability, use Sun Java 1.5 or later.

12.1.7 Oracle C++ Call Interface Compiler Support

On Red Hat Enterprise Linux 4.0, Fedora Core 4, and Asianux, Oracle C++ Call Interface (OCCI) does not yet support GCC 3.4.3. The current GNU C++ compiler version that OCCI supports with these Linux platforms is GCC 3.2.3

Workaround: Use GCC 3.2.3 to build OCCI applications on these platforms.

Note: For updates on GCC support, refer to the OCCI home page on OTN:

`http://www.oracle.com/technology/tech/oci/occi/index.html`

12.1.8 Oracle C++ Call Interface Compilation Errors

The supported compiler for OCCI on Suse 9 and Debian is GCC 3.3, with the following workaround:

Workaround: *`ORACLE_HOME`*`/rdbms/public/occiCommon.h` has a section that describes basic_strings that is defined only when gcc 3.2 is being used. Change this code to enable it for GCC 3.3 also. Specifically, change the following line:

```
#if (__GNUC__ == 3 && __GNUC_MINOR__ == 2
```

to:

```
#if (__GNUC__ == 3 && (__GNUC_MINOR__ == 2 || __GNUC_MINOR__ == 3))
```

12.2 Open Bugs and Known Issues Specific to Oracle Application Express

This section describes bugs and known issues for Oracle Application Express:

- Importing Spreadsheet Data Containing Quotation Marks
- Column Attribute Format in Japanese
- Creating an Item with a Japanese Item Name

- Downloading Triggers with Multibyte Names
- Generate DDL Utility Corrupts Some Multibyte Table and Columns Names
- Spell-checking Features Pop-up Does Not Function Properly
- Authentication Schemes Not Displayed in Icons View Mode
- Verity AUTO Filter Not Supported on Debian GNU

12.2.1 Importing Spreadsheet Data Containing Quotation Marks

If you import spreadsheet data by copying and pasting and a column value contains a double quotation mark, then the data will not import correctly (for example, `54" Plasma Flat Screen`). To avoid this problem, you have two options:

- Option 1:
  a. Save the data in a delimited format (such as comma-delimited (`.csv`) or tab-delimited).
  b. Use the Import Text Data Wizard to upload and import the saved file.
- Option 2:
  a. Replace the quotation mark with two double quotation marks as shown in the following example:

     ```
     54"" Plasma Flat Screen
     ```

  b. Use the Import Spreadsheet Data Wizard to import the file.

12.2.2 Column Attribute Format in Japanese

The number or date format select dialog on the Column Attribute of a Page Definition in Application Builder displays the following message in the dialog box:

```
'backslash'+ 5,234.10
```

The yen symbol should appear accurately in a Japanese environment.

Note that backslash and yen are the same character code point, but vary in appearance depending on the selected font. The backslash character is also displayed when you apply the data format on the page in the application.

12.2.3 Creating an Item with a Japanese Item Name

If you use a wizard to create a form on a table or view based on an included column whose name is in Japanese, then the name of the new item will be included in Japanese.

Workaround: To correct this problem, when you create new items, on the Page Definition use alphanumeric characters A to Z, 0 to 9 and '_' for the item names. You may also need to change item names to alphanumeric before you apply changes to the item.

12.2.4 Downloading Triggers with Multibyte Names

If you download a trigger with a multibyte name from the Object Details view in Object Browser, then the file name becomes corrupt.

Workaround: Download triggers with multibyte names from the Code view.

12.2.5 Generate DDL Utility Corrupts Some Multibyte Table and Columns Names

In character sets in non-UTF8 databases, multibyte table and column names are corrupted when you generate DDL. For example, if you want to generate DDL for objects that have non-ASCII characters (for example, ä or â) and the database character set was distributed with the Western European edition (`WE8MSIN1252`), these characters will be garbled in the generated script.

Database character sets of `AL32UTF8` do not have this bug.

Workaround: Choose the output type of Display Inline instead of Save As Script File.

12.2.6 Spell-checking Features Pop-up Does Not Function Properly

Page items of display type "Textarea with Spell Checker" or "Textarea w/Character Counter & Spellcheck" can be used as ordinary Textarea items only. The pop-up page that presents the spell checking features does not function properly.

12.2.7 Authentication Schemes Not Displayed in Icons View Mode

In Application Express Application Builder, the authentication schemes defined in the current application are not displayed if you view them in **Icons** View mode. To view the authentication schemes, choose **Details** in the View select list and then click **Go**.

12.2.8 Verity AUTO Filter Not Supported on Debian GNU

If you are running Oracle Database XE on Debian GNU, you will be unable to index Japanese online help in Oracle Application Express, which requires Verity AUTO Filter to do so.

12.3 Documentation Corrections and Additions

This section covers documentation corrections and additions for the following manuals:

- Oracle Database Express Edition 2 Day DBA Updates
- Oracle Database Express Edition 2 Day Plus Application Express Developer Guide Updates
- Oracle Database Express Edition 2 Day Developer Guide Updates

12.3.1 Oracle Database Express Edition 2 Day DBA Updates

Oracle Database Express Edition 2 Day DBA has the following updates:

- On Linux, before initiating a local database connection or remote database connection with SQL Command Line (SQL*Plus) or another Oracle command-line utility, you must set environment variables. (There is no need to set environment variables on the Windows platform.) See "Setting Environment Variables," in Chapter 3 of *Oracle Database Express Edition 2 Day DBA* for details.
- When changing the location of the flash recovery area, you must run a supplied PL/SQL script to move the online redo logs to the new location. See "Setting Flash Recovery Area Location and Size," in Chapter 6 of *Oracle Database Express Edition 2 Day DBA* for instructions.
- If you enable redo log archiving (`ARCHIVELOG` mode), it is recommended that you increase the size of the flash recovery area to at least 15 gigabytes to allow for the extra space required for the archived log files. In addition, when in `ARCHIVELOG` mode, you must remember to perform regular backups of the database to avoid completely filling the flash recovery area. A filled flash recovery area can lead to database failure. See "Enabling ARCHIVELOG Mode for Media Failure Protection," in Chapter 11 of *Oracle Database Express Edition 2 Day DBA* for more information.
- If the flash recovery area is approaching 100% full (for example, 85% full or more) and log archiving is enabled (the database is in `ARCHIVELOG` mode), it may be time to back up the database. Backing up the database deletes archived log files and frees space in the flash recovery area. If the flash recovery area is frequently close to 100% full after several recent backups, consider allocating more space for your flash recovery area, or, if in `ARCHIVELOG` mode, taking backups more frequently to reduce the size of the retained archived log files. See "Monitoring Space in the Flash Recovery Area," in Chapter 6 of *Oracle Database Express Edition 2 Day DBA* for more information.
- A database for which log archiving is not enabled---that is, a `NOARCHIVELOG` mode database---can be backed up only while it is in the mounted (but not open) state after a successful `SHUTDOWN` or `SHUTDOWN IMMEDIATE` operation. The supplied backup script, which is run by the Backup Database command on the desktop, automatically puts the database in the proper state for offline backup. See "About Backing Up and Restoring the Database," in Chapter 11 of *Oracle Database Express Edition 2 Day DBA* for more information.

12.3.2 Oracle Database Express Edition 2 Day Plus Application Express Developer Guide Updates

Oracle Database Express Edition 2 Day Plus Application Express Developer Guide has the following additional information:

Determining When a User Has Not Yet Authenticated to an Application

After a user logs in to an Application Express application, the `APP_USER` item contains the authenticated user name and can be accessed using the bind variable `:APP_USER`, or by using the function call `v('APP_USER')`, or in a pure HTML context, by using the following substitution string:

```
&APP_USER.
```

Note that the trailing period in the substitution string is required.

Before a user authenticates, the value of APP_USER depends on the type of authentication scheme used by the application. When the developer uses any of the built-in authentication schemes, this value varies slightly depending on Oracle database edition and the authentication scheme in use.

In Oracle Database XE, APP_USER will be ANONYMOUS when database authentication is used. This is achieved by using the built-in authentication scheme named DATABASE. Note that if you set the application's Public User attribute to some other value, that new attribute value is used to set APP_USER. Also, if you use any built-in authentication scheme other than DATABASE, APP_USER is set to 'nobody' before the user logs in.

When developing applications, be sure to plan ahead for possible upgrades to other database editions such as Oracle Database 10*g* Standard Edition, Oracle Database 10*g* Standard Edition One, or Oracle Database 10*g* Enterprise Edition, or for the possibility that the application might be installed in an Application Express environment installed into one of those database editions. In these editions, the same rules as explained previously apply, but with one difference. While ANONYMOUS is used in Oracle Database Express Edition, HTMLDB_PUBLIC_USER is used in other editions. Remember that these rules determine the setting of APP_USER before a user has authenticated. Two examples of when this situation exists include:

- When the login page itself is being rendered
- During the rendering or after-submit processing of a "public" page requested before the user logs in

Sometimes it may be necessary for a block of PL/SQL code within an application to determine whether authentication has taken place. For example, this may be a requirement of an authorization scheme that requires that APP_USER contain the authenticated username. Another use is in application processes or application computations that are intended to run only once per session, but only after login.

Consider the following PL/SQL example:

```
if v('APP_USER') in ('ANONYMOUS', 'HTMLDB_PUBLIC_USER', 'nobody') then --
authentication has not occurred
```

This code sample is written to allow for the pre-authentication APP_USER values used in any edition of Oracle Database in which the Application Express application is run.

12.3.3 Oracle Database Express Edition 2 Day Developer Guide Updates

The following sections have been added to the book version of *Oracle Database Express Edition 2 Day Developer Guide* after the online help version of this manual was finalized:

- **New section to Chapter 4, "Using PL/SQL":** "Cursor Variables (REF CURSORs)"
- **New section to Chapter 5, "Using Procedures, Functions, and Packages":** "Accessing Types in Packages"
- **New sections to Chapter 6, "Using Triggers":** "Firing Triggers With the INSTEAD OF Option" and "Creating a Trigger With the INSTEAD OF Option"

- **New appendixes:** Appendix C, "Using a PL/SQL Procedure With PHP" and Appendix D, "Using a PL/SQL Procedure With JDBC"

13 Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at

`http://www.oracle.com/accessibility/`

Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

Oracle Database Express Edition Installation Guide, 10*g* Release 2 (10.2) for Linux
B25144-03