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JD Edwards World

Database Audit Manager Guide

Version A9.1

Revised - April 15, 2008

JD Edwards World
Database Audit Manager Guide

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1 Overview

Overview to Database Audit Manager

New federal regulations necessitate a flexible auditing tool that can be reconfigured quickly. The Database Audit Manager provides that tool. The Database Audit Manager enables selective historical database transaction logging. Support for electronic signature verification, enforcement, and capture, is embedded within Audit Manager. Be aware that enforcement of electronic signatures requires changes to JD Edwards World application programs.

The Food and Drug Administration (FDA) requires that companies be able to set up an audit process on demand. These audits need to track changes to any field in any file.

To set up an audit process, first identify the library that contains the file to be configured for audit. Select the file from the library. Define the audit program, define a target file to store the audit information, and determine the type of audit to occur. Select the data fields to trigger an audit or to be copied into the audit target file for informational purposes only. Finally, attach reason codes to the audit actions.

For example, if the FDA requires tracking address changes, set up an audit to record changes to the address data field of the Address Book Master file (F0101). First, find out which library contains the Address Book Master File. After selecting the Address Book Master File from the library, define an audit program (P0101AUD) and a target file (F0101AUD). Then select the address data field to trigger the audit program. Finally, attach reason codes to the actions.

The Database Audit Manager (G946) allows selecting a file and the fields in the file to be tracked. In addition, it allows the following:

- Add a new audit process
- Build an audit
- Activate and deactivate audit triggers
- Maintain reason code
- Set the default library names used throughout the system

System Requirements

The minimum requirements for running Database Audit Manager are as follows:

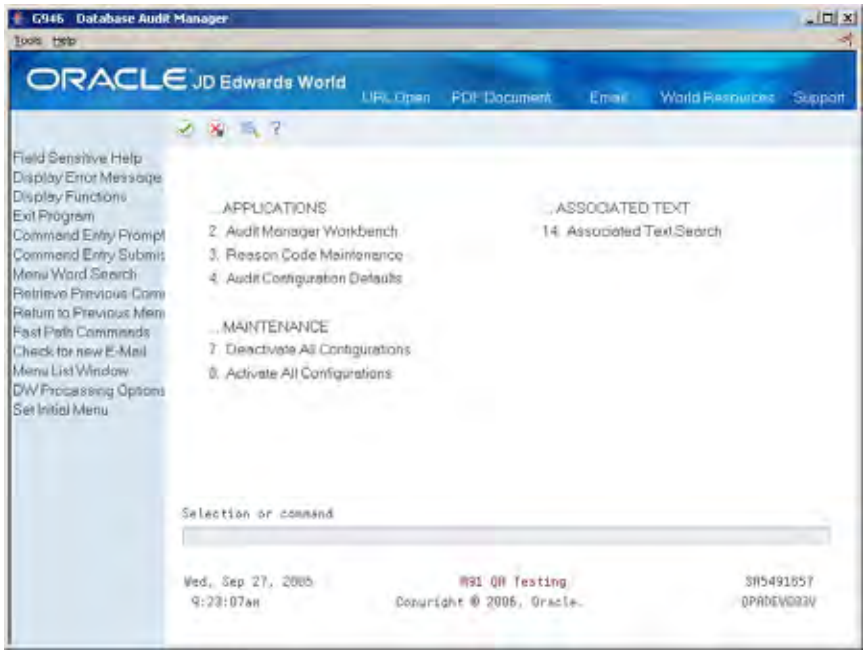
- JD Edwards World
- Source Code for Database Audit Manager must be loaded at the time of install for the product to work properly
- IBM V5R1 or above
- All JDESRC code does not need to be installed. DBAM only requires the source code member XBASETRG – this is the trigger template source member and its location must be specified in the library / file on the Configuration Defaults Panel
- DB2 Query Manager and SQL Development Kit program product.5722-ST1 is no longer required
- SQL is no longer a requirement.

2 Working With Database Audit Manager

Menus and Screens

Overview

This section describes the menus and screens that comprise the Database Audit Manager (DBAM). The menu for the Database Audit Manager is G946, shown below. From the menu you can select a file and the fields you want tracked. You can also add a new audit process, build an audit, activate and deactivate audit triggers, maintain reason codes and set the default library names used throughout the system.



The selections on the Database Audit Manager menu are described briefly below.

Menu Selection	Description
Audit Manager Workbench	Displays the primary application screen, Audit Management Workbench. It allows you to add new audit process, build audit, turn audit triggers on or off, and delete the audit configuration for a file.
Reason Code Maintenance	Opens the Reason Code Maintenance screen that displays reasons to be associated with events. On this screen, you can add, change, and display inactive reasons.

Menu Selection	Description
Audit Configuration Defaults	This screen contains the default library names that will be used throughout the system. Audit defaults must be set up in an environment where the audit process will be active.
Deactivate All Configurations Activate All Configurations	These two menu selections are bulk operations will turn on or off all current Database Audit Manager configured audits. These utilities are provided specifically to facilitate the operations which are needed before applying software upgrades (Releases, Cumes, or PcCpys) and resuming audit functions after upgrades. These bulk trigger activation and deactivation processes should be used only by personnel knowledgeable about JD Edwards World software applications, and with the proper system authorities to add or remove database triggers from production files. Manipulating these configurations requires exclusive object allocation of the database file. Therefore, these operations may need to be performed when no users are accessing the software.
Associated Text Search	Use this screen to access the associated text attached to a specific audit action. Associated text can be changed but never deleted.

Audit Configuration Defaults (P98201)

Audit Configuration Defaults allows you to add, view, or change the default values used when you add a new file. Select Audit Configuration Defaults (P98201) directly from the menu or press F8 on the Audit Manager Workbench (P98200).

The Audit Configuration Defaults (P98201) screen has the following fields:

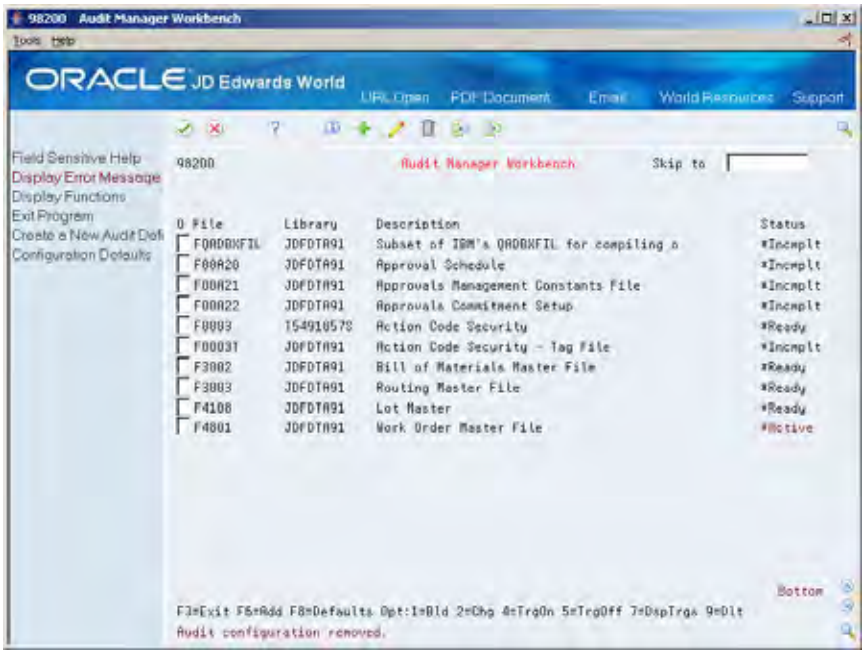
Field	Explanation
Library Locations:	
Database Files	The library that is used to generate the initial database selection list when a new configuration is being created. This should be your production database library.
Audit Log Files	The library into which the Audit Manager will create the audit log files. This library does not need to be in user library lists. The generated auditing trigger programs are able to access the log files without the library appearing in users library lists.
Trigger Programs	The library into which the Audit Manager will create the auditing trigger programs. This library does not need to be in user library lists. The generated auditing trigger programs are able to access the log files without the library appearing in users library lists.
Output Trigger Source:	Specify the library and source file location into which the Audit Manager is to place the generated source code for the auditing trigger program. This source file location does not need to be the standard JD Edwards source file (JDESRC) where production source code resides. This library does not need to be in user library lists to generate audit configurations. Object generation is qualified to this location. The only requirement is that this be a standard IBM source file.
Library	Defines the source code library.
Source File	Defines the source physical file that is in the output trigger source library. This can be any client designated library name.
Trigger Source Template:	Specify the library, source file, and member name of the audit trigger template program that the Audit Manager uses to generate the necessary audit objects. **Note:** The JD Edwards supplied audit trigger template source code contains substitution markers that the build process uses to insert information specific to the defined audit configuration. Each configuration is specific to the database file being audited. It is advised that modifications to this template not be performed, or if required by your installation, they be performed by highly qualified engineers only.
Library	Defines the library that contains the source code that JD Edwards World delivers. This library name was determined at the time of install.
Source File	Defines the source physical file that is in the library.

Field	Explanation
Member	Defines the template program that is shipped from JD Edwards World to be used with the Database Audit Manager system.

The Audit Configuration Defaults (P98201) screen has one function key exit.

Function Key	Task
Exit Program (F3)	Returns the Audit Manager Workbench (P98200).

Audit Manager Workbench (P98200)



The Audit Manager Workbench (P98200) is the primary application screen of the Database Audit Manager. It lists files that have been selected for auditing and the stage of that audit process. The screen provides the following information on each file:

Field	Explanation
File	Identifies the data file containing the fields tracked by the audit.
Library	Identifies the library that contains the data file.
Description	Describes the file containing the fields tracked by the audit process.

Field	Explanation
Status	Indicates if the audit is active (built and turned on), ready (built but not turned on), or incomplete (not built or setup is not complete).

By entering an option number in the Option field for a displayed file, you can perform the following tasks:

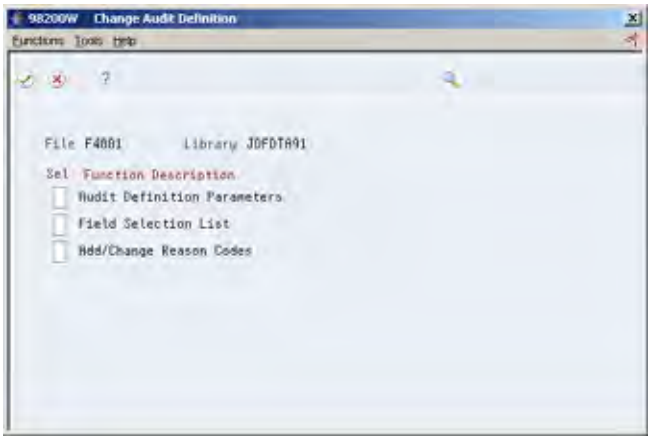
Option	Task
1	Executes the build process that creates or changes the audit file. Creates and compiles the trigger program that is used to audit the data file.
2	Accesses the setup files.
4	Places the triggers on the file.
5	Removes the triggers from the file.
7	Displays triggers for a file.
9	Deletes the audit program and setup records. It does not delete the audit file or the SVR record created for the audit file.

In addition to the options, there are function key exits that allow the user to add new files for auditing and configure defaults used by the system. The following table describes the function key exits:

Function Key	Task
Exit Program (F3)	Returns the Database Audit Manager (G946).
Create a New Audit Definition (F6)	Displays the File List screen, which allows you to select a new data file to audit.
Configuration Defaults (F8)	Display Audit Configuration Defaults screen, which allows you to change the environment default values.

Change Audit Definition (P98200W)

The Change Audit Definition (P98200W) screen displays when you select a file with an option 2 on the Audit Manager Workbench.



From the Change Audit Definition (P98200W) screen, select any or all of the following:

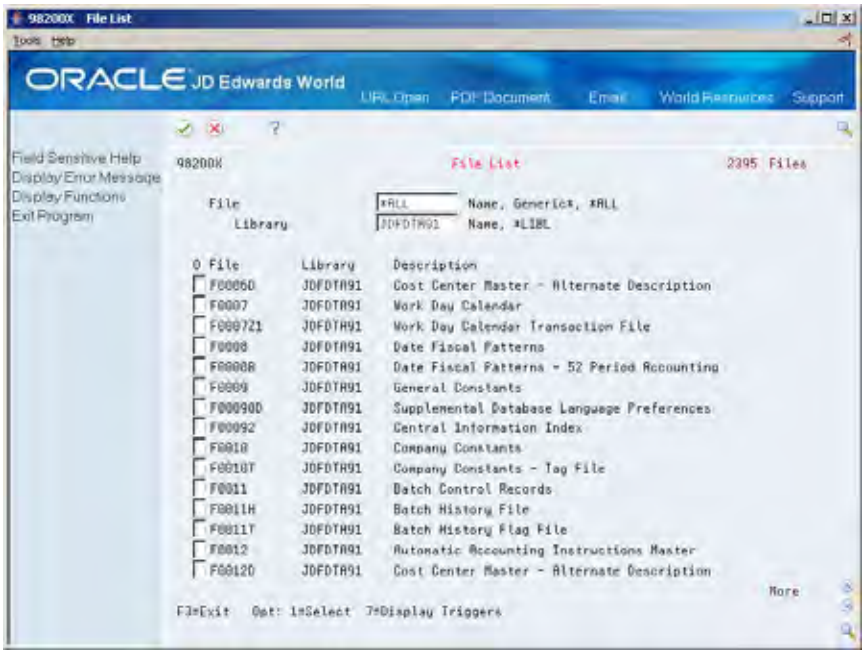
- Audit Definition Parameters (P98202)
- Field Selection List (P98203)
- Add / Change Reason Codes (P98204)

The Change Audit Definition (P98200W) screen has one function key exit.

Function Key	Task
Exit Program (F3)	Returns the Database Audit Workbench (P98200).

File List (P98200X)

The File List (P98200X) screen displays when you press F6 from the Audit Manager Workbench (P98200) screen. It lists the files in a selected library.



Note: The description comes from the object itself. No description on the object means none will show on the display. Files highlighted are not selectable as they are already files with audit configurations. (Depending on the number of files in the library, the response may take several seconds to display the list of files. The message Retrieve Database File List appears at the bottom of the screen.)

The File List screen provides the following information for each file listed.

Field	Explanation
File	The production data file.
Library	The library that contains the file.
Description	A description of the file.

By entering an option number in the Option field for a displayed file, you can perform the following tasks:

Option	Task
1	Selects a file for auditing.
7	Displays the triggers currently defined for the file.

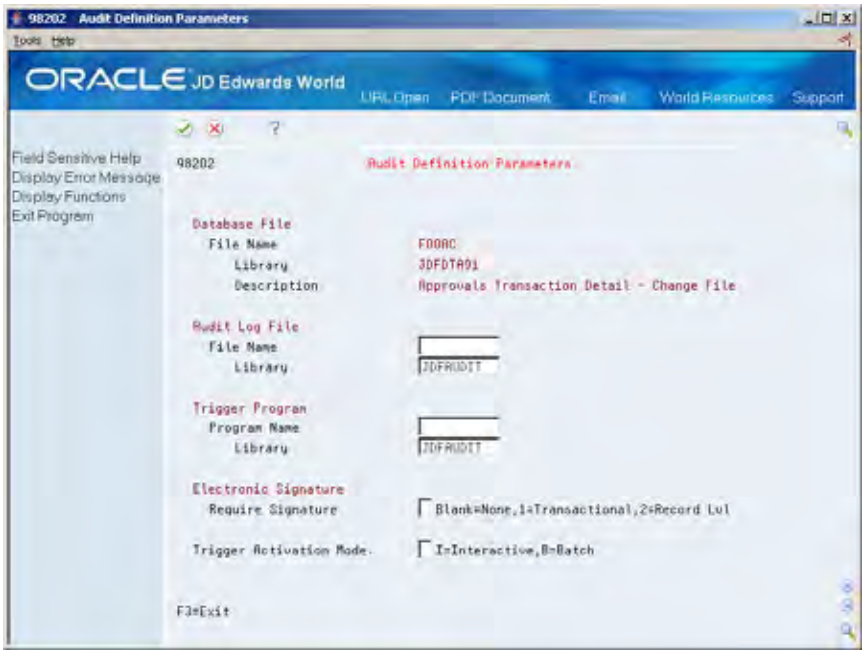
In addition to the options, there is one function key exit.

Function Key	Task
Exit Program (F3)	Returns the Database Audit Workbench (P98200).

Audit Definition Parameters (P98202)

The Audit Definition Parameters (P98202) screen displays if a file is selected from the File List (P98200X) screen or the Detail Parameters is selected from the Change Configuration (P98200W) screen. Specify the audit file and trigger program that will be used to audit actions made to the file.

The Audit Definition Parameters (P98202) screen pulls the default values for its fields from the Configuration Defaults (P98201) screen.



The Audit File Details (P98202) screen has the following fields:

Field	Explanation
Database File:	
File Name	The build process does not generate DDS, rather SQL DDL (data definition language – “Create Table”) is used to create audit log files. After creation, SVR (F9801/F9802) records are created but there is no source code for an audit file.
Library	The library that contains the file to be audited.
Description	The description of the file to be audited.

Field	Explanation
Audit Log File:	Specify the name to give the audit log file and the library in which to create it. The library name defaults from the location specified in the Audit Configuration Defaults panel. The name of the audit log file must be unique and not already exist in the audit log library, and it must not currently exist in the Software Versions Repository. When the configuration is built and the audit log file is created, an entry will be added to the Software Versions Repository.
File Name	The audit file that records the audit. This file name needs to be a unique file name derived by the user. For example if you are planning to audit the F0101 file, you might name the audit file F0101A or F0101AUD. The Audit file name must follow the JD Edwards World standards and begin with an 'F'. The build process will create the data description specifications (DDS) and physical file.
Library	The library where the audit file will be created.
Trigger Program:	Specify the name to give the audit trigger program and the library in which to create it. The library name defaults from the location specified in the Audit Configuration Defaults panel. The name of the audit trigger program must be unique and not already exist in the audit log library, and it must not currently exist in the Software Versions Repository. When the configuration is built and the audit trigger program is created, an entry will be added to the Software Versions Repository.
Program Name	The program that triggers the audit. This needs to be a unique program name derived by the user. For example, if you are planning to audit the F0101 file you might name the trigger program P0101A or P0101AUD. The program name must follow JD Edwards World standards and begin with a "P'. The build process will create the source code and compile the program to the library. To avoid overlaying source code the system will require the name be unique across all libraries.
Library	The library that contains the trigger program object.
Electronic Signature:	

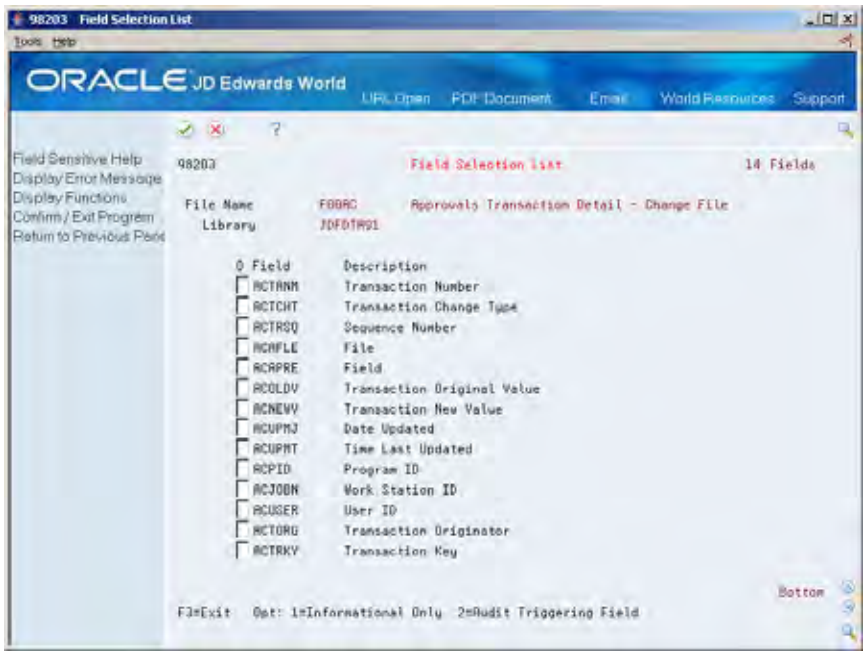
Field	Explanation
Require Signature	* Blank - No electronic signature is required for any action on the audited database file. Triggers are attached to the audit file as *AFTER triggers, and the fields configured for the audit log file are recorded after the database processes the action on the audited database file. 1 Transaction level signature required - An electronic signature will be expected on all transactions to the audited database file. Transaction authorization is defined and prompted for by the application program invoking the authorization server (P98208) to acquire and establish the electronic signature. Audit trigger programs are attached to the database file as *AFTER triggers. The electronic signature is recorded along with the fields configured in the audit log file. 2 Record level signature required - An electronic signature is required for all transactions to the audited database file. Record level authorization is prompted for by the audit trigger program. Valid authorization must be provided for the database action to continue. Triggers are attached to the audit file as *BEFORE triggers and failing valid authorization, the database action is terminated and an I/O error is returned to the program initiating the database action. Application program must monitor and be able to handle the I/O error returned by the database trigger program.
Trigger Activation Mode	Indicates the type of processing to be used when executing the build, activate, or deactivate functions. B Batch - The functions such as the build, adding or removing triggers will be submitted to a JOBQ and run in batch mode. This may need to be used when files are open and locks could prevent triggers from being applied. I Interactive - he functions such as the build, adding or removing triggers will execute immediately and run interactively. **Note:** Adding and removing triggers from database files can only be done when there are no locks on the file. That is, when nobody is using or accessing the database file. The batch option may be used along with hidden selection 82 (and Sleeper) to schedule the activation or deactivation of audit triggers configured for control files, or other files that would normally be open during the times when users are accessing the database files.

The Audit File Details (P98202) screen has one function key exit.

Function Key	Task
Exit Program (F3)	Returns the Database Audit Workbench (P98200).

Field Selection List (P98203)

The Field Selection List (P98203) screen lists the data fields in a file. Data fields selected from this screen will be used to trigger the audit process and are recorded for informational reasons. Changes to informational only fields will not cause an audit file record to be written (the trigger programs always fire).



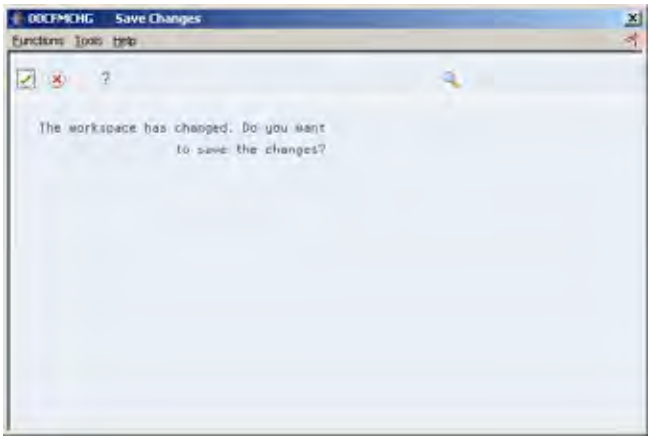
The File Field List (P98203) screen contains the following fields for each listed data field:

Field	Explanation
Option	2 Specifies this field as a triggering field. Triggering fields appear in the audit log file record format and are the fields that determine when a change record is written to the audit log file. 1 Include the field in the audit log file as an informational only field. That is, the field will appear in the audit log file record format. **Note:** When auditing mode is on a database file, a corresponding record is written to the audit log file every time a record is added to or deleted from the database file. For database file changes, corresponding records are written to the audit log file only when a designated triggering field changes in value.
Field	Provides the name of the data field.
Description	Provides a description of the data field.

The File Field List (P98203) screen has one function key exit.

Function Key	Task
F3	Returns the Database Audit Workbench (P98200).

Save Changes (P00CFMCHG)

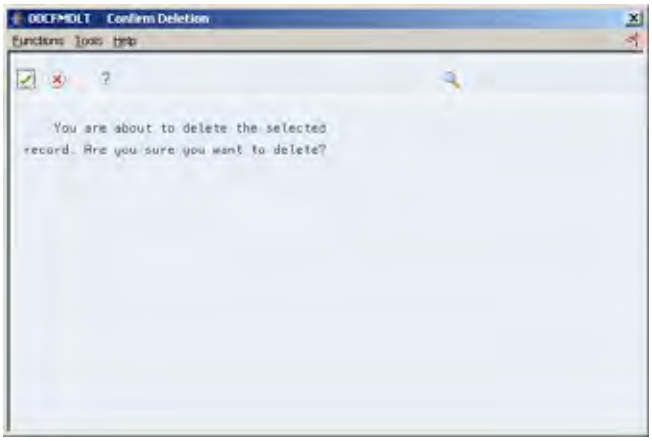


The Save Changes (P00CFMCHG) screen displays upon updating and exiting the Field Selection List (P98203) screen. The following are the valid function keys for this screen:

Function Key	Task
Exit Program (F3)	Exit without saving any changes.
Save / Exit (F6)	Exit and save your changes.
Cancel (F12)	Return to the File Selection List (P98203).

Confirm Deletion (P00CFMDLT)

The Confirm Deletion (P00CFMDLT) screen allows you to confirm the intent to delete an audit configuration. Deleting removes the program and setup, but does not delete the audit file or the audit file SVR record. The audit file and SVR record must be deleted manually.



The Confirm Deletion (P00CFMDLT) screen has two function key exits.

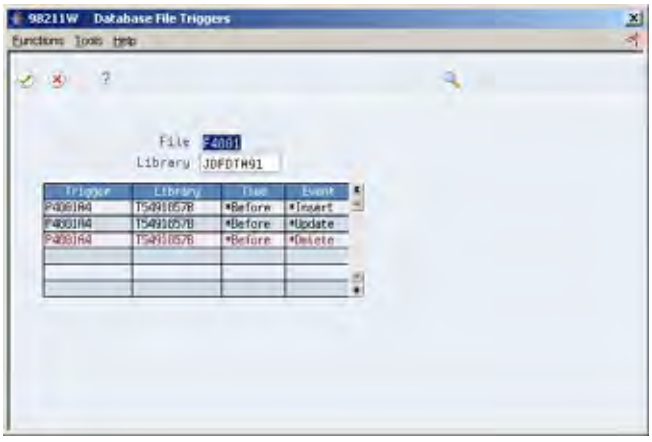
Function Key	Task
Exit Program (F3)	Cancel the deletion.
Delete (F6)	Perform the delete.

Database File Triggers (P98211W)

The Database File Triggers (P98211W) screen displays when you select option 7 from the workbench (P98200). This screen automatically displays when adding a new file to the audit process if the file already contains triggers.

Prior to V5R1, the maximum triggers on a file was six; One for each event (action) Add / Change / Delete, and one for each time *BEFORE / *AFTER the file was updated. As of V5R1, the number of triggers has been increased to 300 per file.

Pre-existing triggers may be replaced with new audit triggers during the audit process if the IBM release is prior to V5R1.



For each trigger, the Active DBF Triggers (P98211W) screen displays the following information:

Field	Explanation
Trigger	The name of the trigger program.
Library	The library that contains the trigger program.
Time	A flag indicating when the program runs, before or after the target file is updated.
Event	The event that triggers the program.

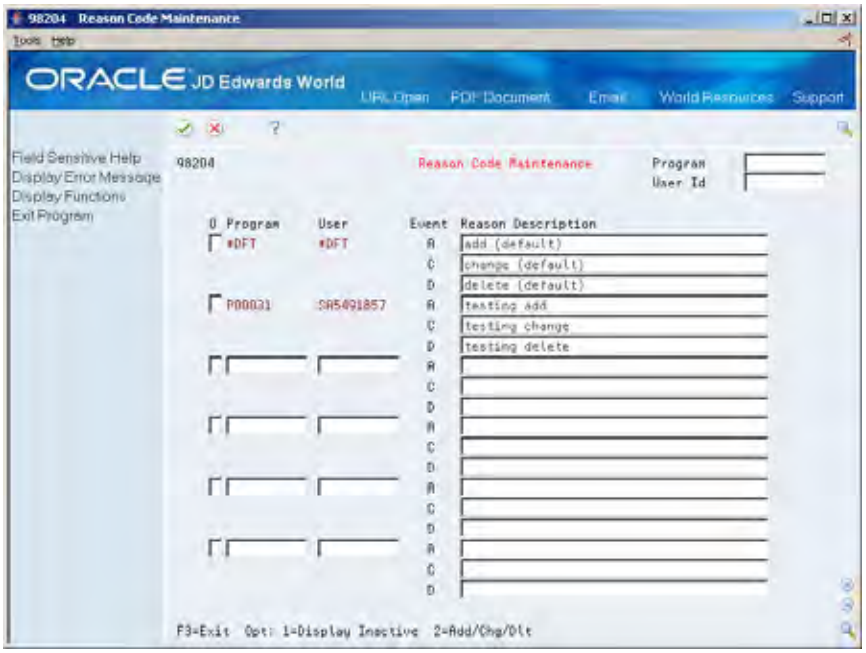
The Database File Triggers (P98211W) screen has one function key exit.

Function Key	Task
Exit Program (F3)	Returns the Database Audit Workbench (P98200).

Reason Code Maintenance (P98204)

The Reason Code Maintenance (P98204) screen allows you to set up and maintain reason codes. Reason codes indicate what action was made to a file and why. For example, set up an audit to track changes to employee records, and associate the reasons “New Hire”, “Employee Relocation”, and “Employee Terminated” with the addition, change, or deletion of employee records, respectively.

Reason codes are associated with serial numbers. If a reason code is associated with the audit program and an audit event has been triggered, the serial number is placed in the audit file to provide more information on the triggering event.



The Reason Code Maintenance screen lists programs with reason codes defined. Each record listed has the following fields.

Field	Explanation
Program	The name of the update program with which the reason codes are associated.
User	The name of the user that would be updating the data file.
Event	A Add C Change D Delete
Reason	Description - Information about the events being audited.

By entering an option number in the Option field for a displayed file, you can perform the following tasks:

Option	Task
1	Display inactive reason codes.
2	Edit or delete existing reason codes.

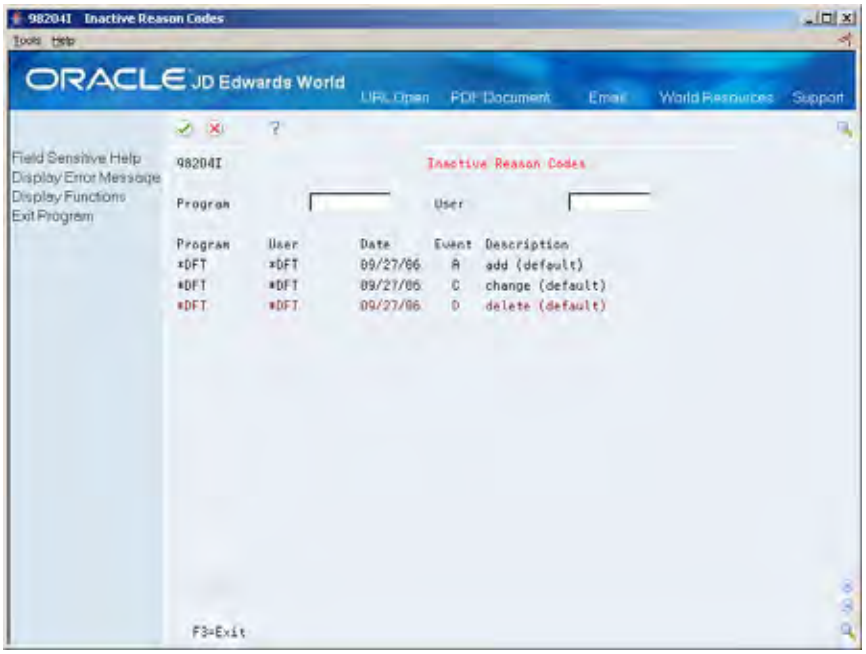
In addition to the options, there is one function key exit:

Function Key	Task
Exit Program (F3)	Returns the Reason Code Maintenance (P90204)

Inactive Reason Codes (P98204I)

The Inactive Reason Codes (P98204I) screen lists reason codes that are no longer associated with an update program. Reason codes are codes that associate reasons with events recorded in the audit file.

Display Inactive Reason Codes (P98204I) screen by entering 1 in the option field of a program listed on the Reason Code Maintenance (P98204) screen.



The Inactive Reason Codes (P98204I) screen provides the following information for each inactive reason code listed.

Field	Explanation
Program	The program if the reason code.
User	The user.
Date	The date the reason became inactive.
Event	A Add C Change D Delete
Description	A description of the reason code.

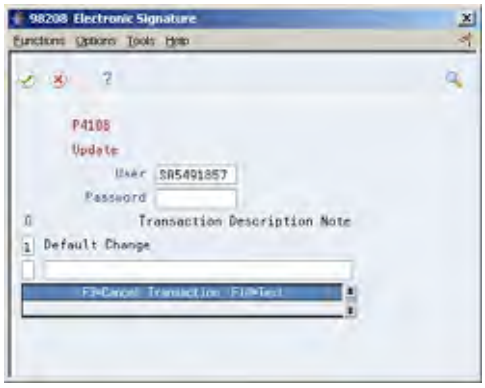
In addition to the options, there is one function key exit:

Function Key	Task
Exit Program (F3)	Returns to the Database Audit Manager (G946).

Electronic Signature (P98208)

An electronic signature is validation of the user credentials, a confirmation that the user identity is known and has been established. The electronic signature is carried along with the transaction for auditing trail and logging purposes.

You are prompted for credential validation before continuing with this database transaction because the Database Audit Manager is monitoring the file and transactions to this file require an electronic signature.



The Electronic Signature (P98208) screen has the following fields:

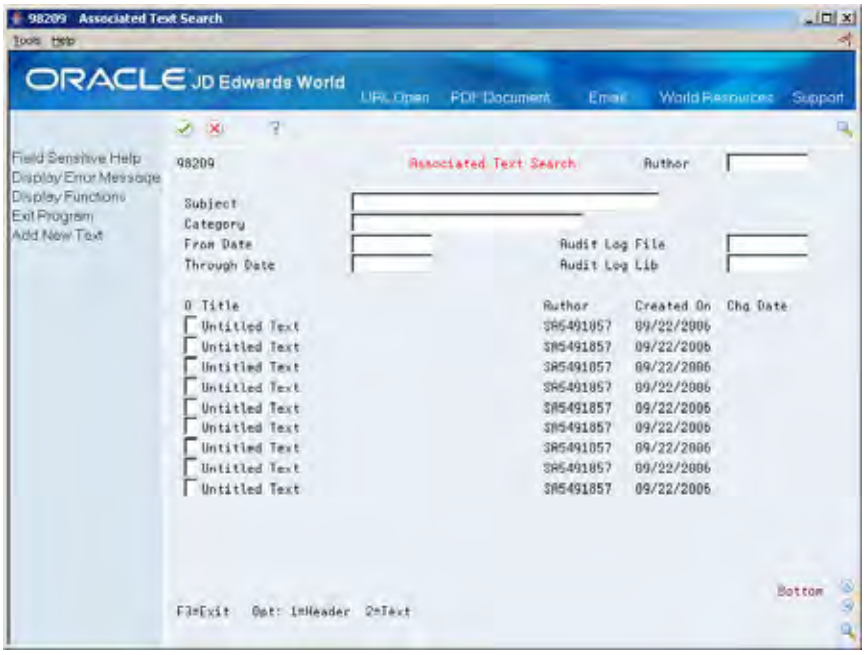
Field	Explanation
User	The User ID.
Password	The password for the User ID.
Transaction Description Note	The text provided for the transaction performed.

The Electronic Signature (P98208) screen has the following function key:

Function Key	Task
Exit Program (F3)	Returns to calling program.
Associated Text (F14)	Displays the Associated Text (P98209D) screen, allowing additional text to be attached to the audit file record.

Associated Text Search (P98209)

The Associated Text Search display is used to access associated text. Various search criteria can be specified to zero in on specific items.



The Associated Text Search (P98209) screen has the following fields:

Field	Explanation
Author	The IBM-defined user profile.
Subject	Displays the Selection List (P98209X) screen.
Category	Displays the Selection List (P98209X) screen.
From Date	Displays the Calendar.
Audit Log File	Displays the Selection List (P98209X) screen.
Through Date	Displays the Calendar.
Audit Log Lib	Displays the Selection List (P98209X) screen.

The Associated Text Search (P98209) screen has the following options:

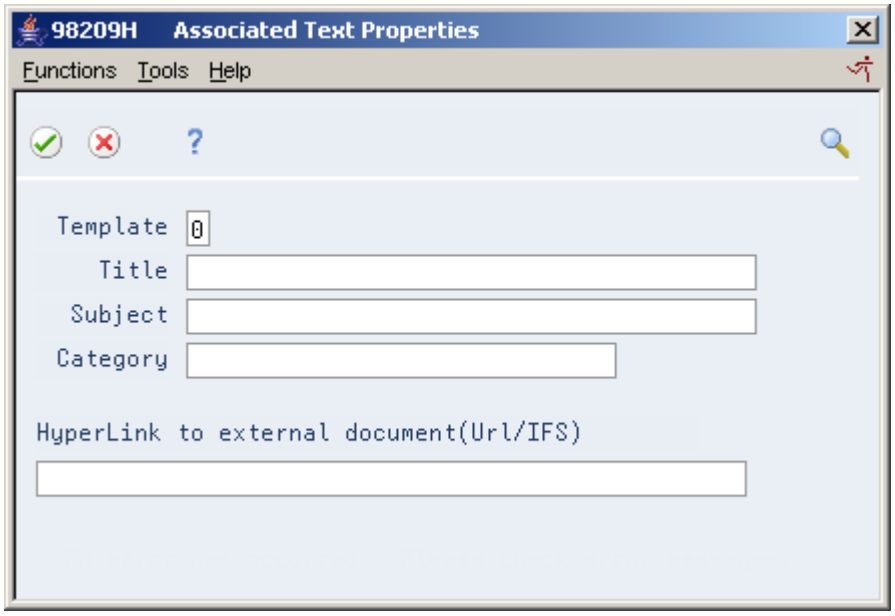
Option	Task
1	Work With Text Header.
2	Work With Associated Text.

The Associated Text Search (P98209) screen has the following function key exits:

Function Key	Task
Exit Program (F3)	Returns to calling program.

Associated Text Properties (P98209H)

The Associated Text Properties panel is used to label text with a title, subject, and category, and also associate the text with a document connected by a URL. The URL can be a hotlink to an IFS directory or a server accessible through your web browser.



The Associated Text Properties (P98209H) screen has the following fields:

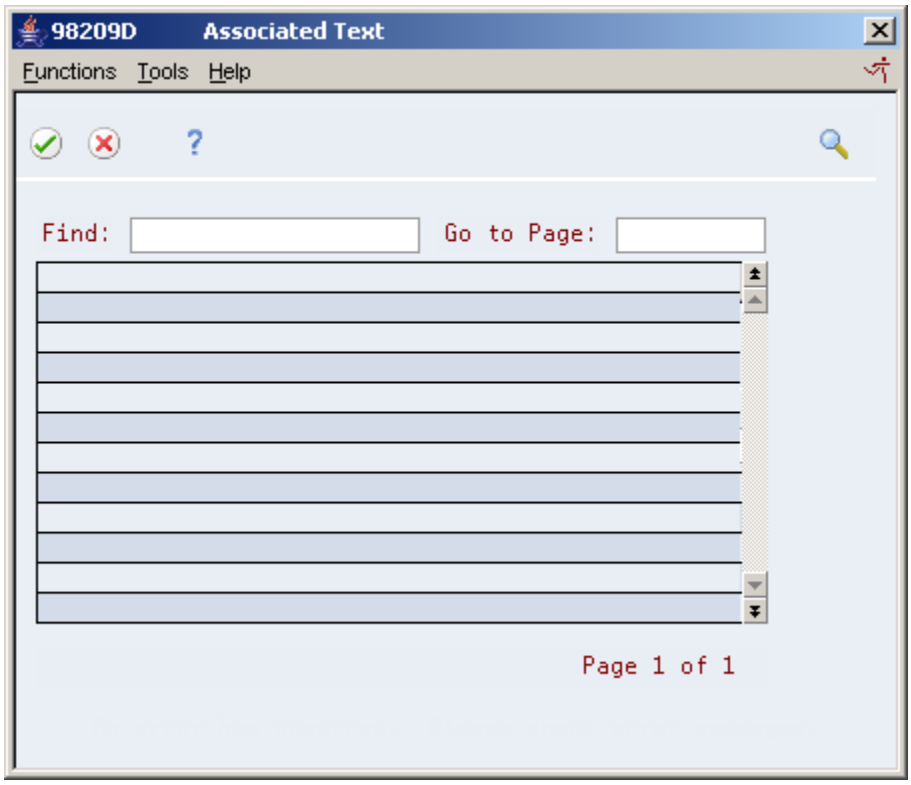
Field	Explanation
Template	Identifies the group of text as a template.
Title	Title name given to a group of text.
Subject	Displays the Selection List (P98209X) screen.
Category	Displays the Selection List (P98209X) screen.
Hyperlink to external document (URL / IFS)	Hyperlink to a document that is associated with this group of text.

The Associated Text Properties (P98209H) screen has the following function key exit:

Function Key	Task
Exit Program (F3)	Returns to calling program.

Associated Text (P98209D)

The associated text editor enables free form text entry. Editing functions and capabilities are more robust than the Generic Text editor. Work is saved in a temporary workspace then applied to the production file upon exiting the editor.



The Associated Text (P98209D) screen has the following fields:

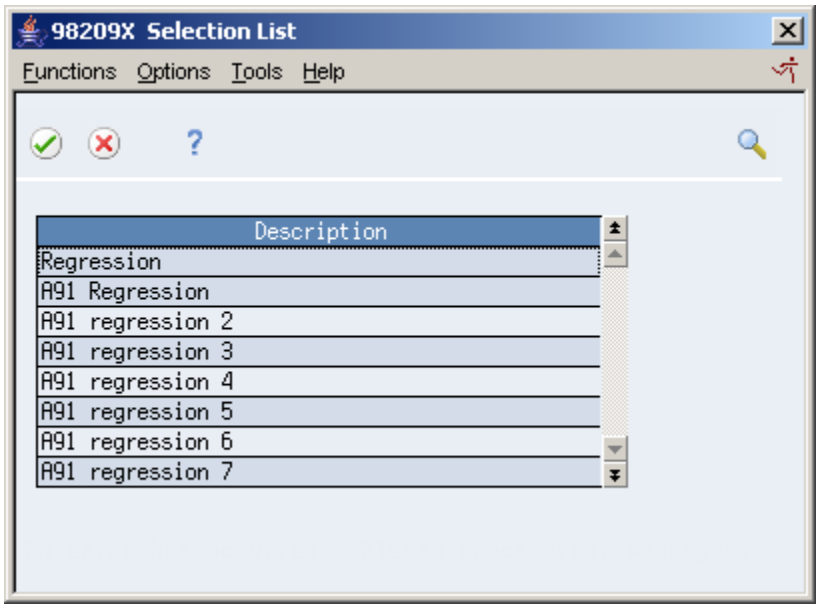
Field	Explanation
Find	Search criteria you need to find.
Go To Page	The system takes you to the page number you typed, if it is available.
Editor	Free form text entry.

The Associated Text (P98209D) screen has the following function key exits:

Function Key	Task
Exit Program (F3)	Returns to calling program.
Position Cursor to Command Line (F10)	Position Cursor to Command Line.
Position Cursor to Page Number (F11)	Position Cursor to Page Number.
Toggle Command Line Display (F13)	Toggle Command Line Display.
Insert Line at Cursor Position (F14)	Insert Line at Cursor Position.
Split Text Line at Cursor Position (F15)	Split Text Line at Cursor Position.
Scan Forward for Text from Cursor (F16)	Scan Forward for Text from Cursor.
Scan Backwards for Text from Cursor (F17)	Scan Backwards for Text from Cursor.
Copy Text Line at Cursor Position (F18)	Copy Text Line at Cursor Position.
Merge Text Line Below up to Cursor Line (F19)	Merge Text Line Below up to Cursor Line.
Display Text Properties (F20)	Display Text Properties.
Delete Line at Cursor Position (F23)	Delete Line at Cursor Position.

Selection List (P98209X)

The Associated Text Search Selection List (P98209X) is the cursor help program for the Associated Text Search program. Since the descriptive columns such as subject, category, etc. are free form entry fields, this window will dynamically build the query list to display all values for the requested column you selected.



The Selection List (P98209X) screen has the following fields:

Field	Explanation
Description	A description of the available selections.

The Selection List (P98209X) screen has the following function key exit:

Function Key	Task
Exit Program (F3)	Returns to calling program.

Tasks

This section provides instructions for the most frequent tasks performed with the Database Audit Manager (G946). The following tasks are included:

- Setting Up an Audit Process
- Editing an Audit File
- Deleting an Audit Process from a File
- Displaying Triggers for a File
- Maintaining Reason Codes
- Changing Configuration Defaults

Setting Up an Audit Process

	From Advanced and Technical Operations (G9), choose Security Officer From Security Officer (G94), choose Database Audit Manager From Database Audit Manager (G946), choose Audit Manager Workbench

Use the Audit Manager Workbench (P98200) to set up new or change existing audit configurations. Setting up an audit consists of the following tasks:

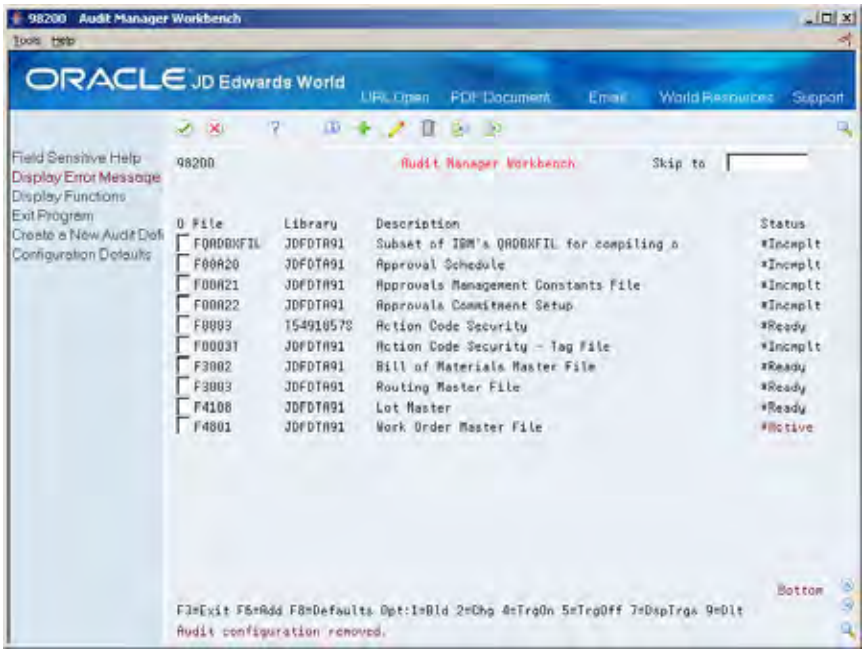
- Adding a data file
- Executing the build process
- Activating the audit

Before You Begin

- Know the library that contains the file to audit
- Default must be set up using the Audit Configuration Defaults (P98201)
- Default must be set up using the Reason Code Maintenance (P98204)

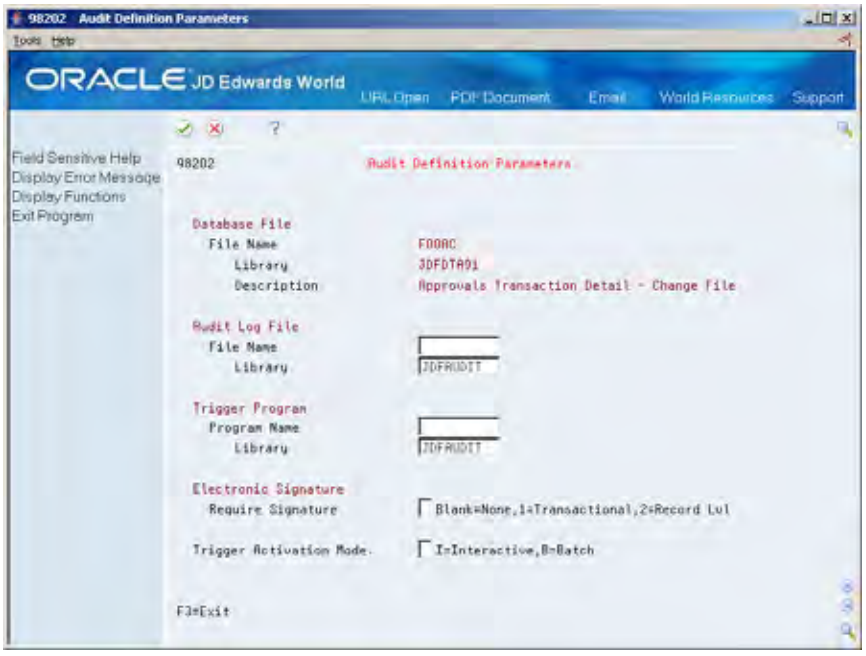
To add a data file

On Audit Manager Workbench (P98200)



1. Choose Add (F6). The File List (P98200X) screen displays a list of the database files in a selected library. Highlighted files are currently being audited. (Depending on the number of files in the library, the response may take several seconds to display the list of files.)

2. Type 1 in the O (Option) field to select a file. Choose Enter to display the Audit Definition Parameters (P98202) screen.

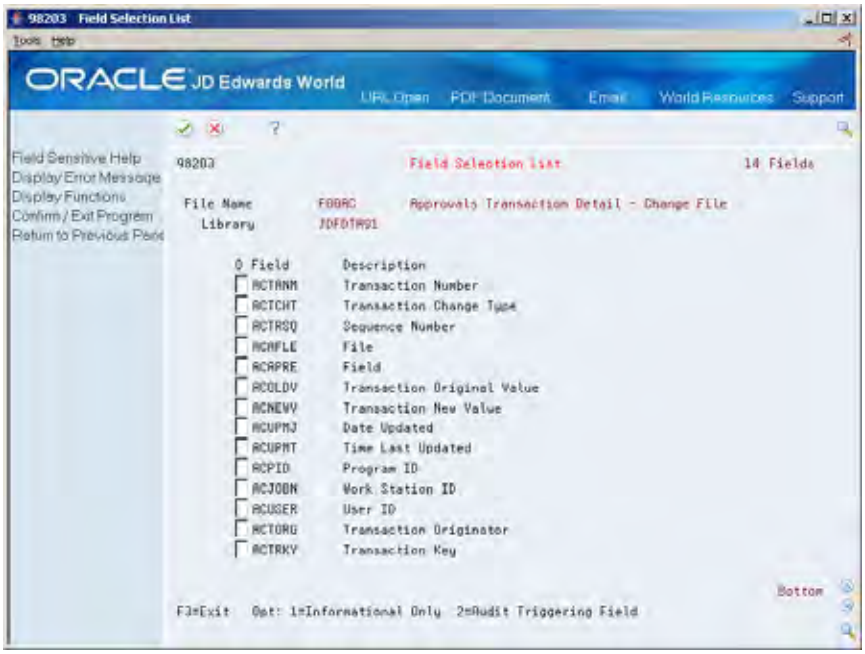


3. Complete the following fields:

   - File Name
   - Program Name
   - Electronic Signature
   - Trigger Activation Mode

   Note: If you select the trigger activation mode B, for Batch, you can use Sleeper to schedule field selection changes without interrupting users.

4. The Field Selection List (P98203) screen displays.



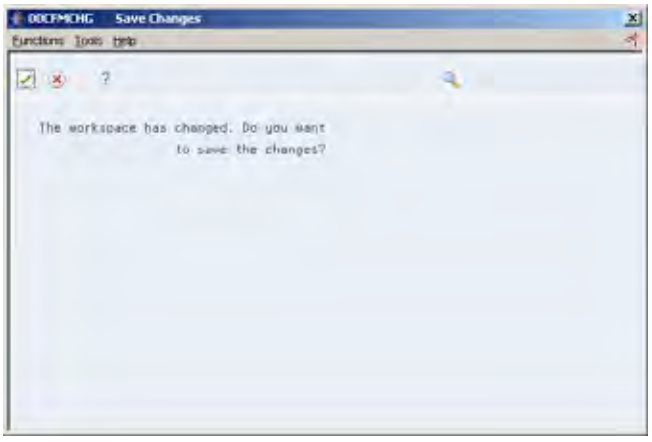
5. Type 1 in the O (Option) to select the data fields that will be recorded in the audit file for informational purposes only.

6. Type 2 in the O (Option) field of the data fields that will trigger the audit program when an action on the file occurs.

> **Note:** Record adds and deletions are always written to the audit log file. Changes to the selected fields will trigger those changes to be recorded to the audit log file. Selecting fields with a 2 slows system performance. Limit the use of 2 to fields that must be audited. At least one field must contain a 2.

7. Choose Enter to accept the entry.

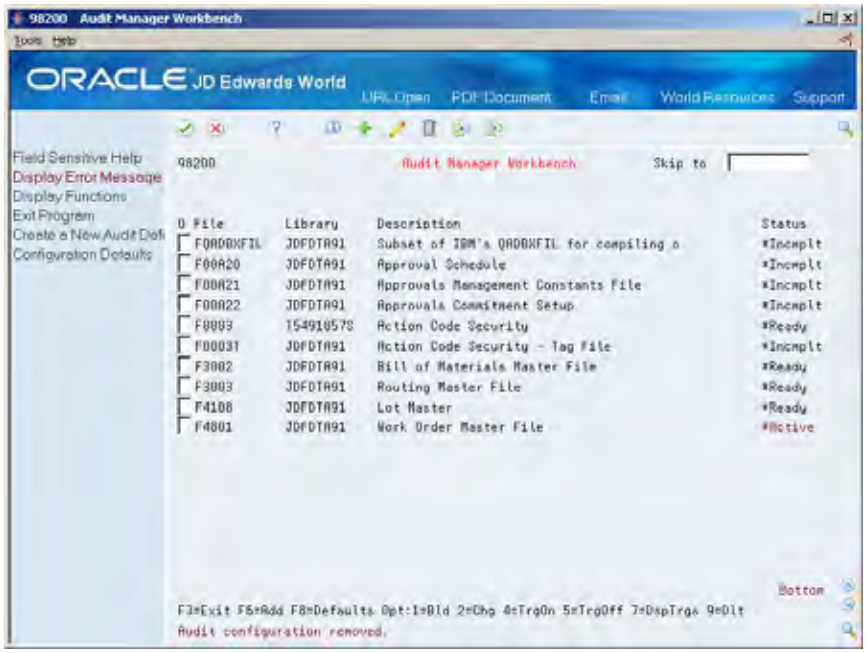
8. Choose Exit (F3). The Save Changes (P00CFMCHG) screen displays.



9. Choose Enter to confirm the fields selected. The Audit Manager Workbench (P98200) screen, displays with the status of *Incmplt. This indicates that changes can still be made to the fields selected.

To build the audit

On Audit Manager Workbench (P98200)



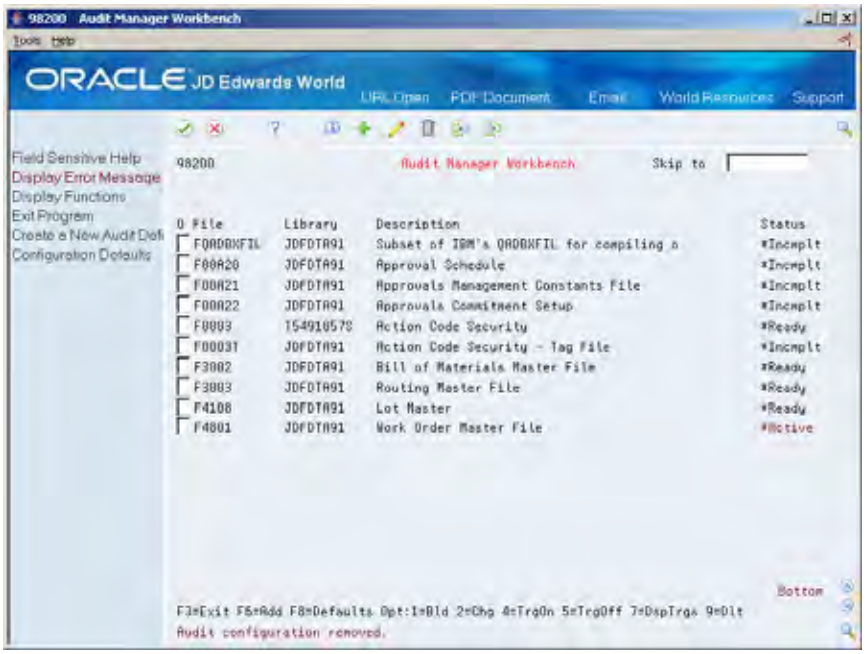
1. Enter 1 in the O (Option) field to select the file you wish to build.

2. Choose Enter. When the build is complete, the status changes to *Ready. This indicates that fields may not be changed or added without rerunning the build process.

> **Note:** If the build errors, you will need to edit the setup information.

Place the triggers on the file

On Audit Manager Workbench (P98200)



1. To start the audit process, type 4 in the O (Option) field to select the file.
2. Choose Enter. The status of the file becomes *Active.

> **Note:** To add the trigger to the file requires an exclusive file allocation thus no users may be accessing the file when triggers are activated. Use sleeper to schedule activation at a time when the file will be available.

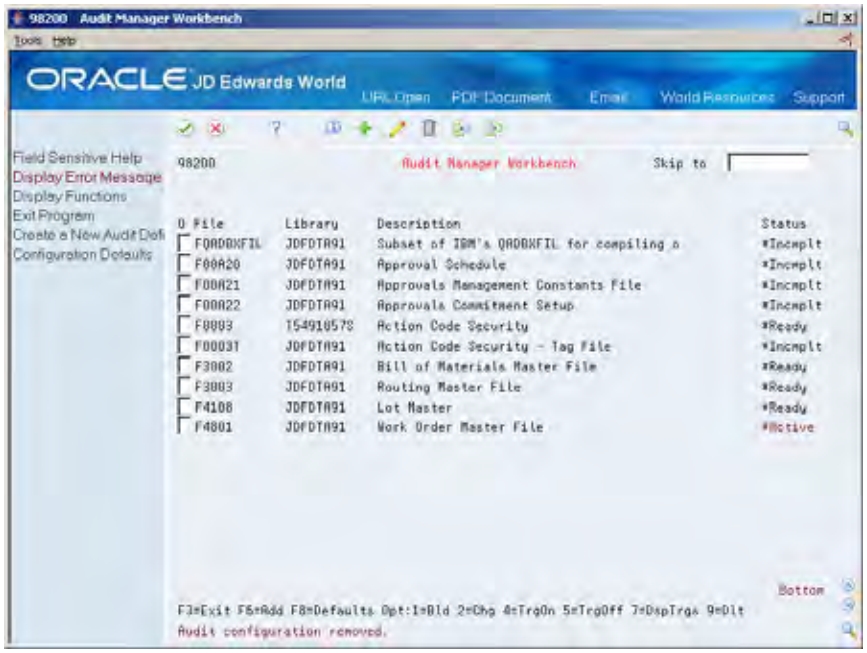
Editing an Audit File

	From Advanced and Technical Operations (G9), choose Security Officer From Security Officer (G94), choose Database Audit Manager From Database Audit Manager (G946), choose Audit Manager Workbench

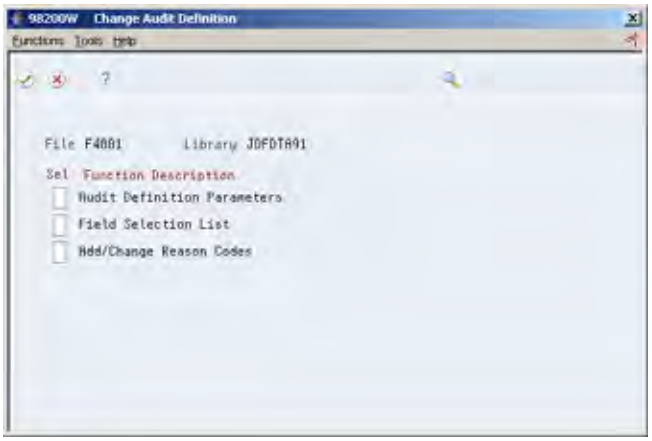
It is possible that a file already defined for audit requires changes. However, different steps may need to be performed based on the status of the audit. Once a file has been set up and is active, fields may no longer be removed from the process.

To change audit file setup

On Audit Manager Workbench (P98200)



1. Type 2 in the O (Option) field to select the file to be changed. Choose Enter to display the Change Audit Definition (P98200W) screen.

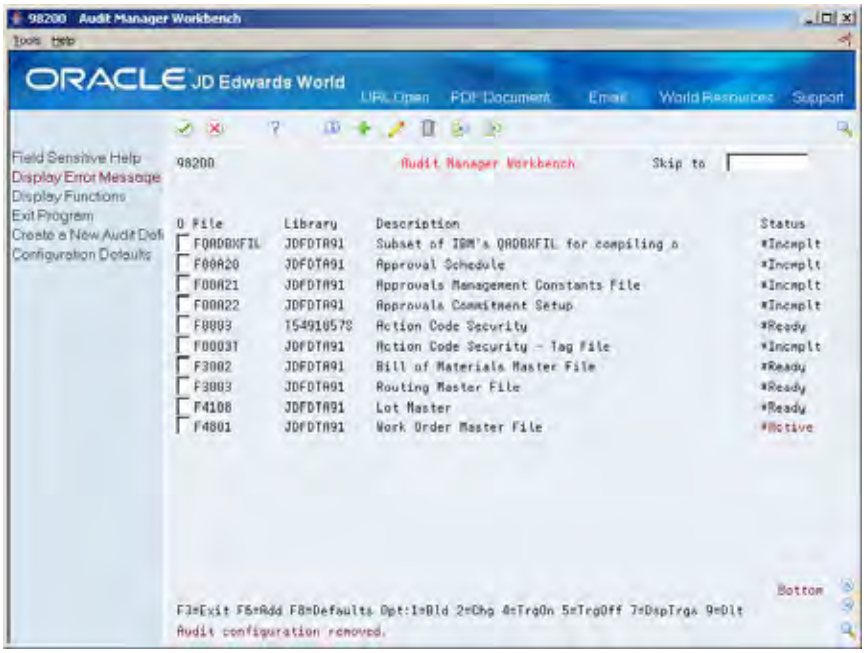


2. Type 1 in the Sel (Selection) field of the line indicating the type of information you need to change. Select any or all of the following:
   - Audit Definition Parameters (P98202)
   - Field Selection List (P98203)
   - Add / Change Reason Codes (P98204)

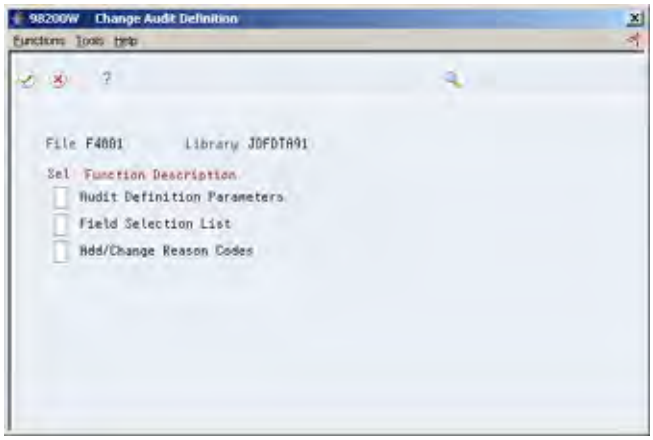
   The selected screen displays.
3. Overtype the information on the screen with your changes. Some information is protected when the status is *Active and cannot be changed.
4. Choose Enter.

To add a field to an existing audit file where the status is *Active

On Audit Manager Workbench (P98200)

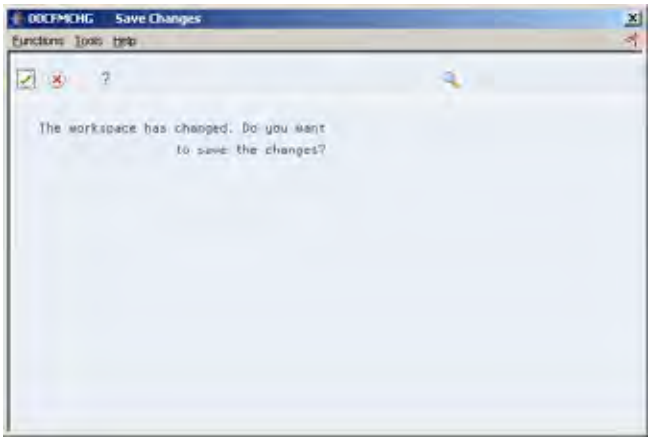


1. To remove triggers from a file, type 5 in the O (Option) field to select a file. Choose Enter to remove the triggers.
2. To make a change to the triggers for a file, type 2 in the in the O (Option) field for the file. Choose Enter to display the Change Audit Definition (P98200W) screen.



3. Type a 1 in the Sel (Selection) field for Field Selection List. Choose Enter to display the Field Selection List (P98203) screen.

4. Do one of the following to select the additional fields required:
   - Type 1 in the O (Option) field to write the field to the audit file for informational reasons only
   - Type 2 in the O (Option) field to write a record to the audit file.
5. Choose Exit (F3) to display the Save Changes screen (P00CFMCHG).



6. Choose Enter to save the changes and display the Audit Manager Workbench (P98200).
7. On Audit Manager Workbench, enter 1 in the Option field to build the new file definition.
8. From a command line, use the IBM command DSPFFD to verify the new fields were added to audit file. The fields will appear at the end of the list.
9. On Audit Manager Workbench, enter 4 in the Option field to place the triggers back on the selected file.

Note: Adding additional fields to an audit log file that already contains data means that those newly added fields will contain no data for existing records. Data will only be recorded into those fields after they have been added and the trigger rebuilt and reactivated.

Deleting an Audit Process from a File

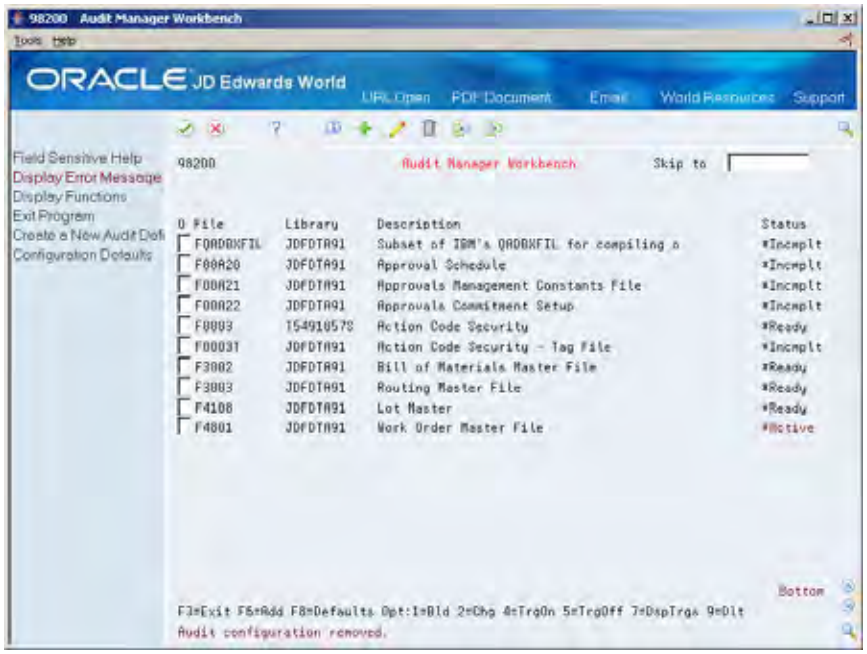
	From Advanced and Technical Operations (G9), choose Security Officer From Security Officer (G94), choose Database Audit Manager From Database Audit Manager (G946), choose Audit Manager Workbench

To delete an audit configuration, you must perform the following tasks:

- Remove audit triggers from the file
- Delete the audit configuration

To remove audit triggers from a file

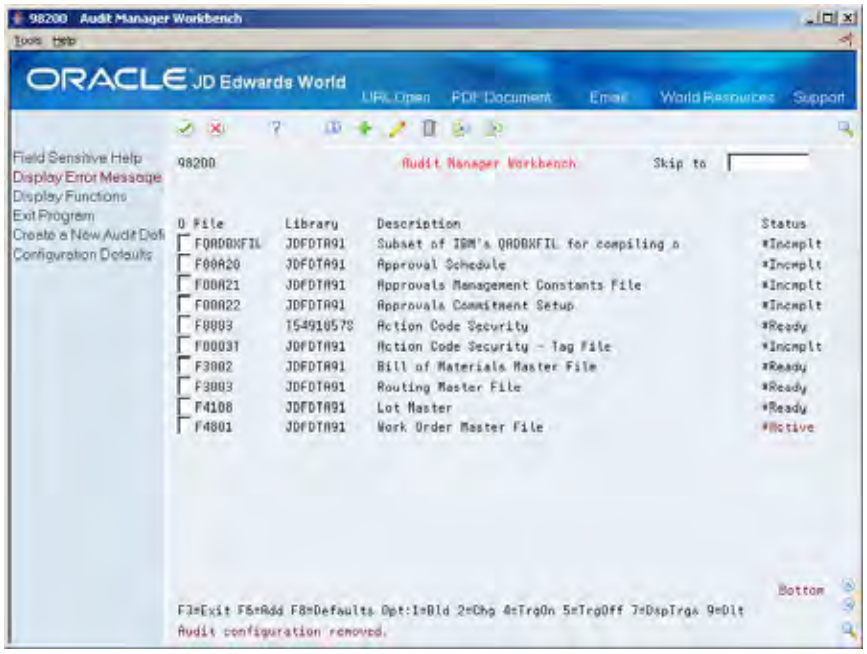
On Audit Manager Workbench (P98200)



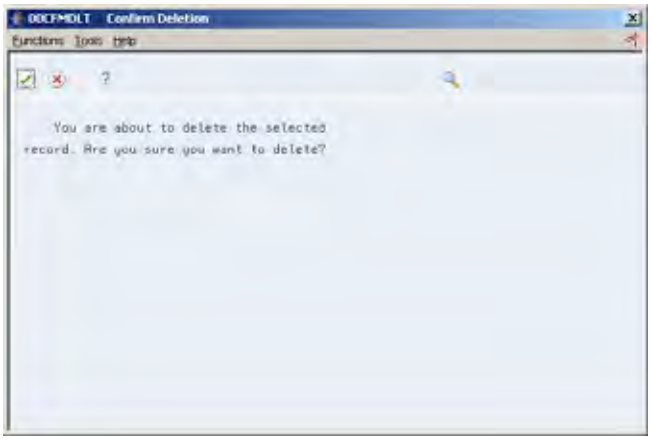
1. Type a 5 in the O (Option) field to select a file.
2. Choose Enter to turn off or remove the triggers from the file.

To delete a trigger program

On Audit Manager Workbench (P98200)



1. In the Option field, type 9 and choose Enter to display the Confirm Delete screen.



2. From the Confirm Deletion (P00CFMDLT) screen, choose Enter to delete the configuration objects and setup records.

> **Note:** This process deletes the trigger programs and removes the records from the setup and program SVR files only. It does not delete the audit file or the audit file SVR record. Federal regulations require the records in the audit files are kept.

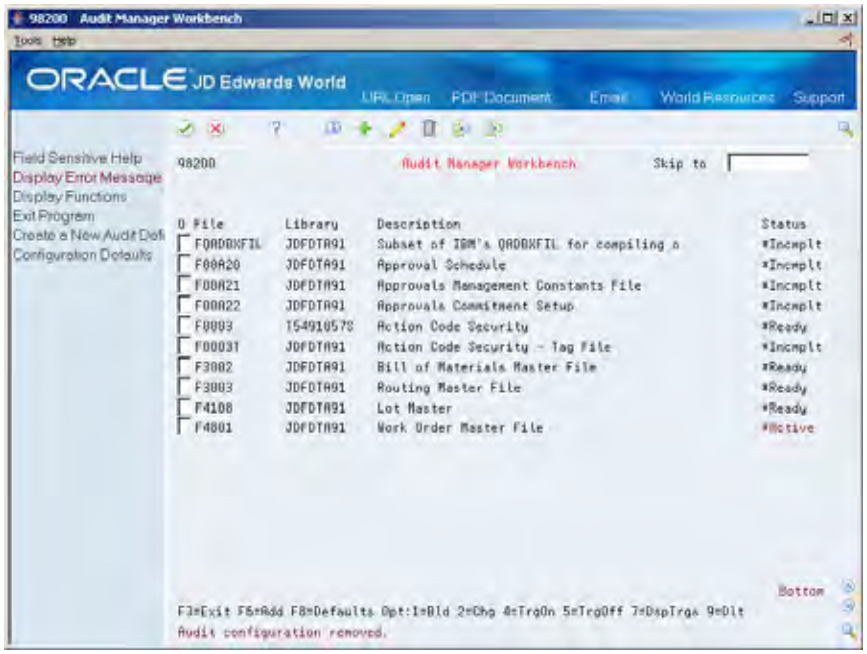
Displaying Triggers for a File

	From Advanced and Technical Operations (G9), choose Security Officer From Security Officer (G94), choose Database Audit Manager From Database Audit Manager (G946), choose Audit Manager Workbench

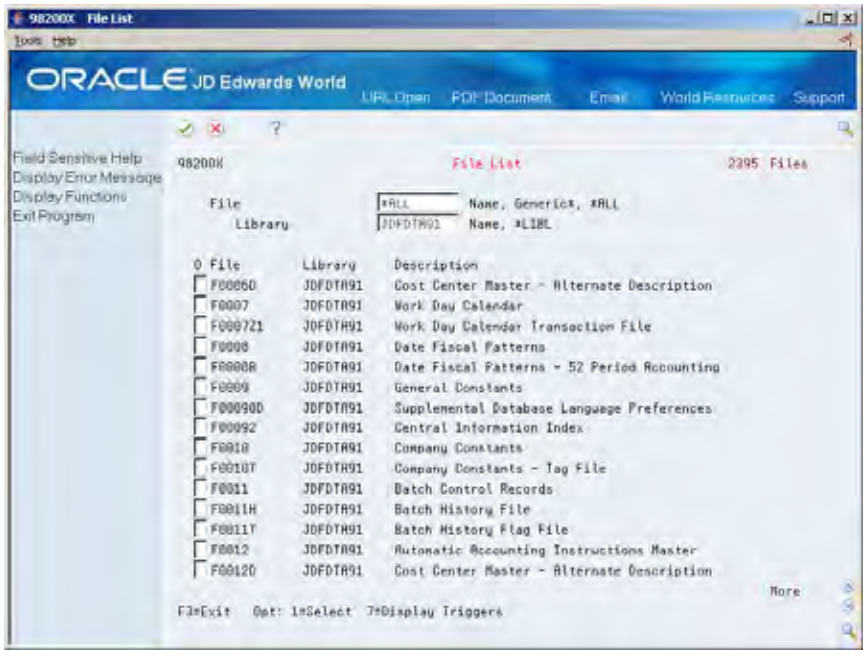
Before you define new triggers for a file, check the file for pre-existing triggers. If the IBM release is prior to V5R1 and the file has pre-existing triggers, these triggers may be overwritten with the new audit triggers.

To display triggers defined for a file

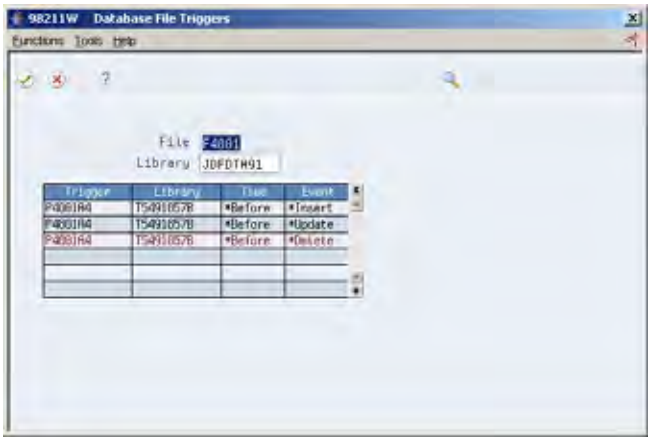
On Audit Manager Workbench (P98200)



1. Choose Add (F6) to display the Files List (P98200X) screen.



2. Enter 7 in the O (Options) field to view attached triggers of the selected file.



3. On Database File Triggers (P98211W), view the trigger programs defined on the file selected.

Maintaining Reason Codes

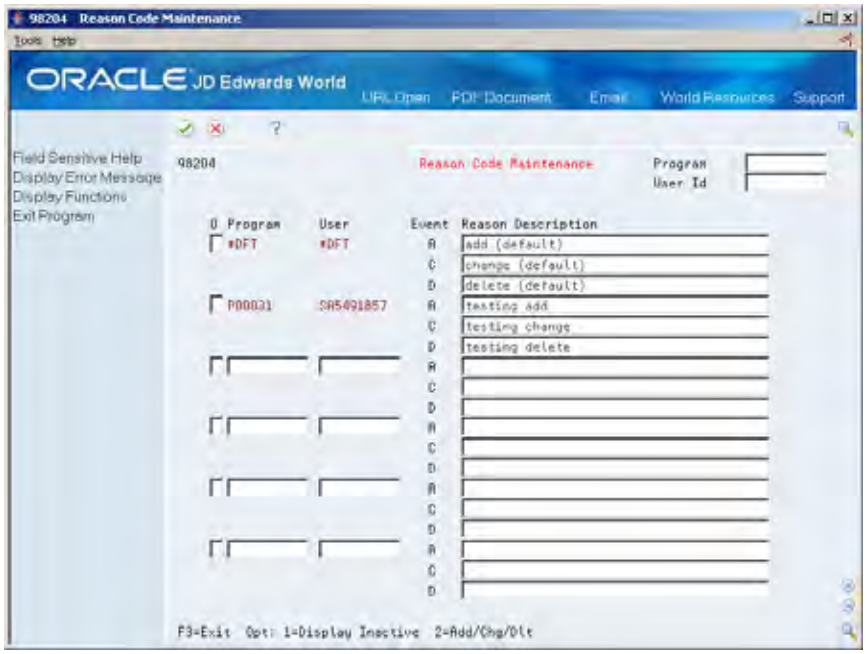
	From Advanced and Technical Operations (G9), choose Security Officer From Security Officer (G94), choose Database Audit Manager From Database Audit Manager (G946), choose Reason Code Maintenance

Reason codes are codes that are associated with text. The text describes the type of change made to a data field in a file. When you make a change that triggers an audit process, the reason code in the target file identifies what type of change was made to the data fields in the audited file. Using the Reason Code Maintenance (P98204) screen, you can do the following:

- Add reason codes to a new program
- Edit reason codes
- Search for a reason code
- View inactive reason codes

To add Reason Codes to a new program

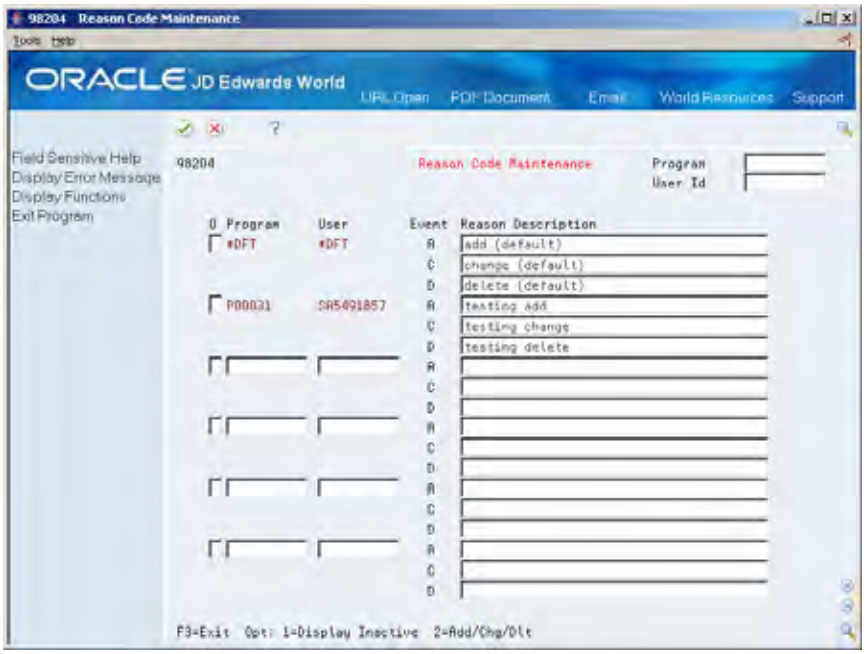
On Reason Code Maintenance (P98204)



1. Page down to the first blank line.
2. In the O (Option) field, type 2.
3. Complete the following fields:
   - Program
   - User
   - Reason Description
4. Choose Enter to complete adding the reason code.

To edit Reason Codes for a program

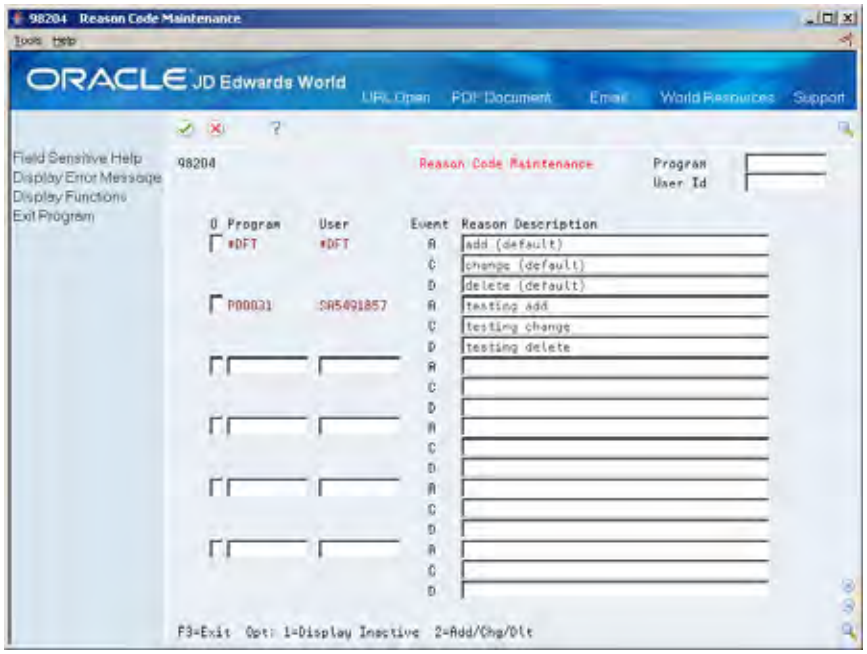
On Reason Code Maintenance (P98204)



1. Type 2 in the O (Option) field of the reason codes you want to edit.
2. Complete the following field:
   - Reason Description
3. Choose Enter to complete the edit.

To search for reason codes

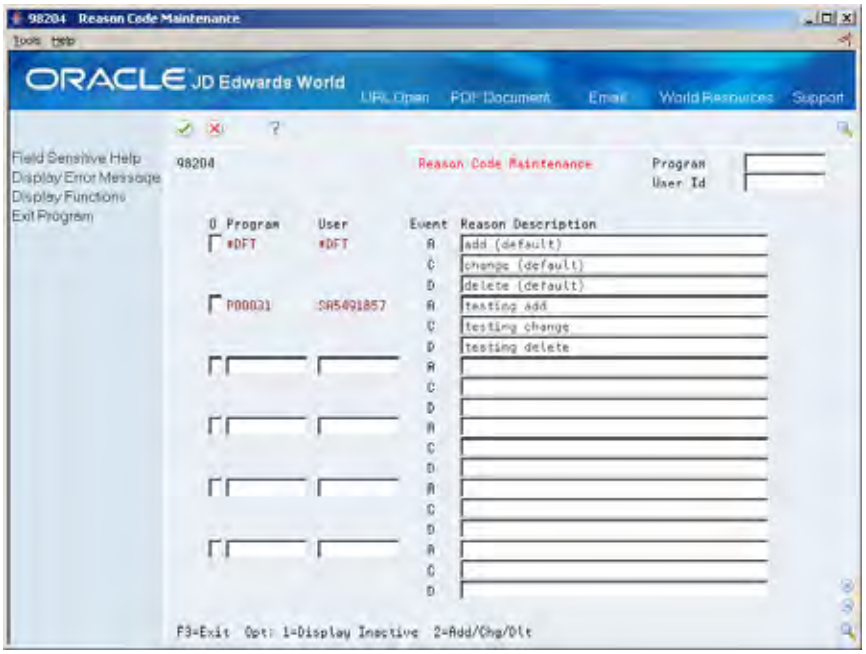
On Reason Code Maintenance (P98204)



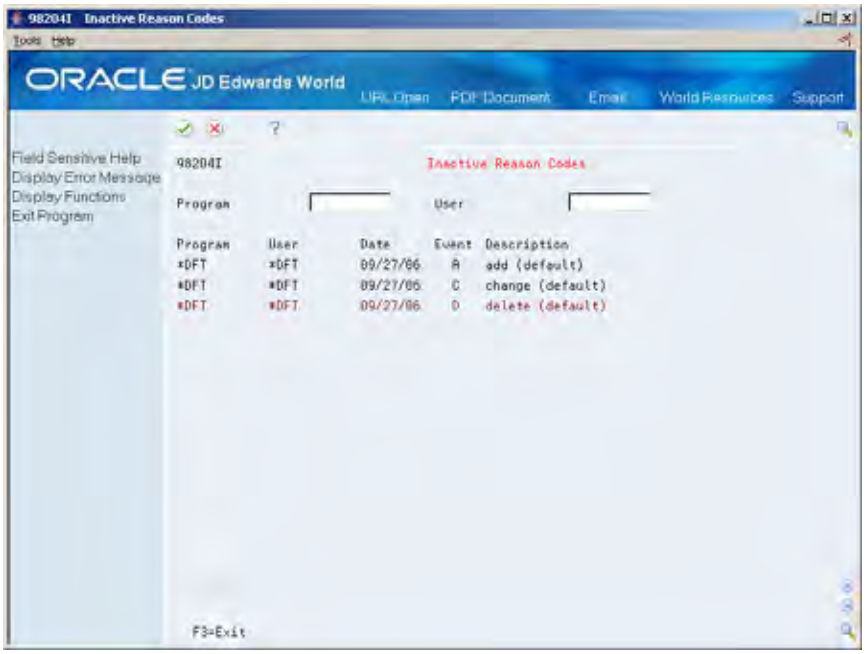
1. Complete one or both of the following fields at the top of the screen:
   - Program
   - User
2. Choose Enter. The screen displays the reason codes that match the search criteria entered.

To view inactive reason codes

On Reason Code Maintenance (P98204)



1. Type 1 in the O (Option) field for a program.



2. View the inactive reason codes associated with the program on the Inactive Reason Codes (P98204I) screen.

Changing Configuration Defaults

	From Advanced and Technical Operations (G9), choose **Security Officer** From Security Officer (G94), choose **Database Audit Manager** From Database Audit Manager (G946), choose **Audit Configuration Defaults**

Configuration defaults are used by the system to create a new audit process.

To change configuration defaults

On Audit Configuration Defaults (P98201)

1. In Library Locations, complete the following fields:
   - Data Files
   - Audit Files
   - Trigger Programs
2. In Output Trigger Source, complete the following fields:
   - Library
   - Source File
3. In Trigger Source Template, complete the following fields:
   - Library
   - Source File
   - Member
4. Choose Enter.

Tips and Techniques

Sleeper

Sleeper may need to be used when files are open and existing locks prevent triggers from being applied or if the processing is to be done after hours. By running audit programs in batch mode, use Sleeper with hidden selection 82 to hold the JOBQ and release in sleeper at a later time. When using sleeper it is necessary to review the sleeper log for successful completion. For more information about hidden selection 82 or sleeper, refer to the Technical Foundations guide.

Issues and Assumptions

OS V5R1 allows you to place multiple triggers in a database file (300). Prior to V5R1, the maximum triggers on a file were six. One for each event (action) Add / Change / Delete, and one for each time *BEFORE / *AFTER the file was updated.

An audit file created using the Database Audit Manager tool cannot be audited by DBAM.

Impact on Other Applications

Triggers running within interactive jobs have negligible performance impacts. It is the same as taking a menu option, a selection or function exit from another program. Batch jobs are where the impact can be significant as the trigger fires for every record add / change / delete. DBAM trigger code has been highly optimized to minimize performance issues in batch programs as much as possible. For extremely high volume transaction processing, analysis and consideration of trigger removal, then reapplying may be feasible or necessary.

Coexistence

Customers who are coexistent with both JD Edwards World and JD Edwards EnterpriseOne must determine if the file to be audited is used and maintained by JD Edwards World and JD Edwards EnterpriseOne applications in the designated audit environments. Some customers choose to coexist with certain applications and not others and so it may be difficult to establish if a file is truly coexisting--you can use cross-reference tools to help determine this. If it is found that the file to be audited is maintained by both JD Edwards World and JD Edwards EnterpriseOne, it must be setup under the JD Edwards EnterpriseOne audit tool rather than the JD Edwards World audit tool. If the file is only used and maintained through the JD Edwards

World applications, then the file should be setup under the JD Edwards World audit tool.

Performance Impact

Trigger programs can affect system performance. The generated trigger programs will be designed to minimize adverse system performance.

Reporting

Reporting on audit files may be created using the JD Edwards World Writer programs. For assistance, contact the JD Edwards World Support Services – JD Edwards World technical.

Each audit file will contain 12 fields in addition to the fields selected on the Field Selection List (P98203) screen. Note the file prefix on these fields will be the same as the file that is setup for auditing; this is used to avoid any possible duplication of fields from the audited file.

Name	Description
TRGEVT	Trigger event (A / C / D)
RCDIMP	Record image type (Before / After)
SRLNBR	Reason code serial number
ESGVFY	Signature verified
ESGUSR	Signature UserID
ESGRSN	Signature description reason
TXUnid	Associated text key
JOBNAM	Updated by Job Name
PGMNAM	Updated by Program
USERID	Updated by UserID
UPDDAT	Updated on Date
UPDTIM	Updated at time

3 Appendices

Appendix A – Electronic Signatures

Overview

Electronic signature is a regulatory requirement of the Food and Drug Agency (CFR21 Part 11). This regulation states that transaction history logs must be maintained, and database transactions must be authorized and documented at the time of the database transaction. An electronic signature is required for every database transaction that is encompassed by the regulation.

The Database Audit Manager (DBAM) incorporates user configurable database transaction logging, credential verification, and the mechanisms necessary to support documentation of transactions thereby assisting JD Edwards World customers with compliance.

In Release A9.1, electronic signature functionality has been implemented into high priority programs selected based on customer input. This document can be used to implement this functionality in other World programs or custom programs.

JD Edwards World does not provide customer support for programs you customize, including those in which you implement this functionality.

Definitions

Electronic signature is the process of verifying the credentials, or authenticity, of the user performing or authorizing the record add, change, or delete, at the time of the database transaction, and including that authorization with the transaction in the transaction history log.

Signatures applied to single record updates are referred to as *record level* signatures. User verification is performed for each and every database transaction. However, to eliminate the continual prompting during transaction processes, subfile programs for example, it is permitted that one signature be applied to the transaction block. Signatures applied to multiple record updates are referred to as *transaction level* signatures.

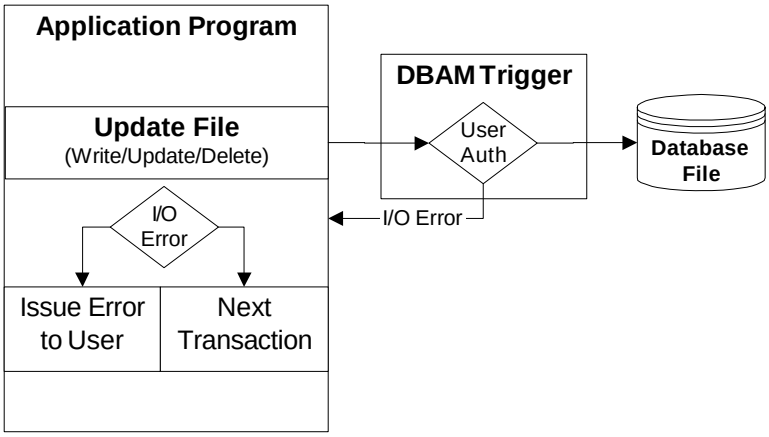
Implementation

DBAM utilizes database trigger technology for recording transactions and implementing user credential authentication at the time of the database transaction.

Two Levels of Signatures

Record Level Authorizations

Record level authorizations are implemented by database triggers configured **Before* transactions are applied to the database. If user identity is not validated (authorization received), the trigger program will cancel the database action. An I/O error is returned to the application program. The application program must respond to that error and convey it to the user. If authorization is received, the transaction is processed normally.

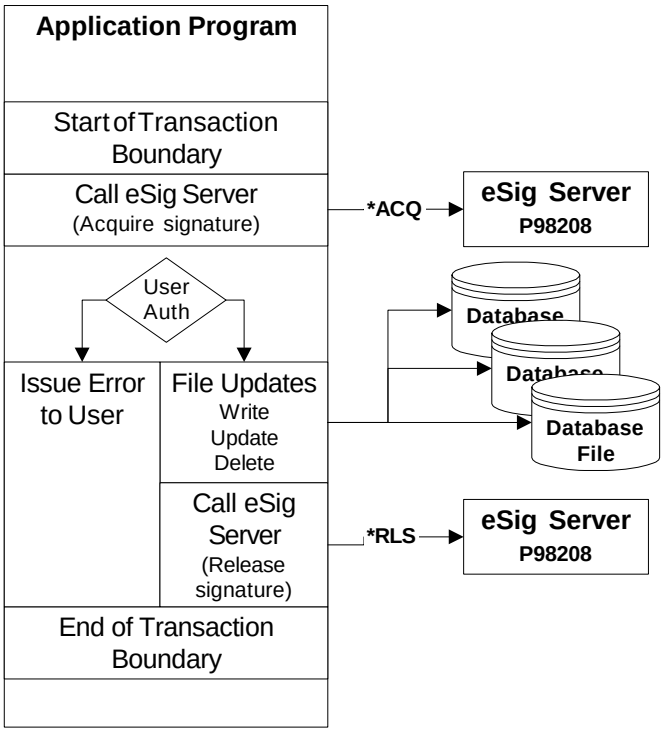


Transaction Level Authorizations

Transaction level authorizations are implemented by database triggers configured **After* the transactions have been applied to the database. Application programs determine the boundaries of the transaction, establish the authorization point, obtain the electronic signature, perform the database transactions, and then release the signature.

The application invokes and responds to the server accordingly. If user identity is not validated (authorization received), the program does not process the transactions and conveys the error to the user.

If authorization is received, the transactions are processed. The trigger programs apply the signature to the transactions as they are performed. Following completion of the transactions, the authentication server is called again to release the signature.



Signature Servers

DBAM handles user authentication when configured at the record level. The DBAM trigger programs invoke the *record level* user authentication server. For transaction processing applications, there are two *transaction level* authentication servers you can use. These two transaction level servers are discussed below.

P98208 Transaction Level Authentication Server

If your application falls under the umbrella of CFR21 regulations, use the P98208 DBAM *transaction level* authentication server. This server verifies that electronic signature is enabled on the primary transaction file before prompting for user authentication.

> **Note:** If a DBAM audit is not configured on the primary database file, no prompting for signature will occur.

Required Parameter Group

#	Parameter	Description
1.	##PGM	The application program calling the server. If you are using the program status data structure you can load ##PROG to this parameter. Otherwise, use the literal name of your program as in the example below.

#	Parameter	Description
2.	##DBFN	The primary database you are updating for this transaction set.
3.	##DBFL	The library name of the primary file. You can use *LIBL for this parameter or if using a file information data structure, the actual file/library opened can be obtain from there: ▪ FileName at offset 83 ▪ Library name at offset 93
4.	##DBFA	The transaction type: *ADD/*CHG/*DLT. If you are processing all transaction types within a subfile, use *CHG for the transaction type.

P00CKPWD Transaction Level Authentication Server (External)

The P00CKPWD server is external from DBAM. It is not dependent upon a DBAM configuration being set up before prompting occurs. It also has these features:

- Backwards compatible to legacy implementations
- DreamWriter ProcOpts control default behavior
- Optional parameters control behavior at runtime
- Can establish a DBAM-compatible transaction level signature

Required Parameter Group

#	Parameter	Description
1.	ReturnCode	Char(1) - User validation state (Required Parm)
	'1'	Users credentials verified.
	'0'	Users credentials not verified.

Optional Parameter Group

#	Parameter	Description
1.	Function	Char(4)
	*GET	Validate and establish an eSignature
	*CLR	Clear the current eSignature
3.	UserId	Char(10)
	*CURRENT	Locks userid prompt to current user (job)
	*ANYUSER	Opens userid prompt for any userid

#	Parameter	Description
	*PROCOPT	Uses ProcOpt value from P00CkPwd / ZJDE0001
4.	eSig	Char(8)
	*YES	Establishes an eSignature upon validation
	*NO	Does not establish an eSignature
	*PROCOPT	Uses ProcOpt value from P00CkPwd / Zjde0001
5.	PgmName	Char(10)
	<Name>	Name of updating program to sign eSignature
6.	eExp	Char(40)
	<Text>	40 char description to add to eSignature

Note: When enabling P00CKPWD for electronic signatures, the program invoking it must be changed to call the server again to release the signature when the transaction is completed.

Application Program Code Samples

Two application program examples are included here. A single record update program impacted by *record level* signatures, and a subfile transaction processor program that implements *transaction level* signatures. The single record update program P4108 uses the same file server as the transaction processor P41080. Code segments will vary program to program even if you are handling the file I/O in your program. Programs vary in usage of subroutine S005 or S010 for updating database files.

P4108 – Single record update

This program uses a file server for database I/O. It checks the return code from the server to determine if the database action was successful. If not, it sets on an error indicator. In this program, two more lines were added to set on additional error indicators and set up the error message. Later in the code, it checks if an error occurred and the screen and error are redisplayed to the user, otherwise, the display fields are cleared for the next transaction.

```
CSR                   CALL 'XF4108 '
C*                    ---- ---------
CSR                   PARM           PS@@1
CSR                   PARM           I4108
C*
CSR                   SELEC
CSR          @@IOR    WHEQ 'ERR'
CSR                   MOVE *ON       *IN99
CSR                   SETON                      93  40
CSR                   MOVE '1'       @MK,1
CSR                   ENDSL
```

P41080 – Transaction processor

This is a subfile transaction processor. Since it falls under CFR21 regulations, it now includes the copy members for invoking the DBAM transaction authentication server. At the appropriate place in the program, before processing the subfile, the program calls the DBAM authentication server. *(See server description above for parameter descriptions.)*

```
 * ------------------------------------------------------------
 * Check for and acquire electronic transaction eSignature...
 *
CSR                   MOVEL'P41080'  ##PGM     P
CSR                   MOVEL'F4108'   ##DBFN    P
CSR                   MOVEL'*LIBL'   ##DBFL    P
CSR                   MOVEL'*CHG'    ##DBFA    P
CSR                   EXSR C98208
 *                    ---- ------
```

Upon returning from the transaction signature server check the primary error indicator (*In93). If an error occurred, the program issues an error, exits the subroutine, and displays the error to the user. No transactions are processed.

```
CSR          *IN93    IFEQ '1'
CSR                   SETON                      9340
CSR                   MOVE '1'       @MK,1
CSR                   GOTO END005
 *                    ---- ------
CSR                   ENDIF
 * ------------------------------------------------------------
```

Note: If a DBAM audit is not configured on the primary database file, no prompting for signature will occur. Control returns to your application and the transactions are processed.

After all the transactions have been processed, and before exiting the subroutine, the authentication server is called again to release the signature.

```
 * ------------------------------------------------------------
 * Release the electronic transaction signature...
 *
C                     EXSR C98209
 *                    ---- ------
 * ------------------------------------------------------------
```

The transaction process is now complete. Here is the copy module code to include the required subroutines for invoking the *transaction level* authentication server. These two modules must be included for transaction level signatures.

```
**************************************************************
 * Copy module to acquire a transaction eSignature.
 *
C/COPY JDECPY,C98208
 **************************************************************
 * Copy module to release a transaction eSignature.
 *
C/COPY JDECPY,C98209
 **************************************************************
```

Example of Single Record Update

When the program updates the database file, it includes an error indicator on the I/O operation. After the file I/O, it checks for an error. In an error was received, it signals the condition to the user. Otherwise, it continues as usual and resets for the next transaction.

```
C*****************************************************************
C* SUBROUTINE S005  - Scrub Input
C* -----------------------------
C*

CSR         S005      BEGSR
C*          ----      -----
C*

Data validation code here

C* Update file. Monitor for I/O error.
C*
CSR                   SELEC
CSR         *IN21     WHEQ '1'
CSR                   WRITEIFILE                  93
C*
CSR         *IN22     WHEQ '1'
CSR                   UPDATIFILE                  93
C*
CSR         *IN23     WHEQ '1'
CSR                   DELETIFILE                  93
CSR                   ENDSL
C*
C* Database I/O error. Maintain screen and issue error to user.
C*
CSR         *IN93     IFEQ '1'
CSR                   MOVE '1'       *INxx
CSR                   MOVE '1'       @MK,x
CSR                   ELSE
C*
C* Clear data fields for next transaction.
C*
CSR                   MOVE #FCLR     @@AID
CSR                   EXSR S001
C*                    ---- ----
CSR                   ENDIF
C*---------------------------------------------------------------
CSR         END005    ENDSR
C*****************************************************************
```

In the above example, the RPG error indicator and error message array position are dependent upon your application requirements.

Transaction Level Interfaces – Copy Modules

Included here are copies of the Copy Modules that must be included in transaction processor applications that are using the DBAM *transaction level* authentication server.

RPG IV

```
C98209L - Copy module to invoke the transaction eSignature.

 ***************************************************************
 * SubRoutine C98208 - Check for and acquire an eSignature...
 * -------------------------------------------------------------

C     C98208        Begsr
 *    ------        -----

C     *Like         Define    PsPgm         ##Pgm
C     *Like         Define    PsDbfn        ##Dbfn
C     *Like         Define    PsDbfl        ##Dbfl
C     *Like         Define    PsDbfa        ##Dbfa

C                   Call      'P98208'
 *                  ----       ------
C                   Parm      '*ACQ'        PsFunc            4
C                   Parm                    PsRtn             1
C                   Parm      ##Pgm         PsPgm            10
C                   Parm      ##Dbfl        PSDbfl           10
C                   Parm      ##Dbfn        PSDbfn           10
C                   Parm      ##Dbfa        PSDbfa            4

 * Check return status from eSignature server...

C                   Select

 * Return code of *Zero means we have an authorization...

C     PsRtn         Wheneq    '0'
C                   Move      '1'           ##eSig            1

 * Return codes less than 4 indicate that eSignature is not
 * configured or not turned on...

C     PsRtn         Whenlt    '4'
C                   Move      '0'           ##eSig            1

 * Return codes greater than 3 are errors...

C     PsRtn         Whengt    '3'
C                   Move      '1'           *In93
C                   Endsl

C     E98208        Endsr
C***************************************************************

C98209L - Copy module to release the transaction eSignature.

 ***************************************************************
 * SubRoutine C98209 - Release transaction eSignature...
 * -------------------------------------------------------------

C     C98209        Begsr
 *    ------        -----

C     ##eSig        Ifeq      '1'
C                   Call      'P98208'
 *                  ----       ------
C                   Parm      '*END'        PsFunc            4
C                   Parm                    PsRtn             1

C                   Move      '0'           ##eSig
C                   Endif

C     E98209        Endsr
 ***************************************************************
```

RPG III

```
C98208 - Copy module to invoke the transaction eSignature.

 ************************************************************
 * SubRoutine C98208 - Check for and acquire an eSignature...
 * ----------------------------------------------------------
 *
CSR         C98208    BEGSR
 *          ------    -----
 *
CSR         *LIKE     DEFN PSPGM     ##PGM
CSR         *LIKE     DEFN PSDBFN    ##DBFN
CSR         *LIKE     DEFN PSDBFL    ##DBFL
CSR         *LIKE     DEFN PSDBFA    ##DBFA
 *
CSR                   CALL 'P98208'
 *                    ----  ------
CSR                   PARM '*ACQ'    PSFUNC  4
CSR                   PARM           PSRTN   1
CSR                   PARM ##PGM     PSPGM  10
CSR                   PARM ##DBFL    PSDBFL 10
CSR                   PARM ##DBFN    PSDBFN 10
CSR                   PARM ##DBFA    PSDBFA  4
 *
 * Check return status from eSignature server...
 *
CSR                   SELEC
 *
 * Return code of *Zero means we have an authorization...
 *
CSR         PSRTN     WHEQ '0'
CSR                   MOVE '1'       ##ESIG  1
 *
 * Return codes less than 4 indicate that eSignature is not
 * configured or not turned on...
 *
CSR         PSRTN     WHLT '4'
CSR                   MOVE '0'       ##ESIG
 *
 * Return codes greater than 3 are errors...
 *
CSR         PSRTN     WHGT '3'
CSR                   MOVE '1'       *IN93
CSR                   MOVE '0'       ##ESIG
CSR                   ENDSL
 *
CSR                   ENDSR
 ************************************************************

C98209 - Copy module to release the transaction eSignature.

 ************************************************************
 * SubRoutine C98209 - Release transaction eSignature...
 * ----------------------------------------------------------
 *
CSR         C98209    BEGSR
 *          ------    -----
 *
CSR         ##ESIG    IFEQ '1'
CSR                   CALL 'P98208'
 *                    ----  ------
CSR                   PARM '*END'    PSFUNC  4
CSR                   PARM           PSRTN   1
 *
CSR                   MOVE '0'       ##ESIG
CSR                   ENDIF
 *
CSR                   ENDSR
 ************************************************************
```