JD EDWARDS

WorldSoftware Database Audit Manager

User's Guide

April, 2003

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Denver, CO 80237

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Overview

New federal regulations necessitate a flexible auditing tool that can be reconfigured quickly. The Database Audit Manager provides that tool. The Database Audit Manager allows you to specify files and fields within files to audit.

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

To set up an audit process, you first identify the library that contains the file you need to audit. You select the file from the library and define an audit program and a target file to store the audit information. You select the data fields to trigger an audit when changed or to be copied into the audit target file for informational purposes only. Finally you can attach reason codes to the audited changes.

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

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

- 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:

- Source Code for this product must be loaded at the time of install for the product to work properly.

- IBM RPG/ILE/SQL compiler

- J.D. Edwards World release A7.3 or A8.1.

Videos
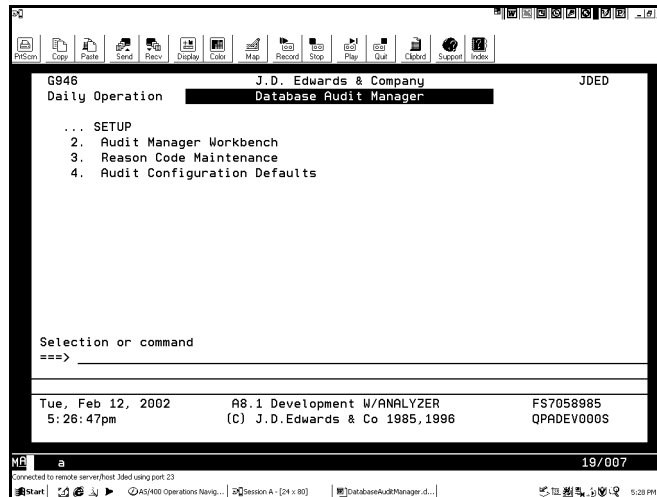
This section describes the videos that comprise the Database Audit Manager (G946). The Database Audit Manager consists of a menu with three options:

- Audit Manager Workbench

- Reason Code Management

- Audit Configuration Defaults

The Audit Manager Workbench option displays the primary application screen, Audit Management Workbench. It allows you to add a new audit process, build the audit, turn audit triggers on or off, and delete the setup for a file.

The Reason Code Management option displays the Reason Code Maintenance screen. It displays reasons to be associated with events and allows you to add reasons, change reasons, and display inactive reasons.

The Audit Configuration defaults must be set up in any environment the audit process will be active. This video allows you to set the default library names that will be used throughout the system.

Audit Configuration Defaults (V98201)

The Audit Configuration Defaults (V98201) video displays when you view defaults by pressing F8 on the Audit Manager Workbench (V98200) video or select the option from the menu. It allows you to add, view, or change the default values used when you add a new file.

```
 98201                  Audit Configuration Defaults

     Library Locations
        Data Files. . . . . . .   T81DTA
        Audit Files . . . . . .   T81AUD
        Trigger Programs. . . .   T81OBJ

     Output Trigger Source
        Library . . . . . . . .   T81SRC
        Source File . . . . . .   JDESRC

     Trigger Source Template
        Library . . . . . . . .   PGFSRC81
        Source File . . . . . .   JDESRC
        Member. . . . . . . . .   XBASETGR




                         F3=Exit
```
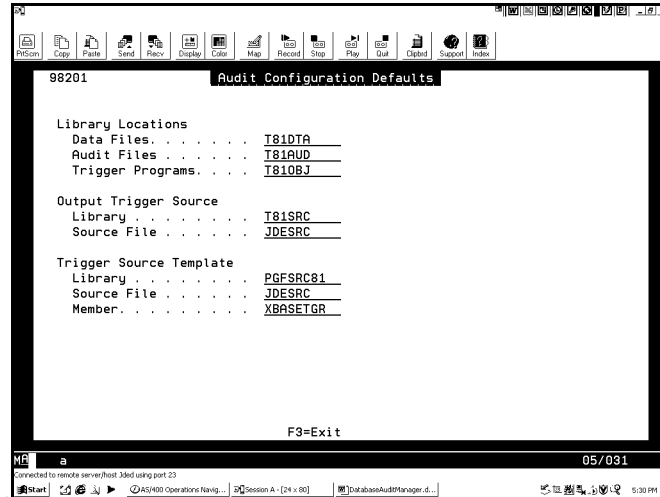
The Audit Configuration Defaults (V98201) video has the following fields:

Field	Description
Library Locations	
Data Files	Defines the library that contains the data file you want to audit. This can be any client designated library name.
Audit Files	Defines the library that will contain the audit file you are creating. This can be any client designated library name.
Trigger Programs	Defines the library that will contain the audit program object code. This can be any client designated library name.
Output Trigger Source	
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	
Library	Defines the library that contains the source code that J.D. Edwards delivers. This library name was determined at the time of install.
Source File	Defines the source physical file that is in the library.
Member	Defines the template program that is shipped from J.D. Edwards to be used with the Database Audit Manager system.

The Audit Configuration Defaults (V98201) video has one function key exit.

Function Key	Task
F3	Returns the Audit Manager Workbench (V98200).

Audit Manager Workbench (V98200)

```
98200                      Audit Manager Workbench      Skip to _____


O File        Library     Description                              Status
_ F0001       T81DTA      Business Unit Security                   *Active
_ F0101       T81DTA      Address Book Master                      *Active
_ F9801       T81DTA      Software Versions Repository Master      *Active












     F3=Exit F6=Add F8=Defaults Opt:1=Bld 2=Chg 4=TrgOn 5=TrgOff 7=DspTrgs 9=Dlt
```
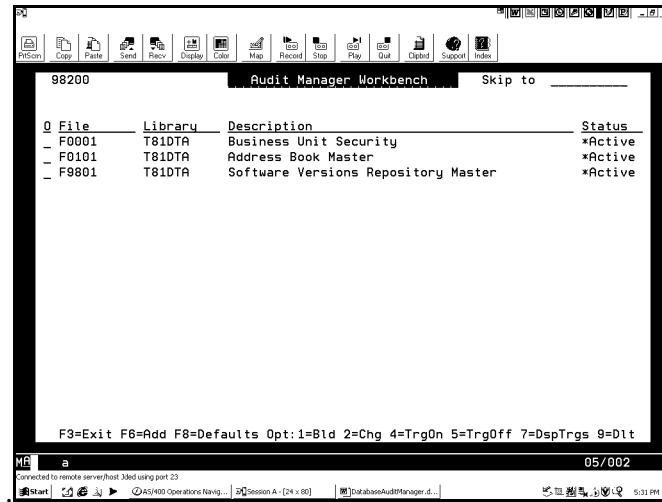
The Audit Manager Workbench (V98200) is the primary application video of the
Database Audit Manager. It lists files that have been selected for auditing and the
stage of that audit process. The video provides the following information on each
file:

Field	Description
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.
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.

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
F3	Returns the Database Audit Manager (G946).
F6	Displays the File List video, which allows you to select a new data file to audit.
F8	Display Audit Configuration Defaults video, which allows you to change the environment default values.

Change Configuration (V98200W)

The Change Configuration (V98200W) video displays when you select a file for editing on the Audit Manager Workbench by entering 2. It allows you to select the information you want to change for a file.
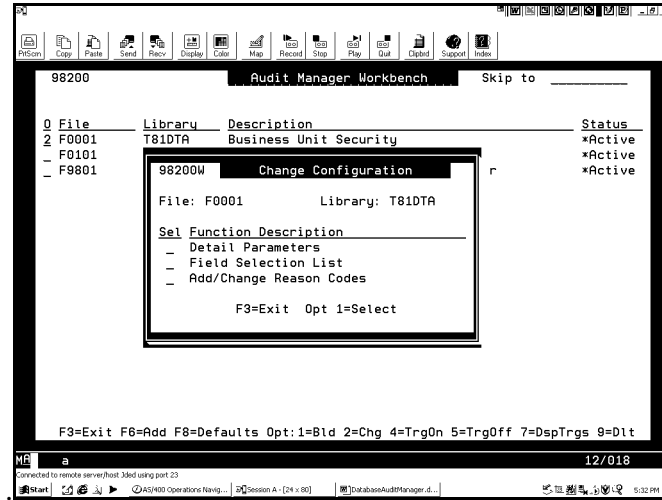
From the Change Configuration (V98200W) video you can select to go to the following videos:

- Audit File Details (V98202)

- File Field List (V98203)

- Reason Code (V98204)

The Change Configuration (V98200W) video has one function key exit.

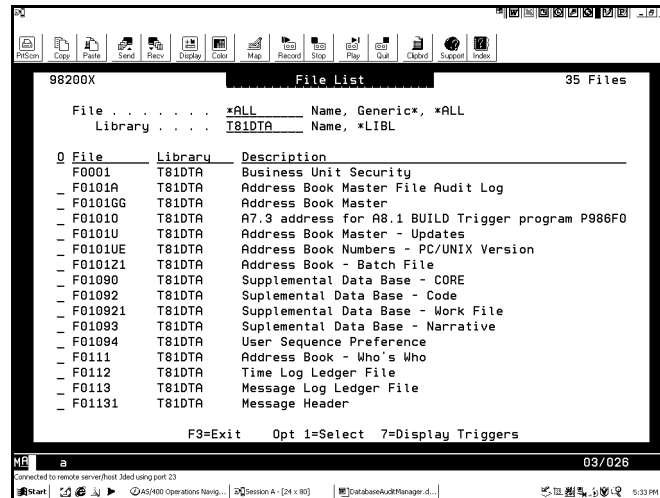| Function Key	Task
F3	Returns the Audit Manager Workbench (V98200).

File List (V98200X)

The File List (V98200X) video displays when you press F6 from the Audit Manager Workbench (V98200) video. It lists the files in a selected library.

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 ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ▐▐  ☐☐  ▐▐☐☐
 PrtScrn Copy Paste  Send Recv  Display Color  Map  Record Stop  Play  Quit  Clipbrd Support Index

   98200X                          File List                    35 Files

        File . . . . . . .  *ALL_____  Name, Generic*, *ALL
        Library . . . .     T81DTA___   Name, *LIBL

        O File       Library   Description_____
          F0001      T81DTA    Business Unit Security
        _ F0101A     T81DTA    Address Book Master File Audit Log
        _ F0101GG    T81DTA    Address Book Master
        _ F01010     T81DTA    A7.3 address for A8.1 BUILD Trigger program P986F0
        _ F0101U     T81DTA    Address Book Master - Updates
        _ F0101UE    T81DTA    Address Book Numbers - PC/UNIX Version
        _ F0101Z1    T81DTA    Address Book - Batch File
        _ F01090     T81DTA    Supplemental Data Base - CORE
        _ F01092     T81DTA    Suplemental Data Base - Code
        _ F010921    T81DTA    Supplemental Data Base - Work File
        _ F01093     T81DTA    Suplemental Data Base - Narrative
        _ F01094     T81DTA    User Sequence Preference
        _ F0111      T81DTA    Address Book - Who's Who
        _ F0112      T81DTA    Time Log Ledger File
        _ F0113      T81DTA    Message Log Ledger File
        _ F01131     T81DTA    Message Header

               F3=Exit    Opt 1=Select  7=Display Triggers

 MA   a                                                              03/026
Connected to remote server/host Jded using port 23
 Start  ⬚⬚⬚ ▶  AS/400 Operations Navig... Session A - [24 x 80]  DatabaseAuditManager.d...      ⬚⬚⬚⬚⬚⬚⬚ 5:33 PM
```

Note: Files that display without a description may be existing audit files. These files may not be selected for additional auditing. (Depending on the number of files in the library, the response may take several seconds to display the list of files.)

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

Field	Description
File	The production data file that contains the data field that you want to audit.
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
F3	Returns the Audit Manager Workbench (V98200).

Audit File Details (V98202)

The Audit File Details (V98202) video displays when you select a file on the File List (V98200X) video or select Detail Parameters on the Change Configuration (V98200W) video. It allows you to name the audit file and trigger program used to audit changes to the file.

The Audit File Details (V98202) video pulls the default values for its fields from the Configuration Defaults (V98201) video.
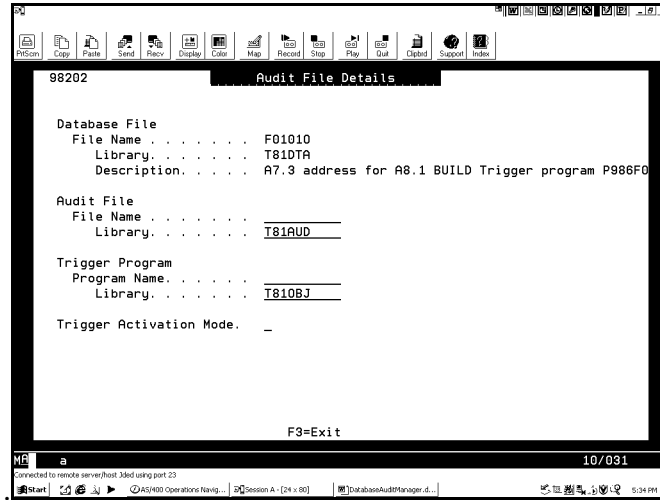
The Audit File Details (V98202) video has the following fields:

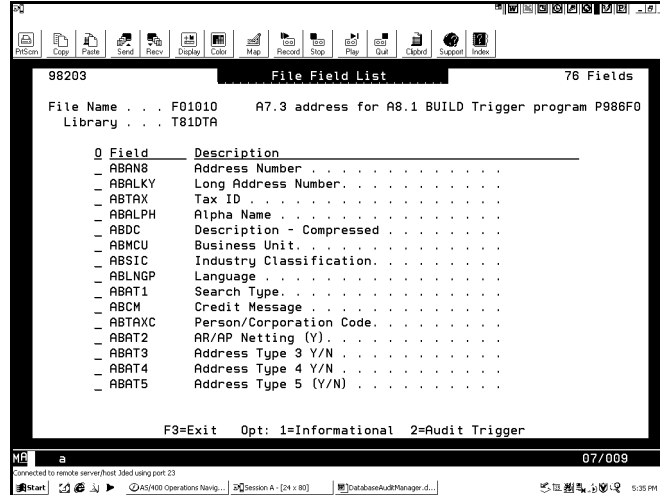| Field	Description
Database File	
File Name	The name of the production data file to be audited.
Library	The library that contains the file to be audited.
Description	The description of the file to be audited.

Audit File	
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 J.D. Edwards 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	
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 J.D. Edwards 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.
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. This may need to be used when files are open and locks could prevent triggers from being applied. I - Interactive, The functions such as the build, adding or removing triggers will execute immediately and run interactively.

The Audit File Details (V98202) video has one function key exit.

Function Key	Task
F3	Returns the Audit Manager Workbench (V98200).

File Field List (V98203)

The Field File List (V98203) video lists the data fields in a file. It allows you to select data fields to trigger the audit program. You can also select data fields that are recorded for informational reasons when the audit program runs, but they do not trigger the audit program.
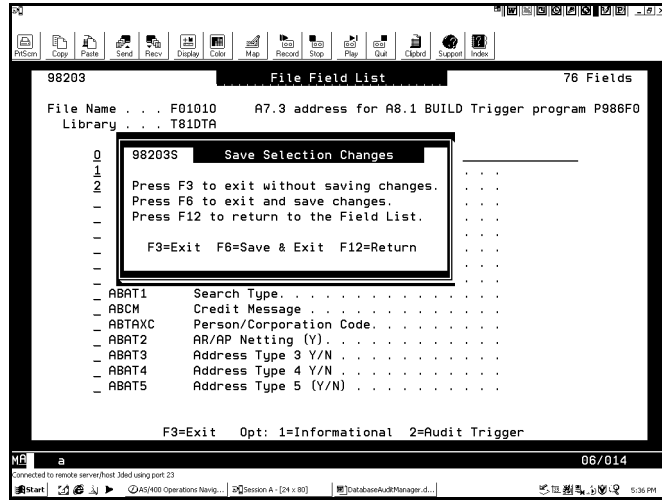

The File Field List (V98203) video contains the following fields for each listed data field:

Field	Description
Option	2 - Trigger the audit program to write a record to the audit file. 1 - Writes this field to the audit file for informational reasons only.
Field	Provides the name of the data field.
Description	Provides a description of the data field.

The File Field List (V98203) video has one function key exit.

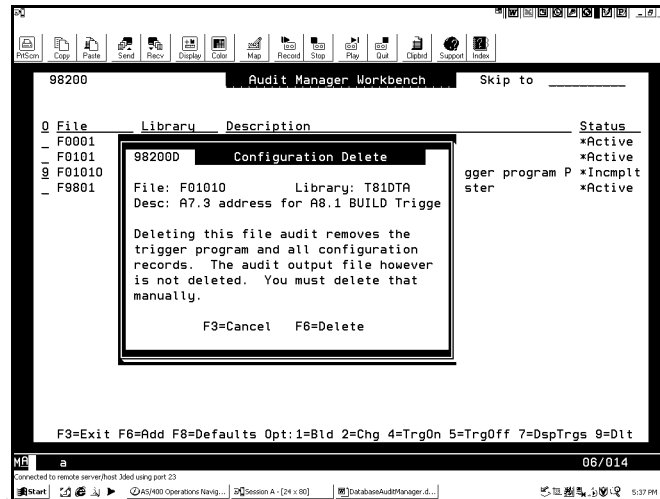| Function Key	Task
F3	Returns the Audit Manager Workbench (V98200).

Save Selection Changes (V98203W)

The Save Selection Changes (V98203W) video displays upon updating and exiting the File Field List (V98203) video. The following are the valid function keys for this video:

Function Key	Task
F3	Exit the without saving any changes.
F6	Exit and save your changes.
F12	Return to the File Field List (V98203).

Configuration Delete (V98200D)

The Configuration Delete (V98200D) video allows you to confirm your intention to delete an audit on a file. Deleting removes the program and setup, but does not delete the audit file. If you wish to delete the audit file, you must do so manually.


The Configuration Delete (V98200D) video has two function key exits.

Function Key	Task
F3	Cancel the deletion.
F6	Delete the record.

Active DBF Triggers (V98211W)

The Active DBF Triggers (V98211W) video displays when you enter 7 from the workbench (V98200). This video automatically displays when adding a new file to the audit process if the file already contains triggers.

If you are on an IBM release prior to V5R1 and if you have defined triggers, on a file to be audited, your pre-existing triggers may be replaced with the new audit triggers during the audit process.
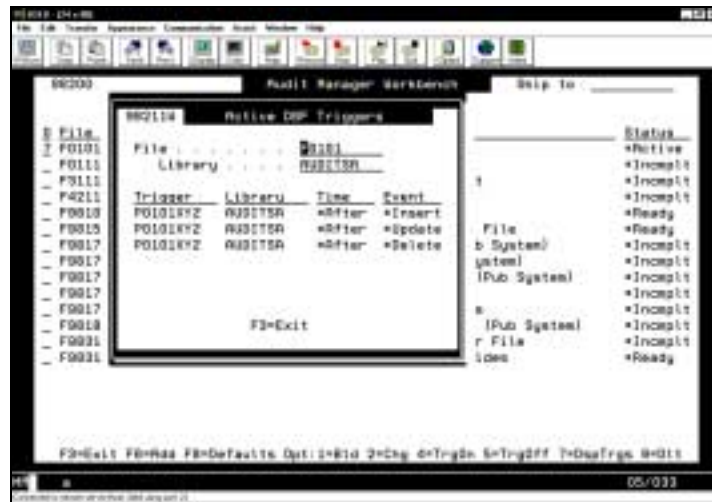
For each trigger, the Active DBF Triggers (V98211W) video displays the following information:

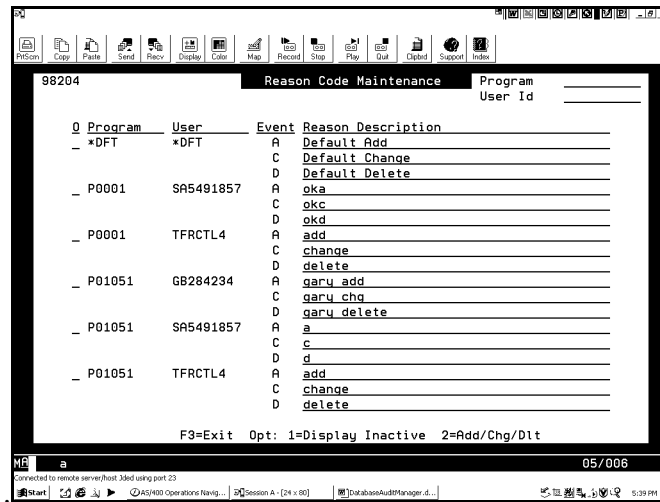| Field	Description
Trigger	The name of the trigger program.
Library	The library that contains the trigger program.
Time	A flag indicating if the program runs before or after the target file is updated.
Event	The event that triggers the program.

The Active DBF Triggers (V98211W) video has one function key exit.

Function Key	Task
F3	Returns the Audit Manager Workbench (V98200).

Reason Code Maintenance (V98204)

The Reason Code Maintenance (V98204) video allows you to set up and maintain reason codes. Reason codes indicate why a change to a file may be made. For example, if you are tracking changes to employee records, you might want to 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. When an audit event is triggered, if a reason code is associated with the audit program, the serial number is placed in the audit file to provide more information on the triggering event.

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

Field	Description
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	Displays inactive reason codes.
2	Allows you to edit or delete existing reason codes.

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

Function Key	Task
F3	Returns to Reason Code Maintenance (V98204).

Inactive Reason Codes (V98204I)

The Inactive Reason Codes (V98204I) video 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.

You display this Inactive Reason Codes (V98204I) video by entering 1 in the option field of a program listed on the Reason Code Maintenance (V98204) video.

```
                                                            ▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔ _�P×
 ▫   🖹🖹  🖹🖹  🖹🖹  🖹🖹   🖹🖹  🖹🖹   🖹🖹  🖹🖹  🖹🖹  🖹🖹  🖹🖹  🖹🖹  🖹🖹  🖹🖹
PrtScrn Copy Paste  Send Recv  Display Color  Map Record Stop  Play Quit Clipbrd Support Index

 98204I                      Inactive Reason Codes

   Program. . . . *DFT           User . . . . . *DFT

   Program   User      Date      Event Description
   *DFT      *DFT      05.02.02   A    Default Add
   *DFT      *DFT      05.02.02   C    Default Change
   *DFT      *DFT      05.02.02   D    Default Delete
   *DFT      *DFT      05.02.02   A    add
   *DFT      *DFT      05.02.02   C    change
   *DFT      *DFT      05.02.02   D    delete
   *DFT      *DFT      05.02.02   A    add  xx
   *DFT      *DFT      05.02.02   C    change xx
   *DFT      *DFT      05.02.02   D    delete   xx




                              F3=Exit

 MA    a                                                             03/018
Connected to remote server/host Jded using port 23
🏁Start  ⚙🗂🗎 ▶   ⚙AS/400 Operations Navig... 🖹Session A - [24 x 80]   🗎DatabaseAuditManager.d...        🔊🗔🗔🖳🗔🗔 5:40 PM
```

The Inactive Reason Codes (V98204I) video provides the following information for each inactive reason code listed.

Field	Description
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
F3	Returns the Database Audit Manager (G946).

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

You can use the Audit Manager Workbench (V98200) to set up a new audit. Setting up an audit consists of the following tasks.

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

Before You Begin

- ❑ You must know the library that contains the file you want to audit
- ❑ Default must be set up using the Audit Configuration Defaults (V98201)
- ❑ Default must be set up using the Reason Code Maintenance (V98204)

▶ **To add a data file**

From the Audit Manager Workbench (V98200) video:

1. Press F6. The File List (V98200X) video 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 Option field of the file you wish to select. Press Enter. The Audit Files Detail (V98202) video displays.

3. Complete the following fields. Press Enter.

   - File Name
   - Program Name
   - 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 File Field List (V98203) video displays.

5. Type 1 in the Option by the data fields you want recorded in the audit file for informational purposes only.

6. Type 2 in the Option field of the data fields that you want to trigger the audit program when an update occurs.

> **Note:**
> Selecting fields with a 2 slows system performance. Limit the use of 2 to fields that must be audited.

7. Press Enter to accept the entry.

8. Press F3. The Save Selection Changes (V98203S) video displays.

9. Press F6 to confirm the fields selected. The Audit Manager Workbench (P98200) video displays with the status of *Incmplt. This indicates that changes can still be made to the fields selected.

► **To build the audit**

From the Audit Manager Workbench:

Type 1 in the Option field of the line you wish to build. Press 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 out, you will need to edit the setup information.

► **Place the triggers on the file**

On the Audit Manager Workbench:

Type 4 in the Option field of the file you wish to start auditing. Press Enter. The status of the file becomes Active.

Editing an Audit File

You may have an audit file already defined that you need to edit. 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**

From the Audit Manager Workbench:

1. Type 2 in the option for the file you wish to change. The Change Configuration (V98200W) video displays.

2. Type 1 in the option field of the line indicating the type of information you want to change. 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. Press Enter.

Adding a field to an existing audit file where the status is Active. Starting from the Audit Manager Workbench.

1. Type 5 in the option to remove the triggers from the file.

2. Type 2 in the option for the file you wish to change. The Change Configuration (V98200W) video displays.

3. Type 1 in the option field for 'Field Selection List' and the File Field List (V98203) video displays.

4. Select the additional fields required with a 1 or 2 and press enter.

5. Press F3 to access the Save Selection Changes window (V98203S).

6. Press F6 to save the changes.

7. Type 1 in the option field to build the new file definition. From a command line hidden selection 40 may be used to verify the new fields have been added to the audit file. The fields will appear at the end of the list.

8. Type 4 from the Audit Manager Workbench to place the triggers back on the file.

Deleting an Audit Process from a File

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

❑ Remove audit triggers from a file

❑ Delete the trigger program

► **To remove audit triggers from a file**

From the Audit Manager Workbench (V98200) video:

Type 5 in the Option field of the audit you want to turn off or remove the triggers from the file. This process must be done prior to deleting the setup. Press Enter.

► **To delete a trigger program**

From the Audit Manager Workbench (V98200) video:

1. In the Option field, type 9. Press Enter.

2. From the Confirmation Delete (V98200D) video, press F6 to delete the configuration objects and setup records.

   Note:
   This process deletes the trigger and the setup files only. It does not delete the audit file. Federal regulations require the records in the audit files are kept.

Displaying Triggers for a File

Before you define new triggers for a file, you need to check the file for pre-existing triggers. If you are on an IBM release prior to V5R1 and if you have defined triggers on a file to be audited, your pre-existing triggers may be replaced with the new audit triggers during the audit process.

▶ **To display triggers defined for a file**

From the Files List (V98200X) video:

Enter 7 in the Options field of the file for which you want to view triggers. The Active DBF Triggers (V98211W) video displays the trigger programs defined on the file.

Maintaining Reason Codes

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 (V98204) video 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

From the Reason Code Maintenance (V98204) video:

1. Page down to the first blank line.

2. In the Options field, type 2.

3. Complete the following fields:

   - Program

   - User

   - Reason Description

4. Press Enter.

► To edit Reason Codes for a program

From the Reason Code Maintenance (V98204) video:

1. Type 2 in the Options field of the reason codes you want to edit.

2. Complete the following field:

   - Reason Description

3. Press Enter.

► **To search for reason codes**

From the Reason Code Maintenance (V98204) video

1. Complete one or both of the following fields at the top of the screen:

   - Program

   - User

2. Press Enter. The video displays the reason codes that match the entered program and user.

► **To view inactive reason codes**

From the Reason Code Maintenance (V98204) video:

Enter 1 in the option field of the program for which you want to view inactive fields. The Inactive Reason Codes (V98204I) video displays.

Changing Configuration Defaults

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

► **To change configuration defaults**

From the Audit Configuration Defaults (V98201) video:

1. In the Library Locations section, complete the following fields:

    - Data Files

    - Audit Files

    - Trigger Programs

2. In the Output Trigger Source section, complete the following fields:

    - Library

    - Source File

3. In the Trigger Source Template section, complete the following fields:

    - Library

    - Source File

    - Member

4. Press Enter. .

Tips and Techniques

Sleeper

Sleeper may need to be used when files are open and existing locks prevent triggers from being applied or when you wish for the processing to be done after hours. By running audit programs in batch mode, you can use Sleeper with hidden selection 82 to hold the jobq and release in sleeper at a later time. This will put the release job into sleeper. 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. Previous releases only allow up to 6 triggers per file (3 *BEFORE and 3 *AFTER). Clients who have pre-existing triggers on files should approach using the audit functionality with care. Clients may need to incorporate the two programs together.

An audit file that is created using the Database Audit Manager cannot be audited.

Impact on Other Applications

Trigger programs can affect application performance. Please take care when selecting files to be audited. Trigger programs run within the users job and are invoked by the database. The trigger programs generated by Database Audit Manager are designed to minimize adverse effects.

Programs shipped with World have a trigger time of *After. If you are on an IBM release prior to V5R1 and if you have defined triggers on a file to be audited, your pre-existing triggers may be replaced with the new audit triggers during the audit process.

Coexistence

Customers who are coexistent with both WorldSoftware and OneWorld Software must determine if the file to be audited is used and maintained by World and OneWorld 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 World and OneWorld, it must be setup under the OneWorld audit tool rather than the World audit tool. If the file is only used and maintained through the World applications, then the file should be setup under the 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 World Writer programs. For assistance contact the Global Support Services - World technical.

Each audit file will contain 7 fields in addition to the fields selected on the V98203-File Field List video. Note the file prefix on these fields is UPD, this is used to avoid any possible duplication of fields from the audited file.

UPDJOBN	-	Work station ID used during the update.
UPDMUSE	-	User ID signed on to enter the update.
UPDRIMG	-	Record Image B=image before the update.
		A=image after the update.
UPDSERK	-	Serial number to identify the F98204 – reason code record.
UPDTEVT	-	Trigger event type A=Add
		C=Change
		D=Delete
UPDUPMJ	-	Date last updated.
UPDUPMT	-	Time last updated.