Lab BL01 - Part II
Database Navigator and Generate SQL in DB2 UDB for iSeries on V5R2

ITSO iSeries Technical Forum 2003

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Contents

Lab 1. iSeries Navigator setup

This lab explains how to set up iSeries Navigator.

Introduction

If you completed the *Piloting DB2 UDB with iSeries Navigator in V5R2* lab, you do not need to recreate the environment necessary to complete this lab. If this is the case, you can proceed to Lab 2. Otherwise, you have to complete this lab to create the necessary environment for these labs.

The notation *XX* that appears in library names, profile names, and so on refers to your *Team Number* (for example, DBNAVXX, SAMPLEDBXX and LIBXX). Refer to your lab worksheet for details.

Note

As part of iSeries Navigator in V5R2, the SQL Script Center uses JDBC instead of an ODBC connection to the server. Connection parameters used by JDBC are similar to those used by ODBC.

Objectives

This lab teaches you how to:

- Create a sample Database (SAMPLEDBXX)
- Display the Database using iSeries Navigator
- Display the contents of the sample database using iSeries Navigator

Lab prerequisites

Before you begin this lab, be sure the following prerequisites are available:

- An IBM @server iSeries or AS/400e server with OS/400 V5R2, or higher, with:
  - 5722-SS1 Option 12: Host Servers
  - 5722-TC1: TCP/IP Connectivity Utilities
- A PC with iSeries Access for Windows V5R2M0 with the latest Service Pack applied
- User profile DBNAVXX created in the iSeries server

Time required

The time required to efficiently complete this lab is 20 minutes.

Task 1: Getting connected

In this task, you create a connection definition from iSeries Navigator on your PC to the iSeries server.

__ 1. If you have a connection to iSeries server using iSeries Navigator, go to Task 2, "Creating a sample schema (database)" on page 3.

__ 2. Double-click the **iSeries Navigator** icon on your desktop. If this is your first time running this application, a message box appears stating that there are

no connections to the iSeries server. Click **Yes**. The Add iSeries Connection dialog appears.

__ 3. In the iSeries server text box, enter `I400WS`. Click **Next**. The iSeries Signon Information dialog appears as shown in Figure 1. Select the **Use default User ID, prompt as needed** radio button. In the text box shown in Figure 1, enter `DBNAVXX`.

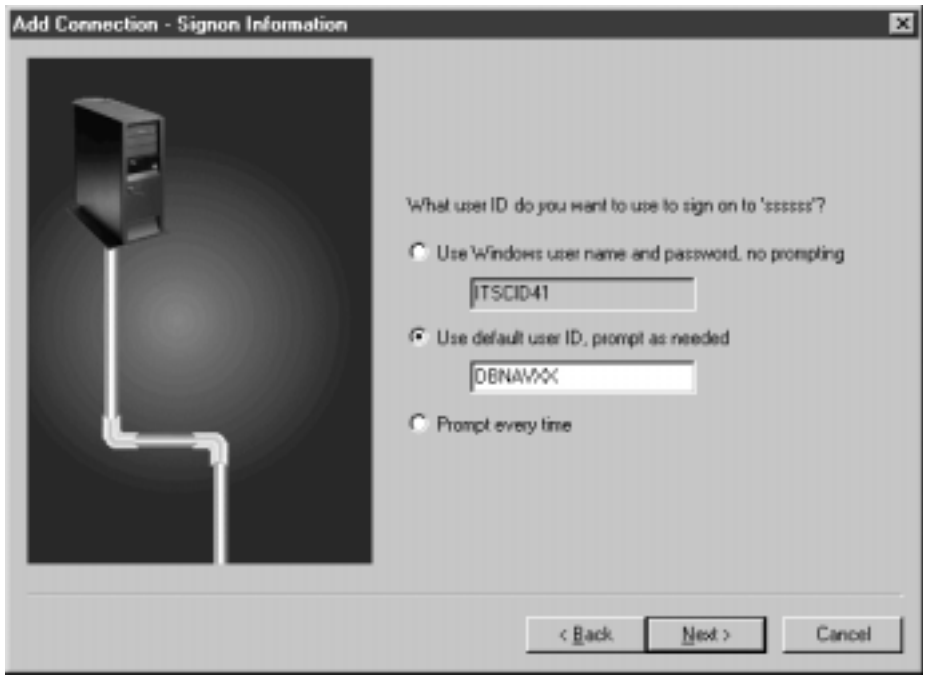

Figure 1. iSeries Signon Information

__ 4. Click **Next**. The Verify Connection dialog appears. Click the **Verify Connection** button. Make sure that the host servers on the iSeries server are up and running. Click **OK** and then click **Finish**.

__ 5. Right-click the **My iSeries Connections** object in the main iSeries Navigator window. Select **Add iSeries Connection**. The Add iSeries Connection - Welcome dialog appears.

__ 6. In the iSeries Navigator window, click the **I400WS** connection. A window prompts you to enter a username and password as shown in Figure 2. Consult your iSeries lab worksheet for your profile name and password. When you are finished, click **OK**. Because this is the first time you are signing on to the iSeries server, the system has to update iSeries Navigator with its capabilities.

Figure 2. Signon to iSeries

__ 7. Click the plus sign (**+**) in front of the **Databases** icon to expand it. Then click the plus sign (**+**) in front of the **Named Database** icon (*I400ws* in this case). The Libraries, Database Navigator, SQL Performance monitors, and Transactions options appear in the expanded list as shown in Figure 3.

Note

You see a different name for the Named Database icon if you let the system create it automatically.

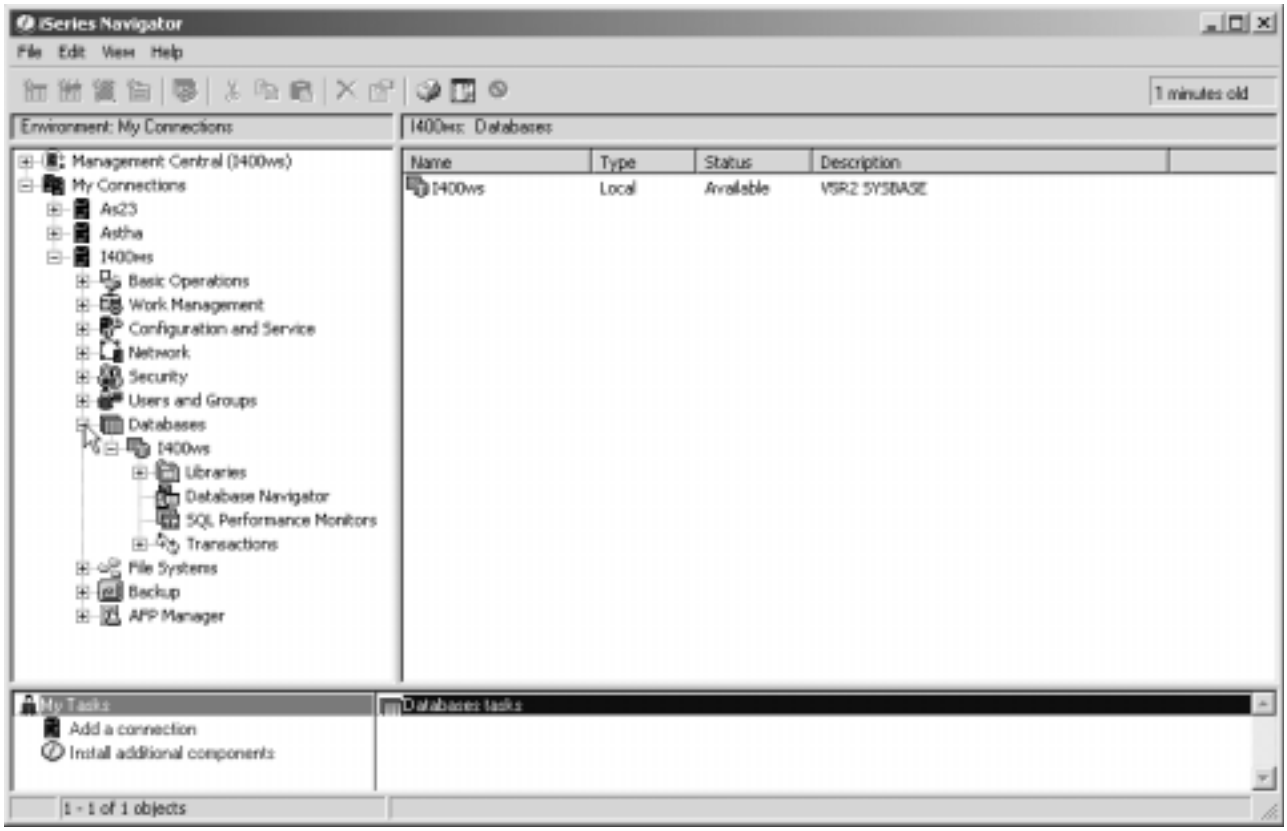

Figure 3. Main iSeries Navigator panel

In iSeries Navigator, there are three places from which to access the functions for an object:

- The File menu
- An icon from the toolbar
- An object's right-click menu

In the remaining labs, use the right-click menu to access these functions.

Task 2: Creating a sample schema (database)

In this task, you run a system-provided stored procedure to create a sample schema (database) from which to work:

__ 1. If you already created a sample schema SAMPLEDBxx, go to Task 3, "Displaying properties and descriptions of DB objects" on page 5.

__ 2. Invoke the SQL Script Center by right-clicking the **Database Name** (*I400WS* icon under your **Databases** icon). Select **Run SQL Scripts**. A new Run SQL Scripts window appears.

__ 3. Click the **Options** menu item and select the following items (one at a time) as shown in Figure 4:

- Stop on Error
- Smart Statement Selection
- Run Statement on Double-Click

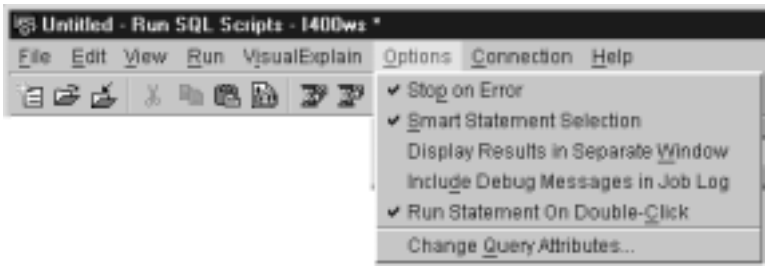

Figure 4. Run SQL Scripts: Options menu item

> **Note**
>
> When the Smart Statement Selection option is selected, all highlighted SQL statements run in sequence. If this option is not selected, the highlighted SQL statements are executed as a single statement. This option also ensures that complete statements are run even if one or more statements are only partially highlighted.

__ 4. Invoke the V5R2-supplied stored procedure that creates a sample database that you use in subsequent tasks. In the SQL statement working area, type the following statement:

```
CALL QSYS.CREATE_SQL_SAMPLE('SAMPLEDBXX');
```

Be sure to replace *XX* with your team number.

> **Note**
>
> Always type a semicolon (;) at the end of every SQL statement so the Smart Statement Selection feature knows where each statement ends.

__ 5. Move the text cursor anywhere into the statement and double-click to run it. Watch the Messages tab for a completion notification informing you that you have a sample database with which to work.

If an error message appears, notify your lab supervisor.

You now have a sample database to use during the next lab.

__ 6. Close the Run SQL Script window.

Task 3: Displaying properties and descriptions of DB objects

In this task, you use iSeries Navigator to explore the sample database that you created in the previous task:

__ 1. In the left panel of the main iSeries Navigator window, click the plus (**+**) sign next to the **Database** icon.

__ 2. Right-click the **Libraries** icon and select **Select Libraries to Display** from the pop-up context menu as shown in Figure 5. The Select Libraries to Display window appears.

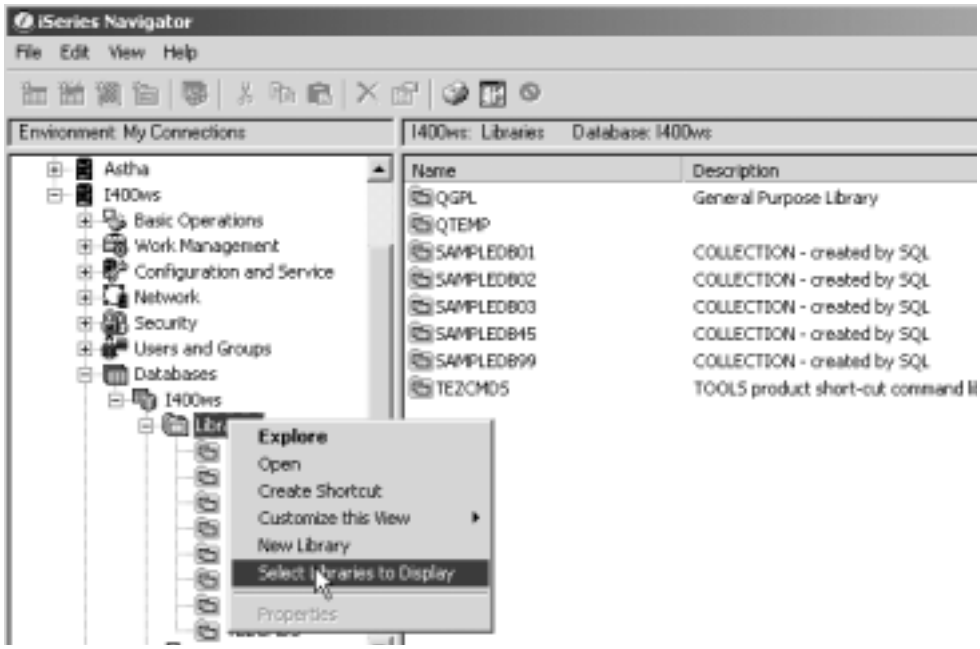

Figure 5. Select Libraries to Display to include iSeries Navigator

__ 3. In the Enter Libraries input field, type `SAMPLEDBXX` and click **Add** as shown in Figure 6. The SAMPLEDBXX library is added to the list in the right panel of the window. Click the **OK** button.

Be sure to replace *XX* with your team number.

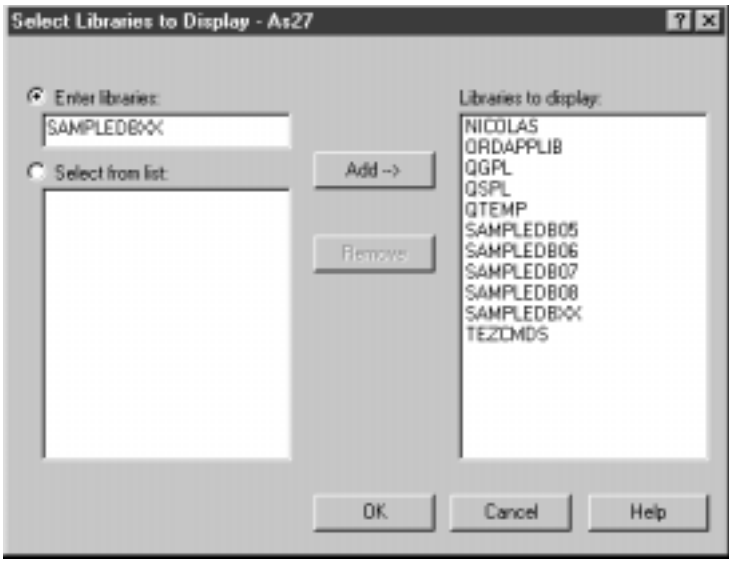

Figure 6. Select Libraries to Display window

__ 4. Right-click your **SAMPLEDBXX** library and select **Properties**. A new SAMPLEDBXX Properties window appears.

__ 5. Explore the information in this window and answer the following questions:

- How large is this library? _____ megabytes

  Hint: General->Total allocated size

- How many objects are in this library? _____

  Hint: Storage->Contents

- When was this library last-saved? _____

  Hint: Save->Last saved

- When was this library created? By whom? _____

  Hint: Creation->Created

Click **OK** when you are finished.

__ 6. Double-click your **SAMPLEDBXX** library to see all the database objects of this library displayed in the right panel.

__ 7. Locate and right-click the **EMPLOYEE** table. Select **Description**. This option is a new function added in V4R5. A new Description window appears with six different information tabs.

This option is used in the same manner as the CL commands Display File Description (DSPFD), Change Physical File (CHGPF), and Change Logical File (CHGLF).

Click each different tab and then click **Help** to see detailed information of all table description attributes in the corresponding tab that you are in.

__ 8. Explore the information in this window and answer the following questions:

- How large is this table? _____ kilobytes
- How many rows are in this table? _____
- Is the Reuse deleted rows feature active? _____

Hint: General Tab

- How many bytes is the longest row in this table? _____ bytes

  Hint: Details->Maximum row length

Click **OK** when you are finished.

__ 9. In the previous step, you found that there are two indexes built for the EMPLOYEE table. How do you identify its indexes?

Hint: Right-click the **EMPLOYEE** table and select **Properties**. Find the correct tab that shows you this information.

Click the **Indexes** tab. Two index names (XEMP1 and XEMP2) appear. Click **OK** when you are finished.

__ 10. Click **OK** to go back to the iSeries Navigator main window. Locate and right-click the **VEMPDPT1** view. Select **Description**.

__ 11. Click the **Details** tab and note the Allowed activities attribute. Why is it read-only? Notice the check mark in front of Read, while there is none for Update, Write, and Delete. Why is this?

Click **OK** when you are finished.

Normally, a joined view is a read-only object. You can prove that VEMPDPT1 is a joined view by right-clicking **VEMPDPT1** and selecting **Properties**. The SQL DDL statement that joins DEPARTMENT and EMPLOYEE tables appears. Click **OK** when you are finished.

At this point, you are ready to run the second lab, which introduces a new feature called Database Navigator (included with iSeries Navigator in V5R2).

You have now completed this lab!

Lab 2. Database Navigator: General tasks

This lab outlines some of the general tasks that are available with Database Navigator.

Introduction

Database Navigator enables you to visually depict the relationship of database objects on your system. The visual depiction you create for your database is called a *Database Navigator Map*. In essence, the Database Navigator Map is a "snapshot" of your database and the relationships that exist between all of the objects in the database.

Using iSeries Navigator, you can explore the complex relationships of your database objects using graphical representations that present the tables in your database and the relationship between tables, indexes, and constraints that are attached to tables. After you connect to your system, you can use iSeries Navigator to:

- Generate a map of a set of tables and the relationships between them.
- Manipulate the map to show items of interest, without changing objects on the system.
- Generate SQL for all the objects in the map.
- Print maps.
- Save maps and view them later.

In this lab, you use the example database SAMPLEDBXX. Remember that *XX* in library names, profile names, and so on refers to your team number (for example, DBNAVXX). Refer to your lab worksheet for details.

Objectives

This lab teaches you how to:

- Generate a MAP from some tables and view the relationship between such database objects as tables, views, indexes, referential constraints, and primary keys
- Add Primary Key Constraints
- Zoom and Arrange objects
- Save the MAP

Lab prerequisites

Before you begin this lab, be sure the following prerequisites are available:

- An IBM @server iSeries or AS/400 server with OS/400 V5R2, or higher, with:
  - 5722-SS1: Host Servers
  - 5722-TC1: TCP/IP Connectivity Utilities
- Client Access Express V5R2M0 with the latest Service Pack applied
- Sample Database SAMPLEDBXX created

Time required

The time required to efficiently complete this lab is 30 minutes.

Task 1: Creating the Database Navigator Map

In this lab, you create your first Database Navigator Map and work with the components. You also learn general navigation operations using the map.

__ 1. In the Navigator window, click the **I400WS** connection. A window prompts you to enter a username and password as shown in Figure 7. Consult your lab worksheet for your profile name and password. When you are finished, click **OK**. Because this may be your first time signing on to the iSeries server, the system has to update Navigator with its capabilities.

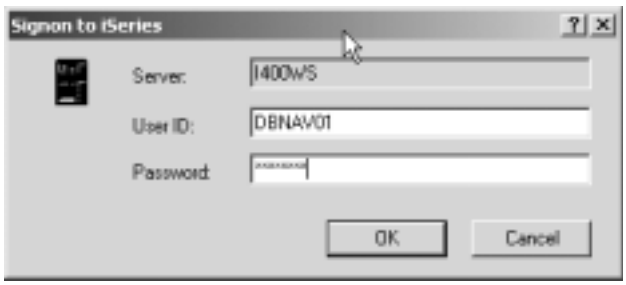

Figure 7. iSeries Sign on information

__ 2. Click the plus (**+**) sign next to the **Database** icon to expand it. The Libraries, Database Navigator, and SQL Performance Monitor functions should appear in the expanded list as shown in Figure 8.

__ 3. Click the **Database Navigator** icon. All of the existing maps on the iSeries or AS/400 server should appear as shown in Figure 8.

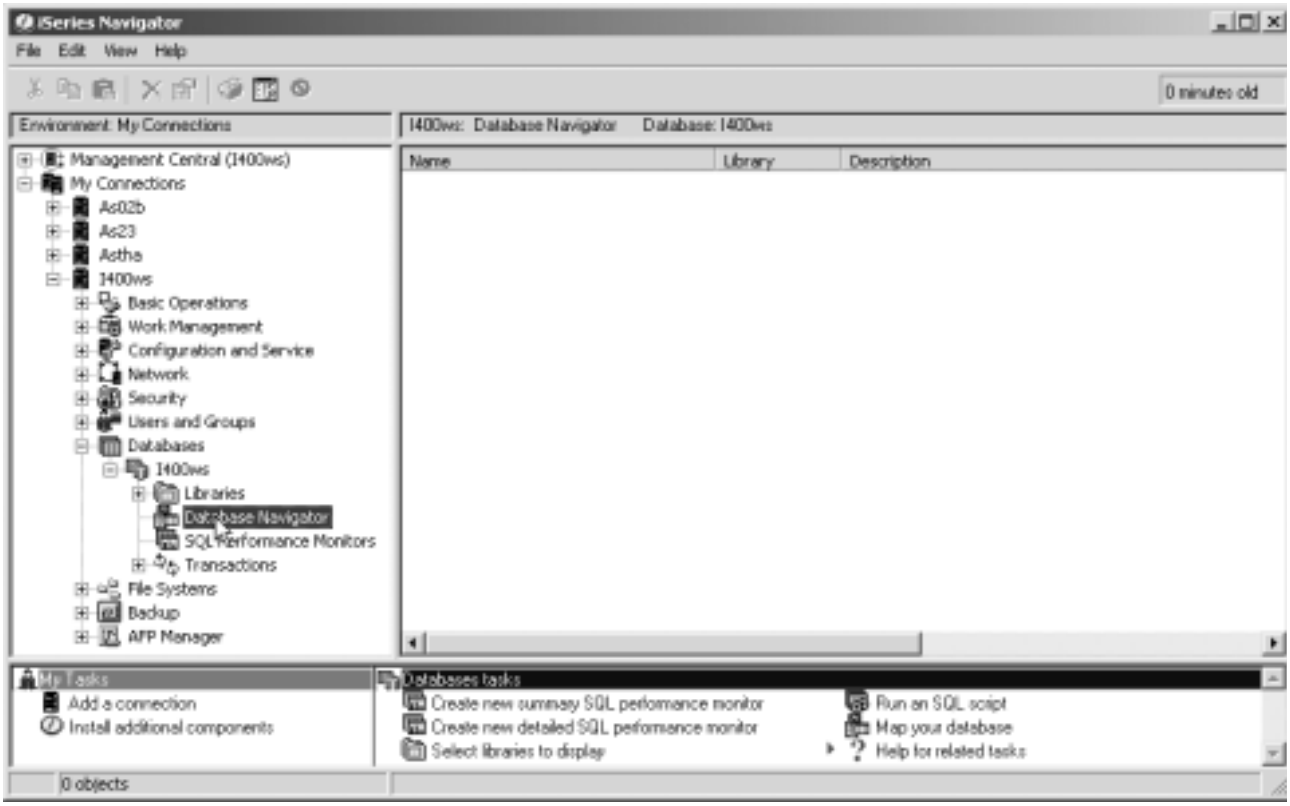

Figure 8. Database Navigator option

__ 4. Click the plus sign (**+**) sign in front of the **Libraries** icon to expand the Navigator library list.

__ 5. Check whether your SAMPLEDBXX library is included in the list. If it does not exist, change the iSeries Navigator Library List to include it. Refer to step 2 in Task 3, ”Displaying properties and descriptions of DB objects” on page 5, in Lab 1.

__ 6. Right-click the **Database Navigator** object and select **New** to create your Map as shown in Figure 9. A new Database Navigator window appears as shown in Figure 10 on page 14.

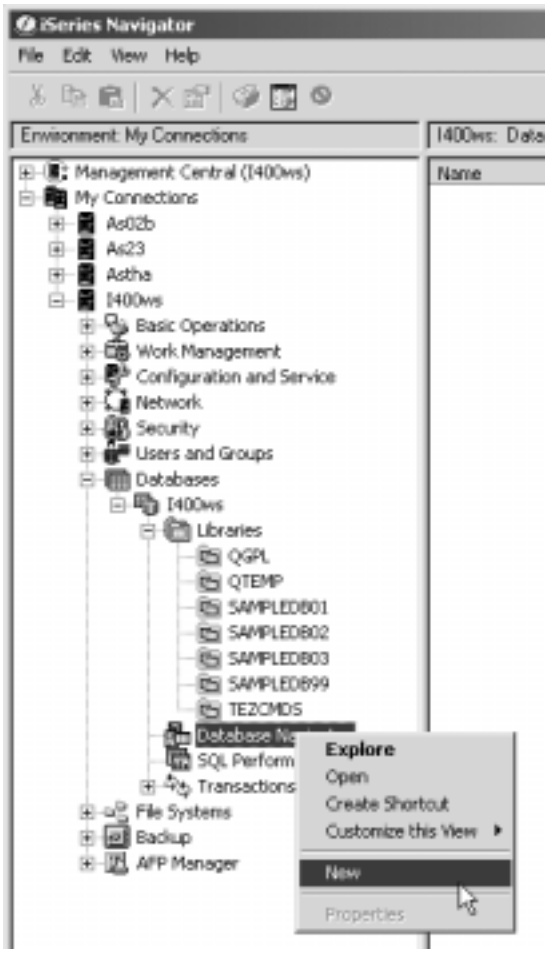

Figure 9. Selecting New to build a new map

Exploring the Database Navigator window

The primary workspace for Database Navigator is a window that is divided into four main areas. These four areas allow you to find the objects to include in a map, show and hide items in a map, view the map, and check the status of pending changes for a map. The following list briefly describes the main areas of the database navigator window:

- **Locator Pane**: The Locator Pane is located on the left side of the Database Navigator window. It is used to find the objects that you want to include in your new map or to locate objects that are part of an open map. The upper Location Pane is a search facility that can be used to specify the Name, Type, and Library of the objects that you want to include in the map. The results of the search are displayed in the lower Locator Pane under the Library Tree and Library Table tabs.
- **Map Pane**: The Map Pane is located on the right side of the Database Navigator window. It graphically displays the database objects and their relationships.
- **Object Status Bar**: The Object Status Bar is located on the bottom left of the Database Navigator window. It displays the number of visible and eligible objects in the map.
- **Action Status Bar**: The Action Status Bar is located on the bottom center of the Database Navigator window. It provides a clear description of what has taken place in the map and whether modifications are pending.
- **Modification Status Bar**: The Modification Status Bar indicates whether a modification has been made or is pending.

__ 7. The iSeries Navigator library list appears in the left side of the Database Navigator Window. Double-click your **SAMPLEDBXX** library to expand the objects (*XX* is your team number) as shown in Figure 10.

__ 8. Double-click **Tables** in the Locator Pane to expand all the tables in a database.

__ 9. Double-click the **EMPLOYEE** table on the lower Locator Pane to start building a map. This table is added to the map and all its related objects.

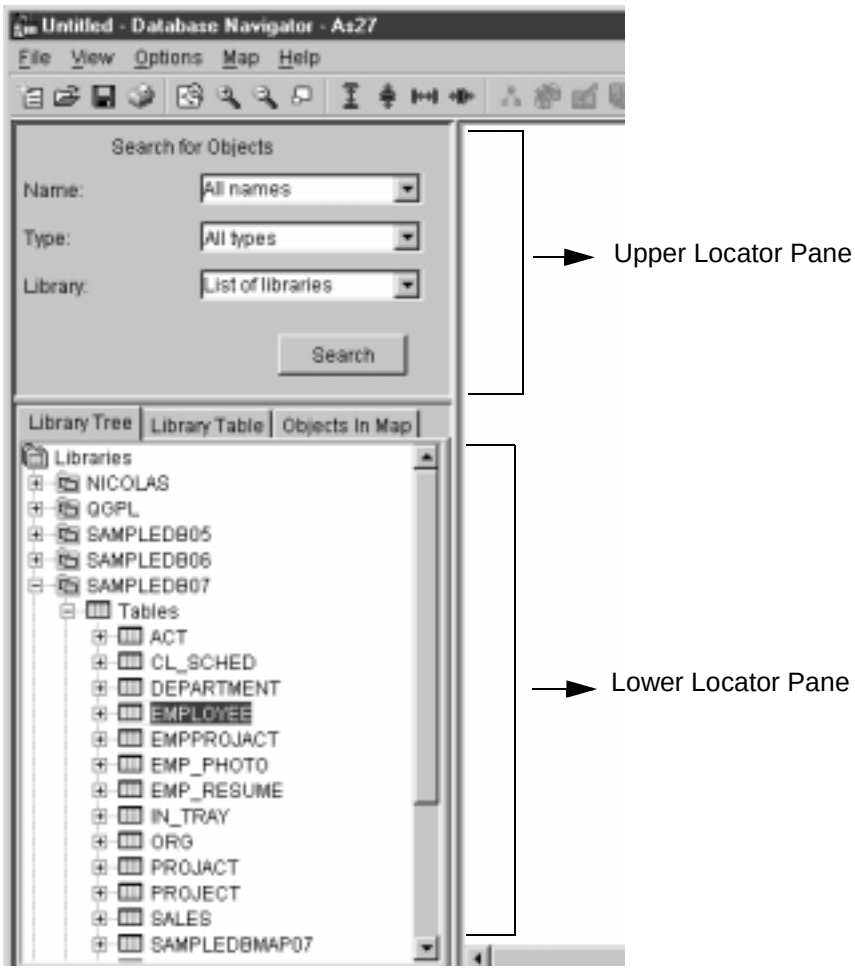

Figure 10. Selecting a database to build a map

The Map is built from the cross reference files (XREF) on the iSeries. The relationship and statistics are based from the table that you selected to generate a map as shown in Figure 11.

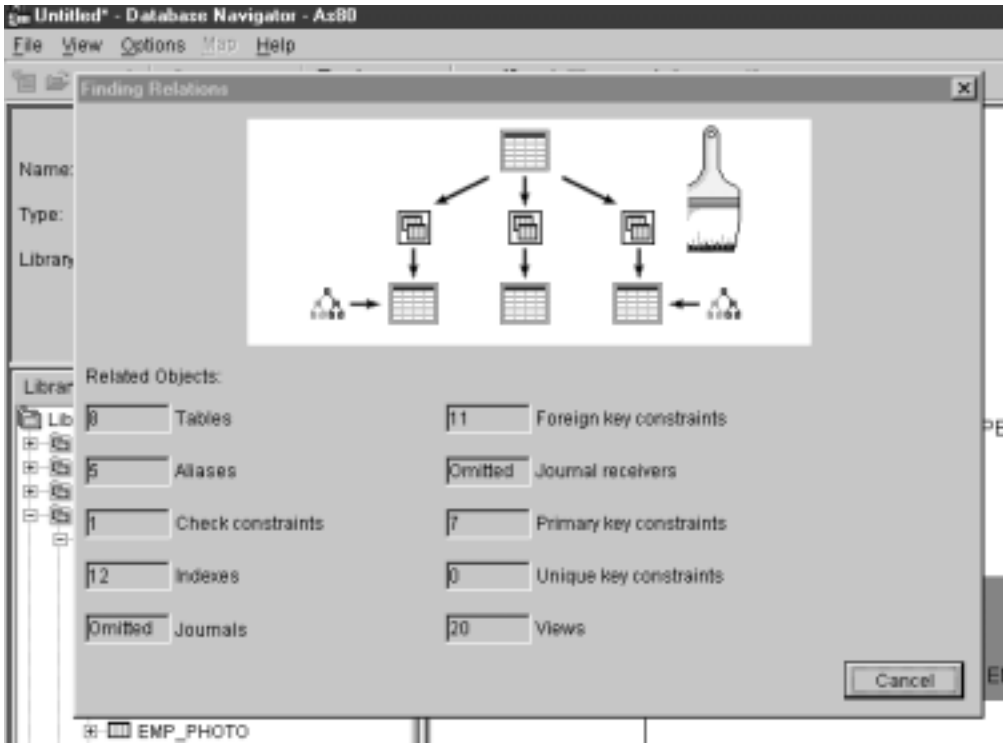

Figure 11. Building a Database Navigator Map

__ 10. Click the minus (**-**) sign next to the **SAMPLEDBXX** database object to collapse the tree view.

__ 11. Use the vertical and horizontal scroll bars to navigate the map. Use the **Zoom** icons on the toolbar to zoom in and zoom out the MAP as shown in Figure 12.

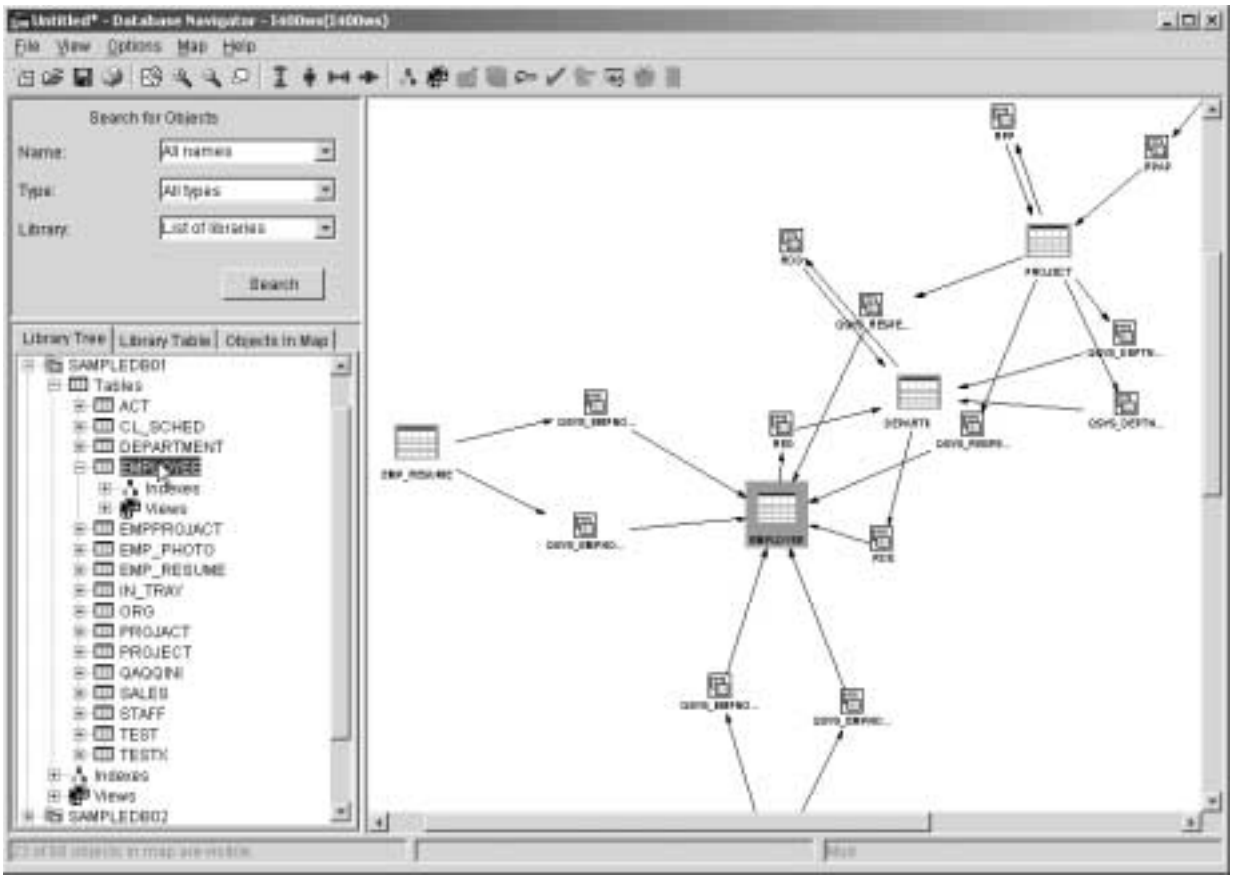

Figure 12. Database Navigator Map

The default view of a map only shows tables and referential constraints.

__ 12. Click **Options** and select the **User Preferences** option to open a new window to include or remove the defaults user preferences as shown in Figure 13.

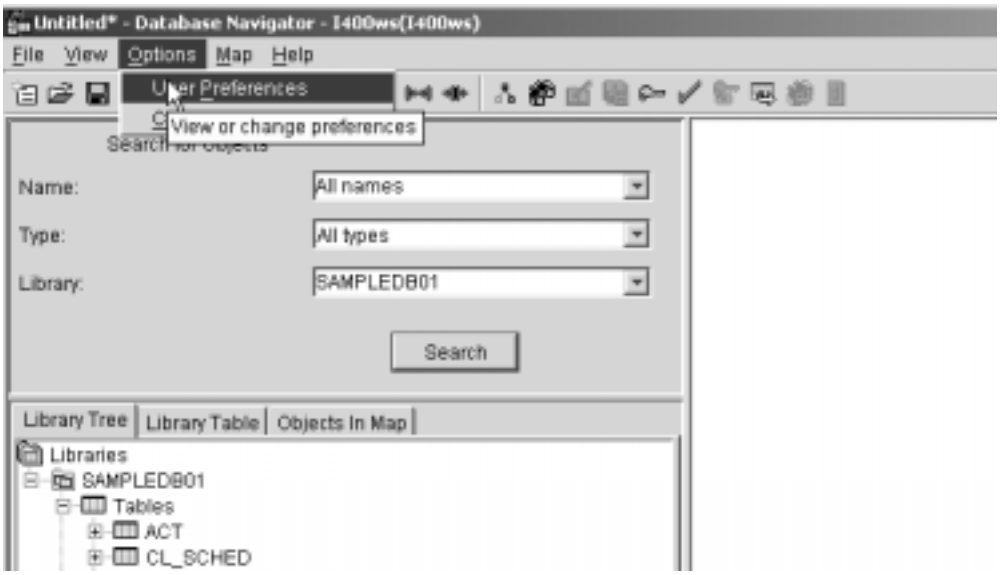

Figure 13. Viewing or Changing the user preference for Database Navigator Map

__ 13. You can see that the **User Preference** window shows you the various objects that may be included on the map, click **OK** to return to Database Navigator Map as shown in Figure 14.

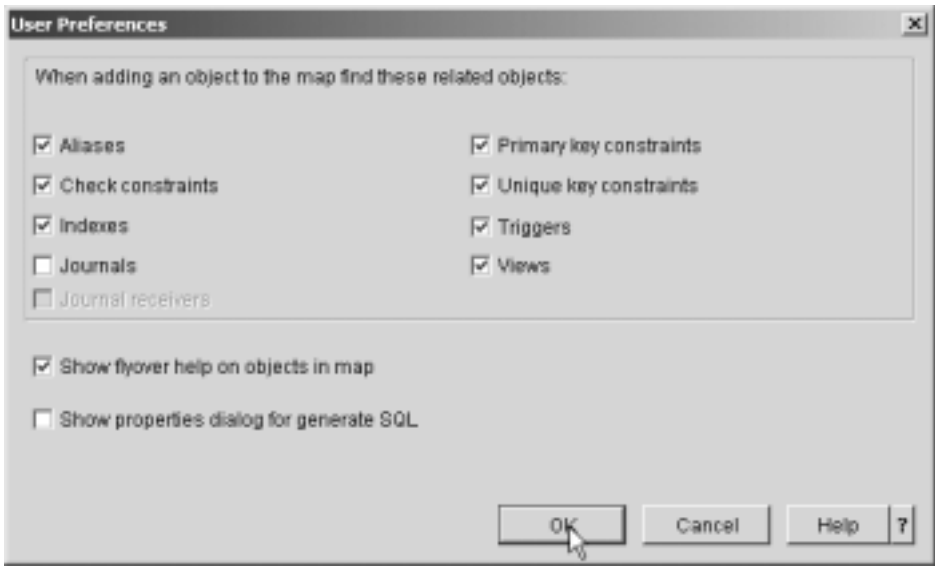

Figure 14. Database Navigator user preference

The map is generated based on default user references. In V5R2, support for *Trigger objects* in the MAP was added. You can change the default option to remove or add extra objects.

Task 2: General tasks using the Database Navigator window

In this task, you select some general functions on the Locator Pane on the left side of the Database Navigator to find and include objects in the map that are part of an open map.

__ 1. Use the criteria selection in the Upper Locator Pane to select only your **SAMPLEDBXX** library. Click and select the library parameter as shown in Figure 15.

__ 2. Click the **Search** button to execute. The result is shown on the bottom pane, under the Library Tree and Library Tables tabs.

Note

When you open your database, the default search process is the list of libraries on the iSeries Navigator window. Therefore, you always can see the list of libraries on the Library Tree tabs.

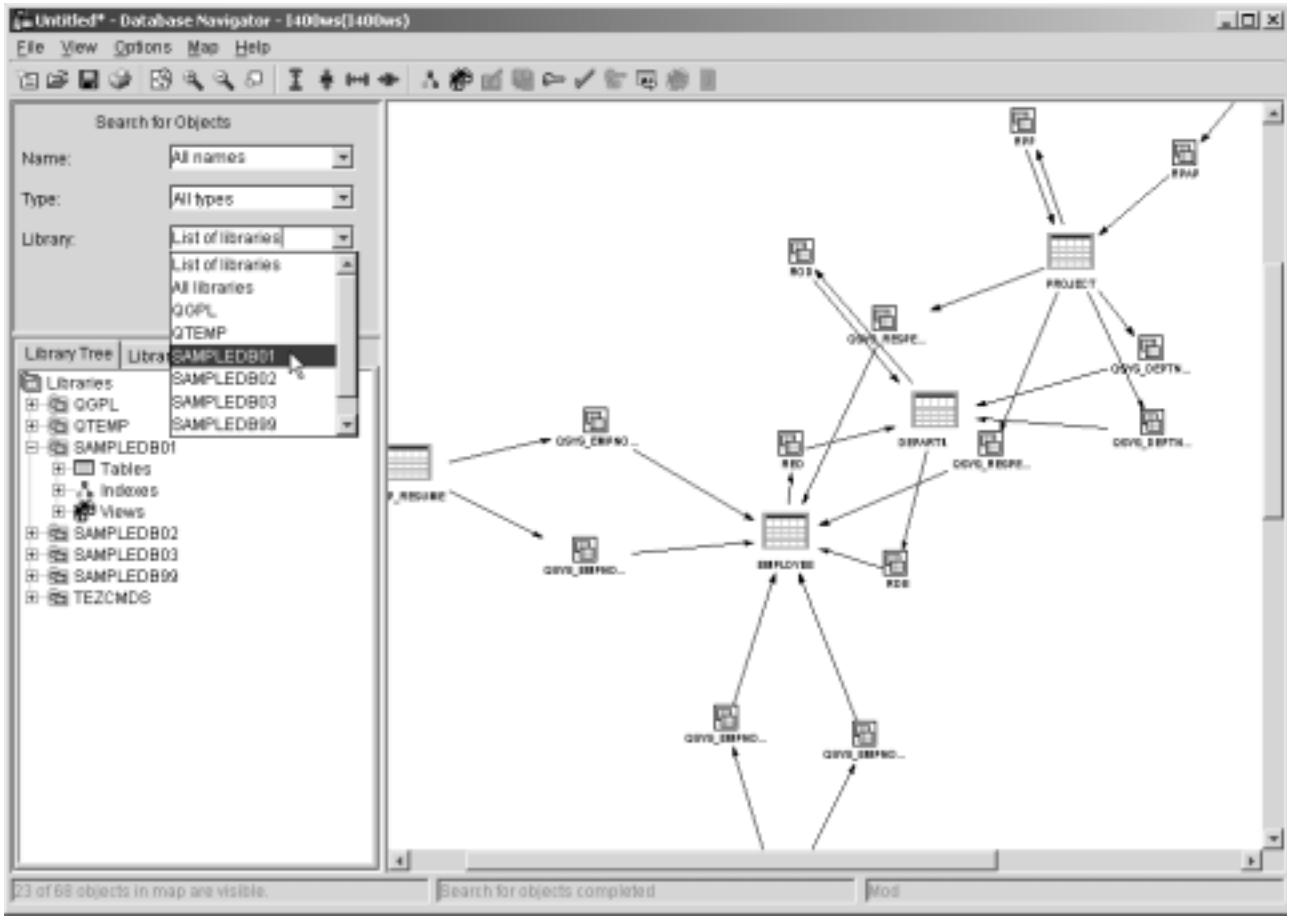

Figure 15. Search criteria on the locator pane

__ 3. Click the plus (**+**) sign next to your **SAMPLEDBXX** database on the Lower location Pane to show the objects found, such as Tables, Indexes, and Views.

__ 4. Click the (**+**) sign next to the **Tables** database object to expand it.

__ 5. All of the tables in the map should appear as shown in Figure 16. Do an advanced search using the criteria selection in the Upper Location Pane to select all tables that begin with the literal ‘EMP’.

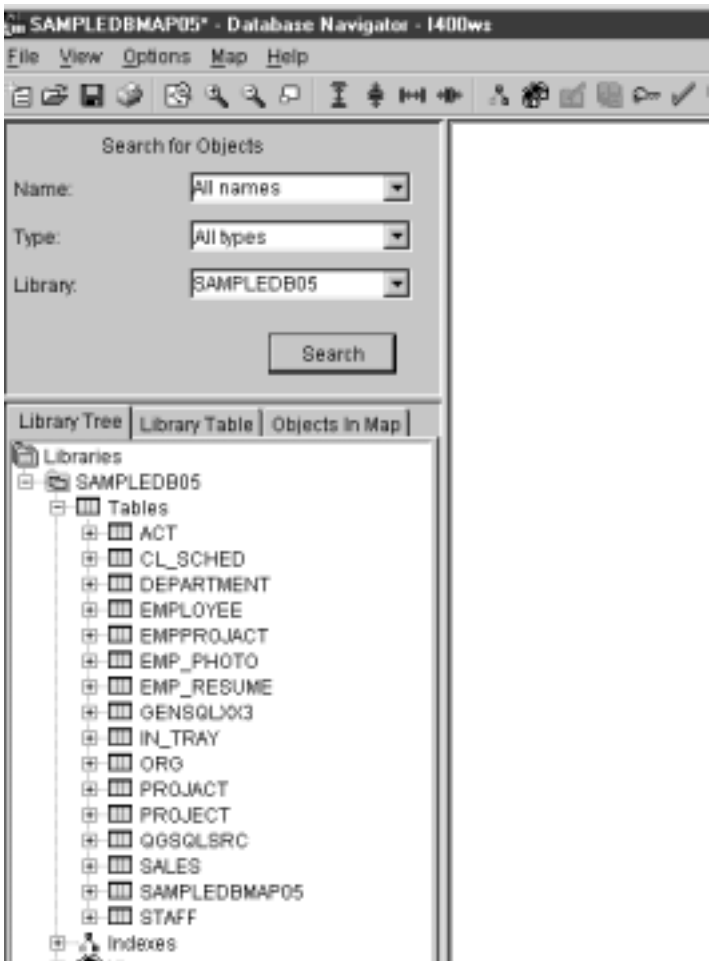

Figure 16. Using the Locator pane

__ 6. In the Name input field, type `EMP*`. In the Type input field, select **Table** as shown in Figure 17.

__ 7. Click **Search** to execute. The search results are shown on the bottom pane under the Library Tree and Library Tables tabs.

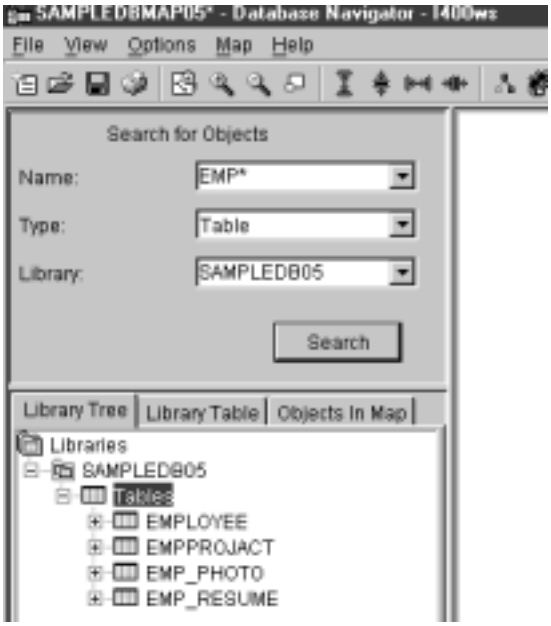

Figure 17. Advance search using the Locator pane

__ 8. Use the criteria selection again to show all of the tables on the Lower Location Pane. Click in the **Name input** field and select **All names** to view all of the tables in the schema. Click the **Search** button. In the next step, you use the Find objects in the map function.

__ 9. Right-click the **PROJECT** table from the list of tables and select the **Find in Map** option to find this table in the map as shown in Figure 18.

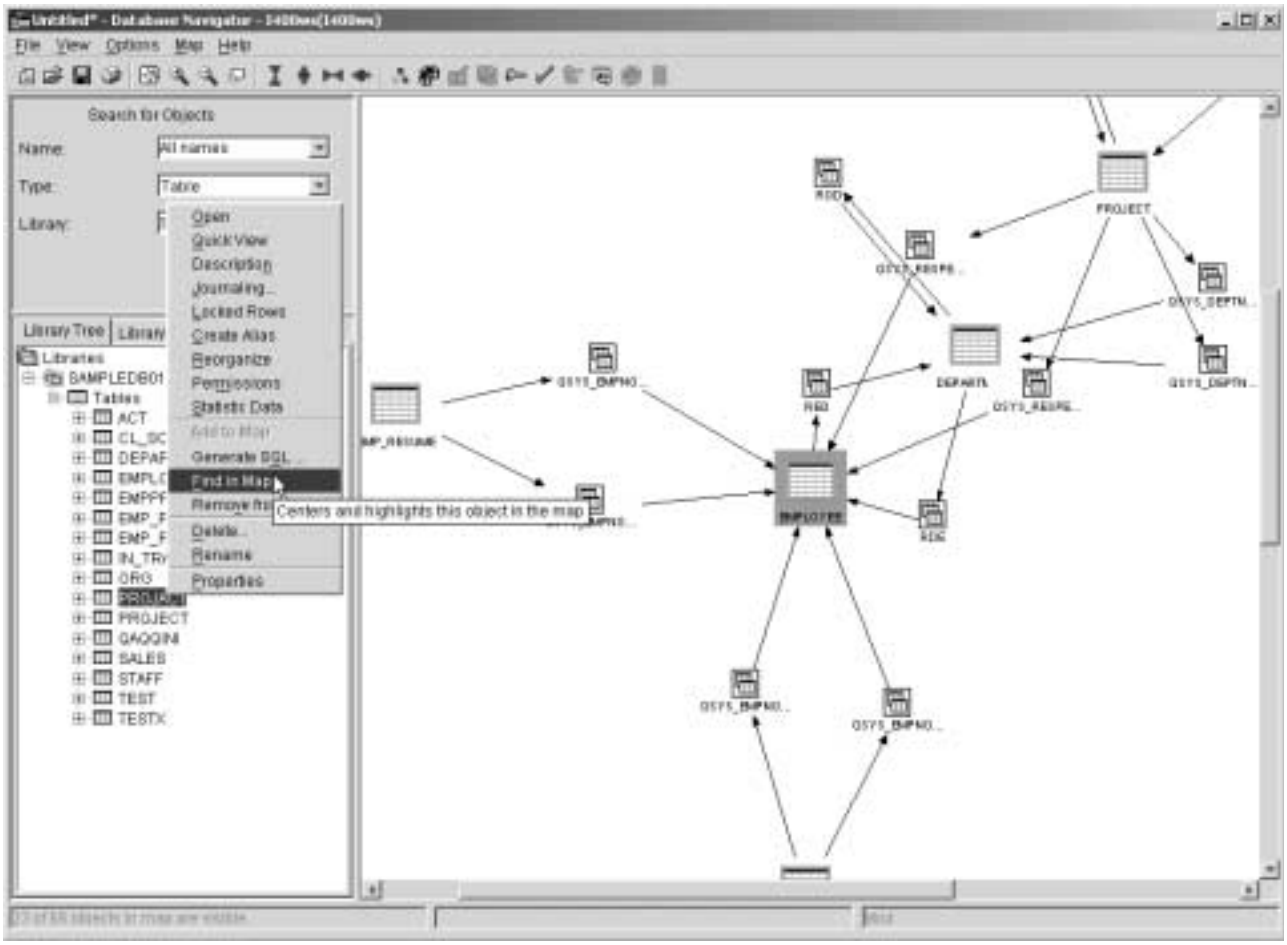

Figure 18. Selecting a specific object to locate in a map

__ 10. Move the pointer over the **PROJECT** table on the map. The general description about it (flyover window) should appear as shown in Figure 19.

__ 11. Use the criteria selection again to show the tables, Indexes and views on the Lower Location pane. Click in the **Type** field and select **All types**. Click the **Search** button.

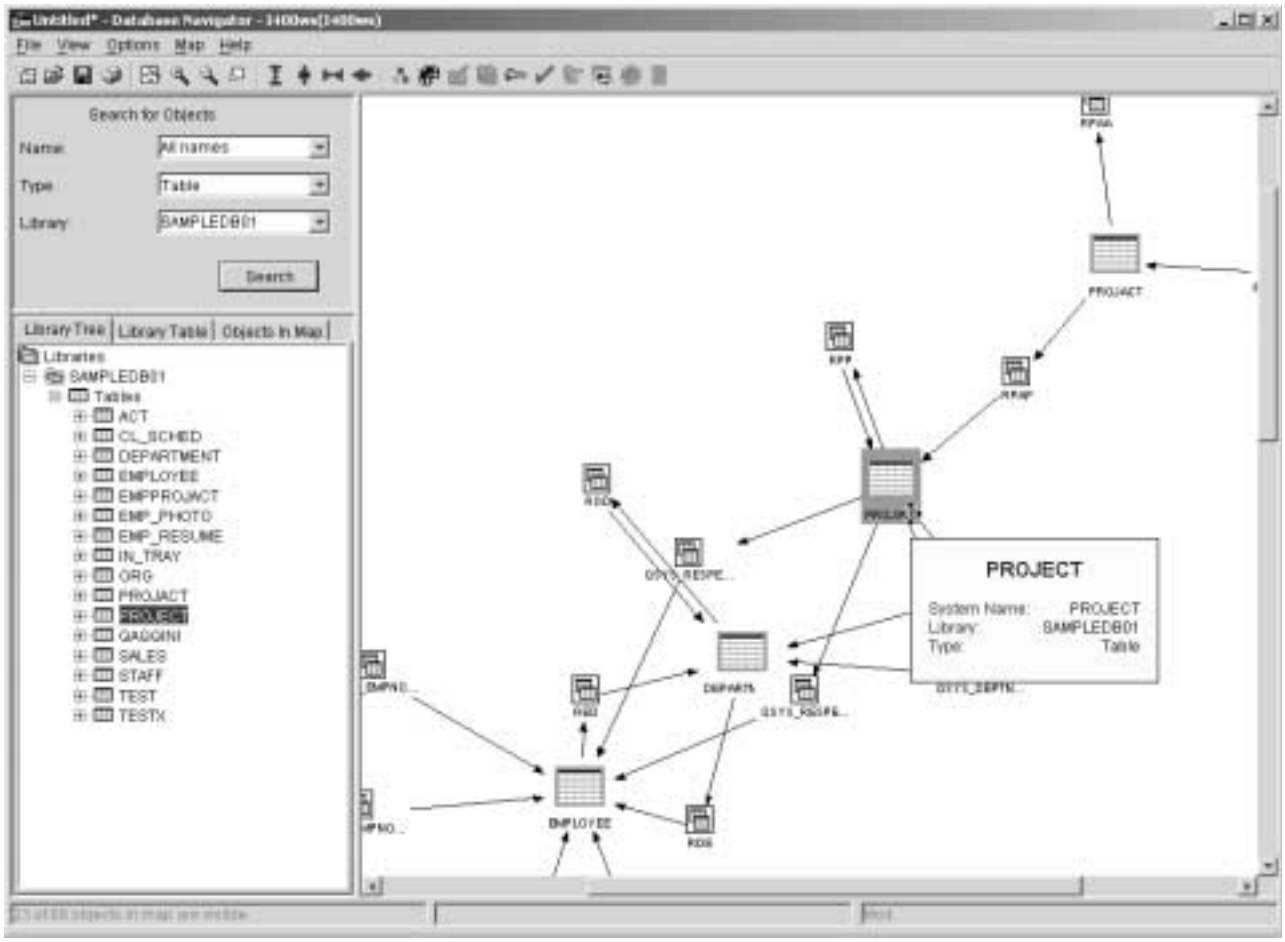

Figure 19. Locate specific object in a map

You can see the Object Status bar at the bottom left of the Database Navigator window as shown in Figure 20. This displays the number of visible and eligible objects in the map. As shown in Figure 20, only 23 of 68 objects qualify as eligible objects and are included on the map. This is because only the tables and constraints are included in the map.

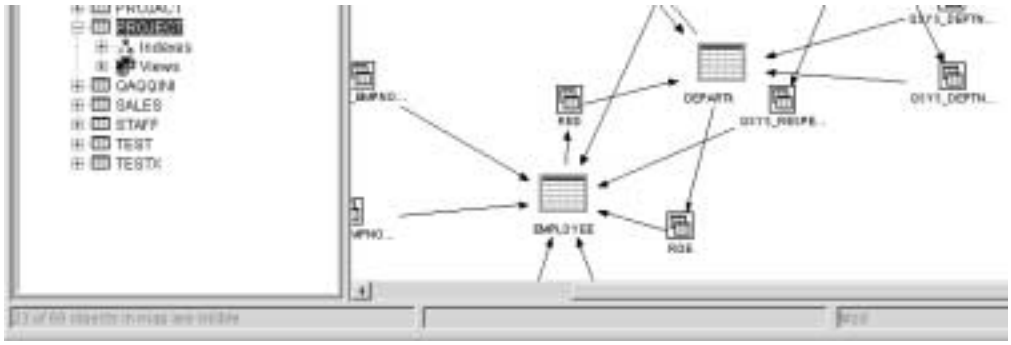

Figure 20. Status bar code

__ 12. Select the **Library Table** tab on the Locator Pane to show the complete list of tables, indexes, and views on the database selected as shown in Figure 21.

__ 13. Use the vertical and horizontal scroll bars to view all of the objects in the Library Table list.

__ 14. Click **Objects In Map** in the lower locator pane and a list of objects in the map should appear. Only the selected objects in the list are included in a MAP.

__ 15. Click the **Type** tab on the Object In Map field to organize the objects by Type.

__ 16. Use the vertical and horizontal scroll bars to search the index objects in the Objects In Map list.

__ 17. Select all of the indexes (one by one) in the list to include them in a map.

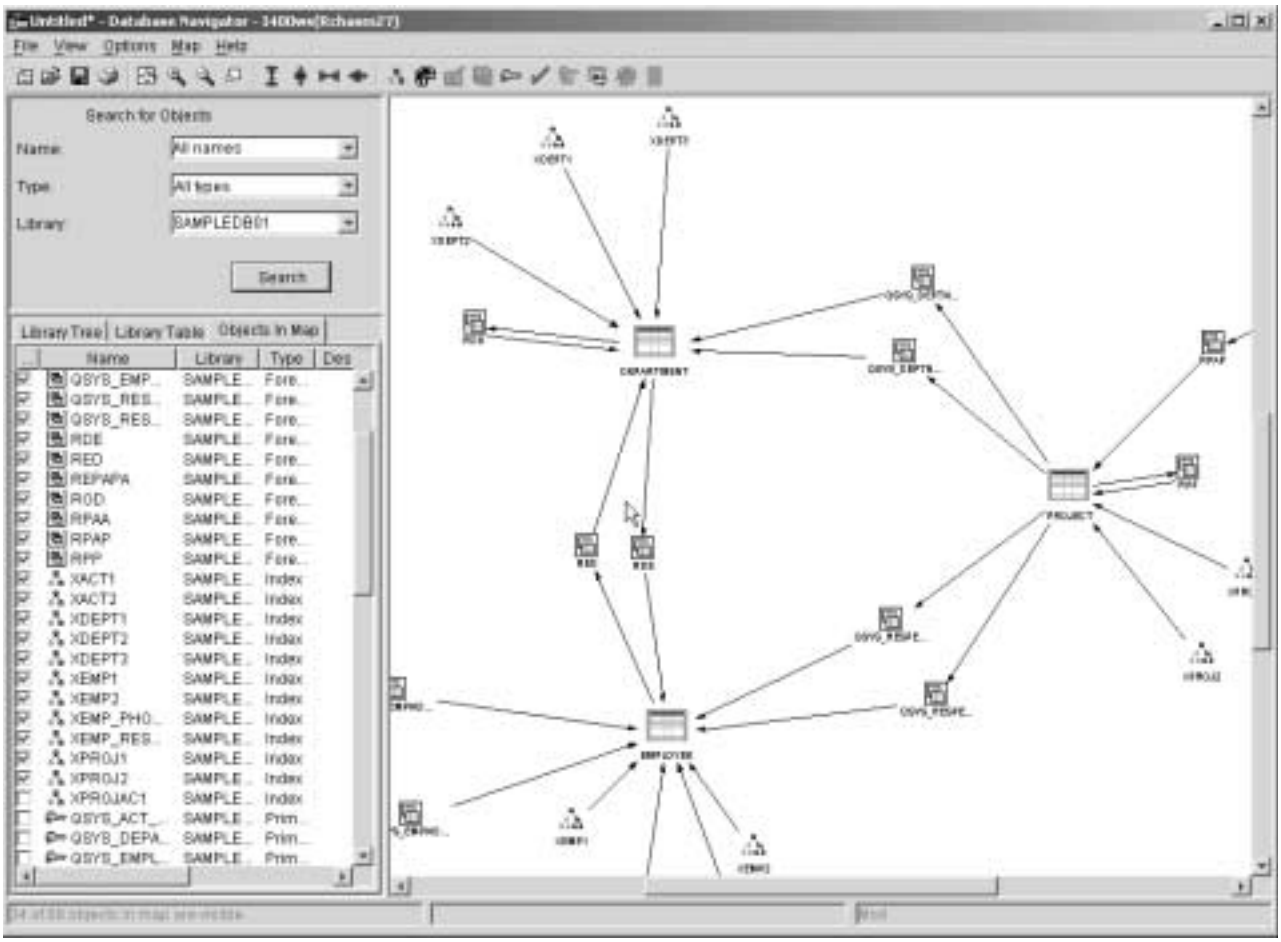

Figure 21. Including a new object in a map

Each time you select an index or another object from the Library Table, the map and the Status bar message is updated.

__ 18. Right-click in a free space on the Map Pane in the Database Navigator window.

__ 19. Select **Zoom** and then select the **To Fit Window** option to fit the map in the window as shown in Figure 22.

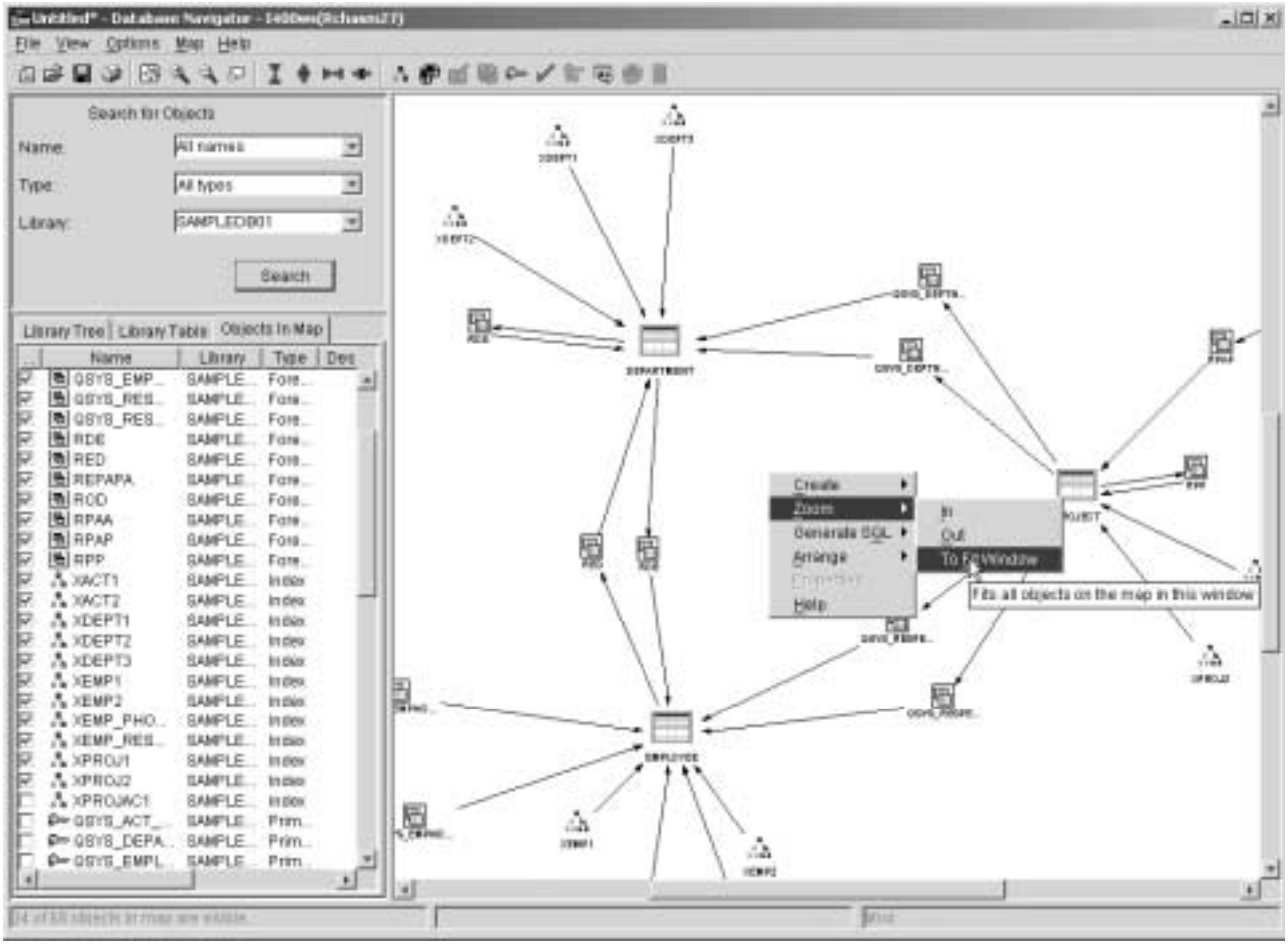

Figure 22. Selecting To Fit Window

You can see all objects in the current window as shown in Figure 23.

When the objects are shown under the Library Tree and Library Table tabs, you can also add objects to the map by right-clicking an object and selecting **Add to Map**, or double-clicking the object name.

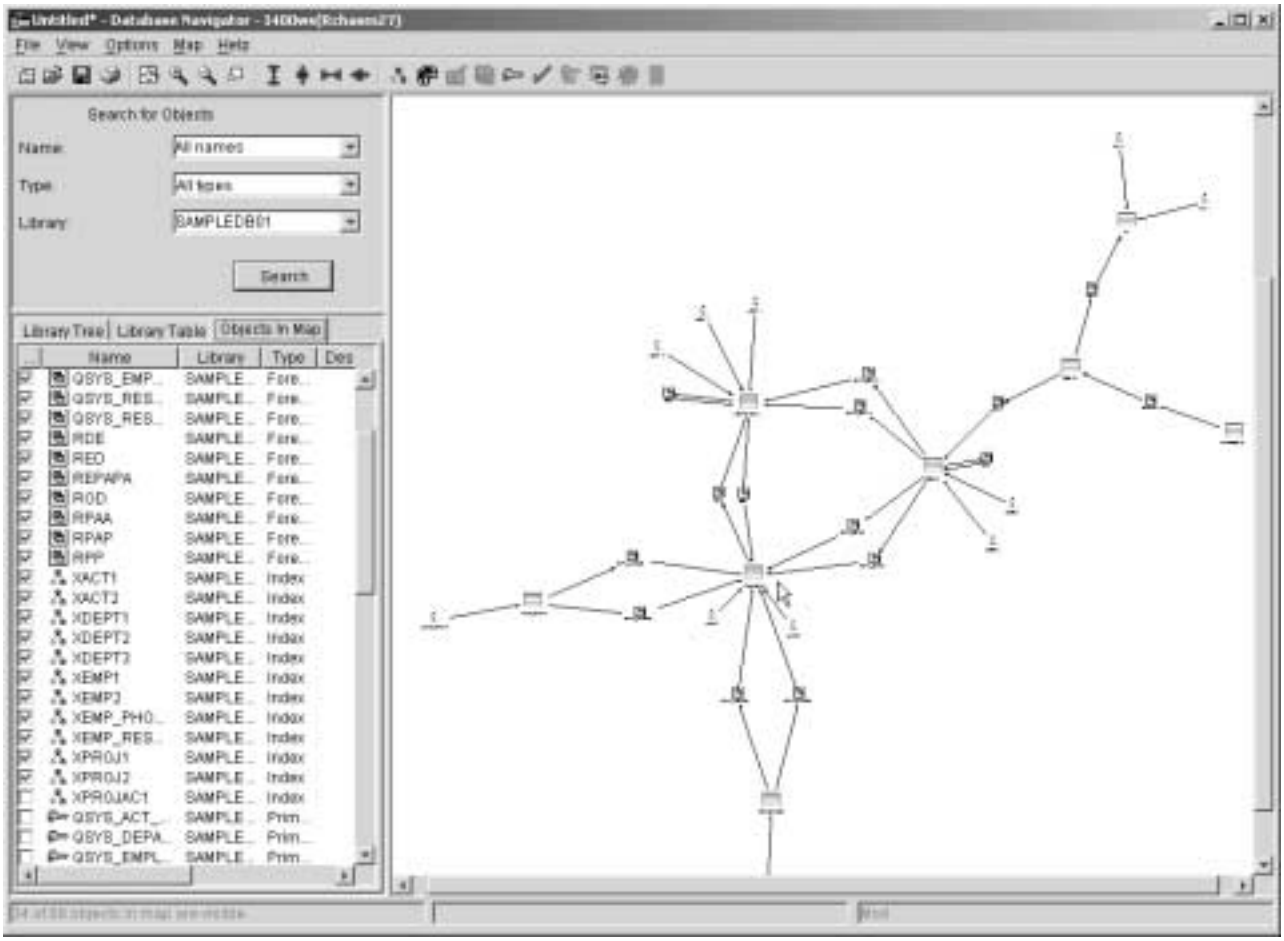

Figure 23. Sizing a map to fit the display window

Notice the Object Status Bar in the bottom left of the Database Navigator window. This displays the number of visible objects in the map of the total found.

__ 20. Click **File** and select **Save As...** to save the Map.

__ 21. From the **Save As...** window, click the **Libraries** parameter and select your **SAMPLEDBXX** library.

__ 22. In the Name input field (Figure 24), type:

```
SAMPLEDBMAPXX
```

__ 23. In the Description input field (Figure 24), type:

```
'MAP created by DBNAVXX'
```

__ 24. Click **OK** to save your map.

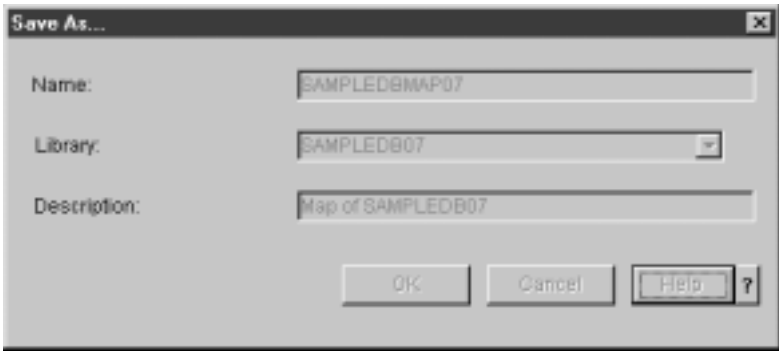

Figure 24. Saving the database map

Note

The Database Navigator Maps are stored on the iSeries server. After you open a Database Navigator Map, it is locked from other users to prevent conflicts where other users try to update the same map at the same time.

Task 3: General task using print capability to print a MAP

In this task, you select some general functions on the Locator Pane on the left side of the Database Navigator. These functions help to find and include objects in the map that are part of an open map. You also select the print options to setup different ways to print a MAP.

__ 1. Click **Objects In Map** in the lower locator pane, and a list of objects in the map should appear. Only the selected objects in the list are included in a MAP.

__ 2. Click the **Type** tab on the Object In Map field to organize the objects by Type.

__ 3. Use the vertical and horizontal scroll bars to search the index objects in the Objects In Map list.

__ 4. Select all objects (one by one) in the list to include them in a map.

__ 5. Right-click in a free space on the Map Pane in the Database Navigator window.

__ 6. Click **Zoom** and then select the **To Fit Window** option to fit the map in the window. Now you can see all the objects included in a MAP.

You can see the Object Status bar at the bottom left of the Database Navigator window as shown in Figure 20 on page 22. This displays the number of visible and eligible objects in the map. As shown in Figure 25, 68 of 68 objects in the map are available.

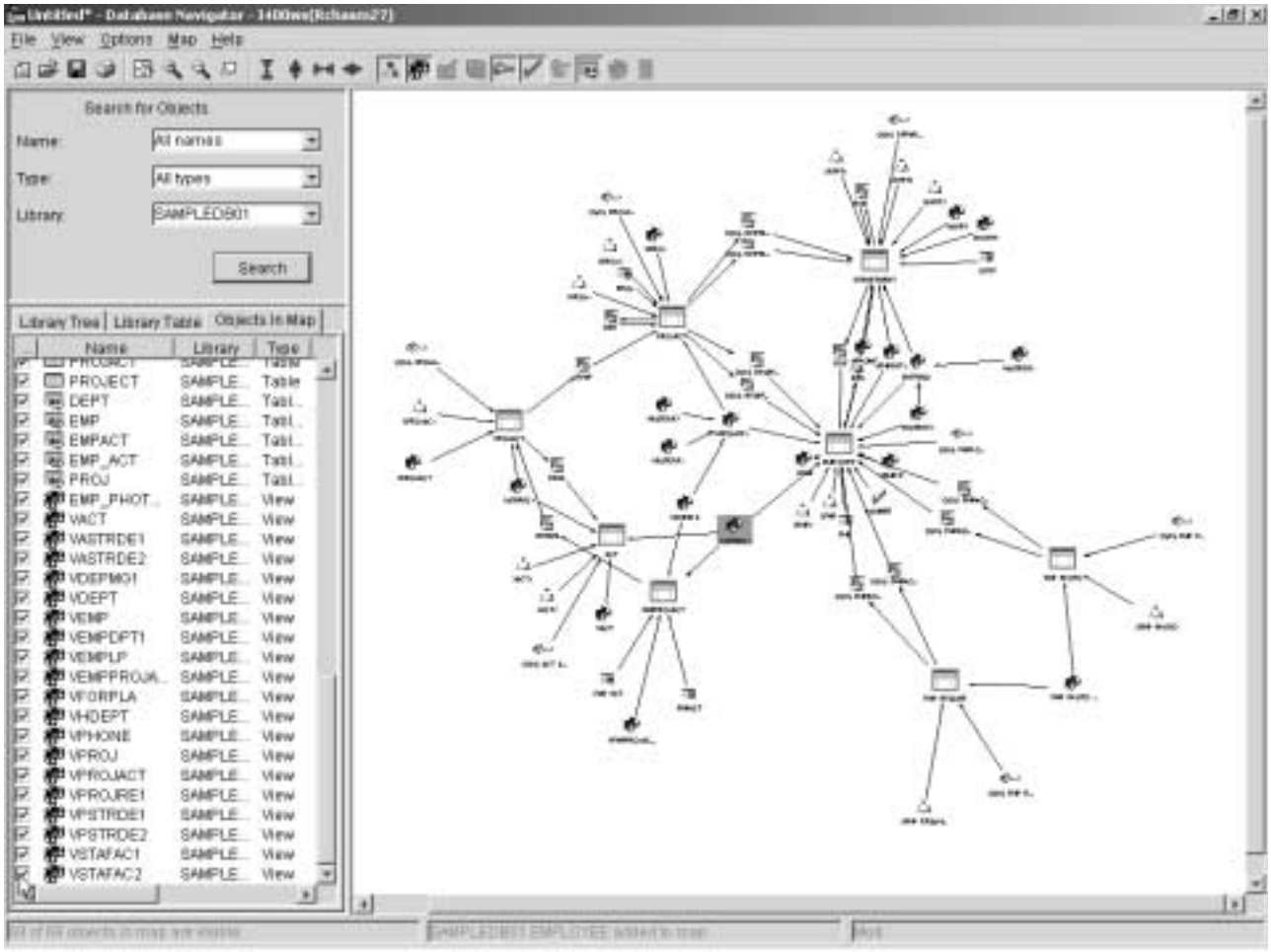

Figure 25. Including all objects in a map

Each time you select an index or another object from the Library Table, the map and the Status bar message is updated.

__ 7. Click **File** and select **Print Preview** to open a new window to preview and customize different options to print a MAP as shown in Figure 26.

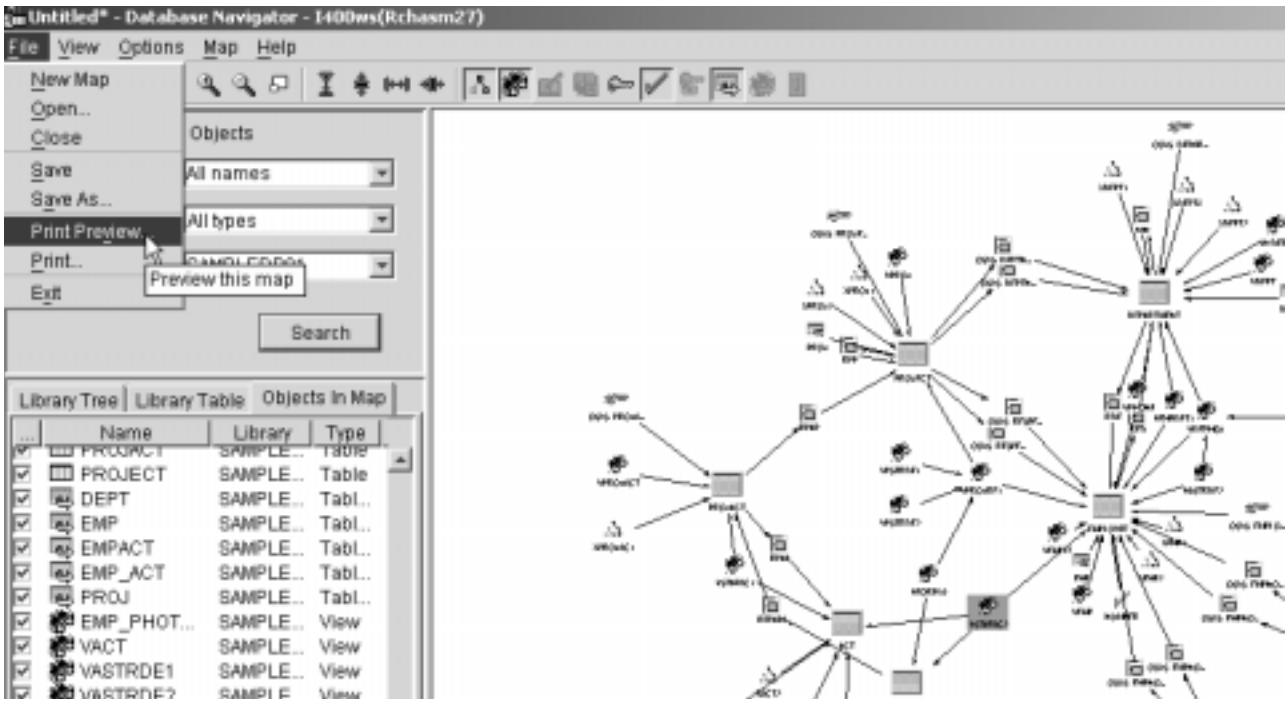

Figure 26. Selecting the Print Preview option

__ 8. Click **Print Setup** to customize the printout to be on 2 x 2 matrix (two lines by two columns).

__ 9. Select **Print Entire Graph**. On Scale Box, select **Pages** to print the output across several pages.

__ 10. In the Page Columns input field, type 2.

__ 11. In the Page Rows input field, type 2 as shown in Figure 27.

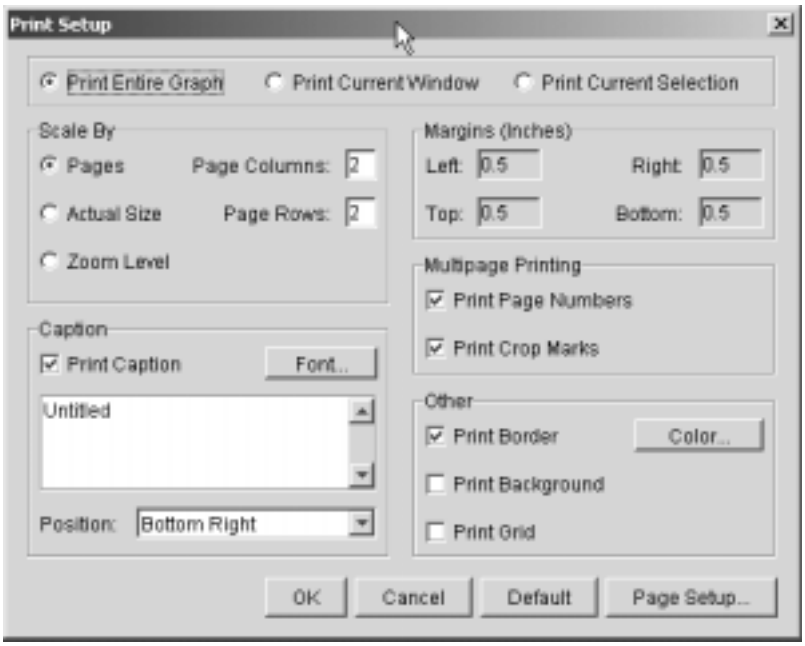

Figure 27. Printing map using Scale by Page

__ 12.Click **OK** to see your map split on a 2 by 2 matrix as shown in Figure 28.

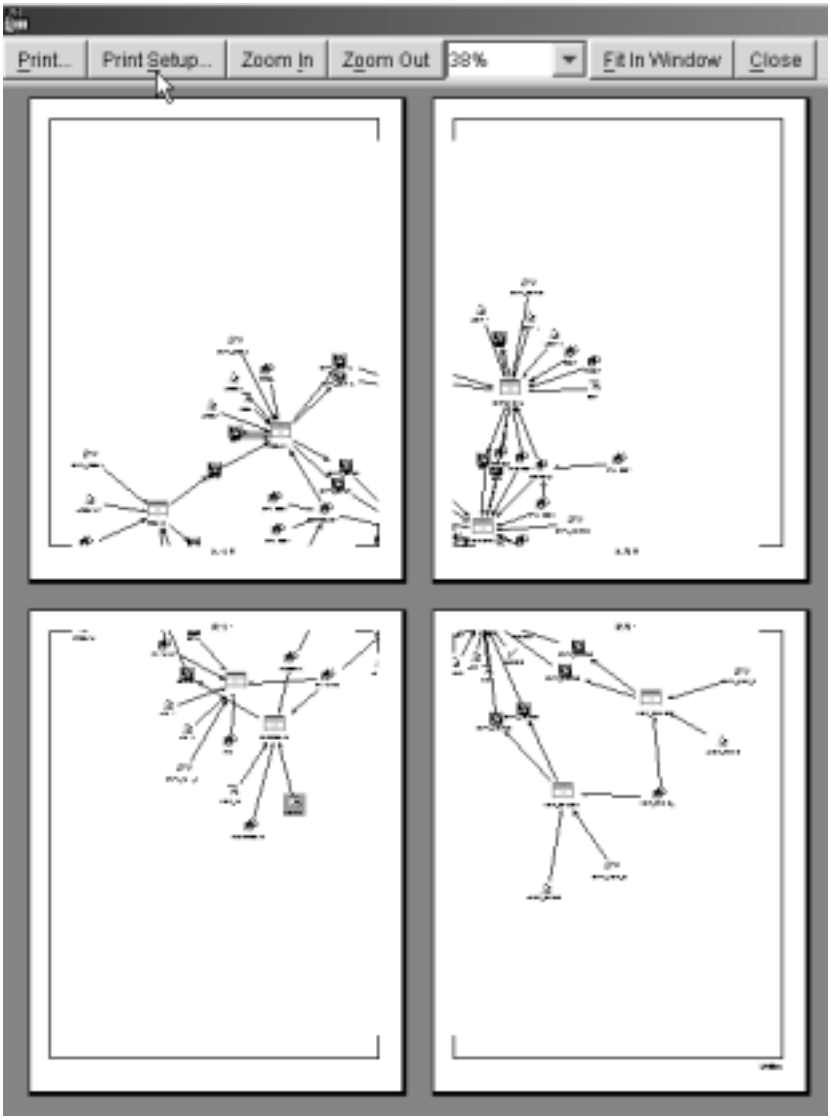

Figure 28. Printing a Map using Scale by Page

With this option, you can split your map across many pages to see the entire object in a Map.

__ 13.If a printer is available in the Lab, click the **Print** button and select the printer to print your Map. Otherwise, click **close** to return a Database Navigator Windows.

__ 14.Click **File** and select **Print Preview** to open a new window to preview. Customize the Scale by **Actual size** option to print a MAP.

__ 15.Click **Print Setup...** to customize the printout automatically based on the number objects in a map.

__ 16.Select **Print Entire Graph**. On Scale Box, select **Actual Size** to set the printout to print automatically as shown in Figure 29.

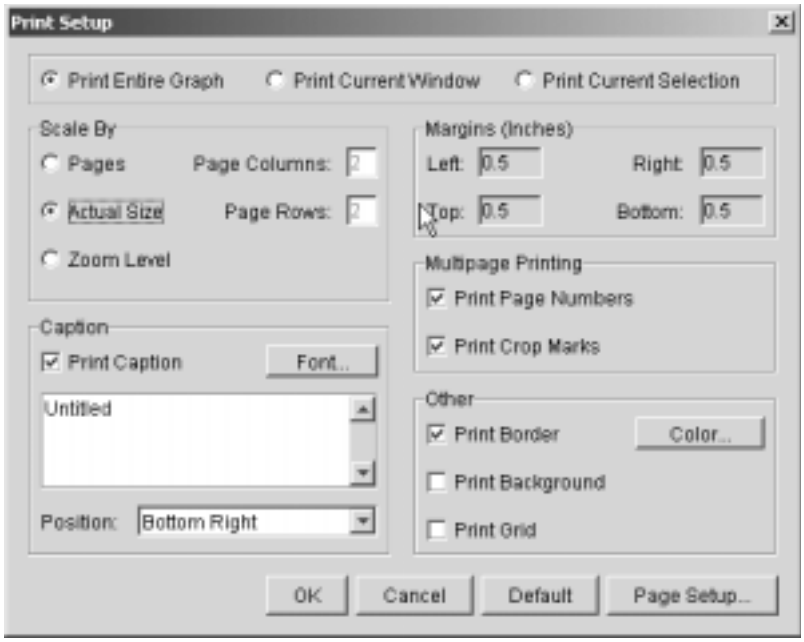

Figure 29. Printing using Actual Size Scale

__ 17. In the Caption section, replace the name *Untitled* with `Project Database MAP` (try now to enter a title for the printer map).

__ 18. Click **Position** and select **Top left** option.

__ 19. Click **Font** button to customize printout to automatically print based on the number objects in a map.

__ 20. On the Choose Font window, select the font **ScanSerif Bold** and size **18** as shown in Figure 30.

Figure 30. Choose Font window

__ 21. Click **OK** to return printer setup see your preview printing Map as shown in Figure 31.

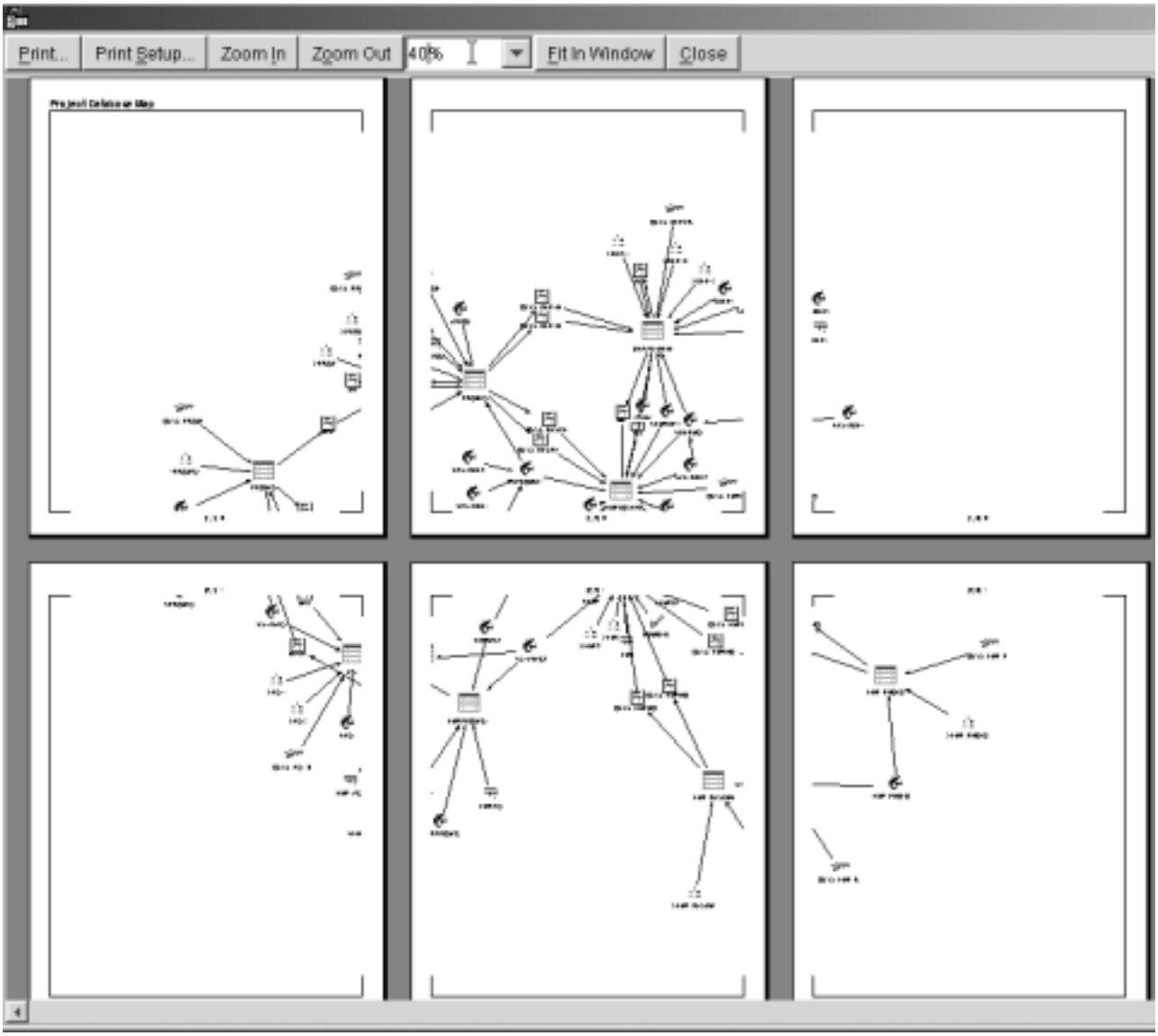

Figure 31. Printing using Actual Size scale

__ 22. If you a printer is available in the Lab, click the **Print** button. Then select the printer to print your map. Otherwise, click **close** to return to the Database Navigator window.

Note

On V5R2, the print options have been enhanced to provide different options to print MAP. This gives the user good documentation about the logical design of the database.

You have now completed this lab!

Lab 3. Changing the Database Navigator Map

The lab explains how to change a Database Navigator Map.

Introduction

This exercise teaches you how to manage a Database Navigator Map, manipulate the map, and show specific objects in the map (this includes showing you the different alternatives for including objects such as views, remove objects, change object placement, and so on). In this lab, you manipulate the map in more detail and you use a mix function from the menu bar and toolbar.

You use the SAMPLEDBXX example database. Remember, *XX* in library names, profile names, and so on refers to your team number (for example, DBNAVXX). Refer to your lab worksheet for details.

Note

In the Database Navigator Map window, there are two places from which to access map functions. You can use either the File menu or an icon from the toolbar. For a specific object, use the right-click menu. In the remaining labs, the right-click menu is used to access these functions.

Objectives

This lab teaches you how to:

- Add Views, Primary Key Constraints, etc., that exist on the iSeries server but that are not included in the Database Navigator Map
- View a different Map layouts: Symmetric (default), Circular, and hierarchic design
- Analyze a map relationship for a specific object
- Remove objects from the map
- Change object placement in the map
- Create a user-defined relationship (UDR)
- Expand and collapse tables in a map
- Save the map

Lab prerequisites

Before you begin this lab, be sure the following prerequisites are available:

- An IBM @server iSeries or AS/400 server with OS/400 V5R2, or higher, with:
  - 5722-SS1: Host Servers
  - 5722-TC1: TCP/IP Connectivity Utilities
- Client Access Express V5R2M0 with the latest Service Pack applied
- Sample Database SAMPLEDBXX created
- Sample Database Navigator Map SAMPLEDBMAPXX created

Time required

The time required to efficiently complete this lab is 30 minutes.

Task 1: Selecting the Database Navigator Map

In this task, you select the map that you want to manage:

__ 1. Click the plus (**+**) sign next to the database object to expand the different options.

__ 2. Click the **Database Navigator** to display the maps in the right panel that exist on the iSeries server as shown in Figure 32.

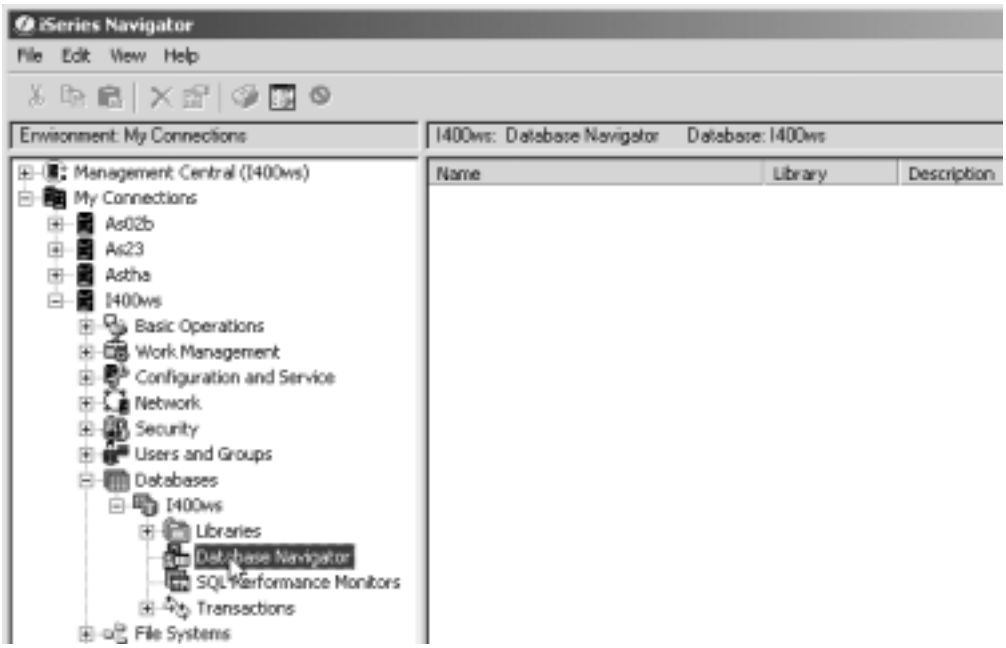

Figure 32. Opening the Database Navigator Map

__ 3. Double-click the **Database Map** that you created in Lab 2, “Database Navigator: General tasks” on page 9, to open it. If it does not appear, refresh the window.

__ 4. Click **View**. From the pull-down menu, select **Zoom-> To Fit Window** to fit all objects on the map in this window as shown in Figure 33.

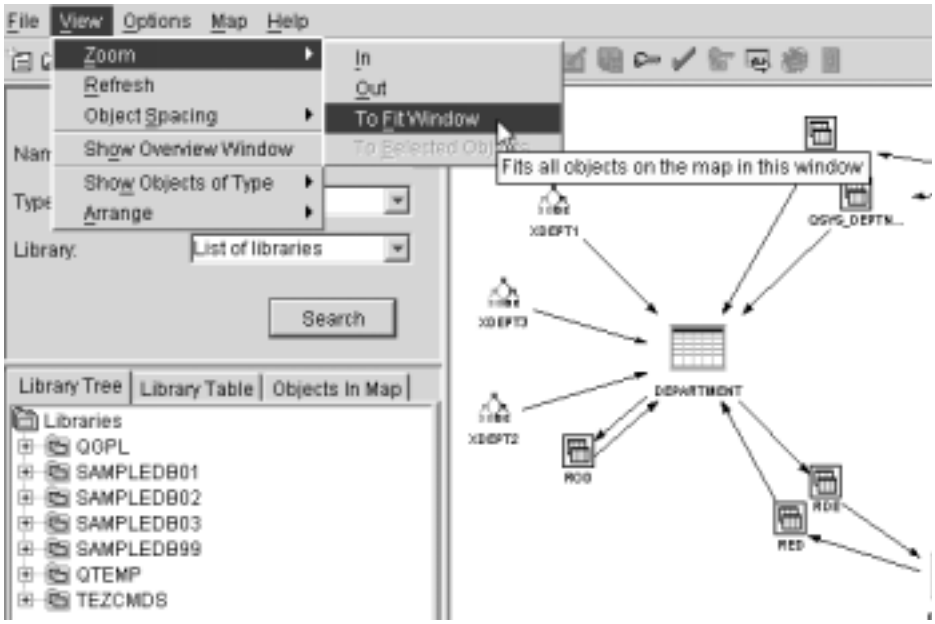

Figure 33. Fitting all objects in a map

__ 5. Use the toolbar to select the icons **Zoom In**, **Zoom Out**, and **Zoom to fit** for the object size on the map in this window as shown in Figure 34. It also shows the different options that are available on the toolbar.

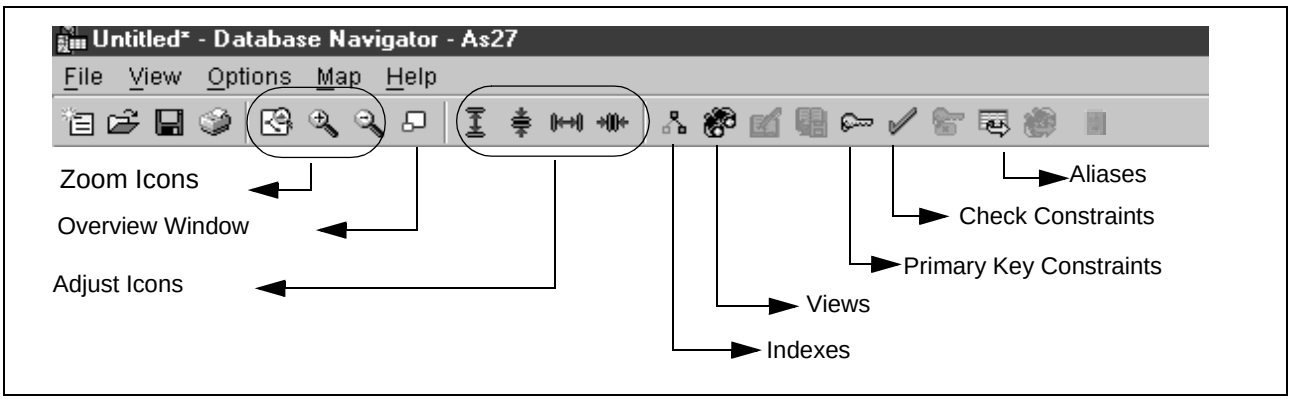

Figure 34. Toolbar options

__ 6. Use the vertical and horizontal scroll bars to navigate to the top of the map.

__ 7. You can see the Objects Status Bar in the bottom left of the Database Navigator window. This displays the number of visible objects in the map and the total found. Write the number of visible objects in the Map: _____.

Task 2: Adding views in the map

__ 1. Click **View-> Show Objects of Type-> Views** to include all Views in the map as shown in Figure 35. In the bottom left of the Database Navigator window, the Object Status Bar that was updated with the new objects included in the map appears.

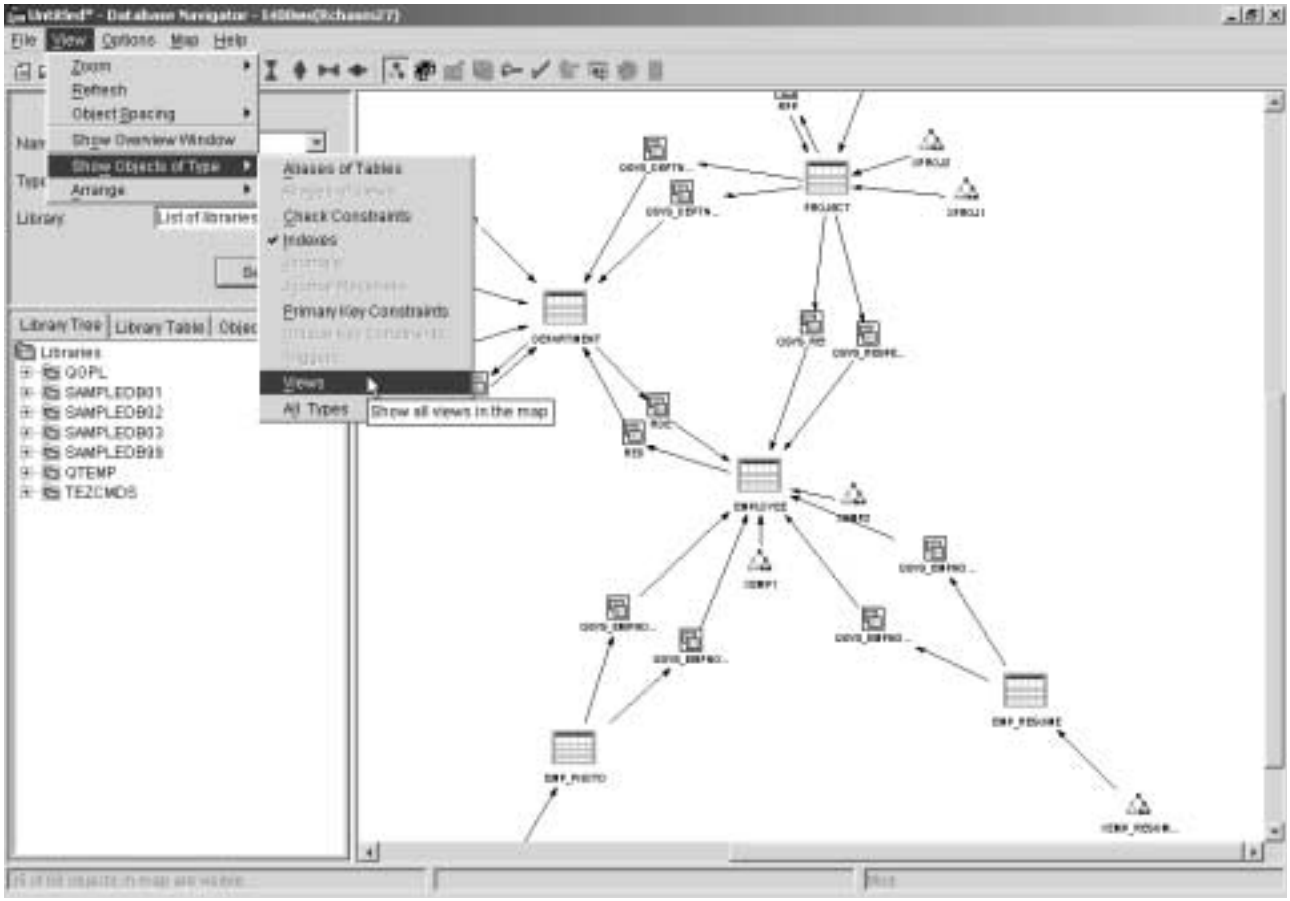

Figure 35. Selecting the Views object type to appear in the Map

__ 2. Write the number of visible objects in the Map: _____

__ 3. Use the toolbar to select the **Zoom** icons (including Zoom in, Zoom Out and Zoom to fit Window) to fit all objects on the map in this window.

__ 4. Use the vertical and horizontal scroll bars to navigate to the top of the map as shown in Figure 36.

You can change the zoom level of the Database Navigator Map to manage how much of the map you can see in the map pane on the Database Navigator window.

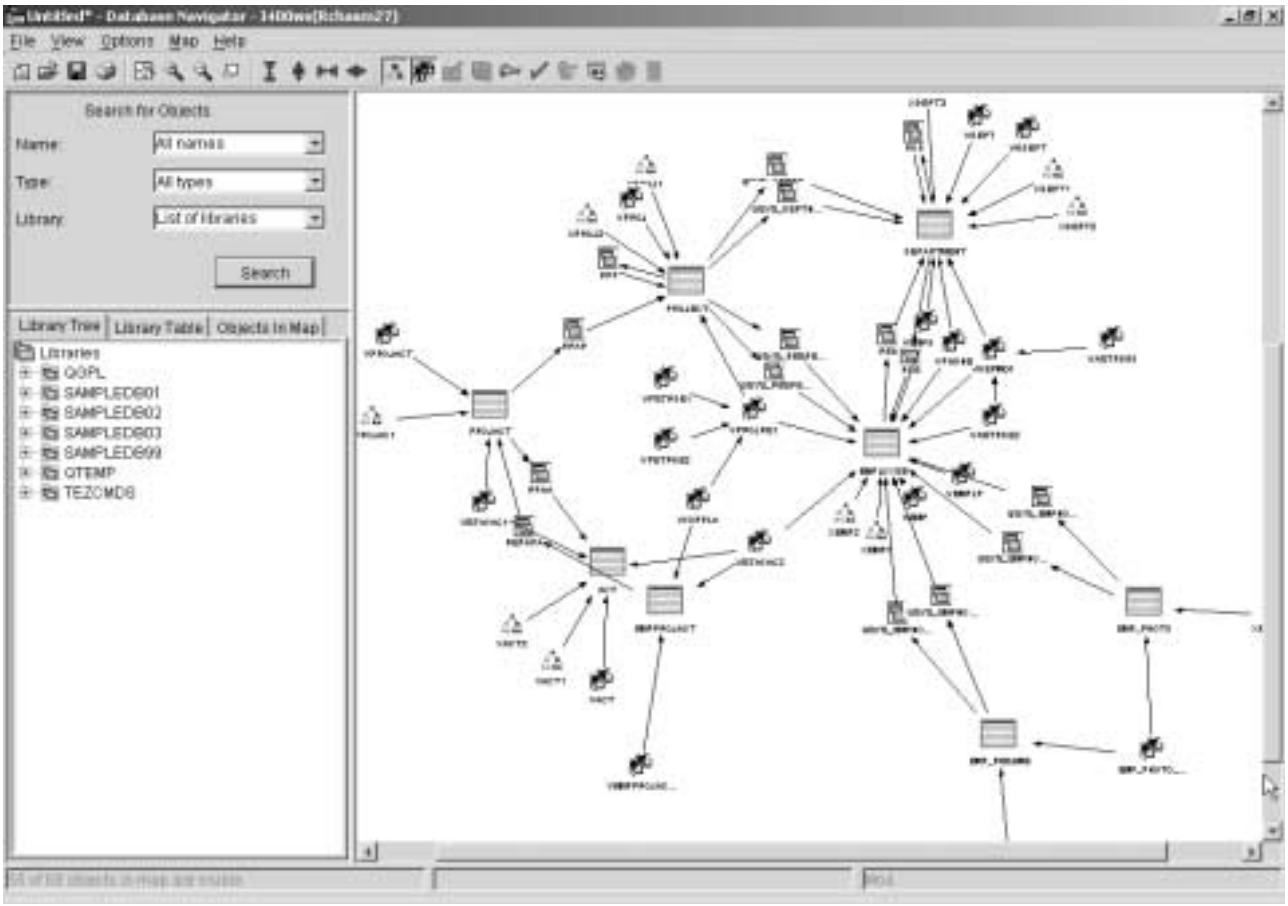

Figure 36. Using scroll bars to navigate to the top of the map

Task 3: Showing the relationships of a specific object

__ 1. Use the criteria selection in the locator pane to select only your SAMPLEDBXX library. Click the **Library** parameter and select your **SAMPLEDBXX** library.

__ 2. Click the **Search** button.

__ 3. Click the plus (**+**) sign next your **SAMPLEDBXX** database to expand the objects for Tables, Indexes, and Views.

__ 4. Click the (**+**) sign next to the **Tables** database object to expand it.

__ 5. Double-click the **PROJECT** table from the list of tables to find this table in a map.

__ 6. Click the zoom icons (**Zoom in**, **Zoom Out**, and **Zoom to fit window**) in the toolbar to focus the PROJECT table in the map pane.

__ 7. Use the vertical and horizontal scroll bars to navigate and focus on every relationship object of the PROJECT table as shown in Figure 37.

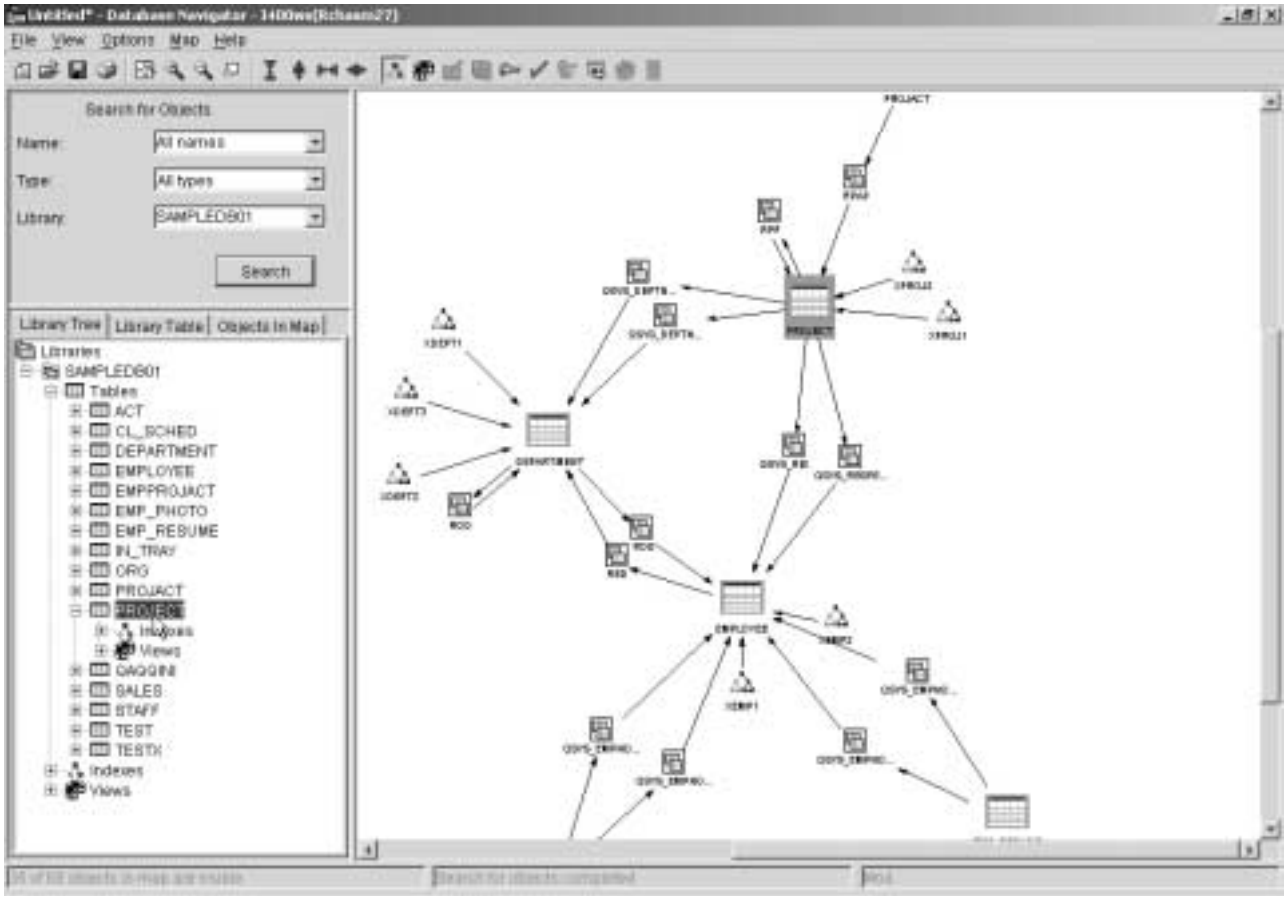

Figure 37. Fitting the object in a map

__ 8. Place the cursor over every relationship to view a brief description (Object Name and Type of Relationship) and fill in Table 1 with all the relationships of the Project table.

Table 1. Relationship objects

Original table	Relationship object name	Type of relationship
Project		

Task 4: Removing objects from the map using the toolbar

__ 1. Click the **Index** and **Views** icons on the toolbar to remove indexes and views from the map as shown in Figure 38.

__ 2. Click the zoom icons (**Zoom in**, **Zoom Out**, and **Zoom to fit window**) from the toolbar to fit the objects in a Database Navigator window.

__ 3. Use the vertical and horizontal scroll bars to navigate to the top of the map on the Database Navigator window.

__ 4. Write the number of visible object in the Map: _____

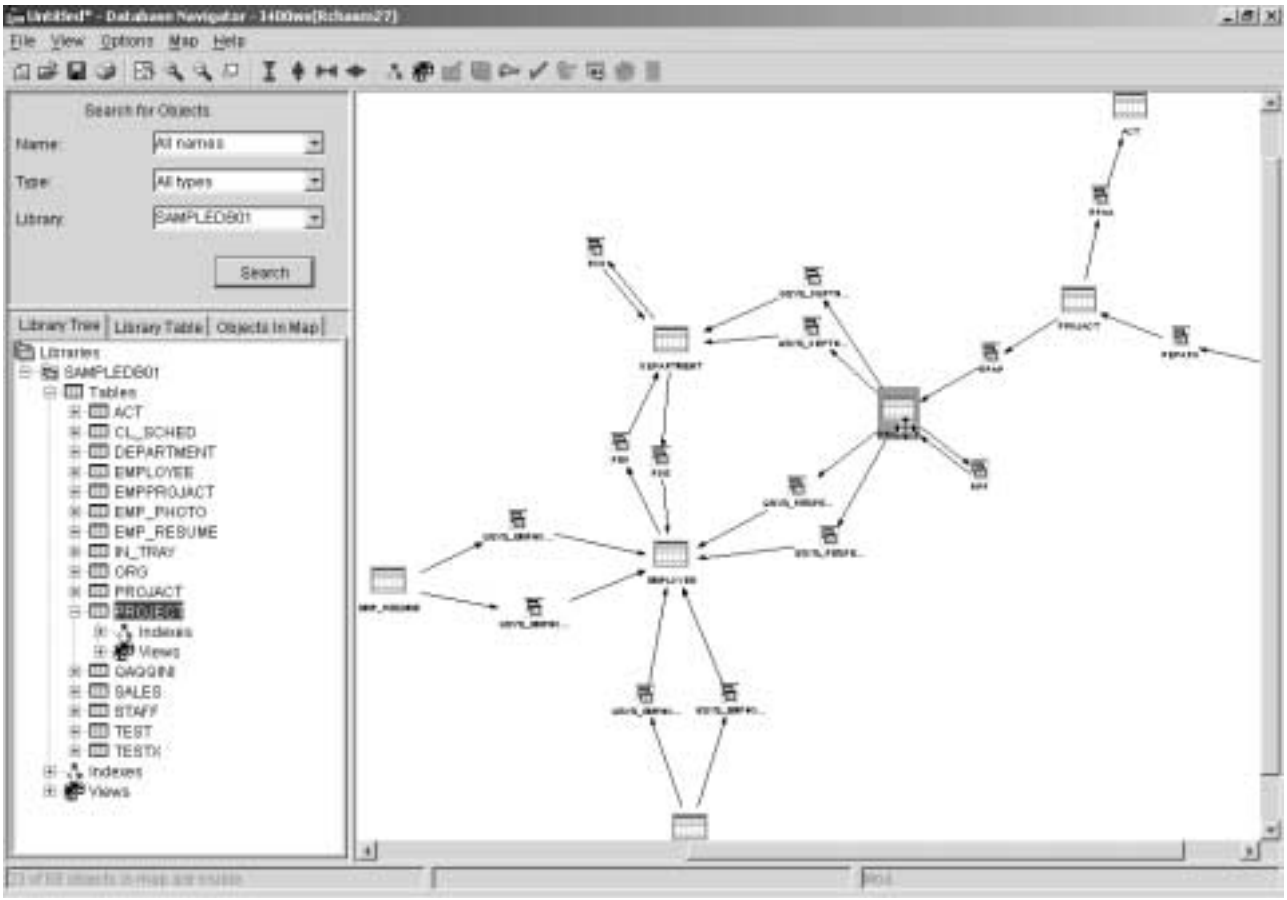

Figure 38. Removing objects from the map

__ 5. Click **File-> Save** to save the changes in the map.

Task 5: Changing object placement and arranging objects in a map

In this task, you learn how to arrange and move objects in the map. You also learn how to remove the bends that appear on the relationship lines after the object is moved to the new location.

__ 1. Double-click the **EMPLOYEE** table from the list of tables to find this table in the map.

__ 2. Click the zoom icon options in the toolbar to see all of the objects in the map pane.

__ 3. Use the vertical and horizontal scroll bars to navigate on the Map on the Database Navigator Windows.

__ 4. Drag-and-drop the **EMPLOYEE** table to the left as shown in Figure 39.

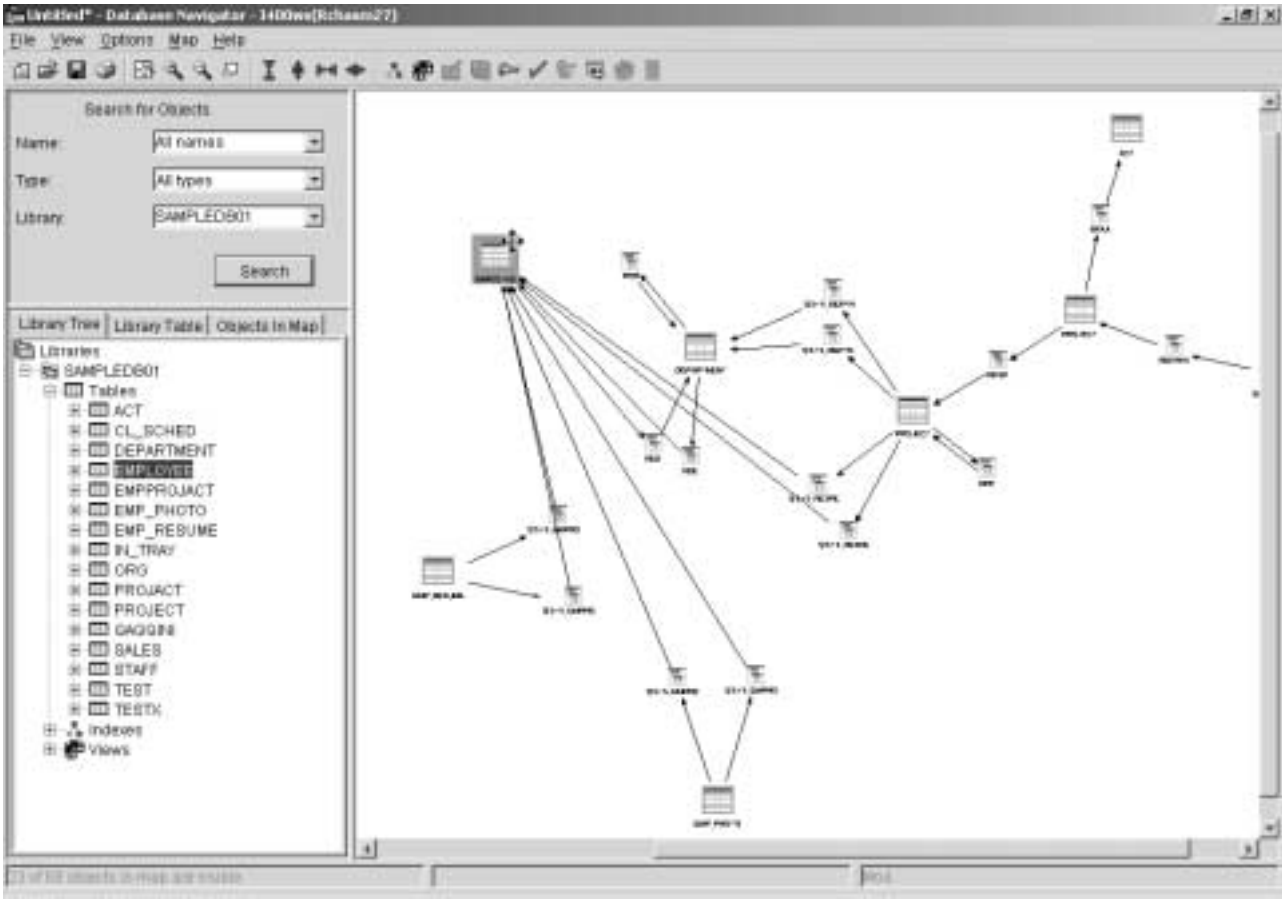

Figure 39. Changing object placement

__ 5. Repeat steps 2, 3, and 4 to move the DEPARTMENT table to the right.

A window similar to the example in Figure 40 appears.

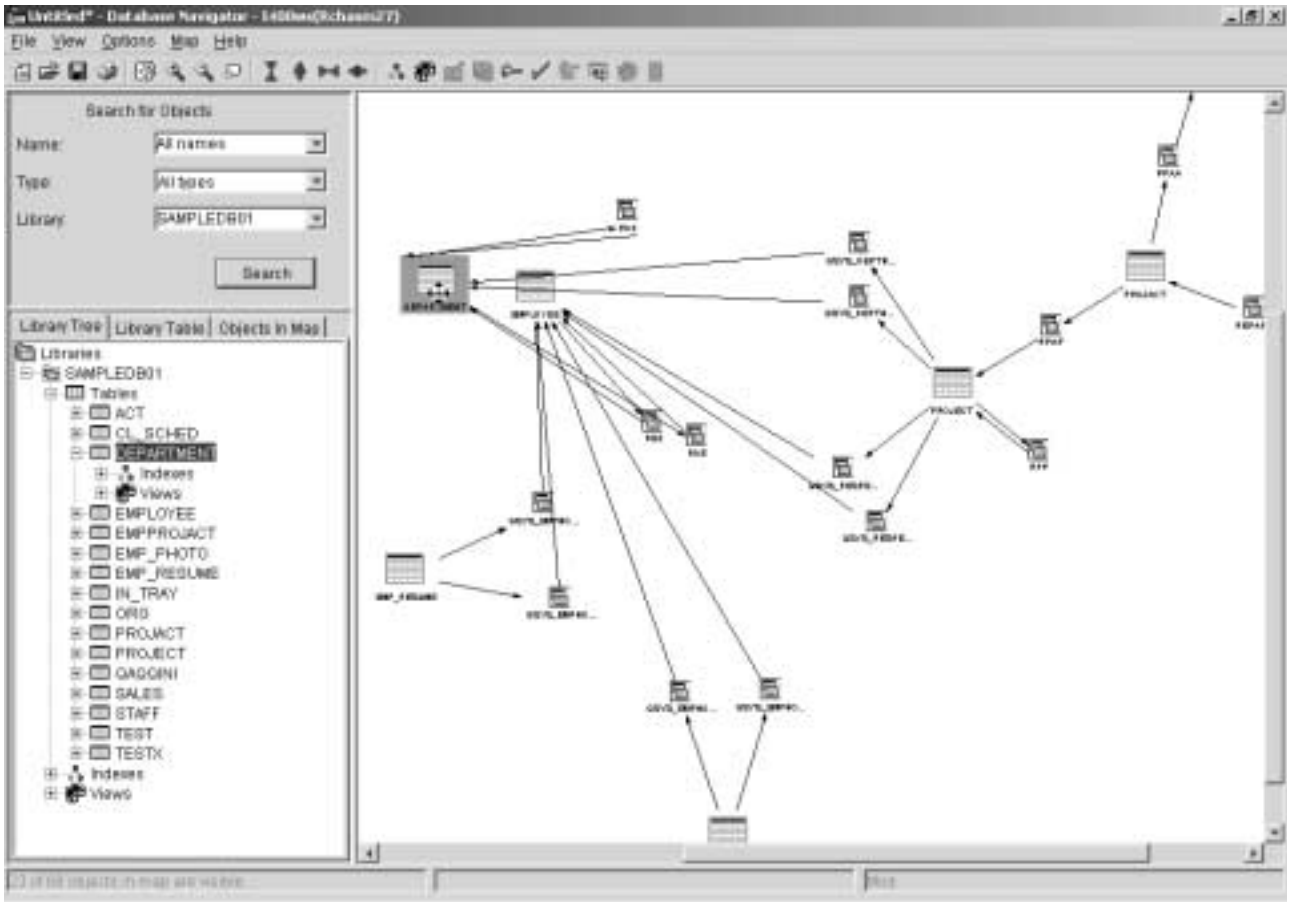

Figure 40. Moving the Department object in a map

When objects are moved or added to a map, you usually use the Arrange function to reorganize the Map in Map Pane.

Arrange option

The arrange option was enhancement in V5R2 to provide additional Map layout: *Circular*, *Hierarchic*, and *Symmetric* (default). The Arrange layout option puts the map in the Default state.

__ 6. Right-click in a free space on the map pane in the Database Navigator window. The Arrange function appears.

__ 7. Select **Arrange** to chose the Symmetric (default) option to put the Map in its original state as shown in Figure 41.

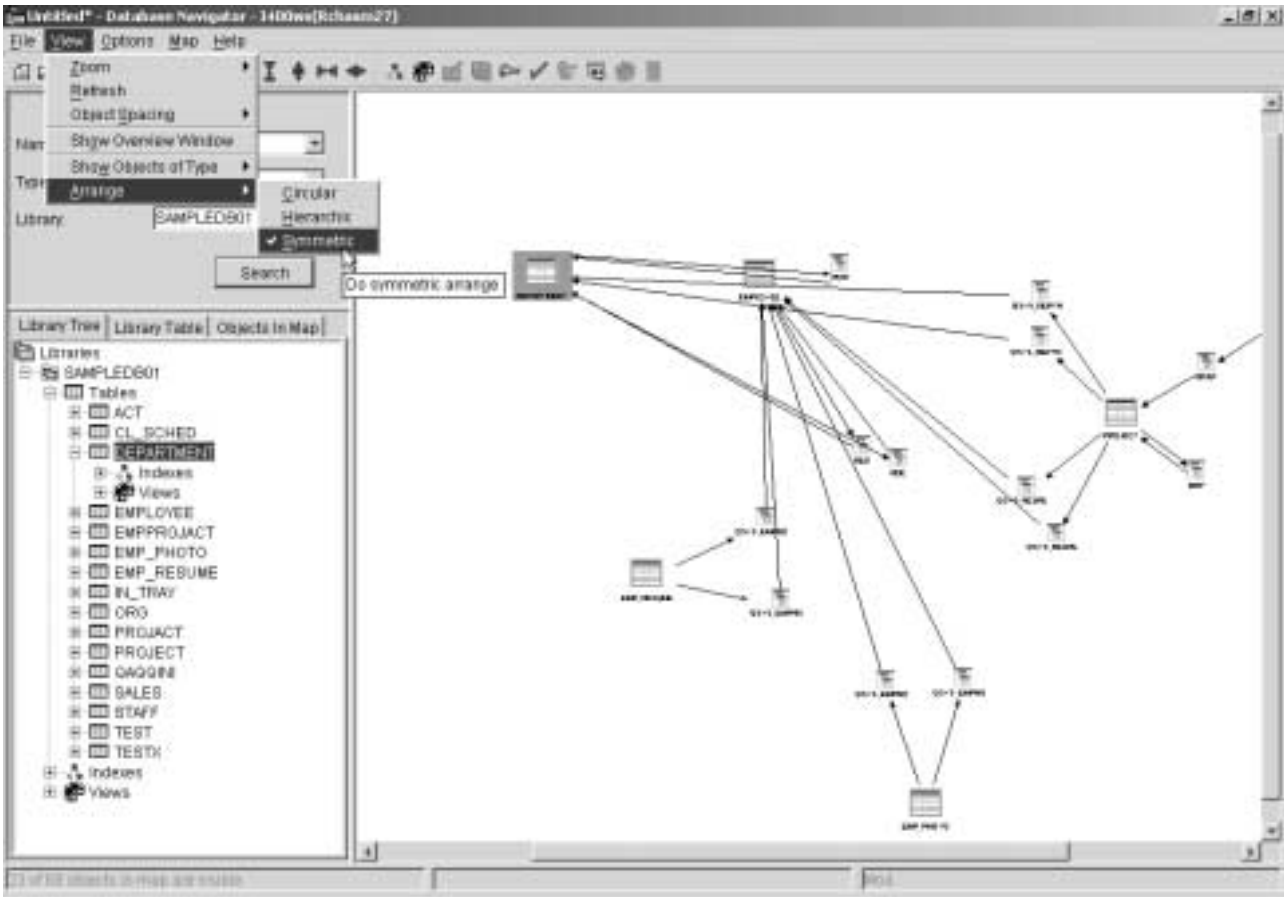

Figure 41. Selecting the Symmetric layout option

__ 8. Use the icons in the toolbar in the Database Navigator windows to include the Indexes, Views, and Primary Key Constrained to gain a good view of different layout Maps.

__ 9. Click the zoom icons (**Zoom in**, **Zoom Out**, and **Zoom to fit window**) from the toolbar to fit the objects in a Database Navigator window.

__ 10. Use the scroll bar to go to the top of the map. You can see the Symmetric (Default) layout as shown in Figure 42.

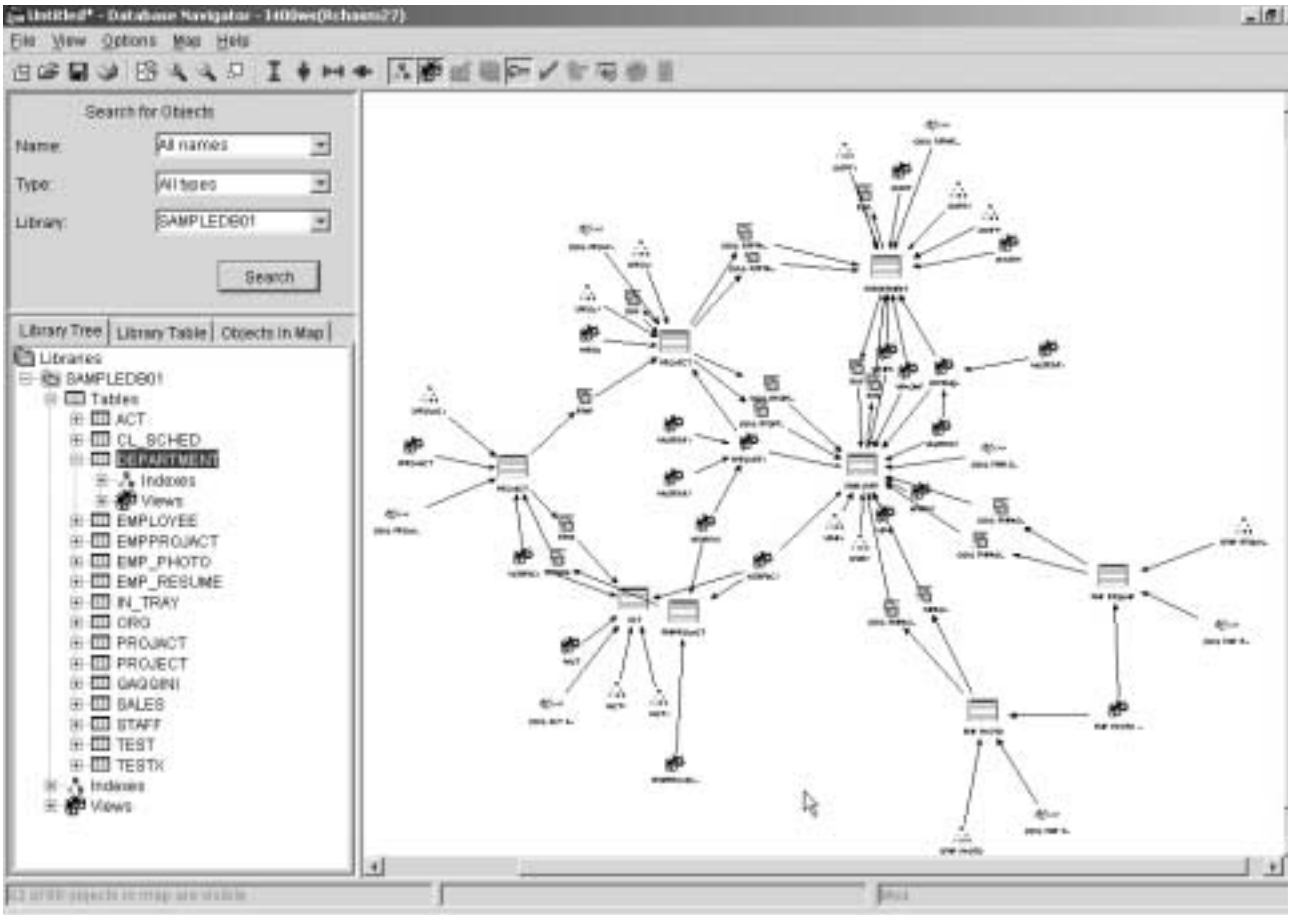

Figure 42. Symmetric (Default) layout or the map

__ 11. Right-click in a free space on the **Map Pane** in the Database Navigator windows.

__ 12. Select **Arrange** and then select the **Circular** option to see the Circular layout as shown in Figure 43.

__ 13. Repeat steps 11 and 12 to see the *Hierarchic* layout map and then return to the Symmetric (Default) layout.

__ 14. Use the icons in the toolbar in the Database Navigator windows to remove the Indexes, Views, and Primary Key Constrained.

__ 15. Click **File-> Save** to save the changes in the map.

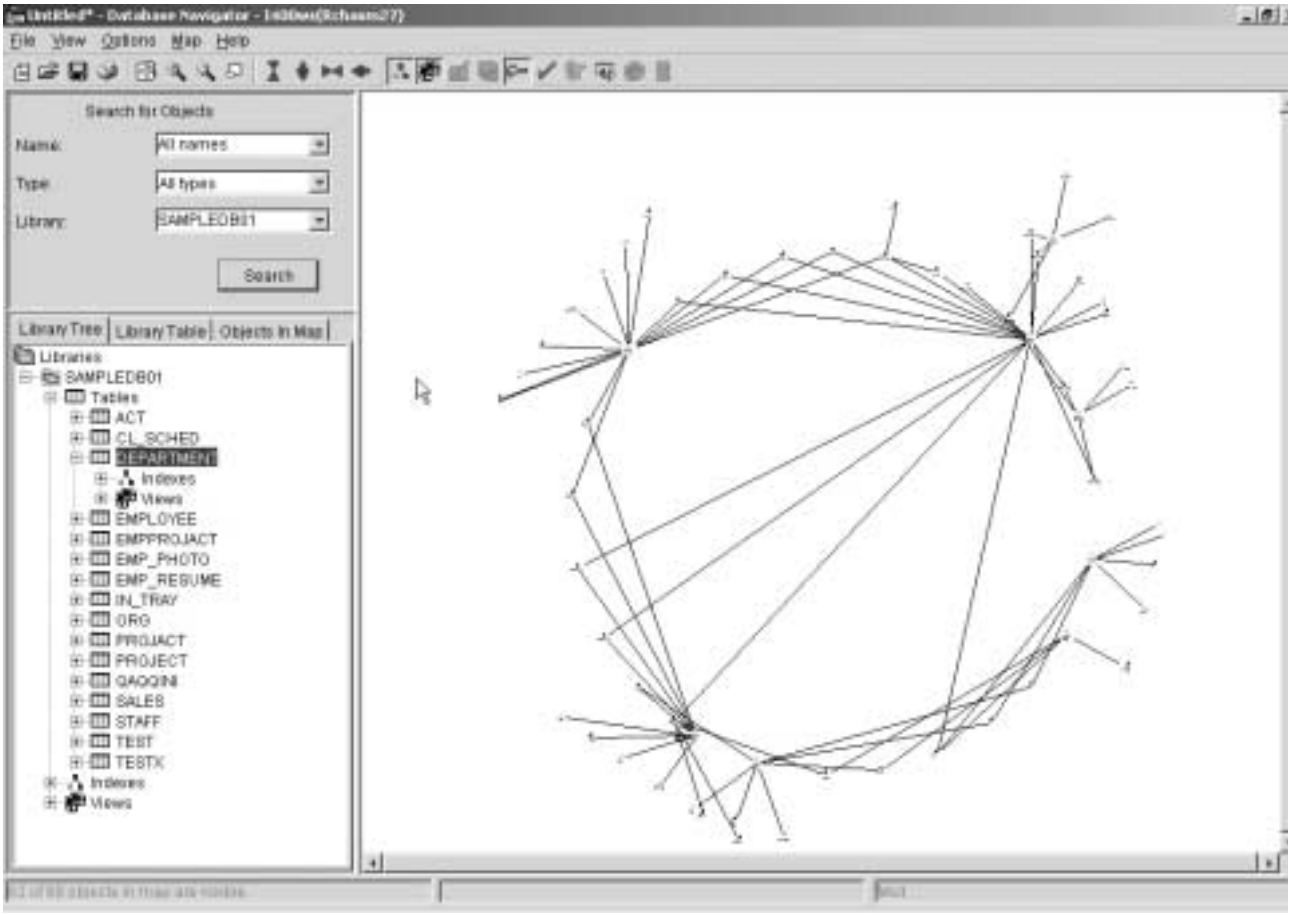

Figure 43. Circular layout of the map

Task 6: Expanding and collapsing a table object

This task shows you how to expand a table icon in your Database Navigator Map. This allows you to view essential data about the table. The data that appears in the expanded table is a subset of the data you can see in Table Properties.

__ 1. Double-click the **PROJACT** table from the list of tables to find this table in the map.

__ 2. Click the **Zoom Icons** in the toolbar to see all the objects in the map pane.

__ 3. Right-click the **PROJACT** table on the Database Navigator window and select **Expand** as shown in Figure 44.

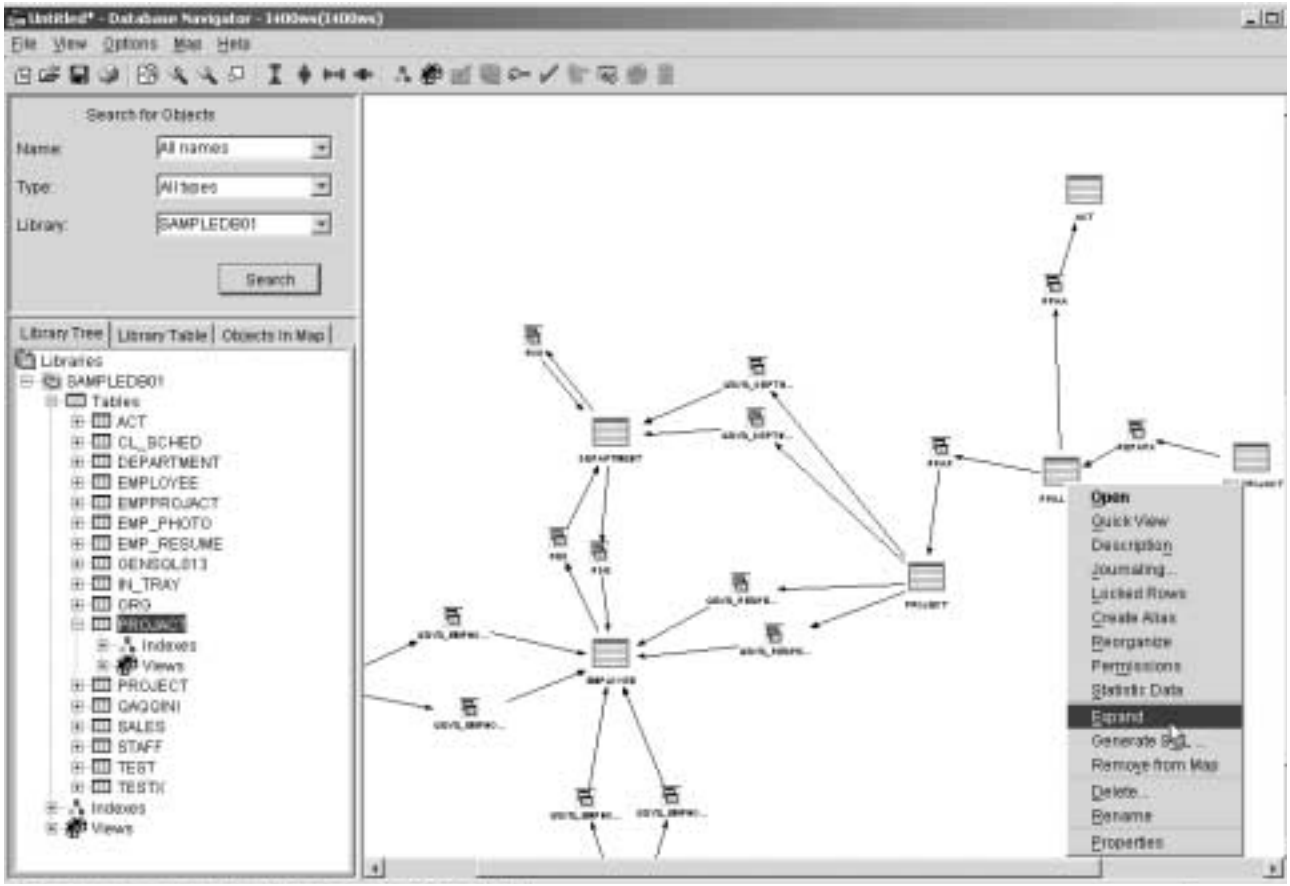

Figure 44. Selecting the Expand table option in a map

__ 4. Resize the **PROJACT** table to increase the size as shown in Figure 45.

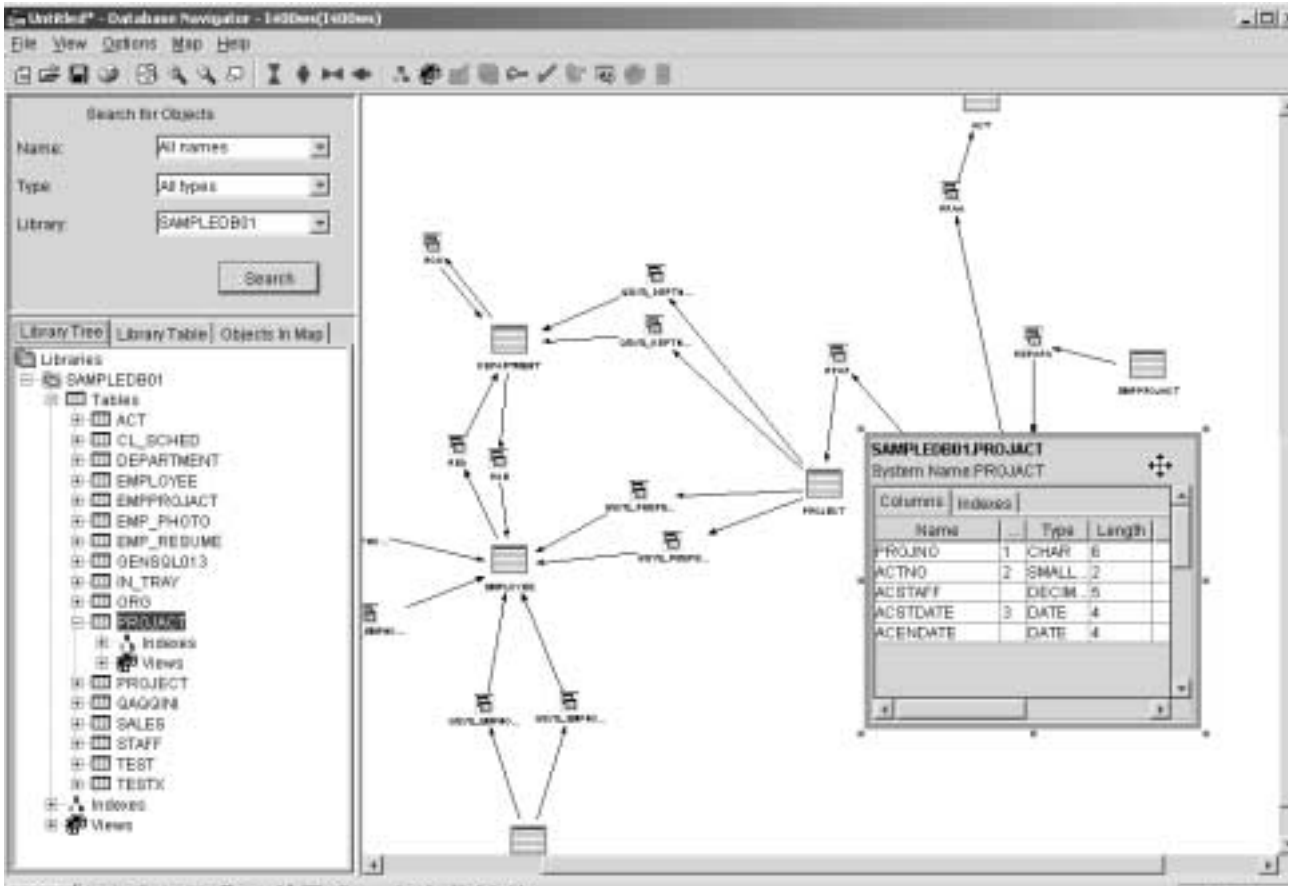

Figure 45. Expanding the table in a map

__ 5. Click the **Columns** tab on the table.

__ 6. Use the cursor to widen the header of the second column on the column table. This column contains the fields that comprise the primary key (if any) for this table.

__ 7. Fill in Table 2, in the correct order, with the columns that have a primary key on them.

__ 8. Click the **Indexes** tab on the table.

__ 9. Use the vertical and horizontal scroll bars to view the Indexes.

__ 10. Enter the Index Name in the following field and, in the correct order, fill in Table 2 with the columns that include an index.

Index Name: _____

Table 2. Primary Key and Indexes

Table	Primary key columns	Index columns
PROJACT		

__ 11. Right-click the **PROJACT** table and select the **Collapse** function to compress the table to its original size in the map (iconify the table) as shown in Figure 46.

__ 12. Click **File-> Save** to save the changes in the map.

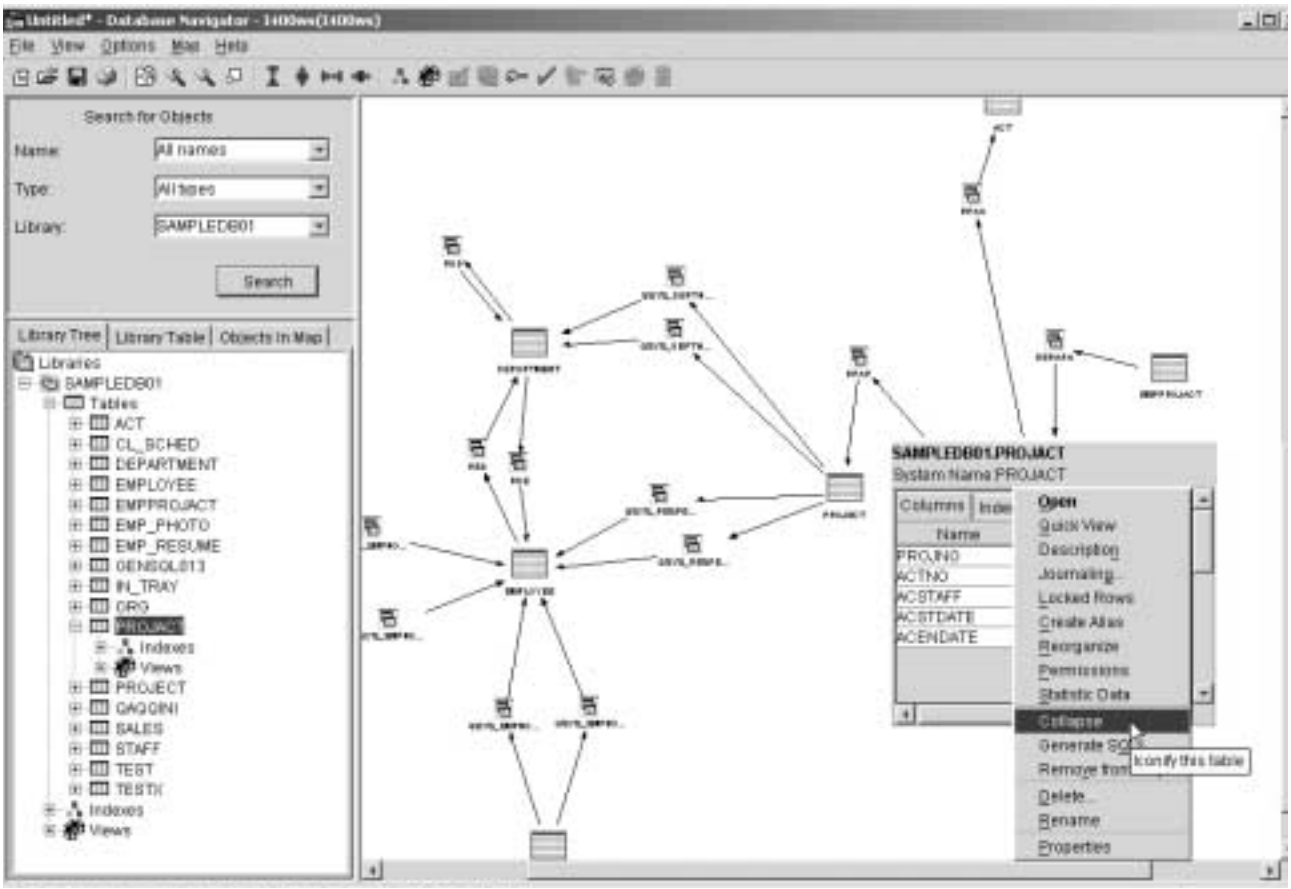

Figure 46. Collapsing the table in the map

You can now see the entire map in the Database Navigator window.

Task 7: Creating a user-defined relationship (UDR)

In this task, you to create a user-defined relationship in a map.

User-defined relationship

When you have a relationship that is defined by your program, you can create a user-defined relationship. An example of this is when the referential integrity is controlled by the application and is not defined in the database.

__ 1. Right-click in a free space on the map pane in the Database Navigator window. Select the **Create** function as shown in Figure 47.

__ 2. Select **Create-> User Defined Relationship** to create the new object (UDR).

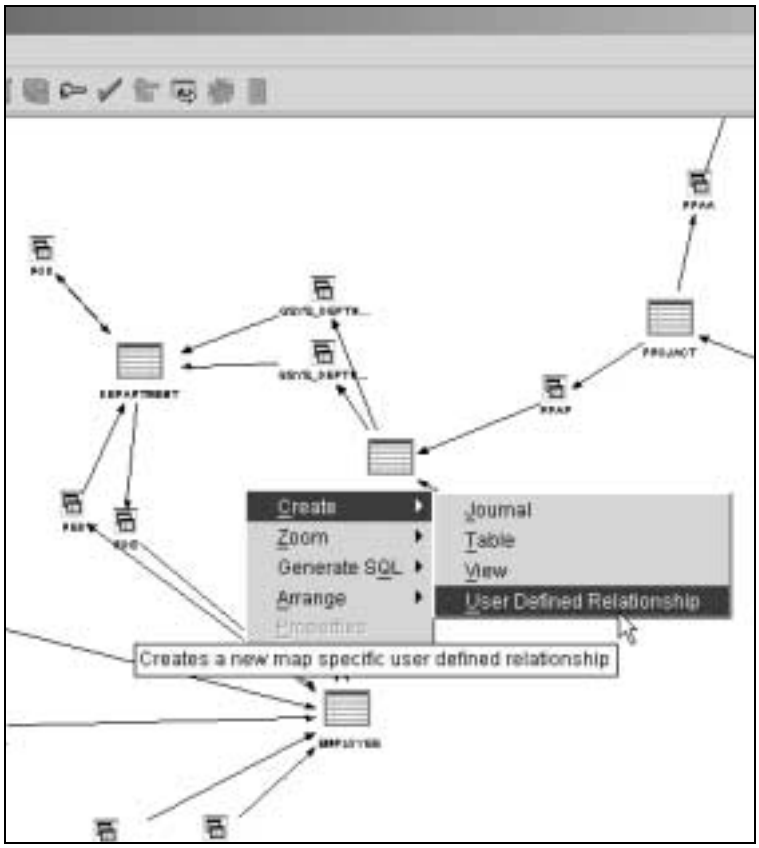

Figure 47. Selecting the function to create a User Defined Relationship

__ 3. In the Name input field, type `SAMPLEUDRXX`. In the Description field, type `'UDR created by DBNAVXX'` as shown in Figure 48.

> **Important**
>
> It is important to provide a meaningful description for your user-defined relationship since it is the only way for you to indicate what the user-defined relationship represents.

__ 4. Click **Type** on the Select Object in Relationship to organize the objects by type.

__ 5. Select the **PROJECT** and **DEPARTMENT** tables from the list of objects.

__ 6. Select **Square** for Shape and **Blue** for Color for this relationship.

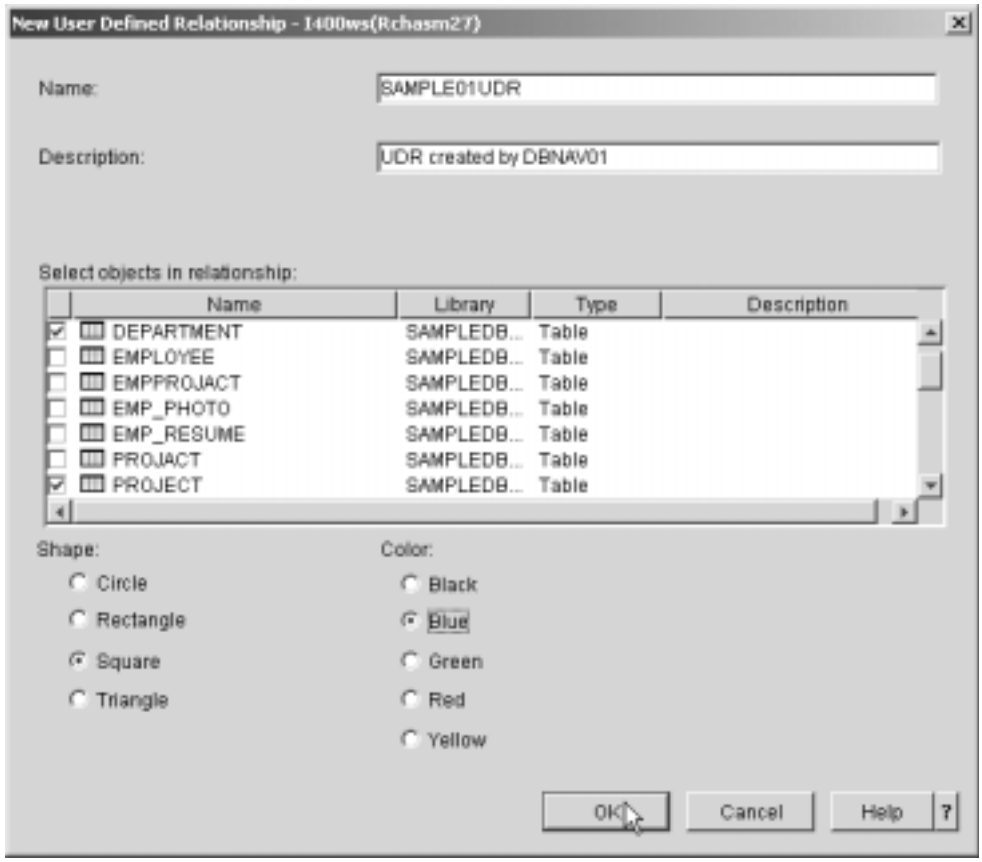

Figure 48. Creating a user-defined relationship

__ 7. Click **OK** to create the user-defined relationship and return to the map.

__ 8. Click the zoom icons in the toolbar to see all the objects in the map pane (Figure 49).

__ 9. Click **File-> Save** to save the changes in the map.

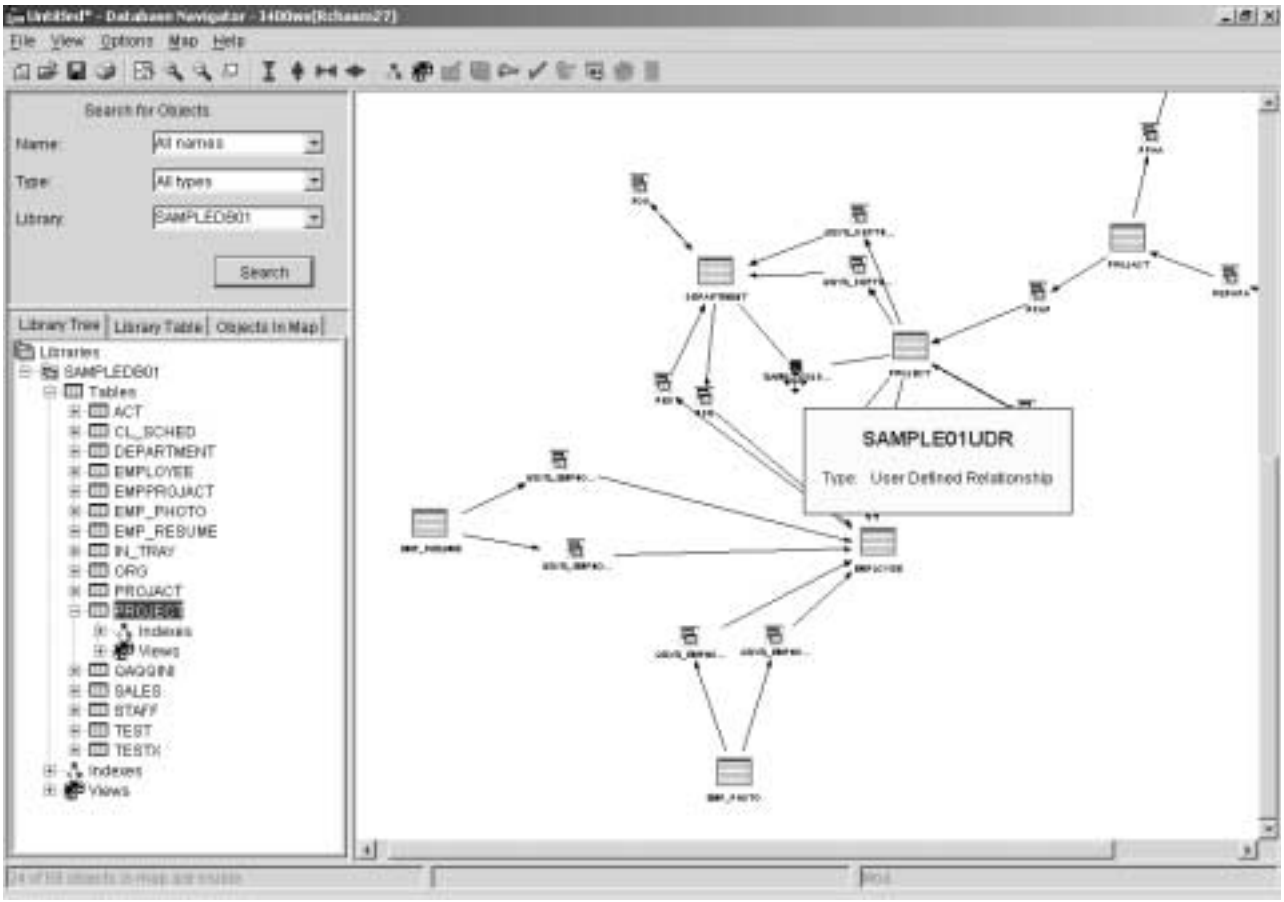

Figure 49. The user-defined relationship in a map

Task 8: Overview window function

The Overview window is a small window that shows the map on a reduced scale. It has a highlighted area that represents the parts of the image that are currently displayed in the main window.

In the Overview window, you can move to specific areas of the map by right-clicking the highlighted area and moving the highlighted area to the area you want to view.

This task shows you to how to view the map in the Overview window and invoke the both function from the toolbar and the view menu. You add the Indexes, Views, Primary Key Constraints, and Check Constraints to gain a better idea of how this function is useful.

__ 1. Use the icons in the toolbar in the Database Navigator window to include the Indexes, Views, Primary Key Constraints, and Check Constraints.

__ 2. Click the zoom icons in the toolbar to see all the objects in the map pane.

__ 3. Use the scroll bar to go to the top of the map as shown in Figure 50.

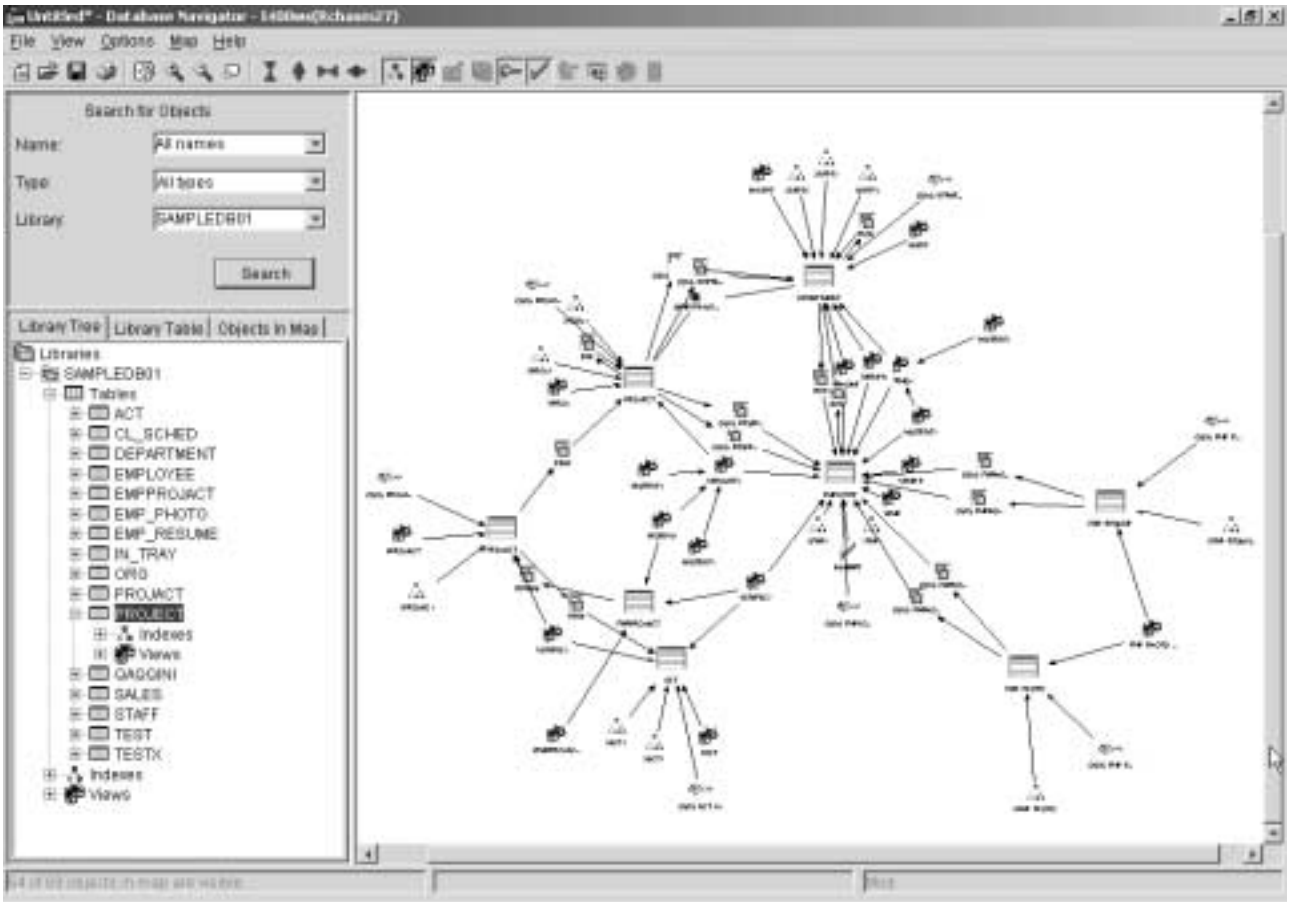

Figure 50. Adding objects in the map

__ 4. Click the **Show Overview Window** icon in the toolbar to open the Overview window as shown in Figure 51.

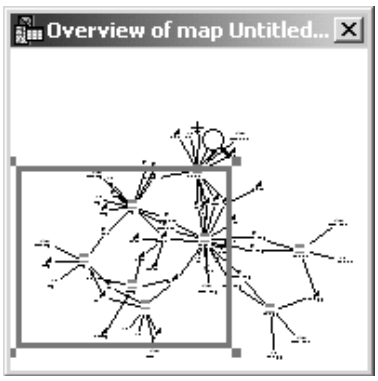

Figure 51. Overview window

__ 5. Click the highlighted area and move the blue box to the right of the Overview window as shown in Figure 52.

Figure 52. Moving the Overview window

The map pane should include a highlighted part of the map on the Overview window as shown in Figure 53.

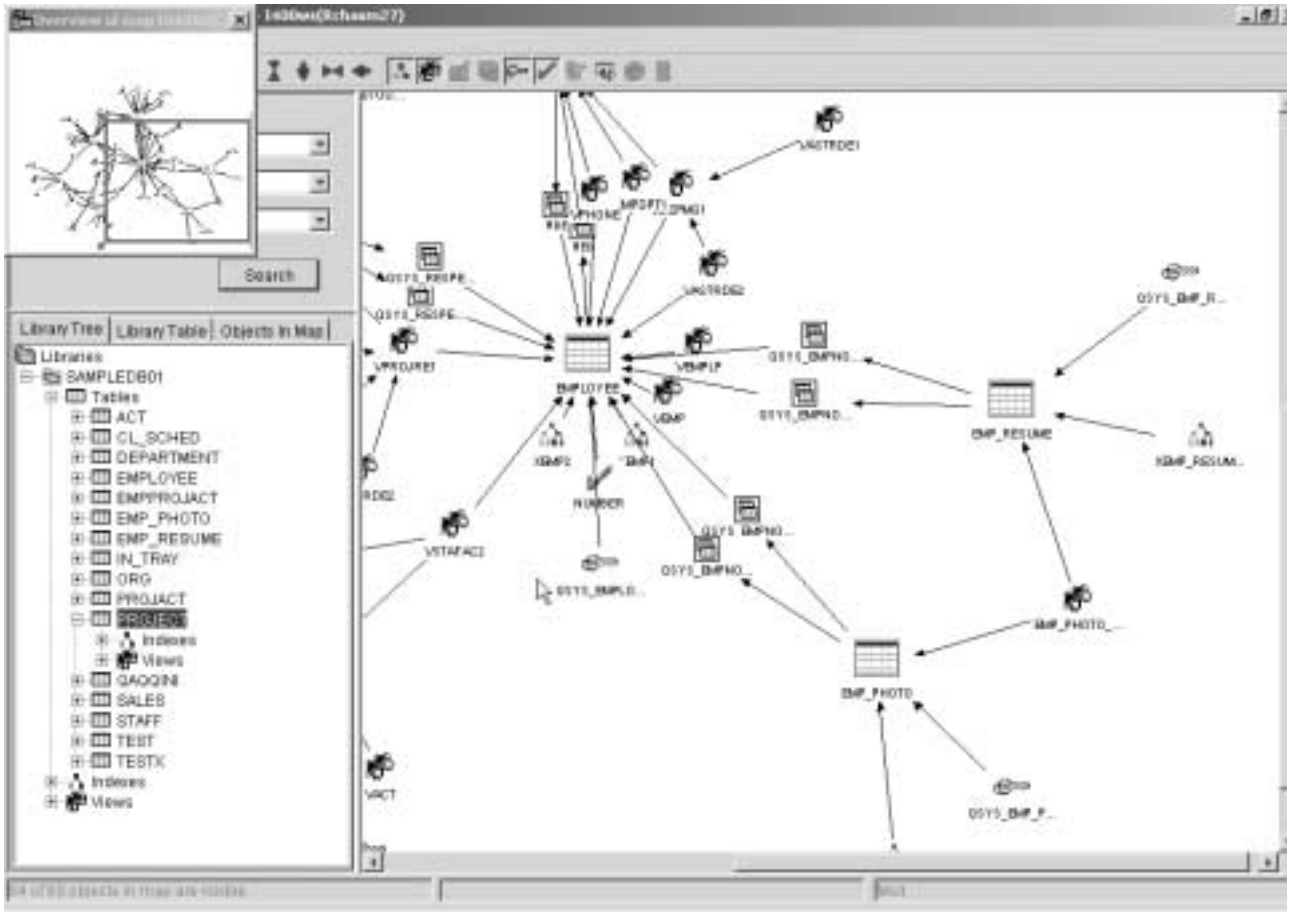

Figure 53. A map using the Overview window

The Overview window contains all of the objects in the map. You can move to specific areas of the map by moving the highlighted area to the area you want to view. In addition, you can reduce or widen the highlighted area to include a specific area.

__ 6. Close the Overview window and the Database Navigator window.

You have now completed this lab!

Lab 4. Generating SQL using iSeries Navigator

This lab explains how to generate the SQL statements from existing database objects via iSeries Navigator. This process is often referred to as *Reverse Engineering*.

The notation *XX* that appears in library names, profile names, directories in your PC, and so on refers to your team number.

Objectives

This lab teaches you how to:

- Generate SQL statements from a map
- Generate SQL statements from an object in a Library
- Save the SQL Script in a Database Source File and PC file

Lab prerequisites

Before you begin this lab, be sure the following prerequisites are available:

- An IBM @server iSeries or AS/400 server with OS/400 V5R2, or higher, with:
  - 5722-SS1: Host Servers
  - 5722-TC1: TCP/IP Connectivity Utilities
- Client Access Express, V5R2M0, with the latest Service Pack applied
- You must have completed *Lab 1, “iSeries Navigator setup” on page 1*, before generating the *SAMPLEDBXX* sample database.
- You must have completed Lab 2, “Database Navigator: General tasks” on page 9, to generate the *SAMPLEDBMAPXX* map used in this lab.
- You must have completed Lab 3, “Changing the Database Navigator Map” on page 33, to obtain the necessary skills.
- The DDSLIBXX library must be available because it contains the physical and logical files created with DDS.

Time required

The time required to efficiently complete this lab is 60 minutes.

Introduction

The new Generate SQL function for iSeries Navigator provides a GUI interface that allows you to reverse engineer several types of database objects. The results are SQL create statements (often referred as *DDL statements*).

After you select one or more objects to be reverse engineered, you have the option to view the resulting SQL in the Run SQL Scripts Dialog. Or, it can be saved to a file on the PC or a Source physical file on the iSeries server.

The new Generate SQL Database Object supports the following objects:

- Aliases
- Distinct types
- Functions
- Indexes

- Procedures
- Schemas (Collections) and libraries
- Tables and Physical files
- Views and logical files

Task 1: Generating SQL from the library in the iSeries Navigator window

In this task, you learn how to invoke the Generate SQL option from your SAMPLEDBXX library in the iSeries Navigator window to generate the SQL DDL statement for some objects:

__ 1. Start iSeries Navigator and expand **Database-> I400WS-> Libraries**.

You should see the SAMPLEDBXX library in the active library list under the Libraries icon. If not, add it by right-clicking **Libraries** and select **Select Libraries to Display**. Refer to Task 3, ”Displaying properties and descriptions of DB objects” on page 5, in Lab 1, for information on how to do this.

__ 2. Click the **SAMPLEDBXX** library to display the current content in the right window panel.

__ 3. Click **Type** in the right window panel to organize all objects.

__ 4. Use the scroll bar to show the Table objects.

__ 5. Press the Ctrl key on the right panel, and locate and select the following tables:

- ACT
- CL_SCHED
- DEPARTMENT
- EMP_PHOTO
- EMP_RESUME
- EMPLOYEE

__ 6. Right-click and select **Generate SQL** as shown in Figure 54.

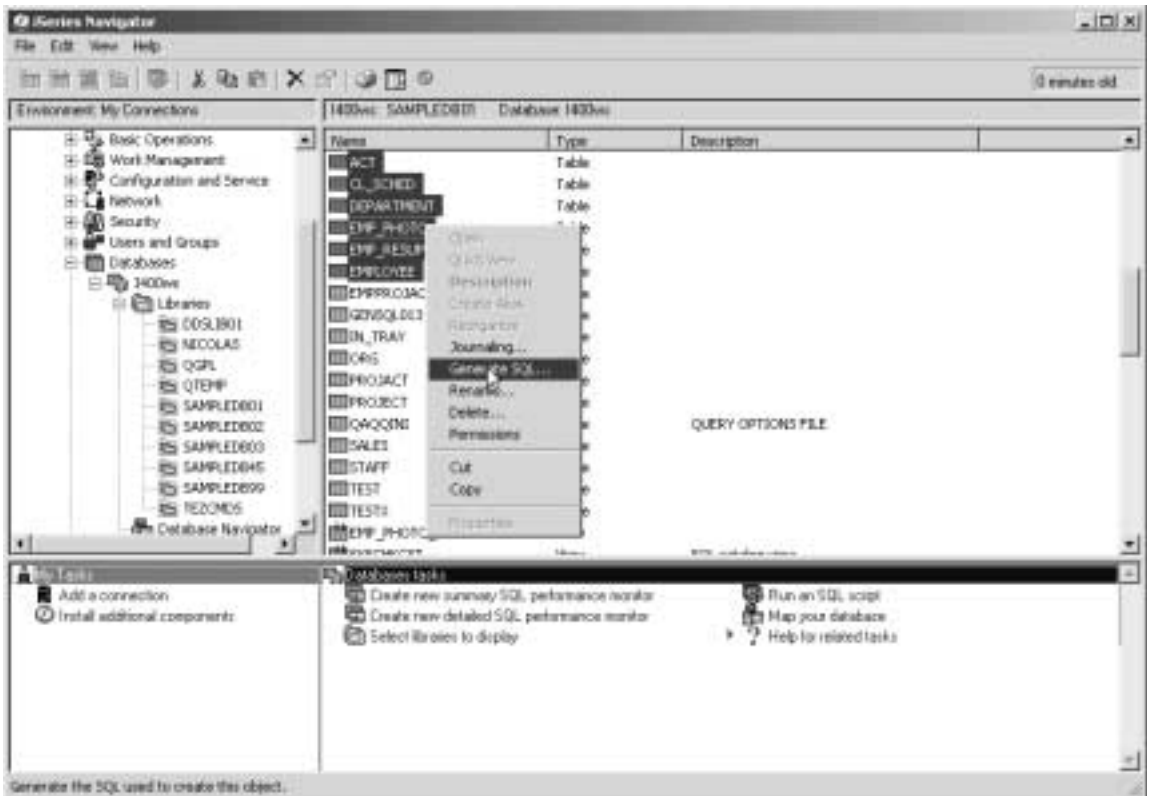

Figure 54. Selecting objects from the library to generate SQL

When the Generate SQL function is invoked, the new Generate SQL window appears as shown in Figure 55. This window provides a list of the objects initially selected and the Output, Options, and Format tabs that are used for the generated SQL.

Figure 55. Generate SQL window

__ 7. In the Generate SQL window, click the **Output**, **Options**, and **Format** tabs to see and accept the default values. Explore the information in this window and answer the following questions:

- Where will it Generate SQL? _____
- Which is the Standards Option? _____
- Which is the Naming Convention? _____

__ 8. Click **Generate** to accept the default values as shown in Figure 56.

Note

The initial list of objects in the Generate SQL window could be modified using the Add and Remove buttons to add new objects or remove objects from the initial list.

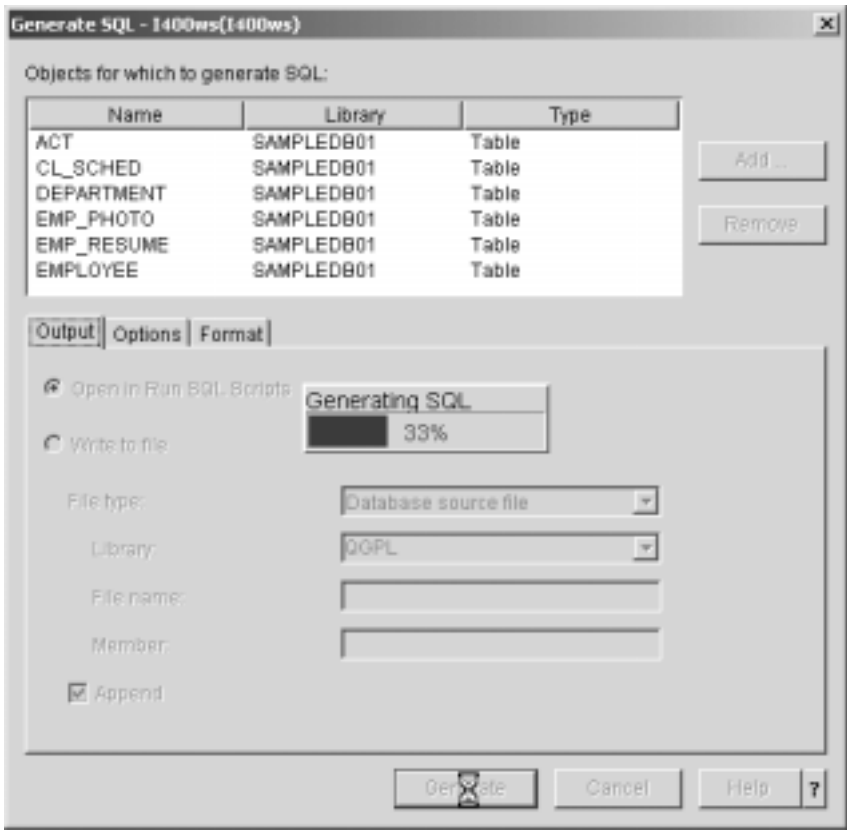

Figure 56. Generating SQL statements

__ 9. Switch to the new Run SQL Scripts window to see the generated SQL statement. Use the scroll bar to navigate as shown in Figure 57.

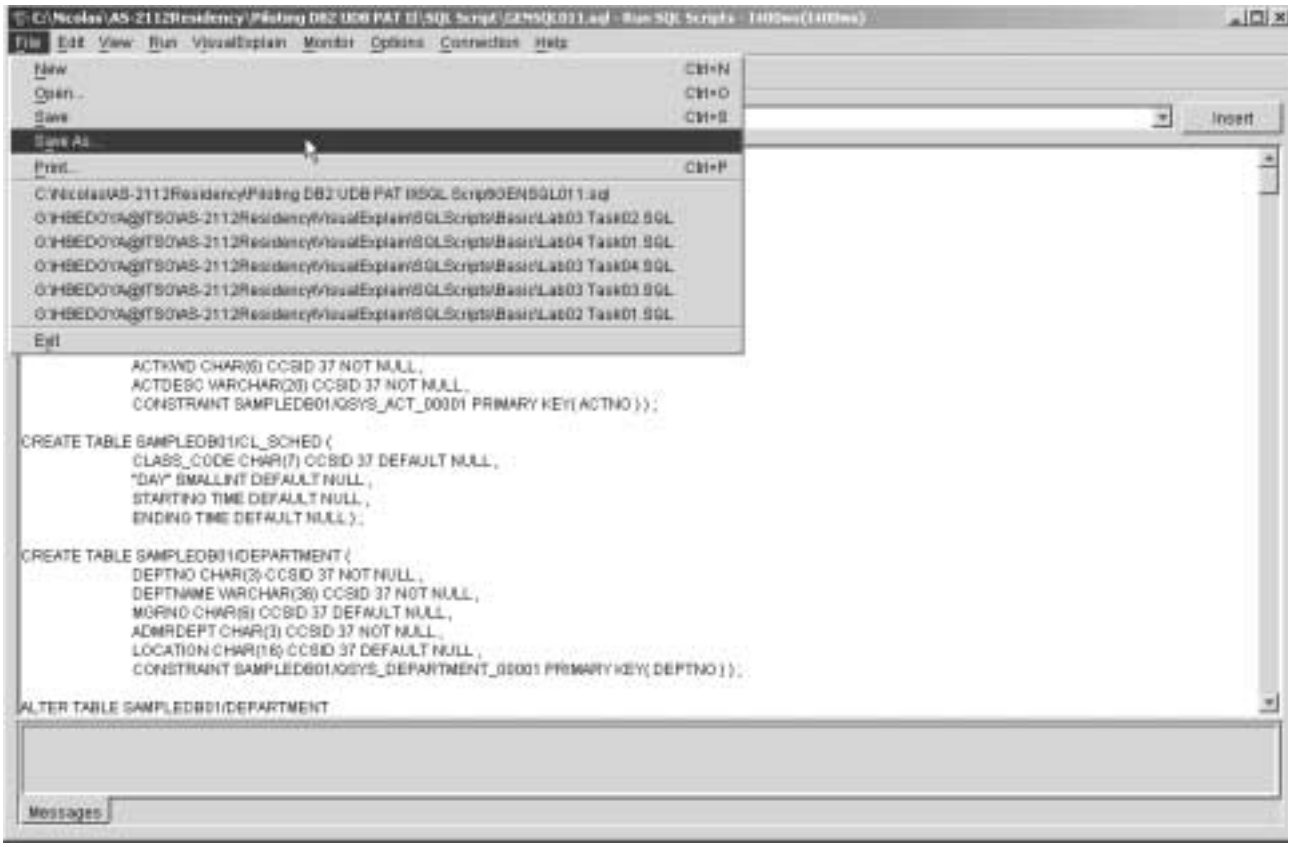

Figure 57. SQL generated in the Run SQL Scripts window

__ 10. After the Run SQL Scripts window is created, explain the reasons for the ALTER table statements to be added to the create table window.

_____

_____

_____

Note

You can generate SQL for a Schema, Table, Type, View, Procedure Function, Alias, and Index. When you generate SQL for a table that contains constraints or triggers associated with it, the SQL Generate is generated for those as well.

__ 11. Click **File-> Save As...** to save the SQL script as shown in Figure 58.

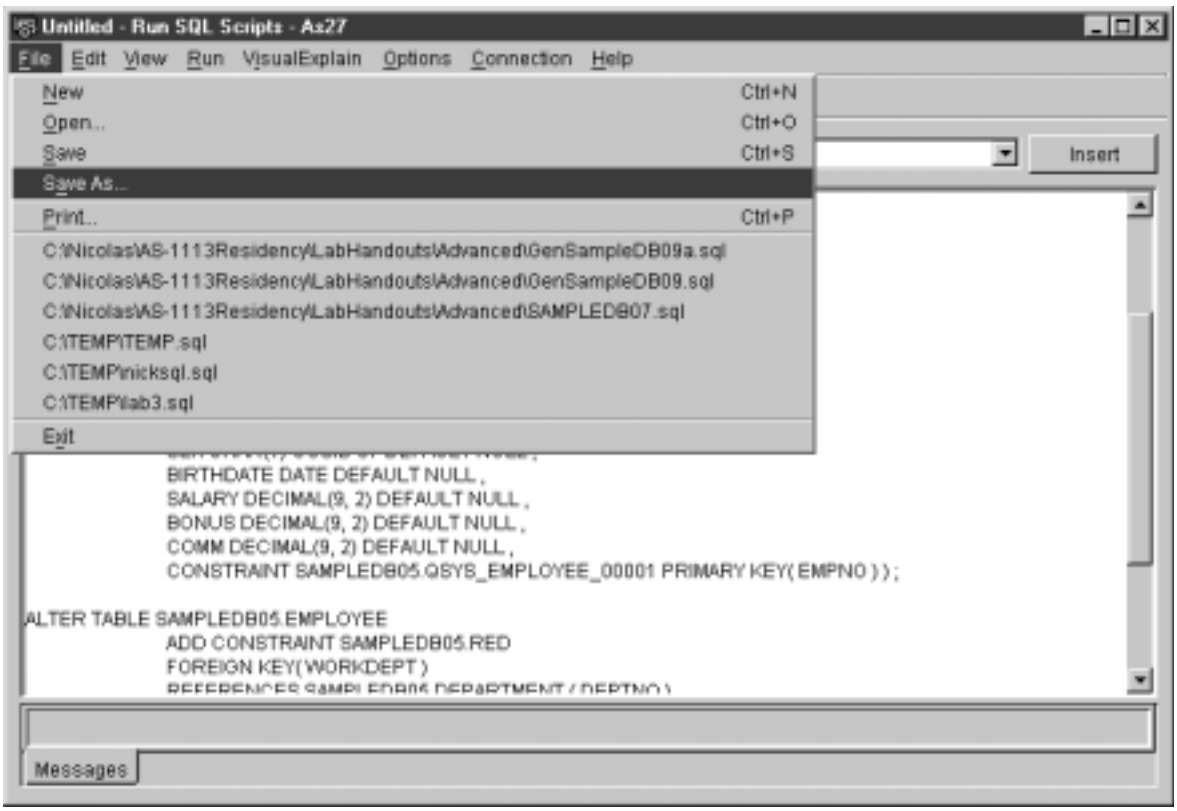

Figure 58. Saving the Script SQL

__ 12.A Save window appears. Click **Look in** to select your directory (C:\DBNAV\SQLScript) from the pull-down menu to save your file as shown in Figure 59.

__ 13.In the File name input field, type `GENSQLXX1`. In the Files of type input field, leave the default as SQL files(.SQL) as shown in Figure 59.

You can use the SQL file to replicate your Database files on another system (for example, a development system). On the GENSQLXXn file name, the *XX* refers a your team number and the *n* is a sequential number.

__ 14. Click **Save** to save the SQL script file.

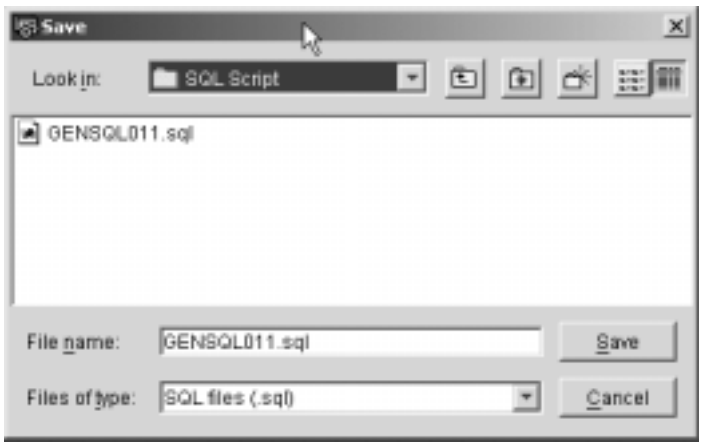

Figure 59. Saving the SQL script

__ 15.Click **File-> Exit** to close the Run SQL Script window.

Task 2: Generating SQL to PC and data source files on the iSeries server

In this task, you generate the SQL statements to a PC file and to a source member on the iSeries server. You start by generating all the SQL statements of all the objects in your library from the iSeries Navigator window:

__ 1. Click the **SAMPLEDBXX** library to display its content in the right window panel.

__ 2. Right-click the **SAMPLEDBXX** library and then select **Generate SQL** as shown in Figure 60.

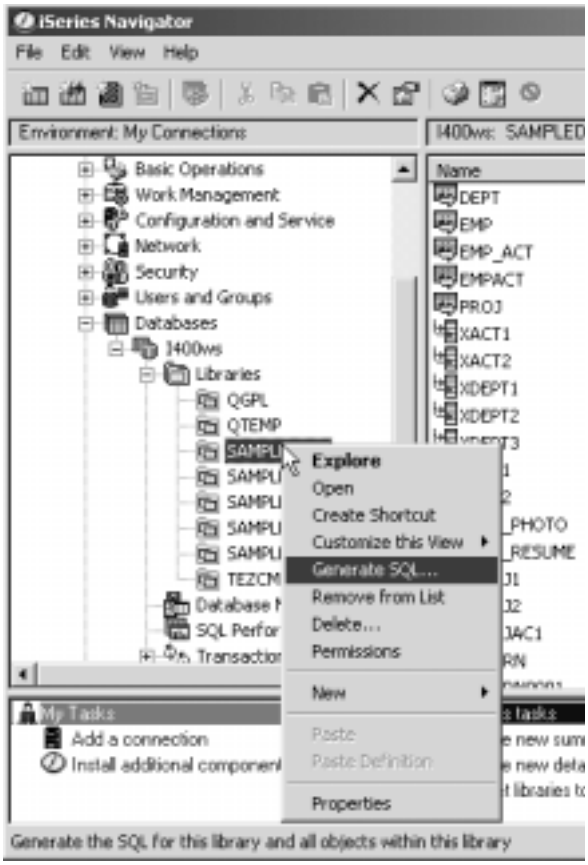

Figure 60. Generate SQL library in the Operation Navigator window

__ 3. In the Generate SQL window, select the **Write to file** option on the **Output** tab as shown in Figure 61. The generated SQL is saved to a PC file.

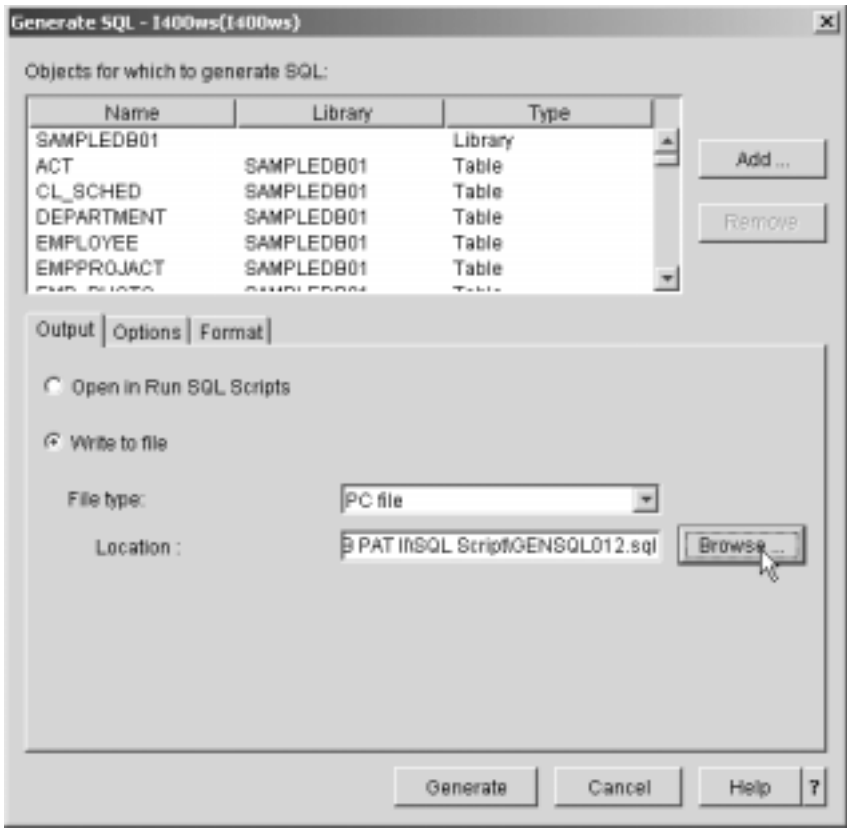

Figure 61. Selecting Generate SQL to PC

__ 4. Click **File type** and select the **PC file** option.

__ 5. In the Location file, click **Browse**, and then select your directory (C:\DBNAV\SQLScript) to save your file.

__ 6. In the File name input field, type `GENSQLXX2`.SQL In the Files of type input field, leave the default SQL files (.SQL) as shown in Figure 62.

__ 7. Click the **Select** button to return to the Generate SQL Output tab.

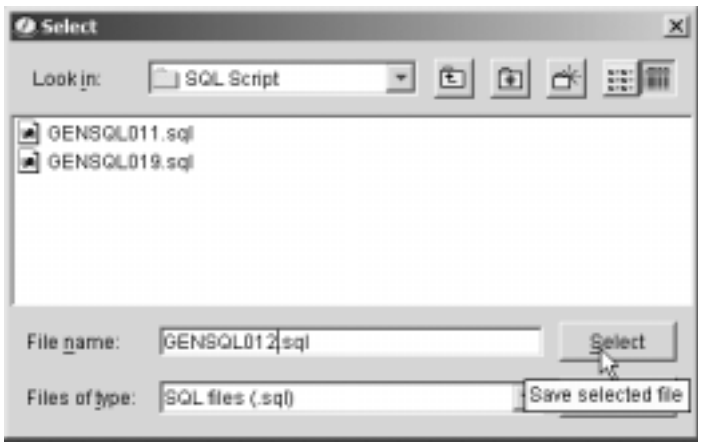

Figure 62. Saving the SQL script to PC file

__ 8. Click the **Generate** button to start generating the SQL DDL statements for all the objects in the library.

A status window appears showing the progress of the generate SQL as a percentage as shown in Figure 63.

Figure 63. Generating SQL window

__ 9. In the iSeries Navigator window, click the **Run an SQL script** icon in the database task pad. Explore the SQL file saved previously as shown in Figure 64.

Note

The task pad (located in the lower part of the iSeries Navigator window) was introduced in V5R1. If you click the various higher level options, such as Security, Users and Groups, Database, etc., this task pad changes accordingly. One of the database tasks of the task pad is Run an SQL Script (among others).

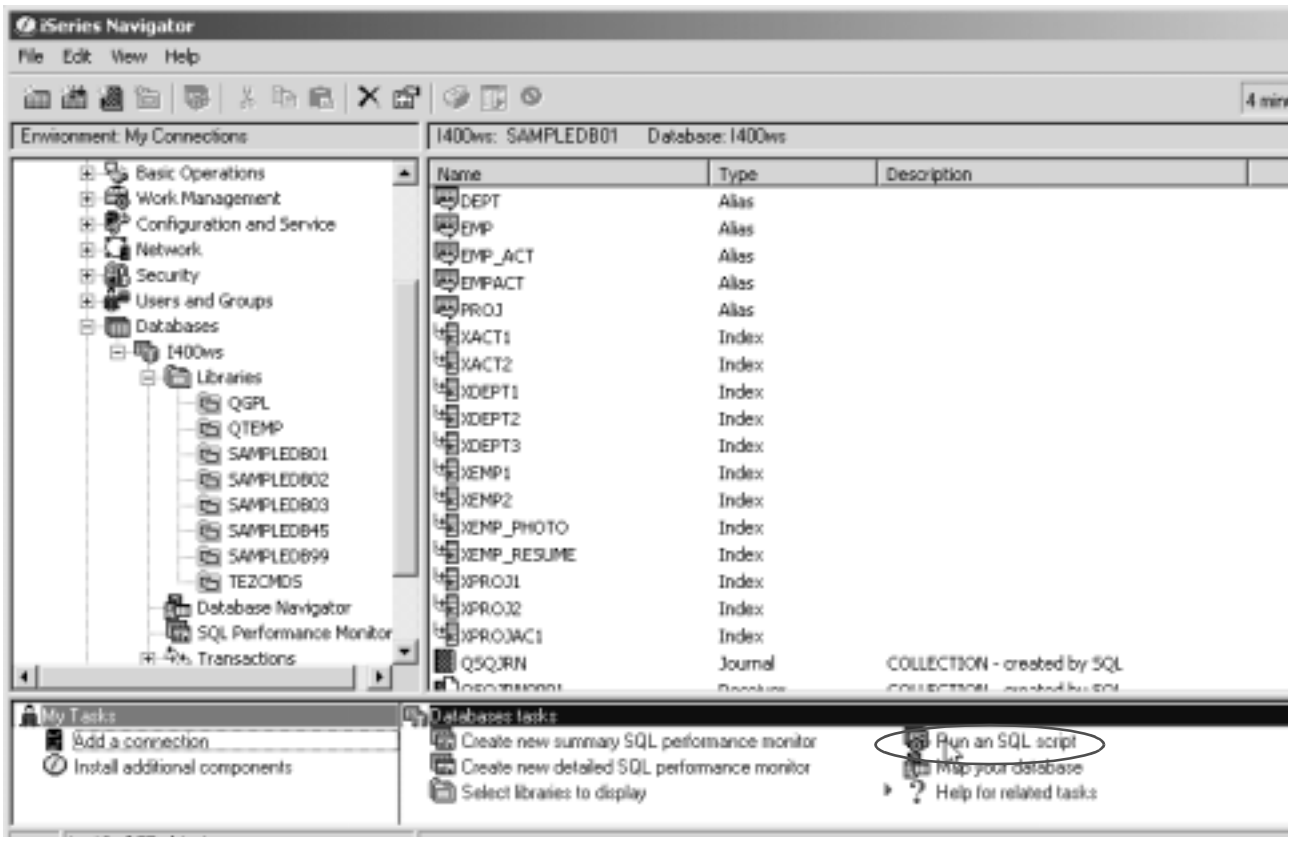

Figure 64. Selecting Run SQL script from the Taskpad option

__ 10. In the **Run SQL scripts** window, click **File-> Open** to open your SQL Script file (GENSQLXX2).

__ 11. Click **Look in** and select your directory (C:\DBNAV\SQLScript) from the pull-down menu to save your file.

__ 12. Select your **GENSQLXX2** file and click the **Open** button as shown in Figure 65.

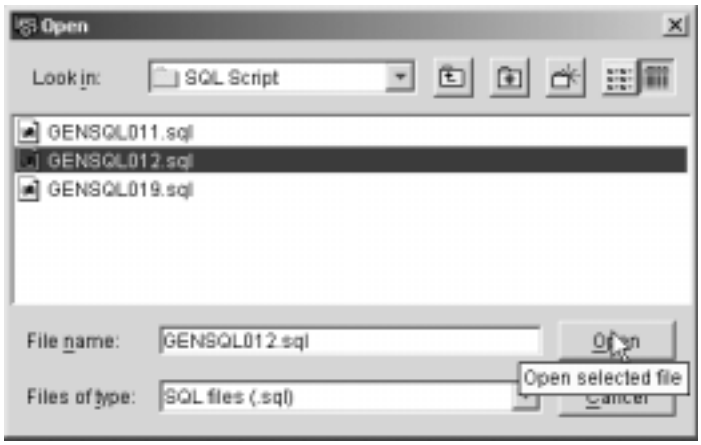

Figure 65. Restoring an SQL script file from a PC

__ 13. View the SQL statements generated on the Run SQL Script window as shown in Figure 66. Take some time to analyze the order of the statements.

Once the statements are generated, they can be edited to, for example, create a new copy in another library and optionally saved, or run using the SQL Script facility. If multiple objects were selected to be SQL Generated, you have the option to run one, some, or all of the statements after any required editing.

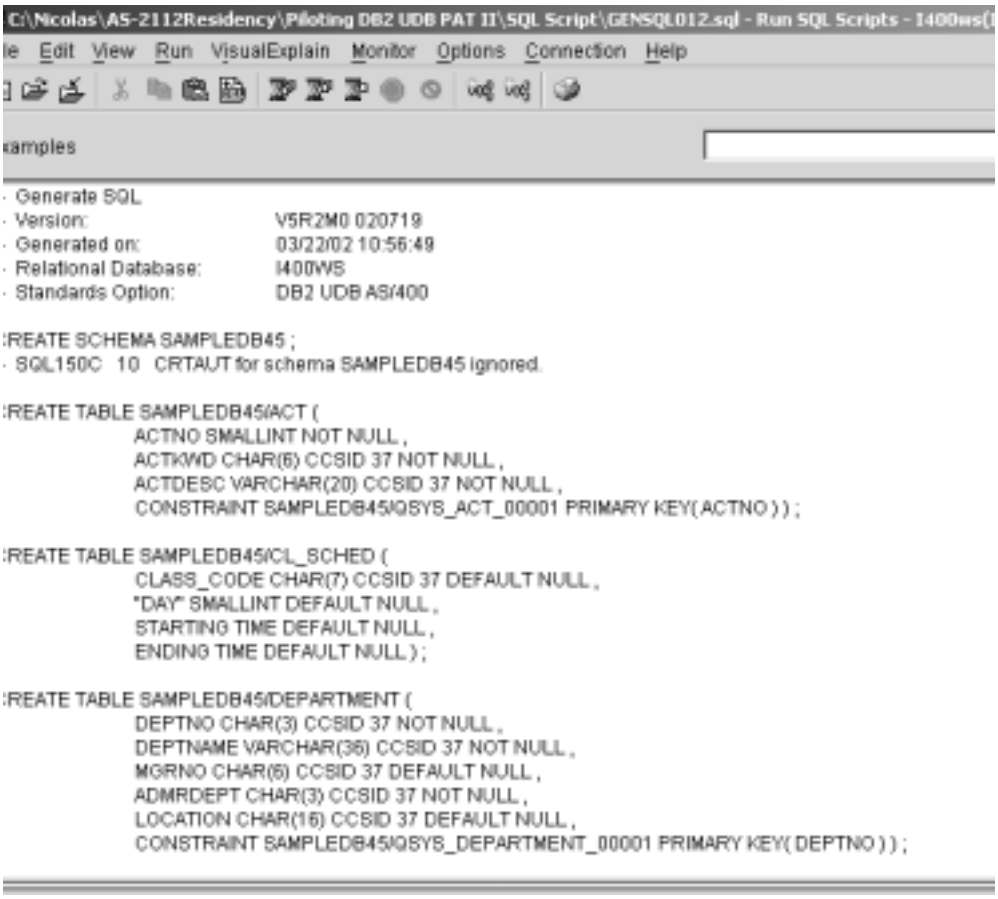

Figure 66. SQL Script Statement generated

__ 14. Click **File-> Exit** to close the Run SQL Scripts window. If you made changes in the SQL script statement, do *not* save.

You now generate the SQL statement directly to a Source physical file member on the iSeries server from the iSeries Navigator window using the File menu.

__ 15. Click the **SAMPLEDBXX** library to display the content in the right window panel.

__ 16. Click **File-> Generate SQL...** to view the Generate SQL window as shown in Figure 67.

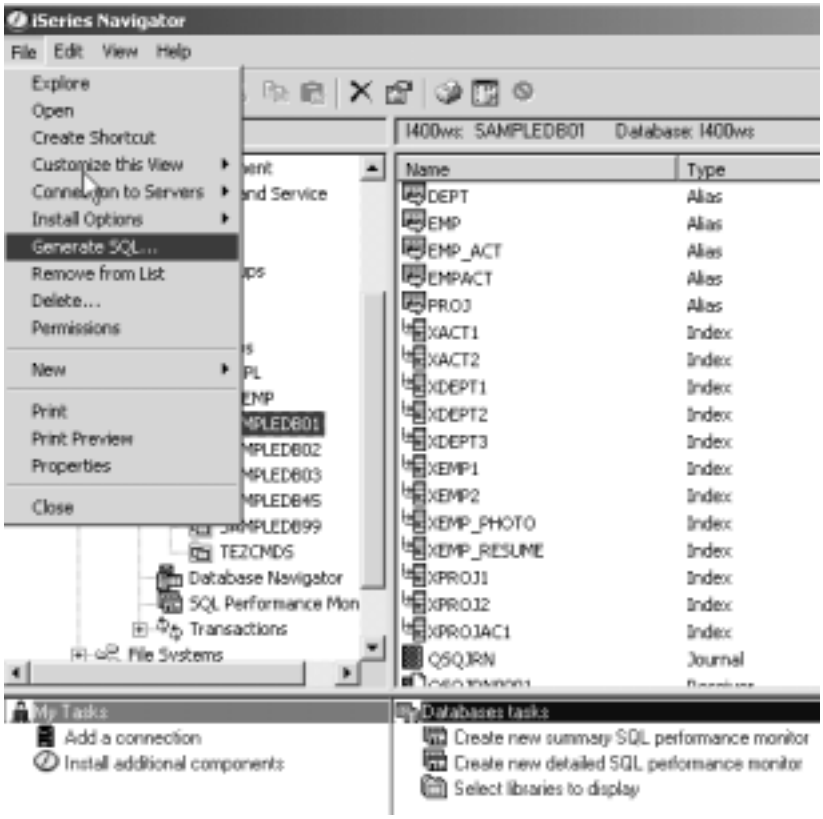

Figure 67. Selecting Generate SQL from the File menu

__ 17. In the Generate SQL window, click the **Write to file** option in the **Output** tab as shown in Figure 68.

__ 18. Click **File type** and select the database source file.

__ 19. Click **Library** and select your **SAMPLEDBXX** library.

__ 20. In the File Name input field, type `GENSQLXX3`. In the Member input field, type `GENSQLXX3`.

> **Note**
>
> You can use the SQL file to replicate your schema tables on another system, such as a development system. For the GENSQLXXn file name, the *XX* refers to your team number and the *n* is a sequential number.

__ 21. Click the **Generate** button to start Generate SQL on the iSeries server.

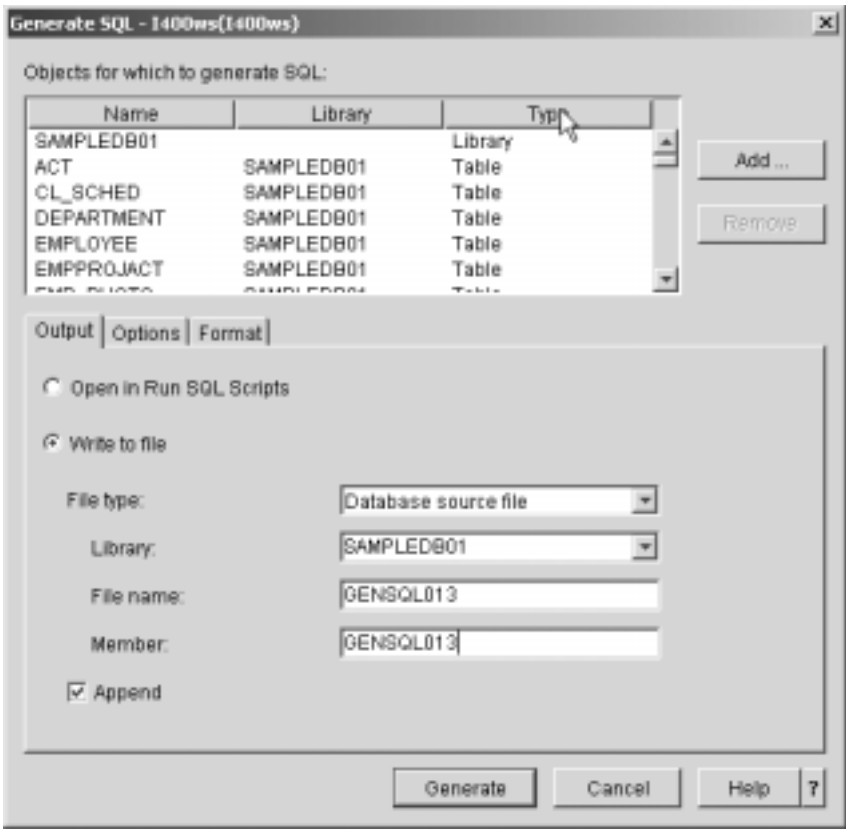

Figure 68. Generating SQL to the iSeries server

For existing files, the option to append to the file is provided. If an existing file is selected, and the append option is not chosen, you are asked if you want to overwrite the existing file.

__ 22. Double-click **GENSQLXX3** to see the script on the iSeries Navigator window as shown in Figure 69.

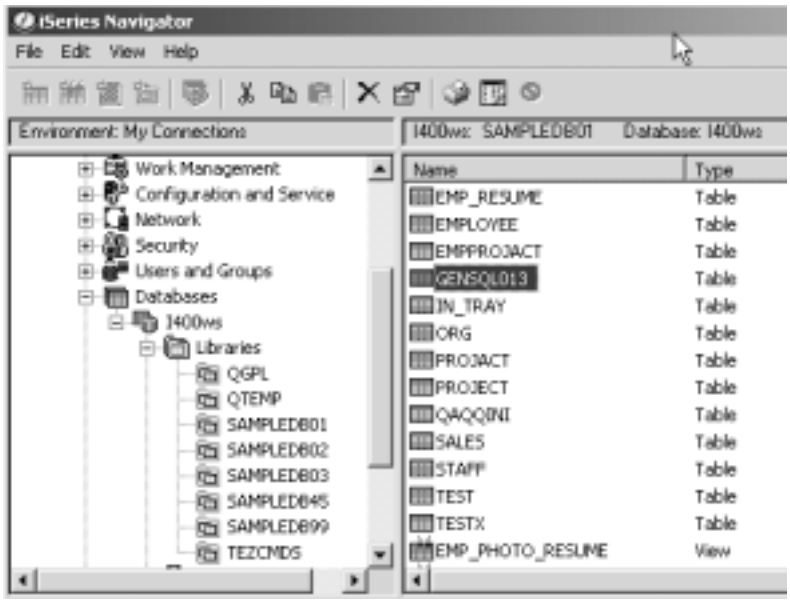

Figure 69. Selecting the source physical file to show the generate SQL script

__ 23. Expand the window and use the scroll bar to explore the script file as shown in Figure 70.

Figure 70. Exploring the SQL script file from iSeries Navigator

__ 24. Close the window of the SQL script file to return to the iSeries Navigator window.

Task 3: Generating SQL from the Database Navigator Map

In this task, you learn how to generate the SQL DDL statement from some and all objects in a map:

__ 1. Click the **Database Navigator** to display the maps on the right that exist on the iSeries server as shown in Figure 71.

Figure 71. Opening the Database Navigator Map

__ 2. Double-click to open the database map that you created in the last exercise. If it does not appear, refresh the window.

__ 3. Click the **View** menu and click **Zoom-> To Fit Window** to fit all objects on the map in this window as shown in Figure 72.

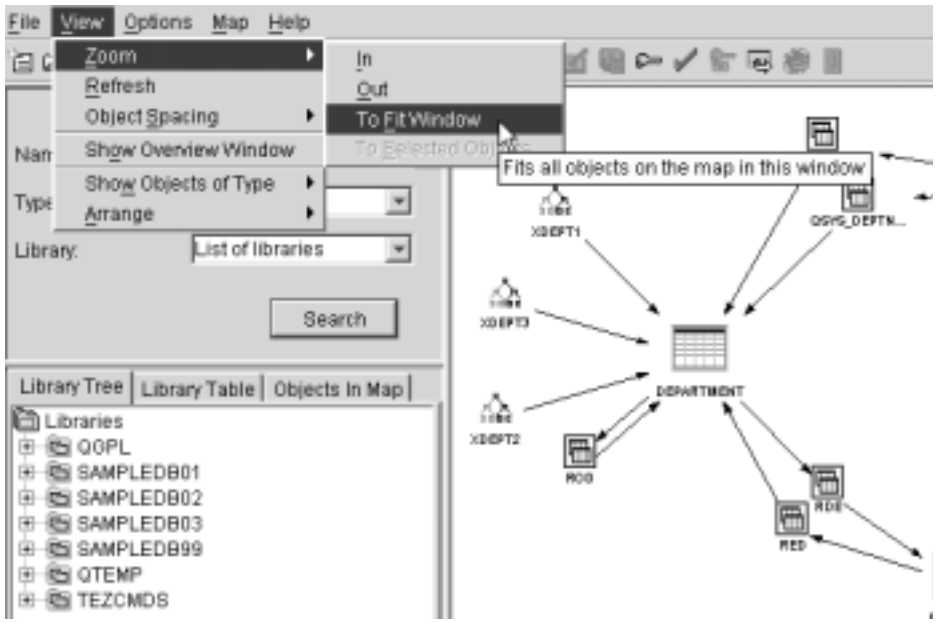

Figure 72. Fitting all objects in a map

__ 4. Use the toolbar to select the **Zoom In** and **Zoom Out** icons to fit the object size on the map in this window.

__ 5. Use the vertical and horizontal scroll bars to navigate to the top of the map as shown in Figure 73.

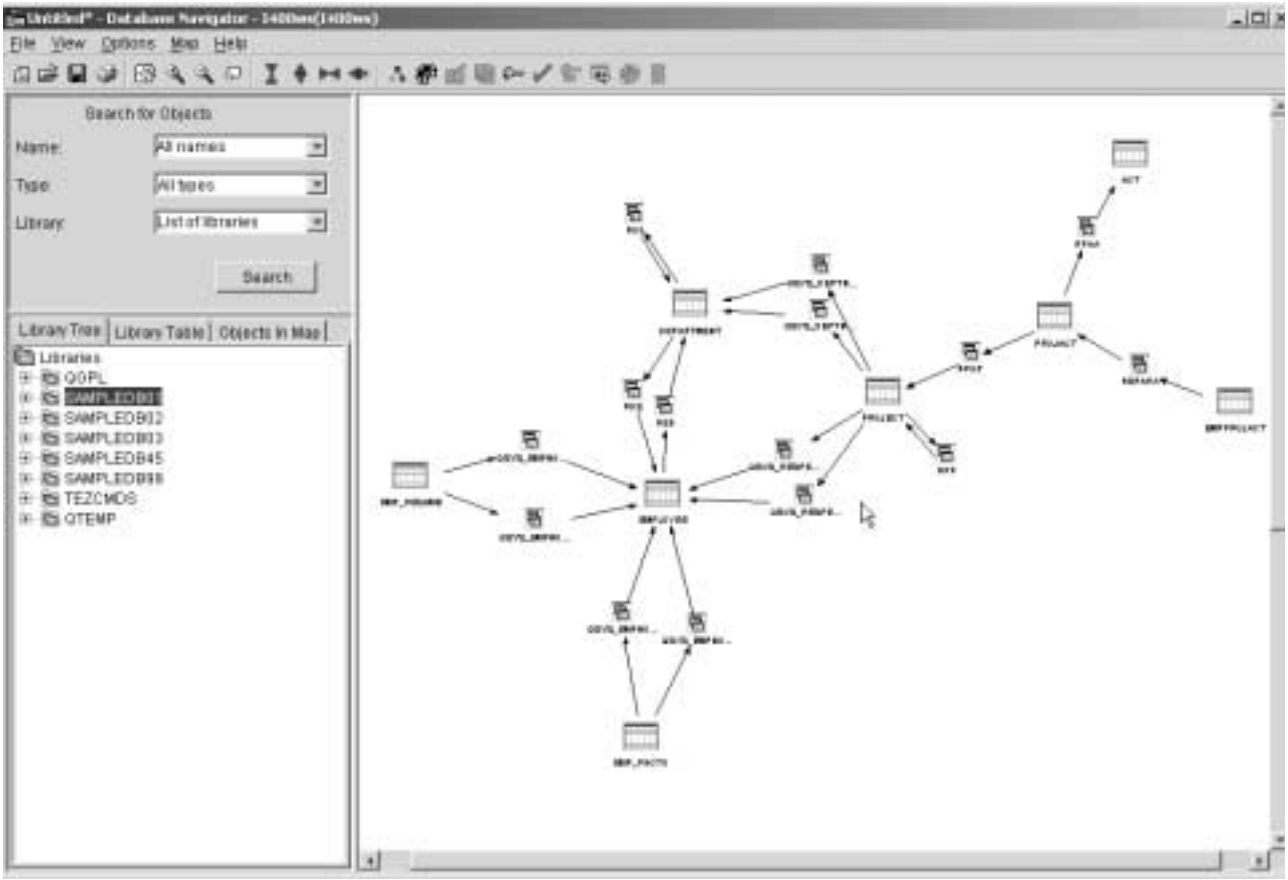

Figure 73. Showing all objects included in the map

__ 6. Use the criteria selection in the locator pane and select only your **SAMPLEDBXX** library. Click the **Library** parameter and select it as shown in Figure 74.

__ 7. Click the **Search** button.

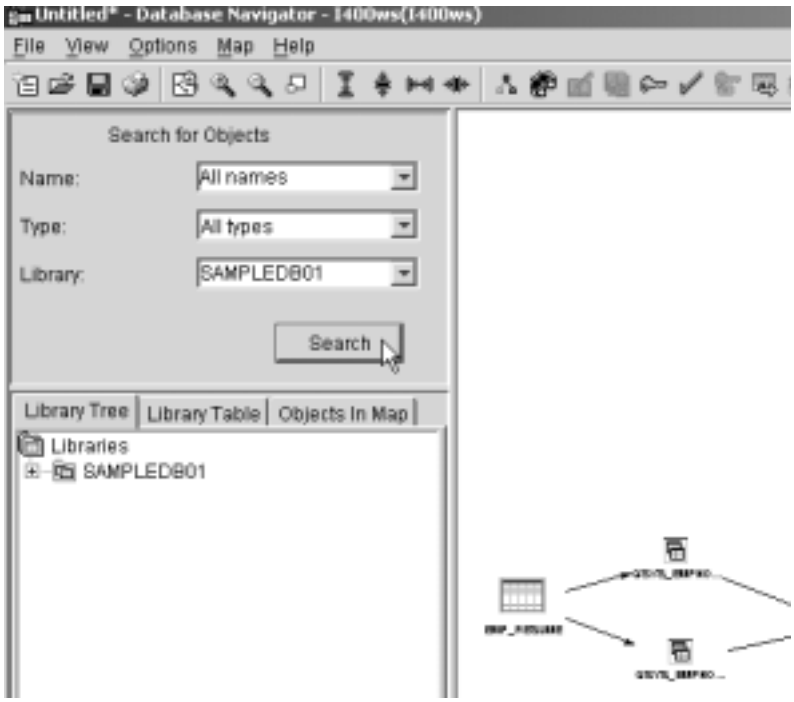

Figure 74. Selecting only your sample library to appear in the Database Navigator Map

__ 8. Click the plus (**+**) sign next your **SAMPLEDBXX** database to see the objects found, such as Tables, Indexes, and Views.

__ 9. Click the (**+**) sign next to the **Tables** database object to expand it.

__ 10. Double-click the **EMPLOYEE** table in the list of tables to find this table in the map.

__ 11. Click the zoom icons (**Zoom in**, **Zoom out**, and **Zoom to fit window**) from the toolbar to focus the EMPLOYEE table in a Map Pane.

__ 12. Right-click the **EMPLOYEE** table and select **Generate SQL** as shown in Figure 75.

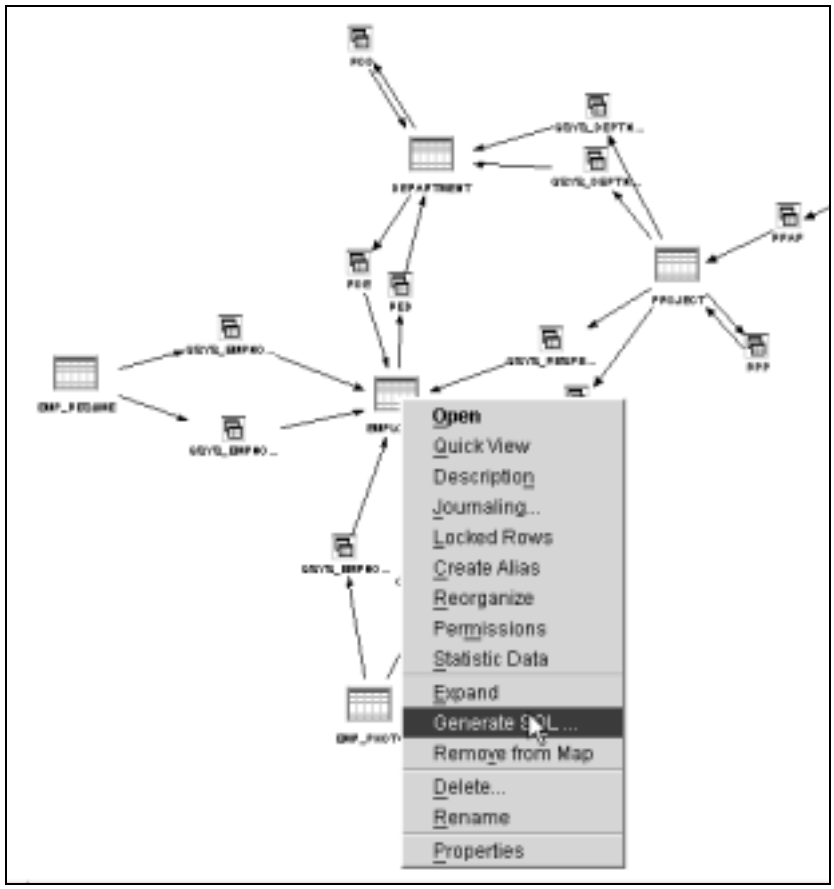

Figure 75. Generating SQL of a specific object from the map

__ 13. In the Run SQL Script window, explore the generated SQL statements, using the scroll bar to navigate as shown in Figure 76.

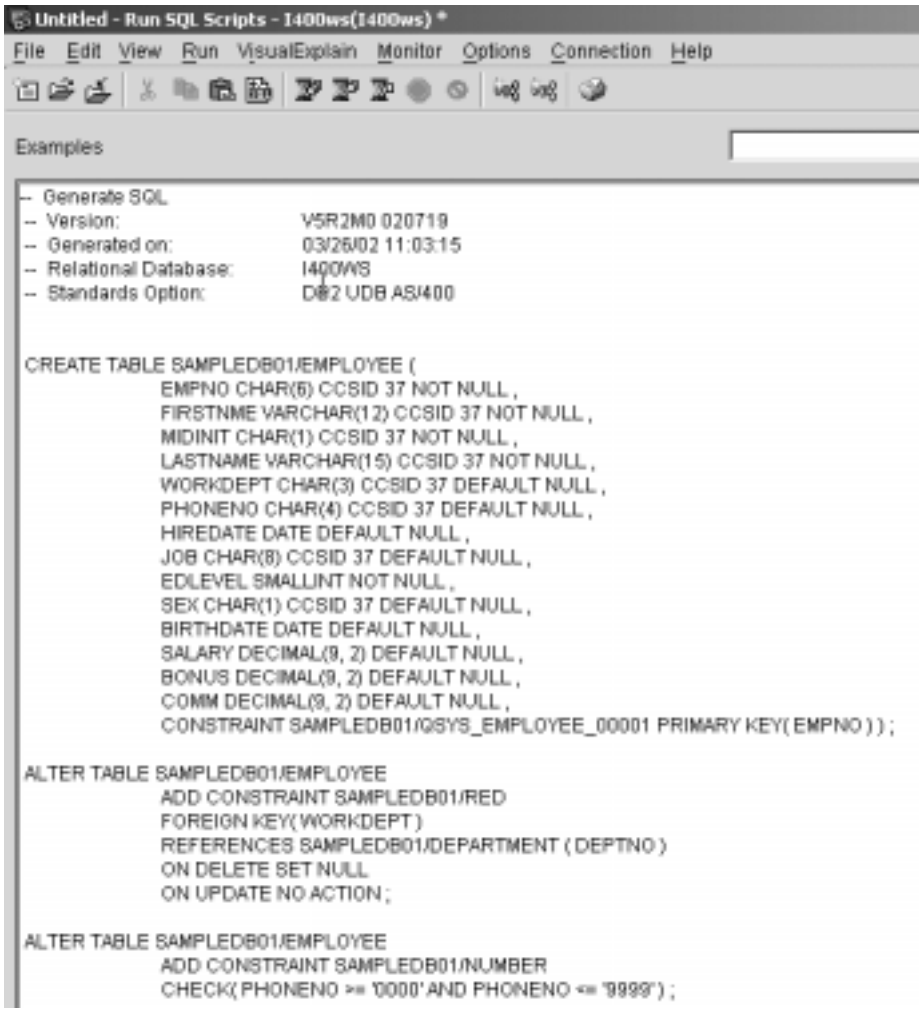

Figure 76. Generating SQL from the employee table

You can see that two Constraint rules were generated in addition to the EMPLOYEE table. One of them, the Referential Constraint Key, is represented as RED in the map to show the relationship between the EMPLOYEE and DEPARTMENT tables as shown in Figure 77.

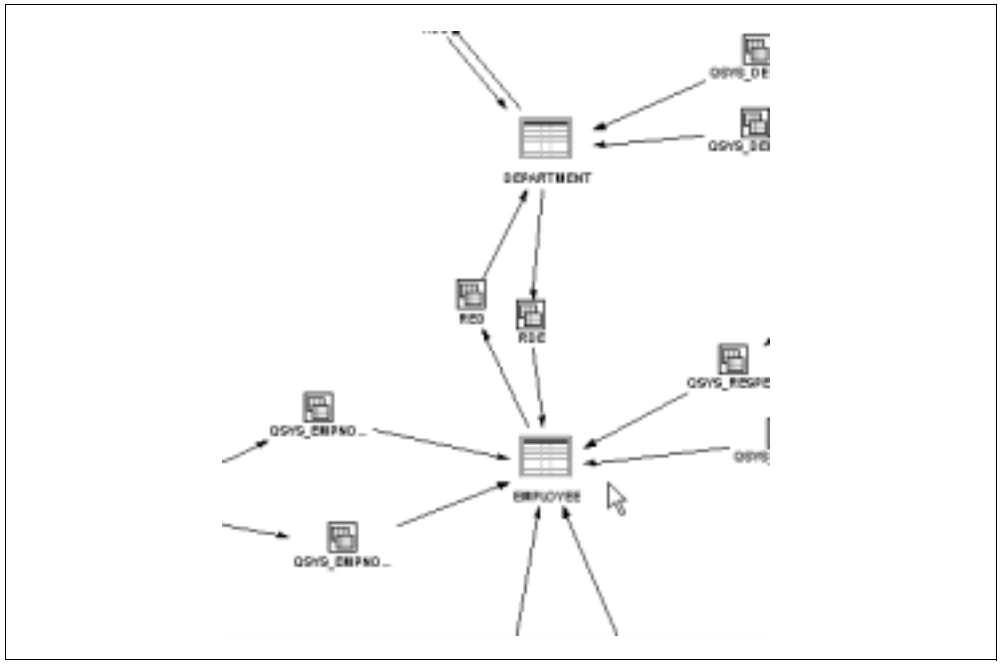

Figure 77. Showing a Referential Constraints Key in the map

__ 14.Click **File-> Save As...** to save the SQL script as shown in Figure 78.

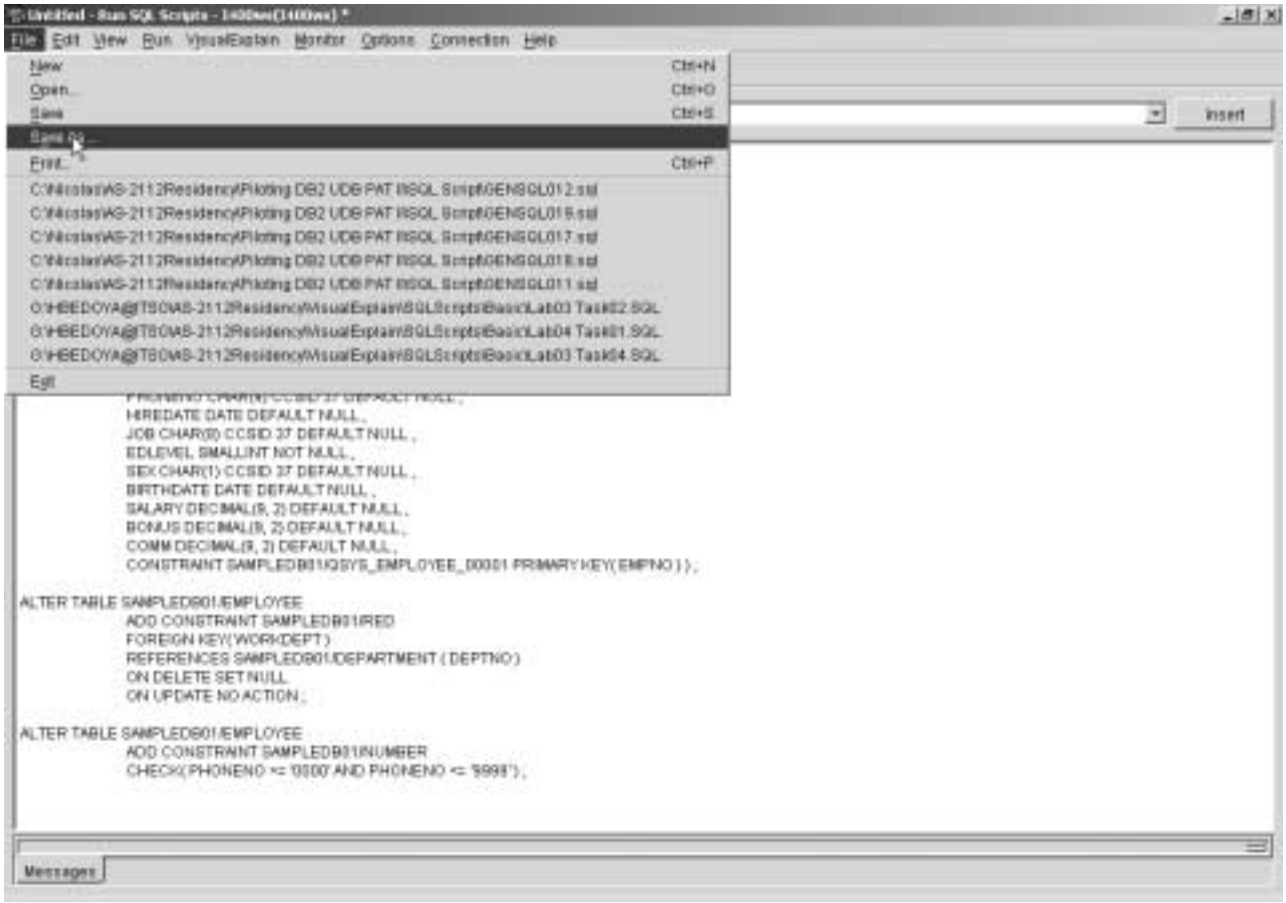

Figure 78. Selecting save Script SQL

__ 15. On the Save window, click **Look in** to select your directory (C:\DBNAV\SQLScript) from the pull-down menu to save your file.

__ 16. In the Name input field, type `GENSQLXX4`. In the Type input field, leave the default SQL files (.SQL) as shown in Figure 79.

__ 17. Click **Save** to save SQL script file.

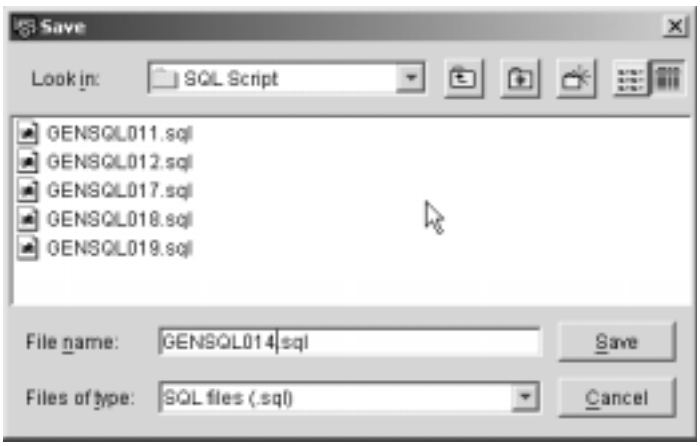

Figure 79. Saving the SQL script

__ 18. Click **File-> Exit** to close the Run SQL Script window.

__ 19. Switch to the Database Navigator window. You are now going to generate the SQL statement for all objects in a library.

__ 20. Click **Map-> Generate SQL-> All Objects...** to generate the SQL statement for all objects in your library as shown in Figure 80.

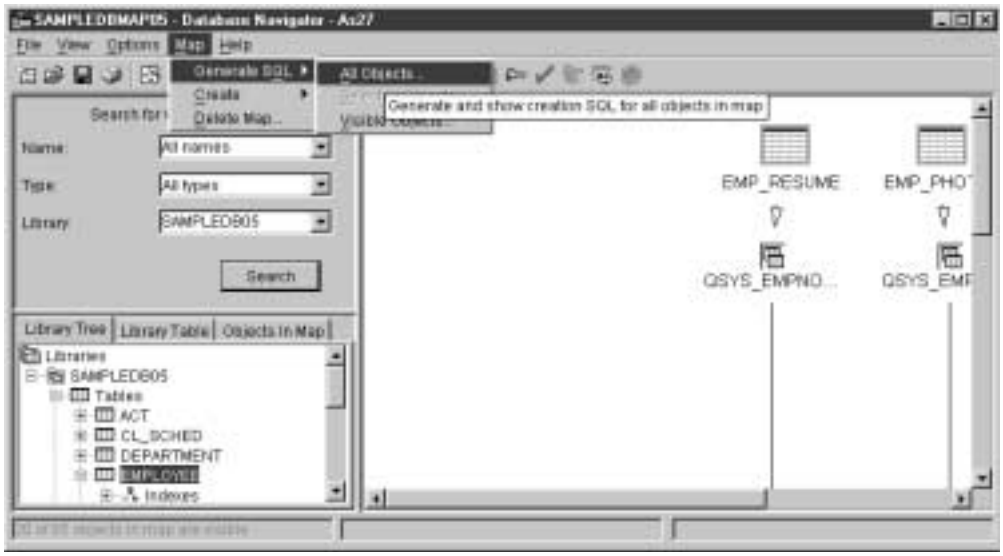

Figure 80. Generate SQL for all objects in a library.

A status window appears showing the progress of the generate SQL as a percentage (Figure 81).

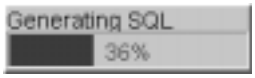

Figure 81. Generating the SQL window

__ 21. In the Run SQL Script window, use the scroll bar to navigate to see the generated SQL statements.

__ 22. Explore all the generated statements and enter the order in which they were created (example, views, constraints, tables, Schema, alias....) in Table 3.

Table 3. SQL Generate order

SQL statements	Objects

__ 23. Click **File-> Save As...** to save the map.

__ 24. In the Save window, click **Look in** to select your directory (C:\DBNAV\SQLScript) from the pull-down menu to save your file.

__ 25. In the File name input field, type `GENSQLXX5`. In the File of type input field, leave the default as SQL files(.SQL).

__ 26. Click **Save** to save the SQL script file.

__ 27. Click **File-> Exit** to close the Run SQL Script window.

__ 28. Return to the iSeries Navigator main window.

Task 4: Generating SQL from DDS

The generate SQL function works with objects created using SQL and using DDS. These objects can also be reverse engineered into an SQL create statement.

However, there are options that allow the user to specify that the generated statement should adhere to certain standards. Depending on the standard selected, some objects created through native OS/400 interfaces may not be compatible for use with this functions.

In this task, you generate the SQL statements for physical files that were created using a DDS source file member. You use the DB2 UDB Family standard to generate this SQL statement.

Comment

The objective of this exercise is to combine Generate SQL with the Database Navigator feature. You create two maps of the same schema while following different steps.

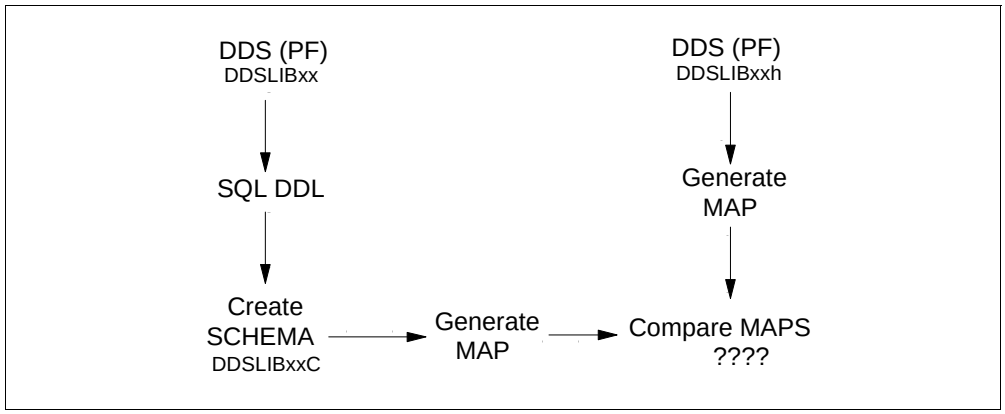

Figure 82. Generate SQL and Database Navigator combined

__ 1. Click the plus (**+**) sign next to the **Libraries** object to expand the list of libraries.

__ 2. Change the list of libraries in iSeries Navigator to include the DDSLIBXX Library. Refer to the first step in Task 3, ”Displaying properties and descriptions of DB objects” on page 5, in Lab 1.

__ 3. Click **DDSLIBXX** (on the right side of the window).

__ 4. Right-click the **DDSLIBXX** library and select **Generate SQL** as shown in Figure 83.

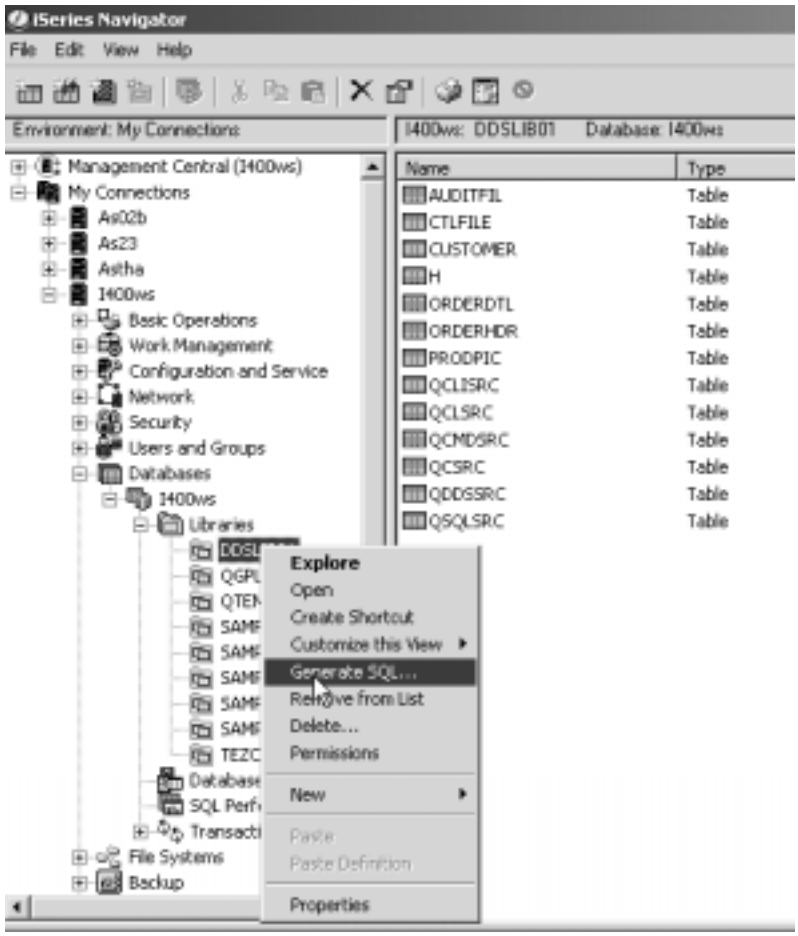

Figure 83. Selecting physical files to generate an SQL statement

__ 5. Leave the default options. Click the **Generate** button in the Generate SQL window.

__ 6. The SQL Script Center appears with the generated SQL DDL statements posted in the working area as shown in Figure 84.

__ 7. Use the vertical scroll bar to explore the SQL statements.

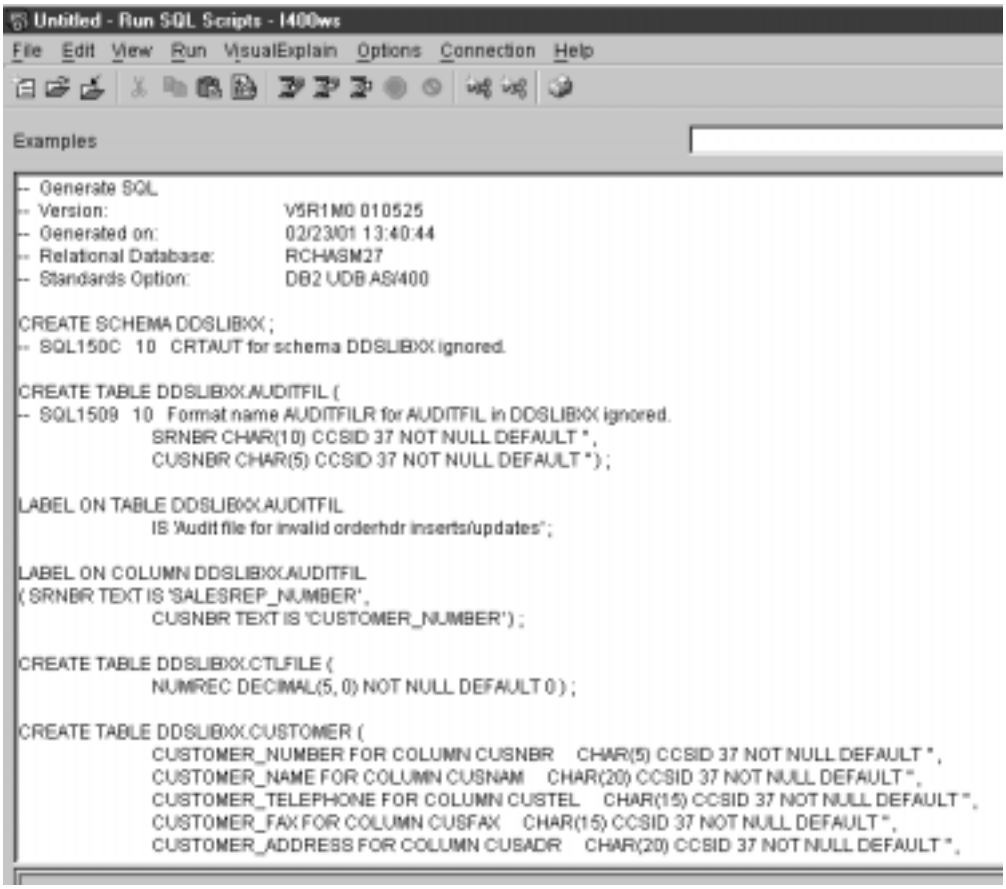

Figure 84. Exploring SQL script generated from a physical file

Note

Previously, you generated SQL statements that can recreate your existing database (for example, on another iSeries server). In this case, you are going to recreate an existing database on the same iSeries server. For this reason, you must change the schema (database) name from DDSLIBxx to `DDSLIBxxC`. There are some DDS-specific keywords that cannot be converted to SQL. This appears in the code as messages (see SQL150C and SQL509 in Figure 84).

__ 8. Click **Edit** and select **Replace**. A Replace window like the one shown on Figure 85 appears.

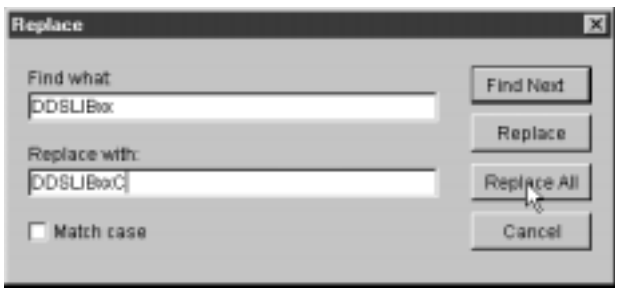

Figure 85. Replace window

__ 9. Review all of the SQL statements. Before you run the script to generate the new schema (DDSLIBxxC), you must move the ALTER TABLE ORDERDTL statement to follow the CREATE TABLE ORDERHDR. You must do this because, in the ALTER TABLE statement, you are trying to define a Referential Integrity constraint, which involves ORDERHDR, that has not been created yet. For this reason, you must move it after the creation of the ORDERHDR table. Figure 86 shows the ALTER statement that you must move to appear after the CREATE TABLE ORDERHDR.

```
ALTER TABLE DDSLIB02C.ORDERDTL
                ADD CONSTRAINT DDSLIB02C.ORDERHDRNUM
                FOREIGN KEY( ORDER_NUMBER )
                REFERENCES DDSLIB02C.ORDERHDR ( ORDER_NUMBER )
                ON DELETE RESTRICT
                ON UPDATE RESTRICT ;

CREATE TABLE DDSLIB02C.ORDERHDR (
                ORDER_NUMBER FOR COLUMN ORHNBR    CHAR(5) CCSID 37 NOT NULL DEFAULT '',
                CUSTOMER_NUMBER FOR COLUMN CUSNBR    CHAR(5) CCSID 37 NOT NULL DEFAULT '',
                ORDER_DATE FOR COLUMN ORHDTE    DATE NOT NULL DEFAULT CURRENT_DATE ,
                ORDER_DELIVERY FOR COLUMN ORHDLY    DATE NOT NULL DEFAULT CURRENT_DATE ,
                ORDER_TOTAL FOR COLUMN ORHTOT    DECIMAL(11, 2) NOT NULL DEFAULT 0 ,
                ORDER_SALESREP FOR COLUMN SRNBR    CHAR(10) CCSID 37 NOT NULL DEFAULT '',
                CONSTRAINT DDSLIB02C.ORDERHKEY PRIMARY KEY( ORDER_NUMBER ) ) ;

ALTER TABLE DDSLIB02C.ORDERHDR
                ADD CONSTRAINT DDSLIB02C.ORDERHDRCNBR
                FOREIGN KEY( CUSTOMER_NUMBER )
                REFERENCES DDSLIB02C.CUSTOMER ( CUSTOMER_NUMBER )
                ON DELETE RESTRICT
                ON UPDATE RESTRICT ;
```

Figure 86. Altering a table after table creation

__ 10. Click the **Edit->Cut** and **Edit->Paste** options to move the text.

__ 11. Run all the SQL statements and verify that they run successfully. You just created a schema (DDSLIBxxC) from the SQL statements that you created from the original DDS created database (DDSLIBxx).

__ 12. You now create a Database Navigator Map of the generated SQL DDSLIB. In the main iSeries Navigator window, expand the **Database** icon.

__ 13. Right-click the **Database Navigator** object and select **New** to create a new map.

__ 14. Use the criteria selection in the upper locator pane to select your new schema (DDSLIBxxC).

__ 15. Click **Search** to execute. The result appears on the bottom pane under the Library Tree and Library Tables tabs.

__ 16. Click the plus (**+**) sign next to your **DDSLIBxxC** schema to show objects, such as Tables, Indexes, and Views.

__ 17. Click the (**+**) sign next to the **Tables** object to expand it.

__ 18. Double-click the **CUSTOMER** table on the lower locator pane to start building a map. This table is added to the map and all of the related objects as shown in Figure 87.

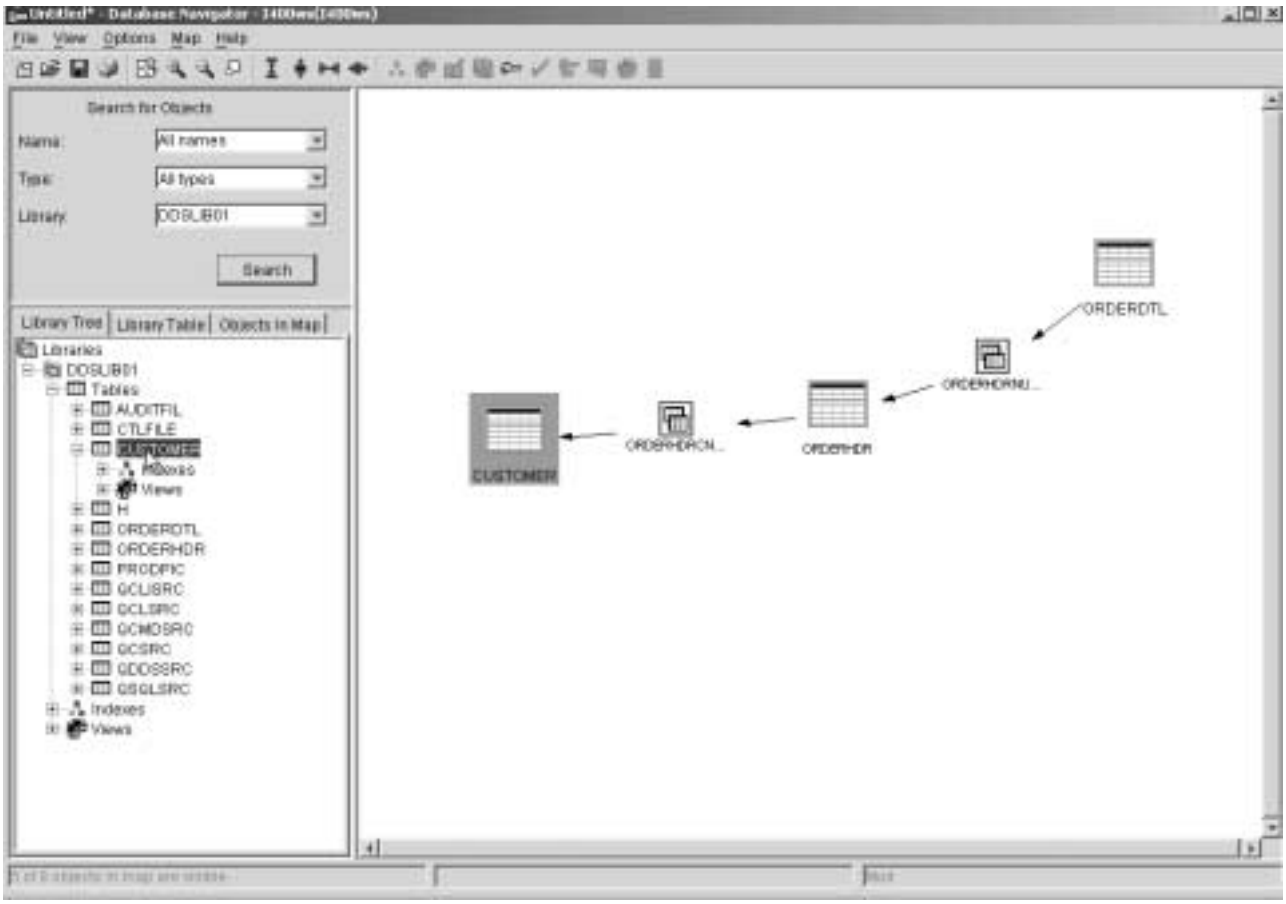

Figure 87. Map of DDSLIBxxC

__ 19. Click **File-> Save As...** to save the Map.

__ 20. From the **Save As...** window, click the **Libraries** parameter and select your DDSLIBxxC library from the pull-down menu.

__ 21. In the Name input field, type `DDSLIBxxMAP`.

__ 22. In the Description input field, type `Map created for the DDSLIBxxC`.

__ 23. Click **OK** to save the map.

Task 5: Generating a map from DDS

In this task, you learn to generate a Map from a DDS-created database. Then you generate the SQL statement from the Map.

__ 1. In the left panel of the main iSeries Navigator window, expand **Database-> I400WS-> Libraries**.

__ 2. Double-click your **DDSLIBXX** library. All the objects in this library appear in the right panel.

__ 3. Right-click the **Database Navigator** object and select **New** to create your Map as shown in Figure 88.

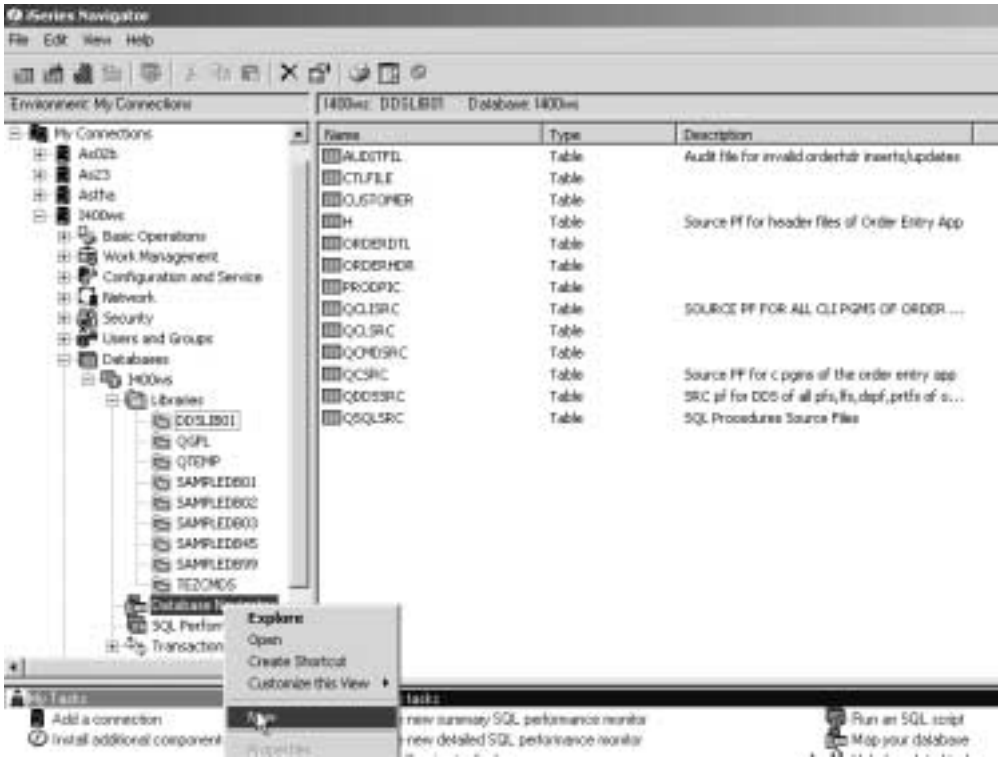

Figure 88. Creating a map from physical files

__ 4. Use the criteria selection in the upper locator pane to select only your DDSLIBXX library. Click the **Library** parameter and select your library. Refer to the second step in Task 2, ”General tasks using the Database Navigator window” on page 17, in Lab 2.

__ 5. Click **Search** to execute. The results appear on the bottom pane under the Library Tree and Library Tables tabs.

__ 6. Click the plus (**+**) sign next to your **DDSLIBXX** database to show the objects found, such as Tables, Indexes, and Views.

__ 7. Click the (**+**) sign next to the **Tables** database object to expand it.

__ 8. Double-click the **CUSTOMER** table in the lower locator pane to start building a map. At this time, this Table is added to the map and all related objects.

__ 9. Use the toolbar to select the **Zoom In** and **Zoom Out** icons to fit the object size on the map in this window.

__ 10. Use the vertical and horizontal scroll bars to navigate to the top of the map as shown in Figure 89.

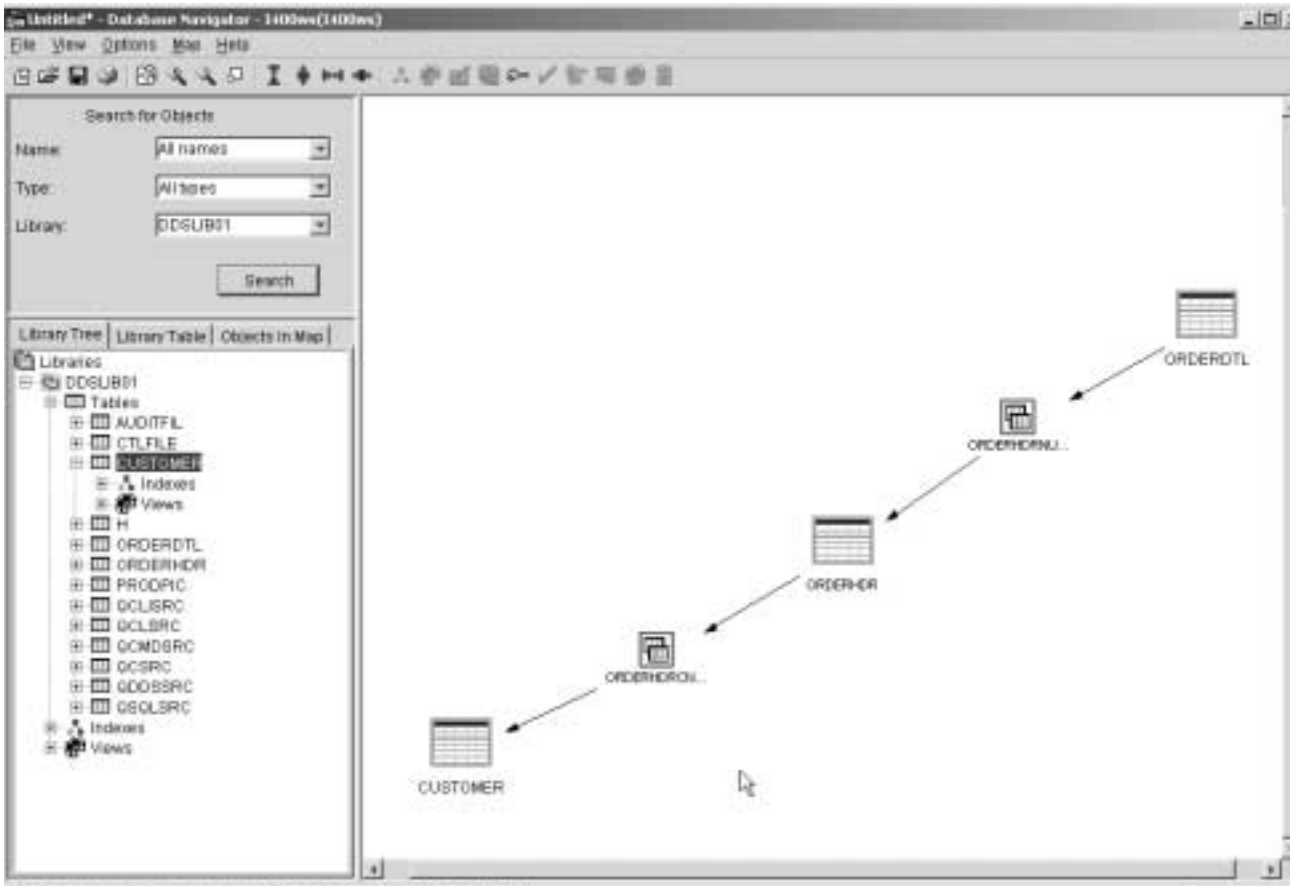

Figure 89. Displaying a map from physical files

__ 11. Take a few moments to analyze the map. Compare it with the one you created in the previous task (GENSQLxx6). Are the maps the same?

__ 12. As an optional step, generate an SQL statement from a the map and compare the SQL statement with the one generated in Lab 2, “Database Navigator: General tasks” on page 9.

You have now completed this lab!