

# Developing DB2 Everyplace JSP Applications using WebSphere Studio Application Developer v5.0

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## Abstract

This document describes how to generate JavaServer Pages (JSP) that access DB2 Everyplace databases using WebSphere Studio Application Developer. A detailed step-by-step description of how to use WebSphere Studio's DB Servers View to create a connection to DB2 Everyplace database will be presented.

This document is intended for DB2 Everyplace database application developers:

- Who want to build a DB2 Everyplace JSP application
- Who are unfamiliar with WebSphere Studio Application Developer

The information in this paper has been verified with the following versions of DB2 Everyplace and WebSphere Studio Application Developer:

- DB2 Everyplace v8.1.2 (<http://www.ibm.com/software/data/db2/everyplace/>)
- WebSphere Studio Application Developer v5.0 (<http://www.ibm.com/software/ad/studioappdev/>)

## Setting up DB2 Everyplace environment

This paper assumes the reader has installed DB2 Everyplace. If you haven't already done so, modify your system CLASSPATH and PATH variables for DB2 Everyplace. <DB2 Everyplace> is the directory where DB2 Everyplace is installed.

- 1) Start => Settings => Control Panel => System => Advanced => Environment Variables...
- 2) Add the following to the system CLASSPATH variable:  
<DB2Everyplace>\Clients\Win32\database\JDBC\db2ejdbc.jar
- 3) Add the following to the system PATH variable:  
<DB2Everyplace>\Clients\Win32\database\x86

## Installing WebSphere Studio Application Developer

IBM WebSphere Studio is a single, comprehensive development environment designed to meet all development needs from Java development to application integration. The WebSphere Studio Family includes many different editions tailored for different development requirements and environments.

IBM WebSphere Studio Application Developer is an easy-to-use, integrated development environment for building, testing, and deploying J2EE and Web services applications. An evaluation copy can be downloaded from the Web site above (navigate to the Downloads page and look for WebSphere Trials (WebSphere Studio Application Developer)).

## Running WebSphere Studio Application Developer

Start WebSphere Studio in the <DB2Everyplace>\SDK\JSP\Win32 directory. Starting in this directory will allow you to use relative paths when specifying the URL of the database you want to connect to.

Enter a workspace directory for this session

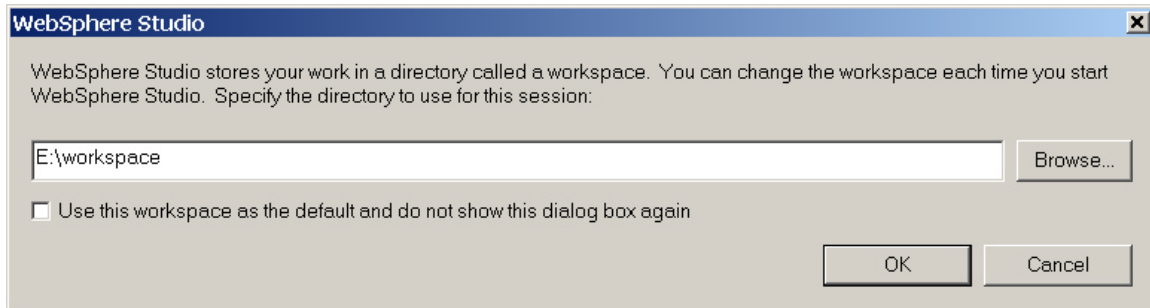


Figure 1

## Sample DB2 Everyplace JSP Application: Visiting Nurse Schedule

The example that follows describes how to create the Visiting Nurse Schedule sample (in the <DB2Everyplace>\SDK\JSP\sample\jsp\VNSchedule\_wsad50 directory).

## Create a Web Project

Follow the steps below to create a web project:

- 1) Open the Web Perspective.
- 2) Select File => New => Web Project
- 3) Project name: VNSchedule\_wsad50
- 4) Click **Next >**.

**Create a Web Project**

**Define the Web Project**

Create a Web Project.

Project name: VNSchedule\_wsad50

☒ Use default

New project location: E:\webstudio\workspace\VNSchedule\_wsad50 [Browse...](#)

☒ J2EE Web Project ☐ Static Web Project

Description:

In a J2EE Web Project you will be able to create content served by a traditional HTTP server (HTML, JavaScript, images, text..) as well as content to be served by a J2EE Application Server (Servlets, JSPs, EJBs..)

Web Project features:

- ☐ Add Struts support
- ☐ Create a default .cvsignore file
- ☒ Create a default CSS file
- ☐ Include Tag Libraries for accessing JSP c
- ☐ Include Tag Libraries for database acces

Description:

Select this feature to have support for Struts added to your project

< Back Next > Finish Cancel

Figure 2

In the J2EE Settings Page in Figure 3, select J2EE level **1.2** from the drop-down menu. Click **Finish**.

**Create a Web Project**

**J2EE Settings Page**  
Set the Enterprise Application project settings, context root, and J2EE level.

Enterprise application project: ☐ New ☒ Existing

Existing project name:

Context root:

J2EE Level:

Description:

J2EE Level 1.2 includes a Servlet Specification level of 2.2 and a JSP Specification level of 1.1. Features such as Servlet Filters and Life Cycle Event Listeners cannot be used if this level is chosen. Applications developed for this J2EE level 1.2 typically target a WAS version 4.x server.

< Back   Next >   Finish   Cancel

Figure 3

The VNSchedule\_wsad50 project appears in the J2EE Navigator View (Figure 4).

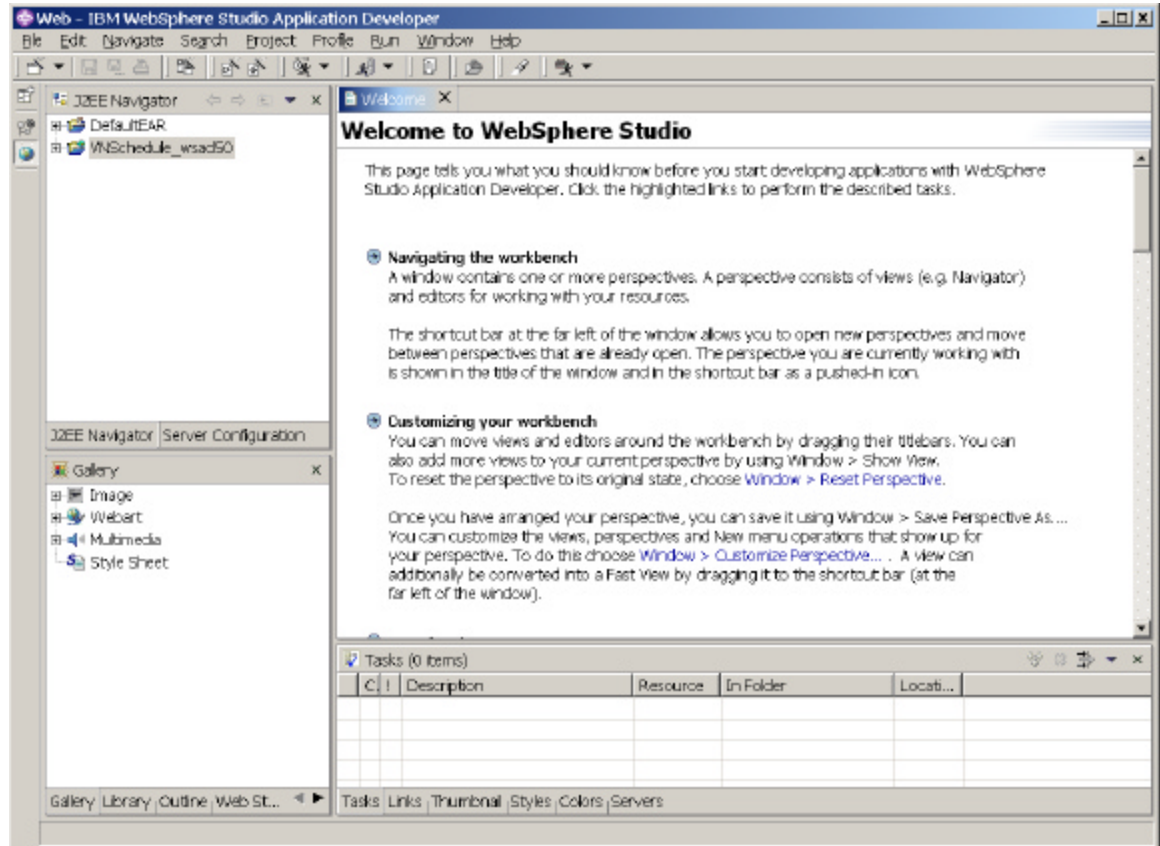


Figure 4

## Create a Connection for the DB2 Everyplace database

To create a connection for the Visiting Nurse Schedule sample database (Figure 5):

- 1) Open the Data Perspective.
- 2) In the DB Servers View, right-click and select **New Connection...**
- 3) In the New Database Connection window:
  - a. Connection name: DB2Everyplace
  - b. Database: VNSAMPLE
  - c. Database vendor type: MySQL, V3.23
  - d. JDBC driver: Other Driver
 

Note: DB2 Everyplace is currently unsupported by WSAD. The workaround is to use MySQL as the database vendor type (like DB2 Everyplace, MySQL does not support schemas).
  - e. JDBC driver class: `com.ibm.db2e.jdbc.DB2eDriver`
  - f. Class location:
 

```
<DB2Everyplace>\Clients\Win32\database\JDBC\db2ejdbc.jar
```
  - g. Connection URL: `jdbc:db2e:../sample/data/VNSAMPLE`

Note: Make sure you use forward slashes in the URL.
- 4) Click **Finish**.

**New**

**Database Connection**

Establish a JDBC connection to a database.

Connection name: DB2Everyplace

Database: VNSAMPLE

User ID:

Password:

Database vendor type: MySQL, V3.23

JDBC driver: Other Driver

Host:

(Optional) Port number:

Server name:

Database Location: Browse...

JDBC driver class: com.ibm.db2e.jdbc.DB2eDriver

Class location: ts\Win32\database\JDBC\db2ejdbc.jar Browse...

Connection URL: jdbc:db2e:../sample/data/VNSAMPLE

Filters...

Finish Cancel

Figure 5

Expand the DB2Everyplace connection in the DB Servers View. Keep expanding until you see the tables for the connection. You should see the VNSAMPLE tables (Figure 6).

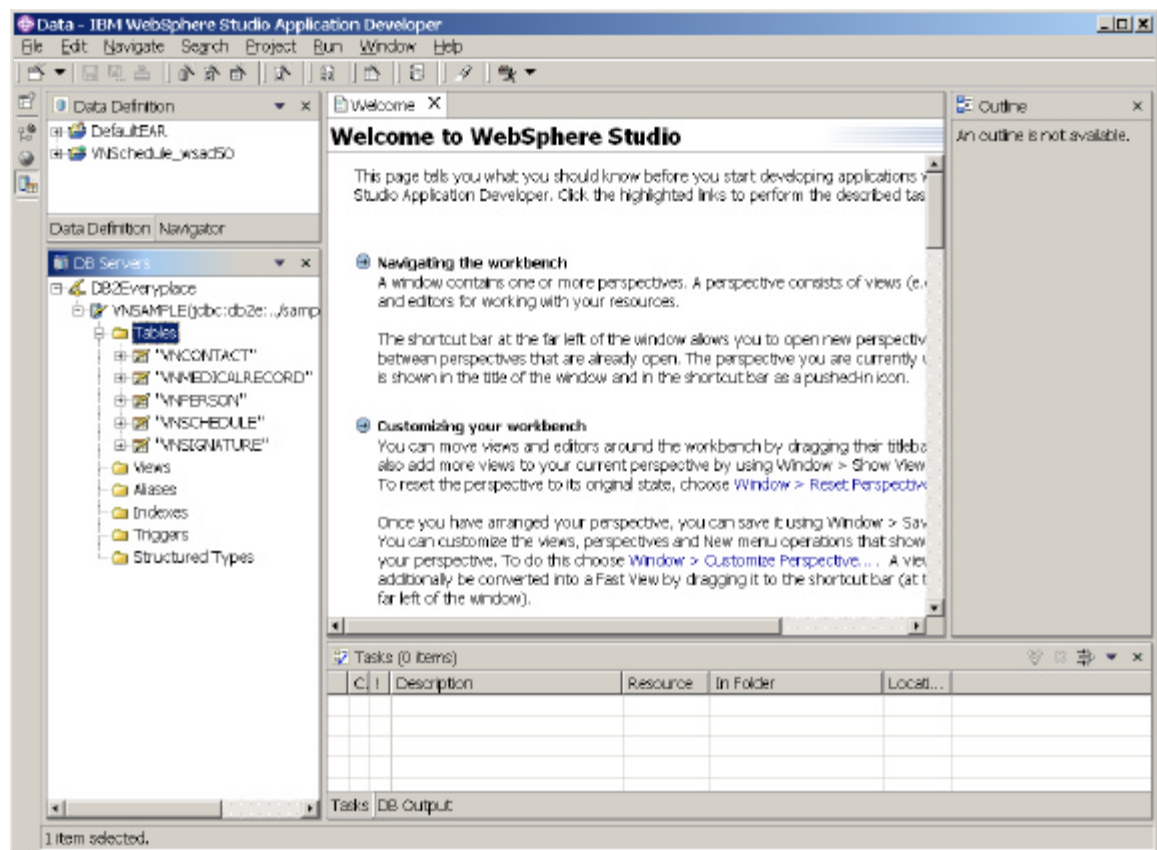


Figure 6

## Import the Connection to the Web Project

The DB2Everyplace connection needs to be imported to the web project that we created earlier:

- 1) Right-click on the DB2Everyplace connection in the DB Servers View and select **Import to Folder...**
- 2) Folder: Click **Browse...**, select **VNSchedule\_wsad50**, and click **OK**.
- 3) Click **Finish**.
- 4) Click **Yes** in the Confirm folder create dialog (Figure 7).

In the Web Perspective, the connection info should be under VNSchedule\_wsad50/Web Content/WEB-INF/databases.

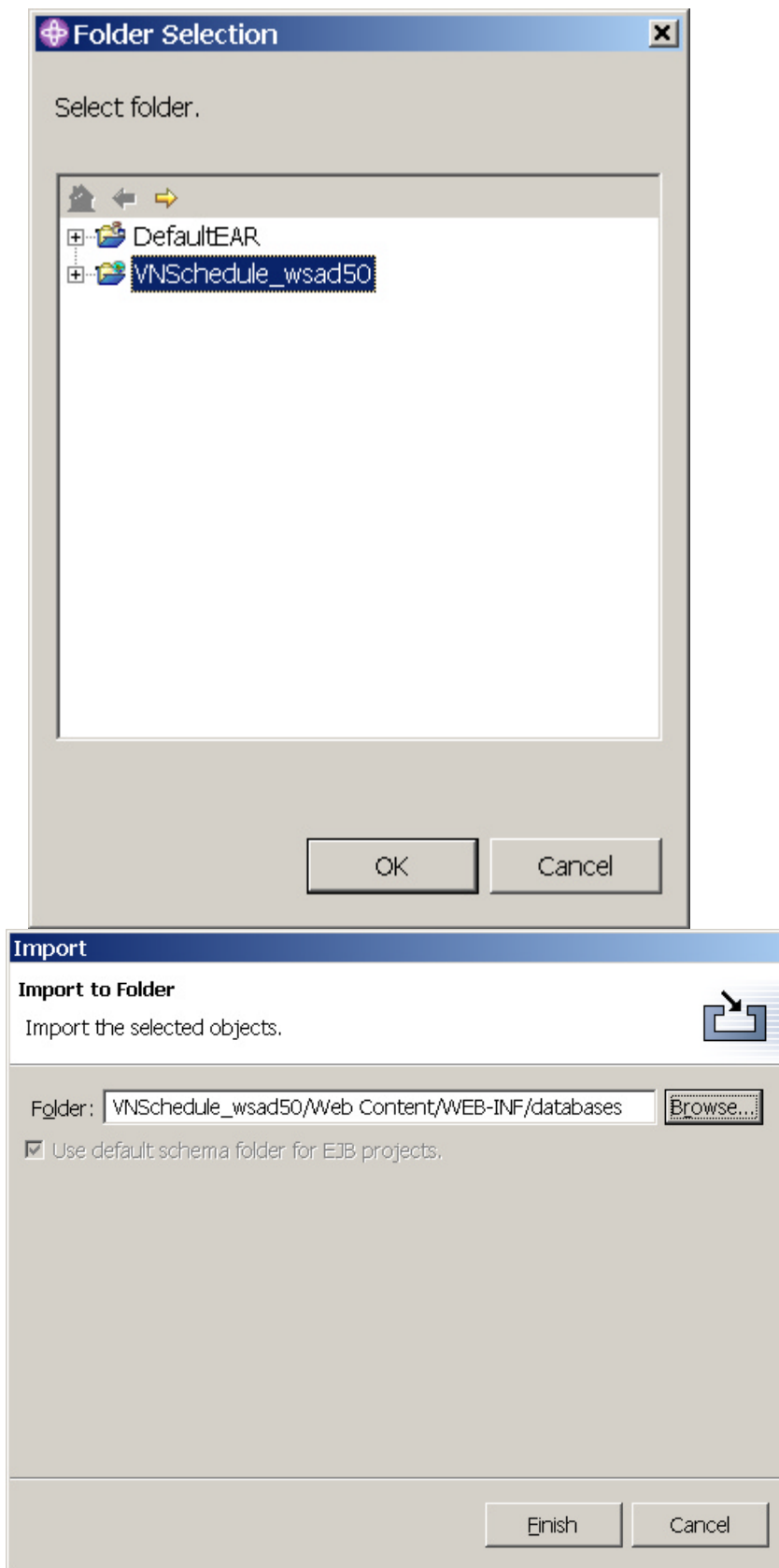


Figure 7



## Create a JavaServer Page

To create the JSP page for the Visiting Nurse Schedule sample JSP application:

- 1) Select File => New => Other...
- 2) In the Select panel:
  - a. Select **Web** in the left pane, and **Database Web Pages** in the right pane.
  - b. Click **Next >**.

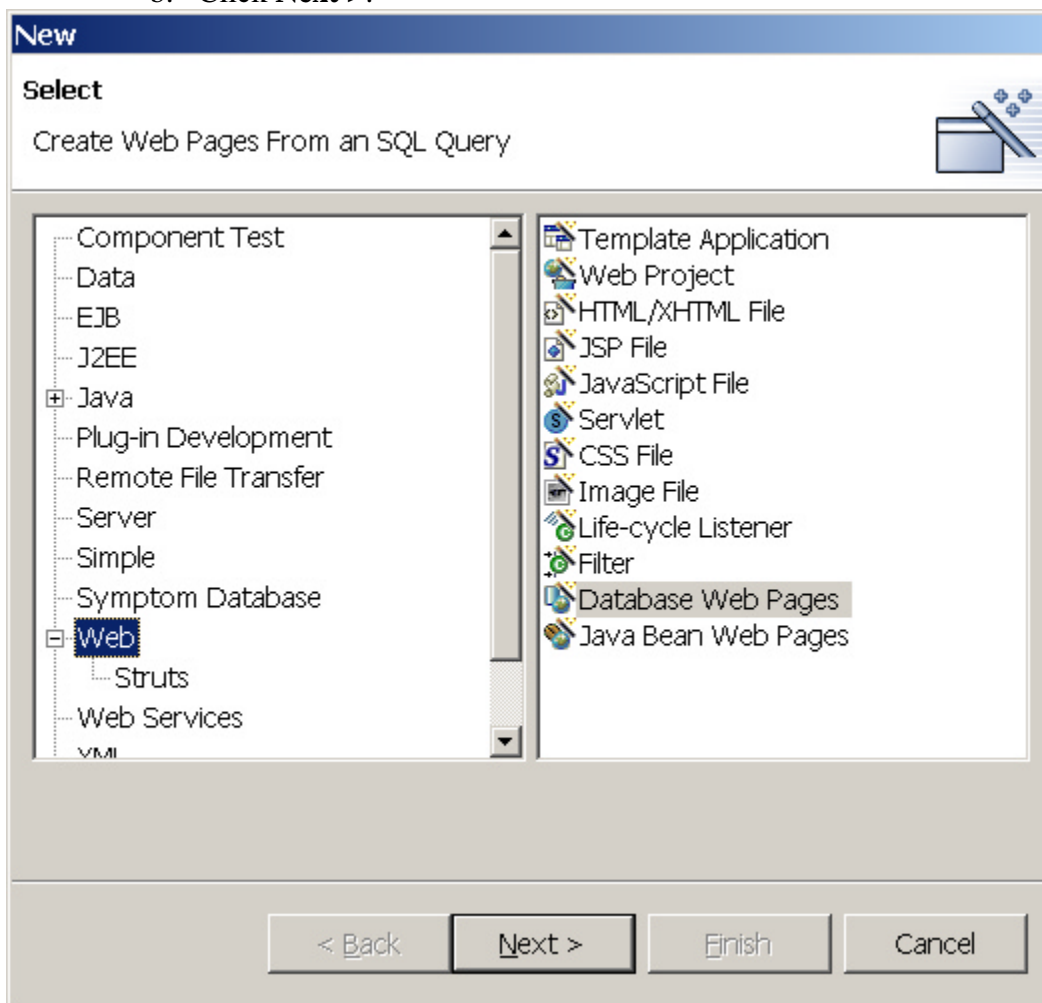


Figure 8

- 3) In the Create Database Web Pages panel:
  - a. Destination folder: /VNSchedule\_wsad50/Web Content
  - b. Model: **IBM Database Access Java Beans – Master Details Pattern**
  - c. Click **Next >**.

The screenshot shows the 'Database Web Pages' wizard in a software application. The title bar reads 'Database Web Pages'. The main heading is 'Create Database Web Pages'. Below this, a text box says: 'Specify the folder and Java package where the files will be created. Choose a code generation model and view details of the files to be generated.' To the right of this text is a small icon of a database cylinder and a globe.

The wizard has several input fields and buttons:

- 'Destination folder:' with a text box containing '/VNSchedule\_wsad50/Web Content' and a 'Browse...' button.
- 'Java package:' with a text box containing '(default)' and a 'Browse...' button.
- 'SQL Statement Type:' with a dropdown menu showing 'Select Statement'.
- 'Model:' with a dropdown menu showing 'IBM Database Access Java Beans - Master Details Pattern'.
- 'Description:' with a text box containing: 'This model generates web pages that access database information using IBM Data Access Beans. The SQL Select statement will produce the Master Results Table. The Details page will display more details on a selected row of the Master'.
- 'Files:' with a list box containing: 'Input Form', 'Master Table View', 'Details View', 'Master Table View Bean', 'Details Table View Bean', and 'Front Controller'.
- 'File Description:' with a text box containing: 'Design the web page to be used to collect host variables to be used in your query.'

At the bottom of the wizard are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Figure 9

- 4) In the Choose SQL Method panel:
- a. Select the radio button for “Use existing database model”
  - b. Database model: Click **Browse...**
  - c. In the Data resource selection window (Figure 10), browse to **VNSchedule\_wsad50/Web Content/WEB-INF/databases/VNSAMPLE (MySQL, V3.23)**. Click **OK**.
  - d. Click **Next >** in Choose SQL Method window (Figure 11).

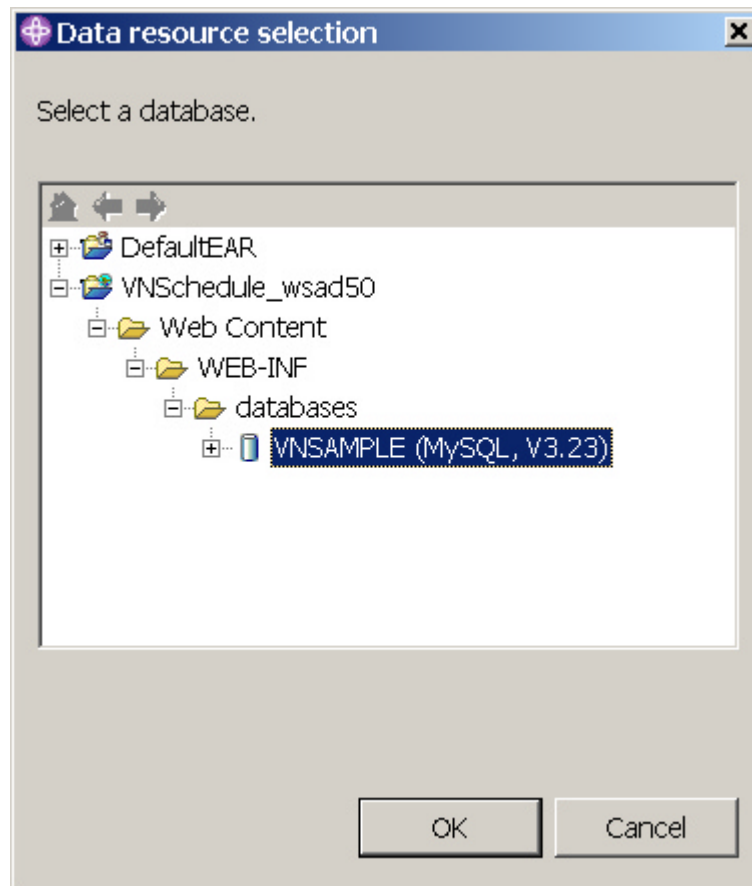


Figure 10

**Database Web Pages**

**Choose SQL Method**

Choose an SQL method.

How would you like to create your SQL statement?

☒ Be guided through creating an SQL statement

☐ Manually type an SQL statement

Choose a database model for the SQL statement.

☒ Use existing database model

Database model:

☐ Connect to a database and import a new database model

☐ Save SQL Statement

Statement Name:

< Back   Next >   Finish   Cancel

Figure 11

- 5) In the Construct An SQL Statement panel:
  - a. In the Tables tab: Select **VNPERSON** and **VNSCHEDULE**, click > .
  - b. In the Columns tab (Figure 12):
    - i. Select **TIME\_C** from **VNSCHEDULE**, click > .
    - ii. Select **NAME**, **ADDRESS**, and **CITY** from **VNPERSON**, click > .
  - c. In the Joins tab (Figure 13): Specify condition VNPERSON.ID = VNSCHEDULE.PATIENTID
  - d. In the Order tab: Select TIME\_C from VNSCHEDULE, click > .
  - e. Click **Next** >.

**Database Web Pages**

**Construct An SQL Statement**

Specify information on each page to create the SQL statement. Click Next to see the generated statement.

Tables Columns Joins Conditions Groups Order

Choose the output columns to include in your SQL statement. You can add column expressions and specify an alias for your output columns.

Available Columns:

- "VNPERSON"
  - "ID"
  - "NAME"
  - "ADDRESS"
  - "CITY"
  - "HOMEPHONE"
  - "WORKPHONE"
  - "MOBILEPHONE"
- "VNSCHEDULE"
  - "PATIENTID"
  - "TIME\_C"

Selected Columns:

Column	Alias
"TIME_C"	
"NAME"	
"ADDRESS"	
"CITY"	

☐ Show schema and table names

Figure 12

Database Web Pages

Construct An SQL Statement

Specify information on each page to create the SQL statement. Click Next to see the generated statement.

Tables

Columns

Joins

Conditions

Groups

Order

Specify the join conditions that will be used to join tables. Join tables by using the pop-up menu or drag and drop columns. Use the pop-up menu on the resulting join connection line for additional options.

Tables:

"VNPERSO"

☐ "ID"

☒ "NAME"

☒ "ADDRESS"

"VNSCHEDULE"

☐ "PATIENTID"

☒ "TIME\_C"

< Back

Next >

Finish

Cancel

Figure 13

14

- 6) In the SQL Statement Page panel (Figure 14):
- Review the SQL statement.
  - You may execute the SQL statement using the **Execute...** button.
  - Click **Next >**.

The screenshot shows a web application window titled "Database Web Pages". Inside, there is a section titled "SQL Statement Page" with a small database icon. Below the title is a text instruction: "Modify your SQL statement. Once modified you will need to press the 'Parse' button before you can go to the next page and the 'Reset' button to be able to use the 'Construct An SQL Statement' page." Below this instruction is a large text area containing an SQL query. To the right of the text area are three buttons: "Execute...", "Parse", and "Reset". At the bottom of the window are four buttons: "< Back", "Next >", "Finish", and "Cancel".

```
SELECT
  "VNSCHEDULE"."TIME_C",
  "VNPERSOON"."NAME",
  "VNPERSOON"."ADDRESS",
  "VNPERSOON"."CITY"
FROM
  "VNPERSOON", "VNSCHEDULE"
WHERE
  "VNPERSOON"."ID" = "VNSCHEDULE"."PATIENTID"
ORDER BY
  "TIME_C" ASC
```

Figure 14

- 7) In the Runtime Connection Page panel (Figure 15):
- Make sure driver manager connection information is correct.
  - Click **Next >** three times to get to **Design the Master View** panel.

**Database Web Pages**

**Runtime Connection Page**

Specify the database connection you would like to use at runtime.

☐ Use data source connection

Data source/JNDI name:

☒ Use driver manager connection

Driver name:

URL:

User ID:

Password:

Re-enter password:

Note that the password given here will be stored unencrypted in this project's web.xml file

< Back   Next >   Finish   Cancel

Figure 15



- 8) In the Design the Master View panel:
  - a. Select **Page** tab in the lower left corner. Rename Page Title to “Visiting Nurse Schedule”. See Figure 16.
  - b. Select **Fields** tab. Edit the result table labels to display **TIME**, **NAME**, **ADDRESS**, and **CITY** respectively. Make sure to press **Enter** to save the changes. You will see the labels updated in the right pane. See Figure 17.
  - c. Click **Next >** twice to get to **Specify Prefix** panel (Figure 18).

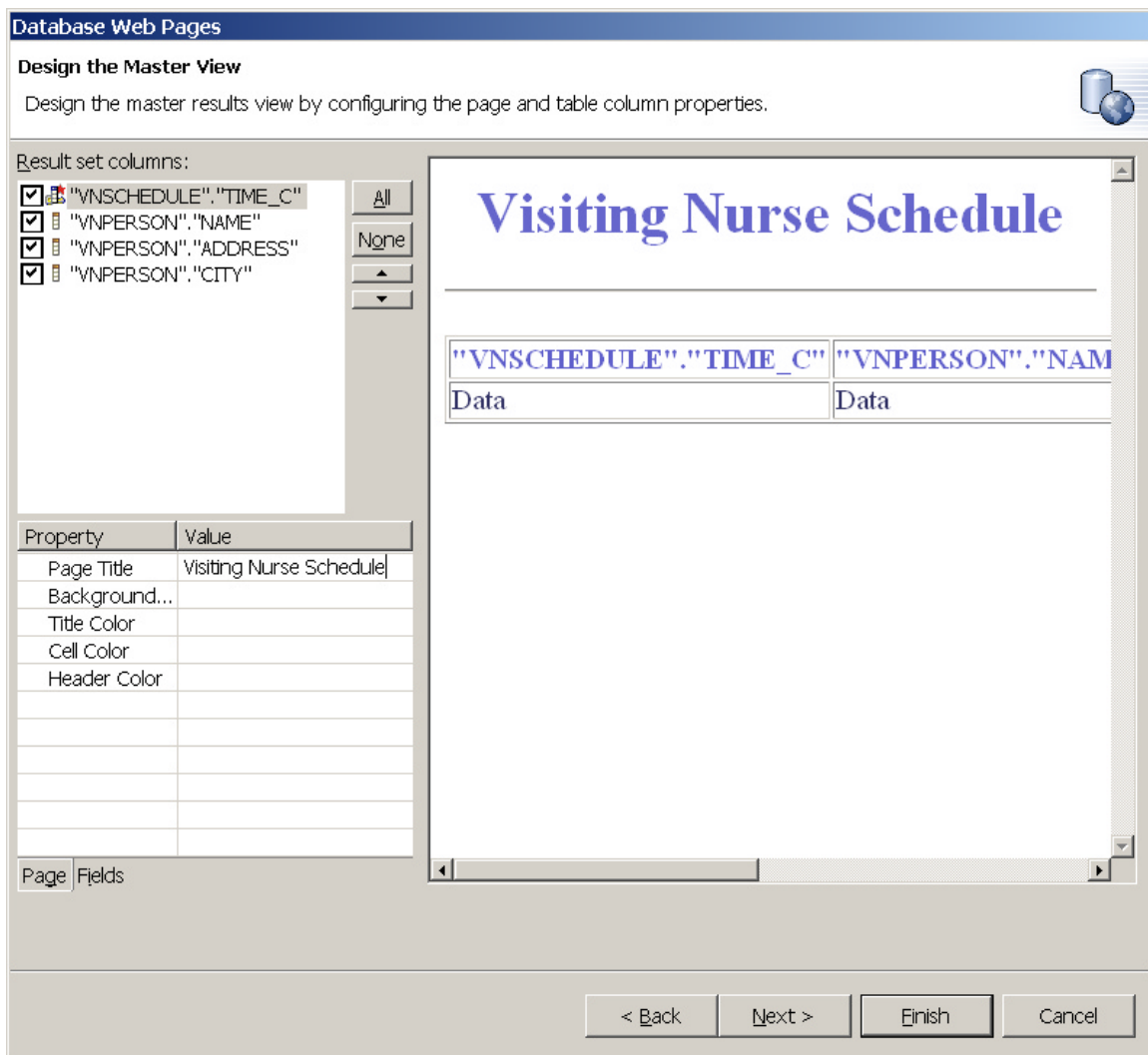


Figure 16

Database Web Pages

Design the Master View

Design the master results view by configuring the page and table column properties.

Result set columns:

☒ "VNSCHEDULE"."TIME\_C"

☒ "VNPERSO"."NAME"

☒ "VNPERSO"."ADDRESS"

☒ "VNPERSO"."CITY"

All

None

▲

▼

Property	Value
ID	f_VNPERSO__CITY_
Label	CITY
Key Value	false
Column Wi...	
Percentage	

Page

Fields

Visiting Nurse Schedule

TIME	NAME	ADDRESS	CITY
Data	Data	Data	Data

< Back

Next >

Finish

Cancel

Figure 17

- 9) In the Specify Prefix panel (Figure 18):
- Prefix: `schedule`
  - Click **Finish**.

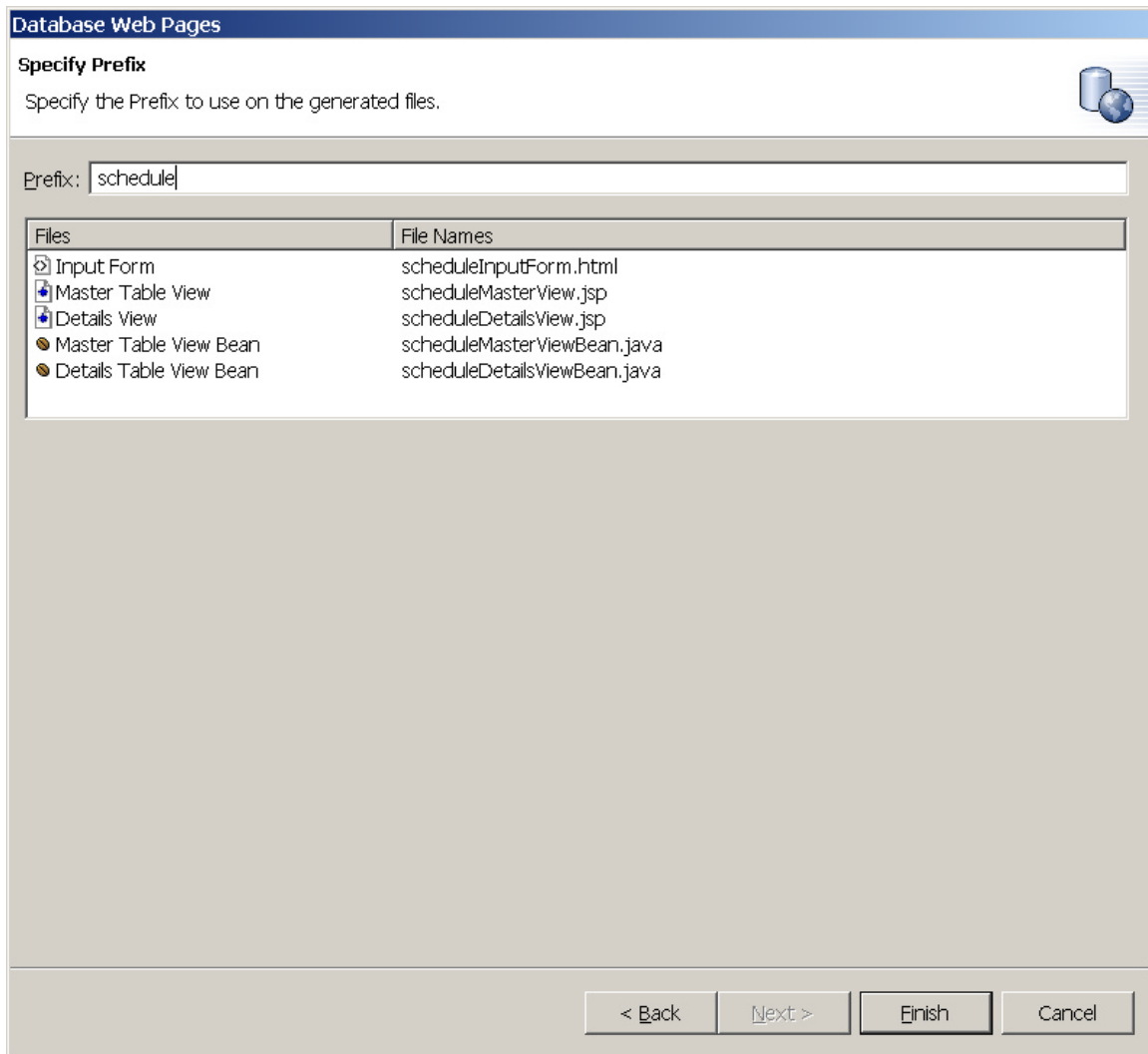


Figure 18

The scheduleMasterView.jsp file now appears under VNSchedule\_wsad50/ Web Content/WEB-INF in the J2EE Navigator View in the Web Perspective (Figure 19). The generated JSP page can be edited in Page Designer in WebSphere Studio by double-clicking on the JSP file.

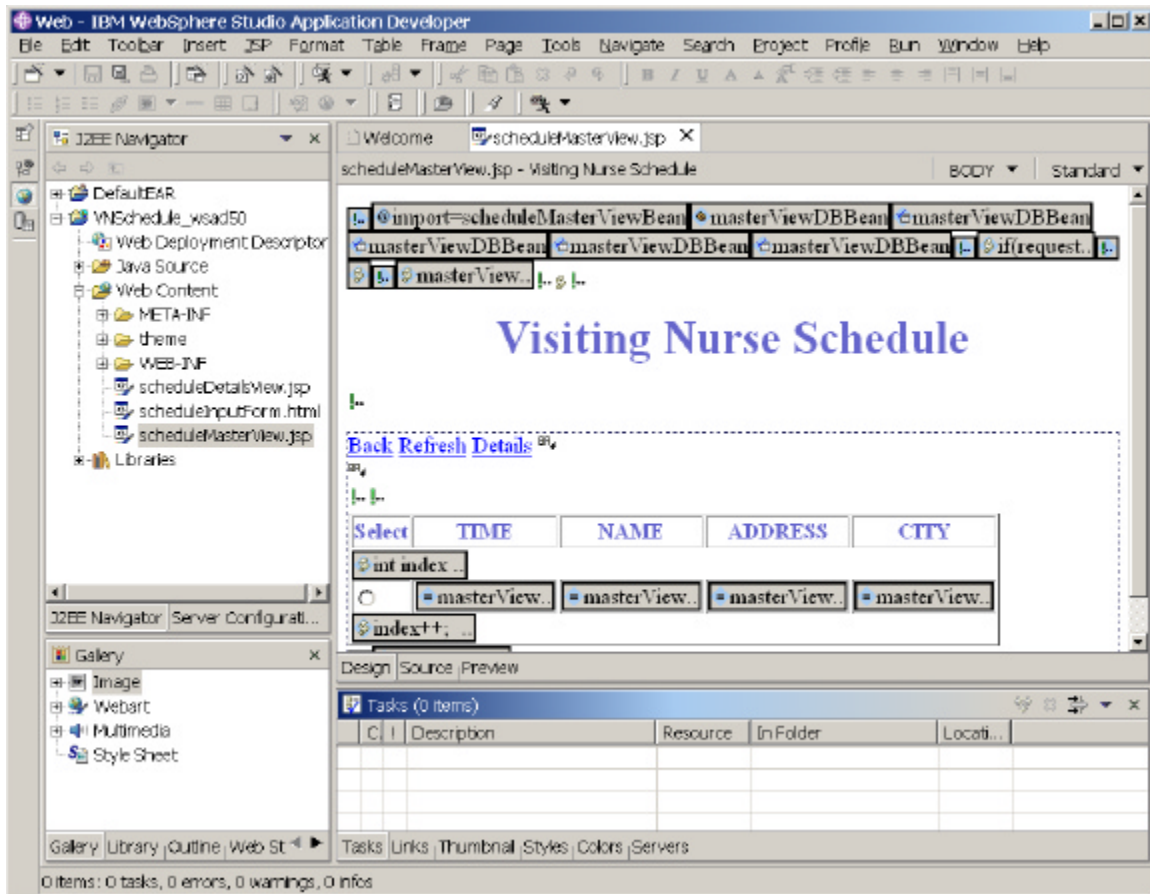


Figure 19

## View the JavaServer Page

Refer to <DB2Everyplace>\SDK\JSP\doc\readme.txt for how to run the JSP page. The project files you will need are under the

<WSAD workspace>\VNSchedule\_wsad50\Web Content directory:

- \scheduleMasterView.jsp
- \WEB-INF\web.xml
- \WEB-INF\classes\scheduleMasterViewBean.class
- \WEB-INF\lib\dbbeans.jar

These files can be found in the

<DB2Everyplace>\SDK\JSP\sample\jsp\VNSchedule\_wsad50 directory.

The diagram below (Figure 20) shows the result of viewing scheduleMasterView.jsp in a Web browser using the DB2 Everyplace mini HTTP Web server.

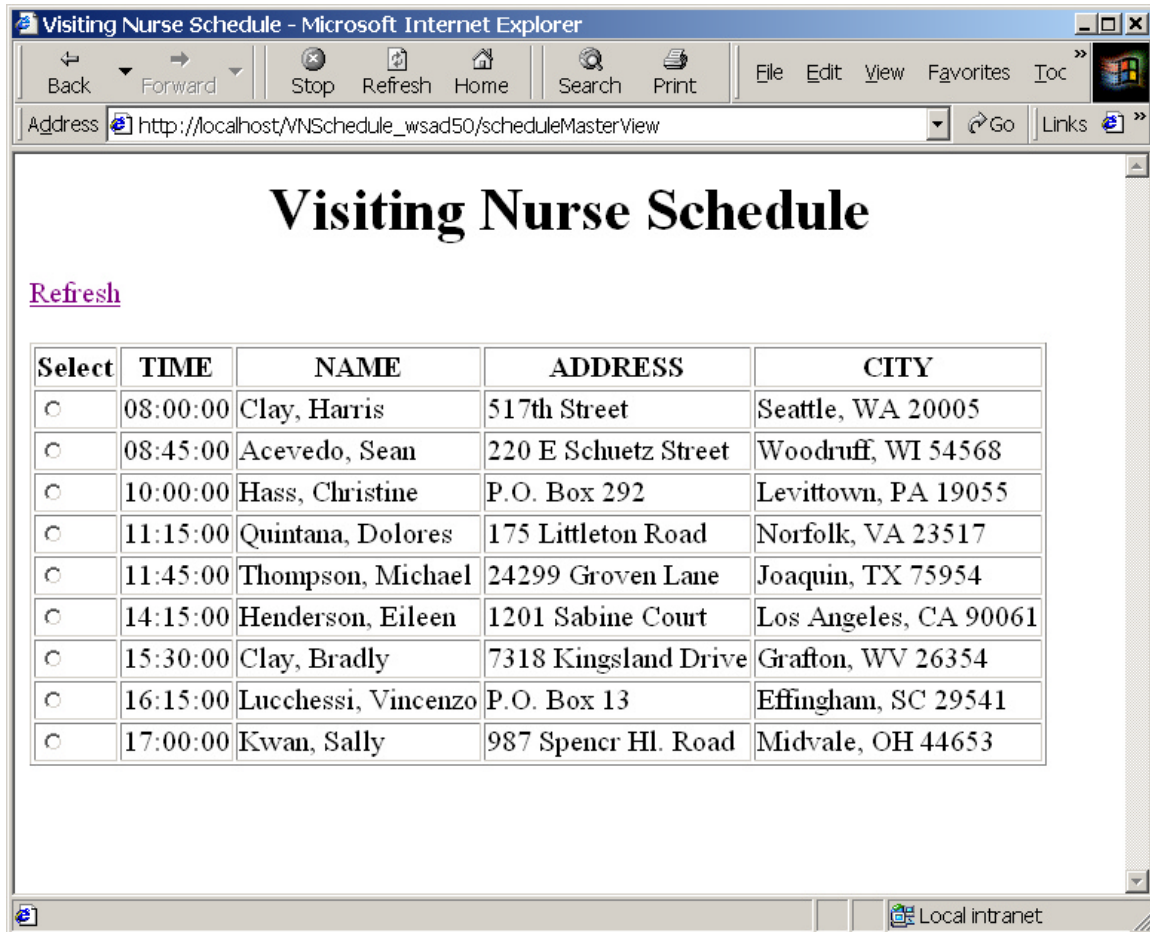


Figure 10

Note: The **Back** and **Details** links were taken out from the ScheduleMasterView.jsp in the <DB2Everyplace>\SDK\JSP\sample\jsp\VNSchedule\_wsad50 directory for simplicity.