IBM RATIONAL APPLICATION DEVELOPER 6.0 – LAB EXERCISE

# Testing Applications in IBM Rational Application Developer

## What this exercise is about

Rational Application Developer includes an environment to test your J2EE 1.4 applications.  For quick testing of applications which have entity beans, Cloudscape can be very quickly configured to persist data for the entity beans.  For testing with a valid production database, DB2 can be used to persist data.  This exercise will have you test a J2EE 1.4 application using Cloudscape.

## Lab Requirements

List of system and software required for the student to complete the lab.

- Windows 2000 Professional Service Pack 4 is required for this lab exercise.

- IBM Rational Application Developer v6.0, with the WebSphere Application Server v6.0 Integrated Test Environment is also required.

- The lab source files (LabFiles60.zip) must be extracted to the root directory (i.e., C:\).

- Experience with previous versions of Rational Application Developer and the J2EE programming model are also required.

## What you should be able to do

At the end of this lab you should be able to:

- Prepare a J2EE 1.4 application for testing on the Integrated Test Environment Application Server.

- Set up Cloudscape as a data source for your application before testing the application.

- Test your application on the Integrated Test Environment Application Server.

# Introduction

The J2EE 1.4 application which you will be testing is a simple banking application named WebSphereBank. It is composed of EJB, Web, and Application Client modules. In the EJB module there is a session bean and an entity bean. Before being able to fully test the application, you will need to generate mappings for the entity bean to a data source as well as generate deploy and RMIC code used by the EJB container of the J2EE server to handle the calls to the entity bean and persisting of the data. Cloudscape is a small footprint, object-relational database based purely on Java. It can be set up very easily and you can quickly test your application to ensure it is working properly.

In this lab, you will be deploying and testing the WebSphereBank application on the Integrated Test Environment application server. The process you will use to setup and test the application on the Integrated Test Environment application server, are very similar to the procedures required to test an application on a remote server running WebSphere Application Server v6.0.

Exercise Instructions

**\*\* NOTE \*\* Solution instructions are normally provided at the end. The solution is not provided in this case because you need to do the exercises in order to understand Java tools and there is no final solution to import. To go through the lab, start at Part One, assuming you have met the requirements in the section "User Requirements" stated above.**

| Reference Variable | Windows Location | AIX/UNIX Location |
|---|---|---|
| <LAB_FILES> | C:\Labfiles60 | /tmp/Labfiles60 |
| <RAD_HOME> | C:\Program Files\IBM\Rational\SDP\6.0 | |

# Part 1: Server  Setup

_____ 1.  Backup your server configuration.  This will preserve your current server configuration. You will restore your server configuration at the end of the lab exercise.

 __ a. Open a Windows **Command Prompt** and navigate to the following directory:

    `<RAD_HOME>\runtimes\base_v6\bin`

 __ b. Backup the server configuration by issuing the following command:

    `backupConfig "c:\Program Files\IBM\Backup.zip"`

_____ 2.  Start Rational Application Developer.

 __ **a. Start > Programs > IBM Rational > Rational Software Development Platform.**

 __ b. For workspace, specify **<LAB_FILES>\IRAD_TestApplLocal\workspace.**

> **NOTE:** If the Auto Launch Configuration Change Alert window appears click the **Yes** button to change the auto launch eclipse instance to use when opening IBM Rational Software Development Platform in the future.

_____ 3.  Open the J2EE Perspective if it is not already open

 __ a. **Close** the **welcome** screen.

 __ b. From the menu select **Window > Open Perspective > Other.**

 __ c. Select **J2EE** and click **OK.**

# Part 2: Application and Cloudscape Setup

____ 4.    Back in IBM Rational Application Developer, import the WebSphereBank application for testing.

   __ a. Select File > Import...

   __ b. Select EAR file and click **Next.**

   __ c. Click **Browse...** and navigate to **c:\LabFiles60\IRAD_TestApplLocal\WebSphereBank.ear** and click **Open**.

   __ d. Verify the EAR project has the name **WebSphereBank.**

   __ e. Click **Finish**.

____ 5.    Add Java Build Path to clean up errors.  If you select the Problems tab, you will notice a list of errors and warnings.

   __ a. Right click on an error and select **Quick Fix.**
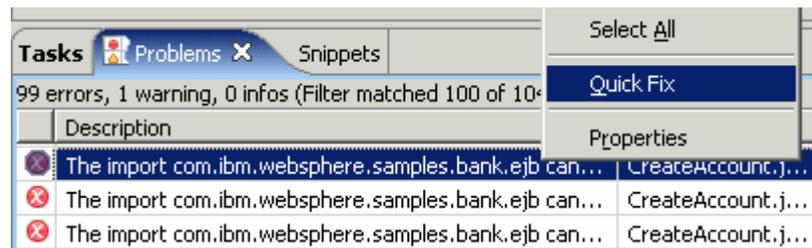


   __ b. A list of available fixes will appear.  Select "Add project 'WebSphereBankEJB' to build path of 'WebSphereBankWeb'" and select **OK.**  The errors should disappear.
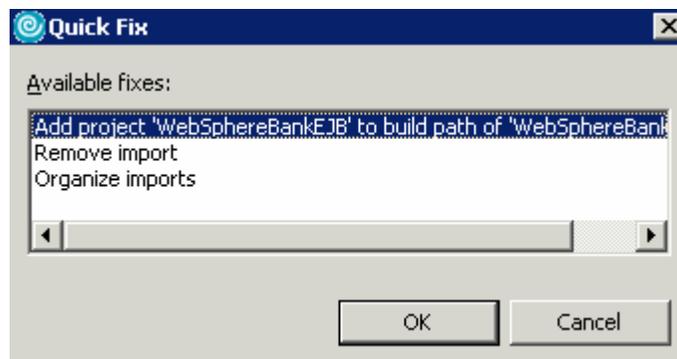


____ 6.    Start the server with the WebSphereBank project while initializing the database and datasource.

__ a. In the Project Explorer view, navigate to **Dynamic Web Projects > WebSphereBankWeb > WebContent** and right click on index.html.
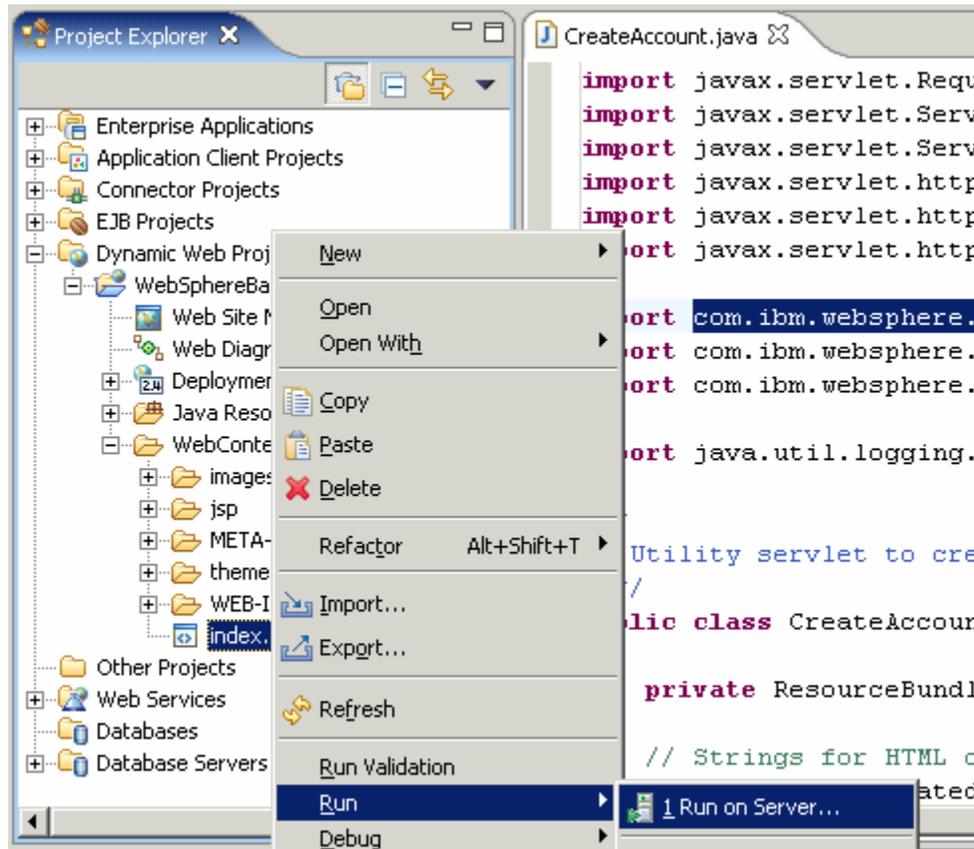


__ b. Select the **Run > Run on Server** option to open the Server Selection window.

__ c. On the Define a New Server page of the Server Selection window make sure the **Choose an existing server** option  is selected as well as the server WebSphere Application Server v6.0. Then click on the **Next** button.

__ d. On the **Add and Remove Projects** page, make sure that WebSphereBank is added to the Configured projects list on the right side of the window.  Then click on the **Next** button.
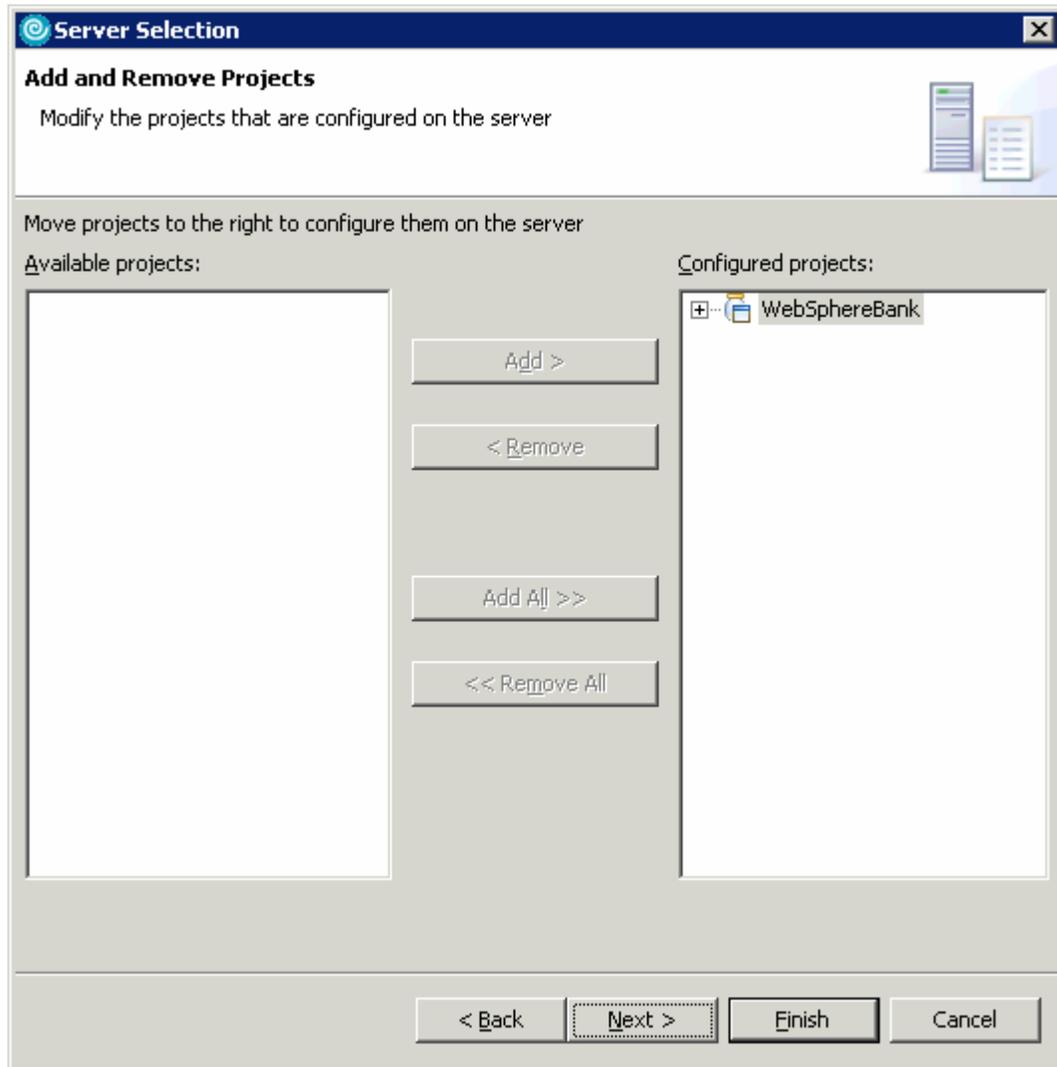
__ e. On the **Select Tasks** page, click on the Create tables and data sources checkbox.  Then click
the **Finish** button.
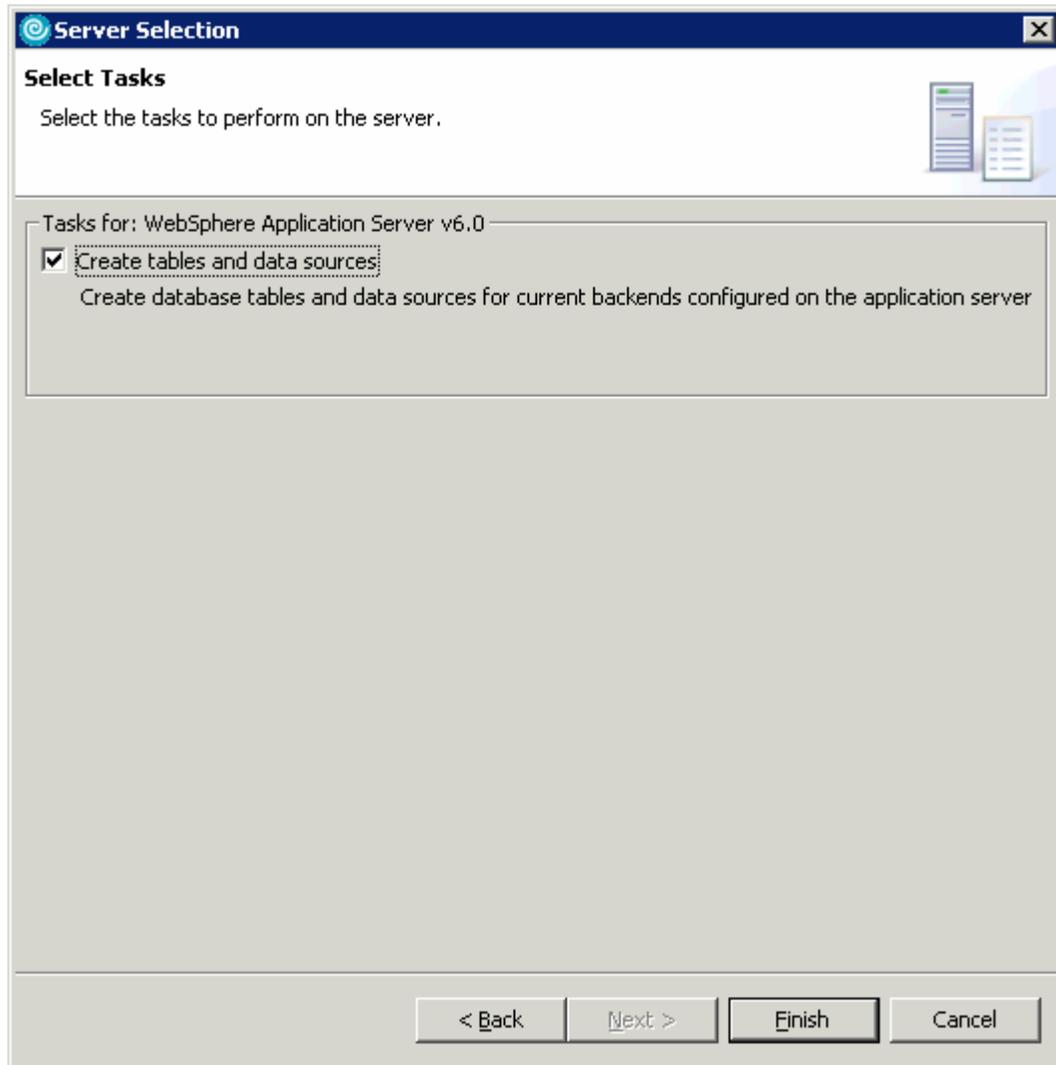


__ f. Click **Finish**.

__ g. You should see a window like the one below if the database has been setup successfully.
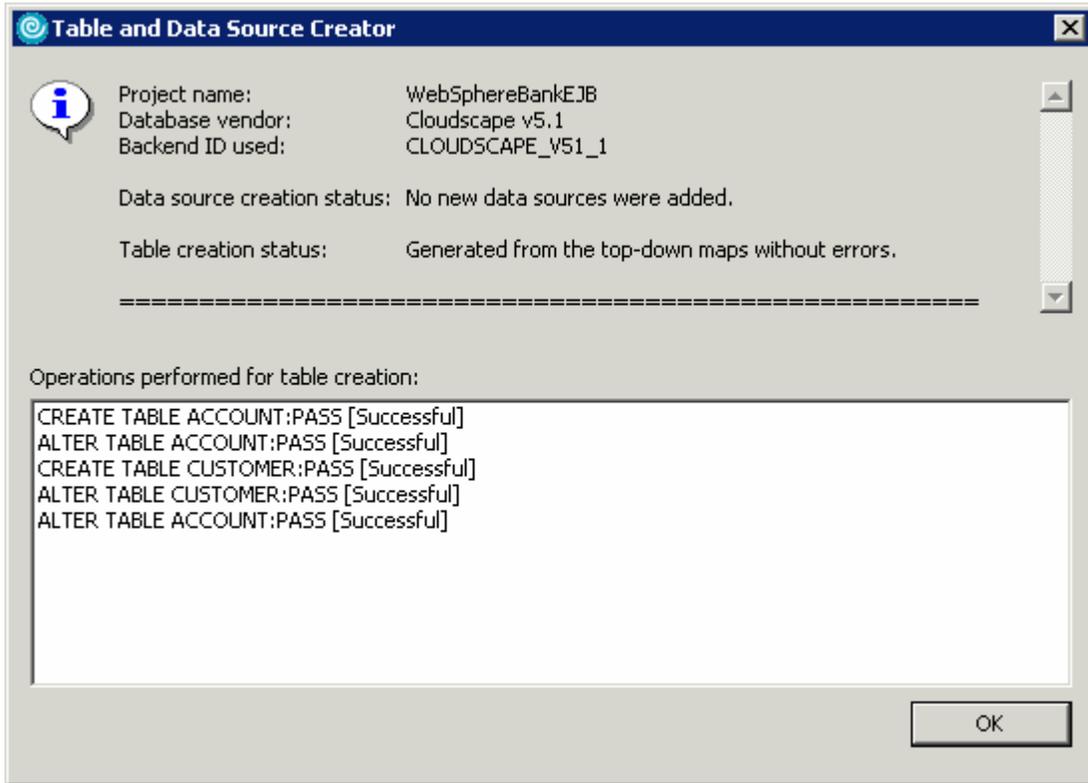


**NOTE:** After the code has been generated, browse to EJBProjects > WebSphereBankEJB > ejbModule. Notice the classes and the packages which were created.   In the com.ibm.websphere.samples.bank.ejb.websphere_deploy package are common classes used to support persisting entity beans running in WebSphere regardless of the data source.  The com.ibm.websphere.samples.bank.ejb.websphere_deploy.CLOUDSCAPE_V5_1 classes are specific for persisting entity beans to a Cloudscape database.

    __ h. Click **OK**.

____ 7.   Go to the administrative console and wait for WebSphereBank application to show up.

    __ a. Open a Web Browser and navigate to the following URL:

        **http://localhost:9060/ibm/console**

    __ b. When prompted for a User ID, enter **wsdemo** to log in.

__ c. Select Applications -> Enterprise Applications.  Watch for WebSphereBank to appear in the list of applications.

*IRADv6_TestApplLocalLab.doc*

# Part 3: Test Application

_____ 1. After the application has made it to the server, open your browser to the WebSphereBank homepage.  Open a Web Browser and navigate to the following URL:

**http://localhost:9080/WebSphereBankWeb**

It may take some time, but eventually the homepage of the WebSphereBank Application will come up.  The WebSphereBank Application is composed of several processes (Create Customer, Create Account, Transfer funds, etc).  First you will test the application by creating a customer, then creating two accounts before transferring funds between the two accounts.

_____ 2. Select the **Create Customer** link.

_____ 3. Enter Customer Number, Name and Tax ID.  Click **Create**.

## Create Customer

Messages

Customer Number: | 10

First Name: | John

Last Name: | Doe

TAX ID: | 012-34-5678

____ 4.    You will see details for customer created.  Click **Create Account**.

## Customer Details

### New Customer has been successfully created

Customer Number:      10

First Name:      JOHN

Last Name:      DOE

TAX ID:      012-34-5678

[ Create Account ]

____ 5.    Enter **101** for the Account Number, checking for account type and **600** for the starting balance. Click **Create**.

## Create a new Account

### Messages

Customer Number:      [10]

Account Number:      [101]

Account Type:      ○ Savings  ◉ Checking

Starting Balance:      $ [600]

[ Create ]      [ Reset ]

____ 6.    Create a savings account with a number of **102** and a balance of **400**.

_____ 7.  With two accounts created, you can now transfer funds between these two accounts.  Select the **Transfer Funds** link.  For the From Account enter **101,** for the To Account enter **102**, and for the amount enter **75**.

From Account:  101

To Account:  102

Amount:  $ 75

Transfer    Reset

_____ 8.  Click **Transfer**.

_____ 9.  The success message will be displayed.  The updated balance will also be displayed.

_____ 10.  Select **Search By Customer Name**.

_____ 11.  Fill in **Doe** for the name.

_____ 12.  Click **Search**.

## Search By Customer

Last Name:  Doe

Search

_____ 13.  The account found will be displayed.

## List of Customers

| Customer Number | Last Name | First Name | No. of Accounts | Tax ID |
|---|---|---|---|---|
| 10 | DOE | JOHN | 2 | 012-34-5678 |

_____ 14.  Select **Search By Customer Number**.

_____ 15.  Fill in **10** for Customer Number and **500** for Balance exceeding by.

____ 16. Click **Search**.

## Search By Customer Number

Customer Number:  `10`

Balance exceeding by  $ `500`

[ Search ]

____ 17. The checking account will be displayed since it has a balance exceeding $500.

## List of Accounts

| Account Number | Balance | Account Type |
|---|---|---|
| 101 | 525.00 | Checking |

____ 18. The application works properly.   Close the Web Browser.

____ 19. Select the **Servers** view from the Server Perspective and stop the server.  Select **server1** and right-click selecting **Stop**.

# Part 4: Restore your server configuration

____ 1. Restore your server configuration.  This will return your server configuration to its original state.

    __ a. Open a Windows **Command Prompt** and navigate to the following directory:

           `<RAD_HOME>\runtimes\base_v6\bin`

    __ a. Restore the server configuration by issuing the following command:

           `restoreConfig "c:\Program Files\IBM\Backup.zip"`

## What you did in this exercise

In this exercise, you tested a J2EE 1.4 application using Cloudscape to persist an entity bean in your application.

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