IBM WEBSPHERE PROCESS INTEGRATION 6.0 – LAB EXERCISE

JDBCInbound Lab

What this exercise is about	1
Lab Requirements	1
What you should be able to do	1
Introduction	2
Exercise Instructions	2
Part 1: Create the JDBCTEST Cloudscape Database and Tables	3
Part 2: Set up the Development Environment	9
Part 3: Create the JDBCTestInbound Application1	0
Part 4: Test the application using the WebSphere Test Environment (WTE)	24
What you did in this exercise2	26

What this exercise is about

The objective of this lab is to provide you with an understanding of the WebSphere Adapter for JDBC and inbound event processing.

Lab Requirements

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

- WebSphere Integration Developer V6 installed
- WebSphere Process Server V6 test environment installed
- WebSphere Adapter for JDBC V6 installed
- Sample code in the directory C:\Labfiles60\JDBC (Windows) or /tmp/LabFiles60/JDBC (Linux)

What you should be able to do

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

• Install and deploy the Adapter for JDBC and integrate it into an SCA application for use with inbound event processing.

Introduction

This lab introduces you to the WebSphere Adapter for JDBC and the processing of inbound events that have occurred in a database table. It uses a JDBCTEST Cloudscape database along with a CUSTOMER table for user data and a WBIA_JDBC_EVENTSTORE table to record events. In the lab, you will import the JDBC Adapter into WebSphere Integration Developer and run the Enterprise Service Discovery wizard to input connection information, create a service description, and discover objects existing in the specified table. You will then assemble an application, wiring together a Java component and the EIS export file. In the Java component, you will add implementations for the create, update and delete methods.

Before working with the adapter, you will first add a record to the CUSTOMER table, creating a create event. The create trigger runs, inserting a record for that event into the eventstore table. The event has occurred and is now waiting in the table for the JDBCTestInbound application to start and the JDBC Adapter to start polling for events. To test the inbound application, you will use the WebSphere Test Environment.

Exercise Instructions

Some instructions in this lab may be Windows operating-system specific. If you plan on running the lab on an operating-system other than Windows, you will need to execute the appropriate commands, and use appropriate files (.sh vs..bat) for your operating system. The directory locations are specified in the lab instructions using symbolic references, as follows:

Reference Variable	Windows Location	AIX/UNIX Location
<lab_name></lab_name>	JDBCInBound	
<wid_home></wid_home>	C:\Program Files\IBM\WebSphere\ID\6.0	
<wps_home></wps_home>	C:\ <wid_home>\runtimes\bi_v6</wid_home>	
<jdbcadapter_home></jdbcadapter_home>	C:\Program Files\IBM\ResourceAdapters\JDBC	
<lab_files></lab_files>	C:\Labfiles60	/tmp/Labfiles60
<temp></temp>	C:\temp	/tmp

Windows users please note: When directory locations are passed as parameters to a Java program such as EJBdeploy or wsadmin, it is necessary to replace the backslashes with forward slashes to follow the Java convention. For example, C:\LabFiles60\ would be replaced by C:/LabFiles60/

Part 1: Create the JDBCTEST Cloudscape Database and Tables

In this part you will create the JDBCTEST database along with the CUSTOMER table for user data and the WBIA_JDBC_EVENTSTORE table for recording events. You will also add triggers to the CUSTOMER table that will fire whenever create, update, or deletes occur to the CUSTOMER table, inserting a record into the event table. To cause an event, you will create at least one record in the CUSTOMER table. This will fire the trigger for the create operation which will add a record to the WBIA_JDBC_EVENTSTORE.

___1. Start Cloudscape Cview Graphical User Interface (GUI) by running the cview.bat.

Note: The Cloudscape embedded driver that is being used in the lab, supports a connection from only one JVM at a time. You can have either the server running and connected to the JDBCTEST database, or the Cview GUI connected to the JDBCTEST database; but not both at the same time.

____a. Open a command prompt window, navigate to the following subdirectory, and run the cview.bat program.

<WPS_HOME>\cloudscape\bin\embedded>cview

- 2. Using the CView GUI, create the JDBCTEST database if it doesn't already exist. If you've already completed the JDBCOutbound lab, the database, tables, and triggers are the same. You can skip to step 7. where you add records to the CUSTOMER table.
 - ____a. Select from the menu, File -> New -> Database Click the Directory ... button and browse to

 Cloudscape\databases subdirectory , enter the name of the database to create, JDBCTEST, and click Open. You will return to the New Database panel as shown: Click OK

New D	tabase 🛛	K
Databa	Localization Encryption Import	
Name:	MWvebSphereVD\6.0\runtimes\bi_v6\cloudscape\databases\JDBCTEST	1
	Directory	
	OK Cancel Help	

__3. Select the JDBCTEST Database, select the Database tab, and enter SQL to create two tables: CUSTOMER table for user data and WBIA_JDBC_EVENTSTORE table for recording events.

NOTE: For your convenience, the following sql code snippets can be found in <LAB_FILES>\JDBC\snippets\CUSTOMERSQL.txt

____a. Select the JDBCTEST Database, select the Database tab on the right, paste the following into the SQL window:

CREATE	TABLE	CUSTOMER			
(
-	ID VAR	CHAR (100)	NOT	NULL	,
]	LName	VARCHAR (1)	19),		
I	FName	VARCHAR (12	19)		
)					

_ b. Select the "lightening bolt" icon to execute the SQL (The SQL text will appear highlighted after executing.)



_ c. Set the key for the CUSTOMER table by pasting the following into the SQL window (you can simply paste over the top of and replace the previous existing SQL shown in the window)

```
ALTER TABLE CUSTOMER
ADD CONSTRAINT NEW_KEYCU Primary Key (
ID)
```

- ____d. Select the "lightening bolt" icon to execute the SQL
- _4. Create the WBIA_JDBC_EVENTSTORE table and create the primary key.

NOTE: For your convenience, the following sql code snippets can be found in <LAB_FILES>\JDBC\snippets\EVENTSTORESQL.txt

____a. Create the WBIA_JDBC_EVENTSTORE table by pasting the following into the SQL window:

```
CREATE TABLE WBIA_JDBC_EVENTSTORE
```

```
EVENT_ID INT DEFAULT AUTOINCREMENT INITIAL 1 INCREMENT 1 NOT NULL,
OBJECT_KEY VARCHAR(80) NOT NULL,
OBJECT_NAME VARCHAR(40) NOT NULL,
OBJECT_FUNCTION VARCHAR(40) NOT NULL,
EVENT_PRIORITY INT NOT NULL,
EVENT_TIME TIMESTAMP DEFAULT CURRENT TIMESTAMP NOT NULL,
EVENT_STATUS INT NOT NULL,
EVENT_COMMENT VARCHAR(100)
```

_b. Select the "lightning bolt" icon to execute the SQL.

)

____ c. Create the primary key by pasting the following into the SQL window:

ALTER TABLE WBIA_JDBC_EVENTSTORE

ADD CONSTRAINT "c3350098-0104-7683-90b5-ffffe0415391" Primary Key (EVENT_ID)

- _____d. Select the "lightening bolt" icon to execute the SQL.
- 5. Create triggers on the CUSTOMER database for create, update, and delete events.

NOTE: For your convenience, the following sql code snippets can be found in <LAB_FILES>\JDBC\snippets\CUSTOMERTRIGGERSQL.txt

____a. Create the trigger for the create event by pasting the following into the SQL window:

```
CREATE TRIGGER event_create

AFTER INSERT ON CUSTOMER REFERENCING NEW AS N

FOR EACH ROW MODE DB2SQL

INSERT INTO wbia_jdbc_eventstore (object_key, object_name,

object_function, event_priority, event_status)

VALUES (N.id, 'AppCustomerBG', 'Create', 1, 0)
```

____b. Select the "lightening bolt" to execute the SQL.

____ c. Create the trigger for the update event by pasting the following into the SQL window:

```
CREATE TRIGGER event_update
AFTER UPDATE ON CUSTOMER REFERENCING NEW AS N
FOR EACH ROW MODE DB2SQL
INSERT INTO wbia_jdbc_eventstore (object_key, object_name,
object_function, event_priority, event_status)
VALUES (N.id, 'AppCustomerBG', 'Create', 1, 0)
```

____d. Select the "lightening bolt" to execute the SQL.

____e. Create the trigger for the delete event by pasting the following into the SQL window:

```
CREATE TRIGGER event_delete
AFTER DELETE ON CUSTOMER REFERENCING OLD AS O
FOR EACH ROW MODE DB2SQL
INSERT INTO wbia_jdbc_eventstore (object_key, object_name,
object_function, event_priority, event_status)
VALUES (0.id, 'AppCustomerBG', 'Delete', 1, 0)
```

____f. Select the "lightening bolt" to execute the SQL.

6. Verify that your JDBCTEST database and tables look similar to the following.

2 Cview	
File Edit View Help	Action New Delete Database Statistics Properties SQL
indexes indexes Ews	CREATE TRIGGER event_delete
 Horro <li< td=""><td>Stop Inspect Export</td></li<>	Stop Inspect Export
	Total Rows: 0 Total Timing: Compile = 0.06, Execute = 0.1

- _____7. Using the CView GUI, create a record in the CUSTOMER Table.
 - _____a. Expand the Tables tree underneath the JDBCTEST database. Select the CUSTOMER Table. Select the Data tab at the far right. Click in the open area below the column names.

2 Cview	
File Edit View Help	
System C:wid/runtimes/bi_v6\cloudscape\databases\JDBCTEST C:wid/runtimes/bi_v6\cloudscape\databases\JDBCTEST CUSTOMER Indexes Indexes Lindexes Lin	Action New Delete Table Properties SQL Data
	ID LNAME FNAME S

- ____b. Add an entry to the CUSTOMER table by typing in values for ID, LNAME, and FNAME. Specify ID of 10, LNAME of Johnson, and FNAME of Jerry. Click OK.
- _____c. Verify that the WBIA_JDBC_EVENTSTORE now has an event record for the customer record just created. Select the WBIA_JDBC_EVENTSTORE Table. Select the Data tab at the far right. You should see a record with OBJECT_KEY of **10** and OBJECT_FUNCTION of **Create**.

2 Cview		×
File Edit View Help		
System Ctwid/runtimes\bi_v6\cloudscape\de Tables CUSTOMER → Indexes Keys	Action New Delete Table Properties SQL Data	
Keys Keys NeW_KEYCU Checks	EVENT_ID OBJECT_KEY OBJECT_NAME OBJECT_FUNC 1 1 10 AppCustomerBG Create	
□ WBIA_JDBC_EVENTSTORE → Indexes		

____d. Close the JDBCTEST database by selecting File -> Close. Exit Cview GUI by selecting File -> Exit.

Note: You must exit the Cview GUI, before starting the server as the Cloudscape "embedded" database driver used in this lab allows for only one JVM connection at a time.

Part 2: Set up the Development Environment

In this part, you will start WebSphere Integration Developer, using a new workspace, and set up the WebSphere Process Server to be used as the WebSphere Test Environment (WTE).

- 1. Start WebSphere Integration Developer v6 with a new workspace.
 - ____a. From the start menu select Start > Programs > IBM WebSphere > Integration Developer V6.0 > WebSphere Integration Developer V6.0 Beta
 - b. When prompted enter <LAB_FILES>\JDBC\jdbcinbound\workspace for your workspace and click OK

Workspace Launcher	×
Select a workspace	
IBM WebSphere Integration Developer stores your projects in a director Select the workspace directory to use for this session.	y called a workspace.
Workspace: c:\Labfiles60\JDBC\jdbcinbound\workspace	▼ <u>B</u> rowse
Les this as the default and do not ask again	
	OK Cancel

c. When WebSphere Integration Developer v6.0 opens, close the Welcome page



Part 3: Create the JDBCTestInbound Application

In this part you will import the WebSphere Adapter for JDBC, run Enterprise Service Discovery to discover objects and create the necessary SCA artifacts, and assemble into an SCA application.

1. Import the JDBC Adapter Resource Archive (RAR) file. This will create a J2EE Connector Project.

____a. From the top Menu bar, select File -> Import, Select RAR file, click next

____b. At the Confirm Enablement popup window, check the box and click OK

🚯 Confirm Enablement 🛛 🛛 🔀
This action requires the enablement of "Base J2EE Support". Enable the required capability?
Always enable capabilities and don't ask me again.
OK Cancel Details >>

- ____ c. Complete the Connector Import panel
 - Connector file: Browse... to the location of the CWYBC_JDBC.rar adapter file and select it, for example: c:\<JDBCADAPTER_HOME>\adapter\jdbc\deploy\CWYBC_JDBC.rar (or wherever you previously installed the adapter using the WebSphere Adapter for JDBC installation program).
 - 2) Deselect the "Add module to an EAR project" and select Finish

🚯 Import		×
Connector Import Import a Connector	: project from the file system	
Connector file:	C: \Program Files \IBM \ResourceAdapters \JDBC \adapter \jdbc \dej 💌	Browse
Connector project:	CWYBC_JDBC	N <u>e</u> w
🔲 Overwrite exis	sting resources without warning,	
🗖 Delete proje	ect on overwrite	
Target server:	WebSphere Process Server v6.0	N <u>e</u> w
EAR project;	Add module to an EAR project.	Ne <u>w</u> ,,,
	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

____d. At the Confirm Perspective Switch prompt, click Yes



- _ 2. Add any external dependencies your adapter has to the imported project. These are dependencies that the adapter may have on the JDBC applications (adapter–specific). Add the db2j.jar to the build path of the Connector project.
 - ____a. Expand the **Connector Projects** folder, right click the **CWYBC_JDBC** connector project, select **properties**.

😤 Project Explorer 🛛		
ra 🕞 🗧	本	
+ R Enterprise Applicat	tions	
🕀 🔂 Application Client F	Projects	
🖃 🙀 Connector Project	s	
E CWYBC_JDBC	New	•
EJB Projects		
+ Other Projects	Сору	
🗄 🕞 Web Services	💼 Paste	
👘 Databases	💢 Delete	
in Database Servers		
	Refactor Al	t+Shift+T ▶
	Import	•
	Export	•
	🔗 Refresh	
	Close Project	
	Run Validation	
	Run	•
	Debug	•
	Profile	•
	Deploy	
	Team	•
	Compare With	•
	Restore from Local History	
	Source	
	Code Review	
	Properties Al	t+Enter

____b. Select Java Build Path from the list at the left, select the Libraries tab from the panel at the right, select Add External JARs... button

Into Recolute Dath	Java Build Path	
Builders J2EE Java Build Path Java Compiler Javadoc Location Java JAR Dependencies Java Task Tags Project References Server Validation	Source Projects Libraries Order and Export JARs and class folders on the build path: Image: CWYBC_JDBC.jar - CWYBC_JDBC/connectorModule Image: CWYBS_AdapterFoundation.jar - CWYBC_JDBC/connector Image: CWYBS_AdapterFoundation.jar - CWYBC_JDBC/connectorModule Image: CWYBS_WPS v6.0 Runtime Image: CWYBS_VF.org Image: CWYBS_VF.org <	Add JARs Add External JARs Add Variable Add Library Add Class Eolder Edit Remove
	Default output folder:	Browse

- ____ c. Browse to the location of c:\<WPS_HOME>\cloudscape\lib and select the **db2j.jar**, click **Open**.
- ____d. You will now see the db2j.jar added in your JARS and class folders in the build path: list. Click OK

😕 Source 🔁 Projects 🛋 Libraries 🖧 Order and Export		
JARs <u>a</u> nd class folders on the build path:		
Em CWYBC_JDBC.jar - CWYBC_JDBC/connectorModule	Add <u>J</u> ARs	
CWYBS_AdapterFoundation.jar - CWYBC_JDBC/connectorModule db2j.jar - C:\Program Files\IBM\WebSphere\ID\6.0\runtimes\bi_v6\cloudscape\ib	Add External JARs	
Im I icutij_3_2.jar - CWTBC_JDBC/connectorModule	Add <u>V</u> ariable	
	Add Li <u>b</u> rary	
	Add Class <u>F</u> older	
	<u>E</u> dit	
	<u>R</u> emove	
Defaul <u>t</u> output folder:		
CWYBC_JDBC/connectorModule	Bro <u>w</u> se	
	OK Cancel	

- _ 3. Switch to the Business Integration Perspective and run the Enterprise Service Discovery wizard. A Business Integration project will be created for you during this process.
 - ____a. From the top Menu bar, select Window > Open Perspective > Other ... > Business Integration (default) click OK
 - b. From wiithin the Business Integration Perspective, select File > New > Enterprise Service Discovery

____ c. Highlight the JDBC EMD Adapter and click Next



- ____4. Complete the Configure Settings for Discovery Agent panel to connect to the JDBCTEST database and discover the available services. Click **Next**
 - ____a. Enter valid userid and password values, for example

Username:	WSdemo
Password:	WS15Demo1

____b. Enter the following values for DatabaseURL and JdbcDriverClass

DatabaseURL: jdbc:db2j:c:\Program Files\IBM\WebSphere\ID\6.0\runtimes\bi_v6\cloudscape\databases\JDBCTEST

JdbcDriverClass: com.ibm.db2j.jdbc.DB2jDriver

🚯 Enterprise Service Discovery 🛛 🔀					
Configure Settings for Discovery Agent					
agent.	alize the resource adapter and the enterprise service discovery	0			
Connection Configuration -					
Miscellaneous					
Prefix:					
UserCredentials					
UserName:	* WSdemo				
Password:	* ********				
MachineCredentials					
DatabaseURL:	* jdbc:db2j:c:\Program Files\IBM\WebSphere\ID\6.0\runtim	es\bi_v6\clou			
JdbcDriverClass:	* com.ibm.db2j.jdbc.DB2jDriver				
BiDi Properties					

___c. Click NEXT

5. Complete the Find and Discover Enterprise Services panel

_____a. Select the **Run Query** button. A connection will be made to the Cloudscape JDBCTEST database and a selection of Meta data objects will be presented in a tree-like structure.

Note: Select the **Edit Query** ... button to see the available options, however, don't change any of the defaults for this lab exercise.

b. Expand the schema named APP, (this is the default schema given to our Cloudscape tables) expand Tables, highlight CUSTOMER, click the >> Add selected button. CUSTOMER now appears in the Selected meta data objects window. Click Next.

D Enterprise Service Discovery	
Find and Discover Enterprise Services Use "Edit Query" to create a query and press "Run Query" to discover matching objects on the enterprise system.	EIS
Query:	
Schema Name Filter =null,Types=Tables,Types=Views,Types=Stored ProceduresTypes=Synonyms - Nick Names,Add busines Run Query Objects discovered by query:	Edit Query
APP CUSTOMER WBIA_JDBC_EVENTSTORE Stored Procedures Synonyms - Nick Names SYS SYS SYSIBM	Filter Clear Filter
) Objects to be imported:	1
USTOMER.	<< Remove
< <u>Back</u> <u>Next</u> > Einish	Cancel

____ c. On the Configure Objects panel, leave the default value for Namespace, leave the Service Type: set to Inbound, and enter com/test/data for BOLocation. Note the Operations available. Click Next.

🚯 Enterpris	e Service Discovery
Configure Obj	jects
Specify the pr	roperties for the objects that will be imported by the discovery agent.
NameSpace:	http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc
Service Type:	Inbound
Operations:	
Update Delete	Add Remove
	100
MaxRecords:	
BOLocation:	com/test/data
	< <u>B</u> ack <u>N</u> ext > Einish Cancel

- 6. Complete the Generate Artifacts Panel.
 - ____a. A Business Integration Module has not yet been created, select the **New...** button and enter in the name **JDBCTestInbound** for the Module Name. Click **Finish.**

🚯 New Module 🛛 🔀
Module
Create a new business integration module. A module is a project that is used for development, version management, organizing resources, and deploying to the runtime environment.
Module Name JDBCTestInbound
Module Location
Directory; c:\Labfiles60\JDBC\jdbcinbound\workspace\JDBCTes Browse
<u>F</u> inish Cancel

- ____b. Enter com/test/data for the Folder value. Leave the default JDBCInboundInterface for the Name value.
- ____ c. Leave the Deploy connector with module box checked.
- d. Select the radio button to the left of Use discovered connection properties Additional properties options appear to complete for Activation Spec, ResourceAdapterProperties, and Miscellaneous properties.

Note: The IBM WebSphere Adapters (this includes the IBM WebSphere Adapter for Flat Files, IBM WebSphere Adapter for JDBC, IBM WebSphere Adapter for PeopleSoft Enterprise, IBM WebSphere Adapter for Siebel Business Applications, and IBM WebSphere Adapter for SAP Applications) are supported as "Deploy connector with module" only, meaning the adapter is deployed within the module which is packaged as an Enterprise Archive file (EAR file). Therefore, the "Deploy connector with module" checkbox should always be checked and the "Use discovered connection properties" checkbox should always be checked.

e. Scroll down the list of properties available to set for the Activation Specification. Notice the Event Distribution Database and Table (EDT) Info properties available and that the Auto Create EDT box is checked. For this lab, the "in memory" Event Distribution Table is used rather than a persistent Event Distribution Table, so you won't be entering any EDT values; however, here is where the properties would be entered. It is important to note that the persistent Event Distribution Table Distribution Table a driver that is XA capable as XA transactions are used

in recovery and to guarantee delivery of inbound events to an endpoint. Review the remaining properties available. Scroll down to the UserCredentials section, and enter the following values for the remaining required fields. Click **Finish.** Wait for the workspace to complete building.

UserName: valid value to connect to the database Password: valid value to connect to the database EventOrderBy: OBJECT_KEY

EventTableName: WBIA_JDBC_EVENTSTORE

DatabaseVendor: **Other** (Enter Other since you are using Cloudscape. If you were using DB2, Oracle, or MSSQLServer, you would enter those values as specified in the JDBC Adapter user guide, as specific adapter processing is available with those specific databases.).

___f. Click Finish

- 7. Use the Assembly Diagram to wire the **JDBCTestInbound** Interface to a Java Component.
 - ____a. Change to the **Business Integration** perspective. Expand the **JDBCTestInBound** folder.
 - ____b. From the **Business Integration** view, double click the **JDBCTestIntbound** module. This will open the module in the Assembly Diagram. You will see a message that there is one new element added to the module.

🕄 Assem	Assembly Diagram: JDBCTestInbound 🛛 👔				
Ø	(1) There are 1 new elements that have been added to your module.	x			
₽ > (⇒ >	1 com/test/data/JDBCInboundInterface				
డి> ఒ					

____ c. From the palette, select the **Component (with no implementation type)** icon, then select the **Java Component** and drop it on the Assembly Diagram.

____d. Wire the **JDBCInboundInterface** to the **Java Component.** At the Add Wire popup window, select **OK** in response:



____e. The Assembly Diagram now looks as follows:

8	🕄 *Assembly Diagram: JDBCTestInbound 🛛 🗖				
(6	(1) There are 1 new elements that have been added to your module.	x		
	P	1 com/test/data/JDBCInboundInterface			
L	(⇒>				
L	&>				
L	۹.,				
l		Component1			

8. Generate the implementation for the Java Component

____a. Right click the Java Component1, select Generate Implementation from the context menu

(C) *Asser	nbly Diagram: JDBCTestInbound 🛿		
	(1) There are 1 new ele	ements that have been added to your module.	x
R 20 20 20 20 20 20 20 20 20 20 20 20 20	1 com/test/data/JDBCInboundInterf	ace	
	Component1	✓ Undo Add Wire ♦ Redo	
		Add 🔸	
		Change Type	
		Generate Implementation	
		Merge Implementation	

b. Highlight the com.test.data package and select OK (Click New Package and create the com.test.data package if it doesn't already exist.)

Generate Implementation		_ 🗆 🔀			
Please choose the package where the Java implementation will be generated:					
(default package) com com.test com.test.data					
New Package		Cancel			

____ c. The Java Editor will open with the **Component1Impl.java** file.

NOTE: For your convenience, the following code snippets can be found in <LAB_FILES>\JDBC\snippets\Component1Impl.txt

_____d. Scroll down and locate the createAppCustomer(Object createCustomerInput) method that needs to be implemented. Paste the following code into the method so the complete method looks as follows:

```
public void createAppCustomer(Object createCustomerInput) {
   System.out.println("CREATE customer is: " + createAppCustomerInput);
   DataObject bg=(DataObject)createAppCustomerInput;
   DataObject bo=bg.getDataObject("AppCustomer");
   System.out.println("bo is: "+bo);
   System.out.println("verb is: "+bg.get("verb"));
   System.out.println("id is: "+bo.get("id"));
   System.out.println("LNAME is: "+bo.get("Iname"));
   System.out.println("FNAME is: "+bo.get("fname"));
}
```

_____e. Scroll down and locate the updateAppCustomer(Object updateAppCustomerInput) method that needs to be implemented. Paste the following code into the method so the complete method looks as follows:

```
public void updateAppCustomer(Object updateAppCustomerInput) {
  System.out.println("UPDATE customer is: " + updateAppCustomerInput);
  DataObject bg=(DataObject)updateAppCustomerInput;
  DataObject bo=bg.getDataObject("AppCustomer");
  System.out.println("verb is: "+bg.get("verb"));
  System.out.println("bo is: "+bo);
  System.out.println("id is: "+bo.get("id"));
  System.out.println("LNAME is: "+bo.get("lname"));
  System.out.println("FNAME is: "+bo.get("fname"));
}
```

_____f. Scroll down and locate the deleteAppCustomer(Object deleteAppCustomerInput) method that needs to be implemented. Paste the following code into the method so the complete method looks as follows:

```
public void deleteAppCustomer(Object deleteAppCustomerInput) {
   System.out.println("DELETE customer is: " + deleteAppCustomerInput);
   DataObject bg=(DataObject) deleteAppCustomerInput;
   DataObject bo=bg.getDataObject("AppCustomer");
   System.out.println("verb is: "+bg.get("verb"));
   System.out.println("bo is: "+bo);
   System.out.println("id is: "+bo.get("id"));
   System.out.println("LNAME is: "+bo.get("Iname"));
   System.out.println("FNAME is: "+bo.get("fname"));
}
```

- ____g. Save your work by selecting File -> Save from the top menu, or using the shortcut key sequence Ctrl + S. Close the file.
- ____h. Close and save the Assembly Diagram. Wait for the workspace to complete building.
- 9. Before starting the WebSphere Test Environment Server, you first need to "Switch Workspaces" which will release the Enterprise Discovery process connection to the Cloudscape database. This is necessary, so the server JVM can get a connection to the Cloudscape database when running the test in the next Part.
 - ____a. From the top menu bar, select File > Switch Workspace... and select the same workspace from which you've been working.

Part 4: Test the application using the WebSphere Test Environment (WTE)

In this part you will use the WebSphere Test Environment to test the SCA application event processing by simply starting the application and verifying that it polls for and picks up the Create event already waiting in the WBIA_JDBC_EVENTSTORE Table.

- 1. Add the project to the server for the WebSphere Test Environment.
 - ____a. Right click on the server in the server view and select Add and remove projects ...

Properties	Problems	워 Servers 🛛 Console	
Server			Host name
🐻 WPS Se	erver 60	New	• • • •
		Open	
		Delete	
	蓉	Debug	
	0	Start	
	Ď	Profile	
		Restart	•
		Stop	
	14	Disconnect	
	1	Publish	
	_	Monitoring	•
	R_	Add and remove projects	

_____b. In the Add and Remove Projects dialog, select the JDBCTestInboundApp project from the Available projects panel.

🚯 Add and Remove Projects	5		×
Add and Remove Projects Modify the projects that are config	gured on the server		
Move projects to the right to configu <u>A</u> vailable projects:	Add All >>	<u>C</u> onfigured projects: 	oundApp
	<< Remove All		
	< <u>B</u> ack <u>N</u> ext >	Einish	Cancel

____ c. Click Add > to add it to the Configured projects panel. Click Finish

_____ d. Wait for the project to be added. In the Console view, you will see messages that the application has successfully started and has received and processed the inbound Create event. (These messages are also reflected in the c:\<WPS_HOME>\prof\logs\server1\Systemout.log).

[6/26/05	21:43:56:129	AKDT]	00000064	SystemOut	0	verb is: Create
[6/26/05	21:43:56:129	AKDT]	00000064	SystemOut	0	id is: 10
[6/26/05	21:43:56:129	AKDT]	00000064	SystemOut	0	lname is: Johnson
[6/26/05	21:43:56:129	AKDT]	00000064	SystemOut	0	<pre>fname is: Jerry CWSCA3009I:</pre>

e. If you would like to try other events, such as a delete, you will need to first stop the server (right click on the server, and select **stop**) to release it's connection to the JDBCTEST database. Then, start the Cview.bat GUI to add, delete or update records to the database. Once completed, exit the Cview GUI, and then restart the server for the events to be processed.

What you did in this exercise

In this exercise, you learned how to install and deploy the WebSphere Adapter for JDBC. You also were introduced to inbound event processing.

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