



**Tutorial: BlackBerry Application
Development**

Sybase Unwired Platform 2.0

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Sybase Unwired Platform Tutorials

The Sybase® Unwired Platform tutorials demonstrate how to develop, deploy, and test mobile business objects, device applications, and mobile workflow packages. You can also use the tutorials to demonstrate system functionality and train users.

- Learn mobile business object (MBO) basics, and create a mobile device application:
 - *Tutorial: Mobile Business Object Development*
- Create native mobile device applications:
 - *Tutorial: BlackBerry Application Development*
 - *Tutorial: iOS Application Development*
- Create a mobile workflow package:
 - *Tutorial: Mobile Workflow Package Development*

The tutorials demonstrate a cross section of basic functionality, which includes creating MBOs that can be used in replication-based or message-based synchronization; and using various Sybase Unwired WorkSpace development tools, independent development environments, and device types.

Table 1. Tutorial summary

Tutorials	Mobile business objects (MBOs)	Synchroni- zation types	Development tools	Device types
Tutorial: Mobile Business Object Development	Create new MBOs	Replication-based	Sybase Unwired WorkSpace	N/A
Tutorial: BlackBerry Application Development	Create new MBOs	Replication-based	Sybase Unwired WorkSpace	BlackBerry
Tutorial: iOS Application Development	Create new MBOs	Message-based	Sybase Unwired WorkSpace	iPhone
Tutorial: Mobile Workflow Package Development	Create new MBOs	Message-based	Mobile Workflow Forms Editor	Windows Mobile iPhone

Task Flow

Use this tutorial to develop a BlackBerry device application using replication-based synchronization and custom coding. Test the application on a simulator.

Table 2. Eclipse tutorials

Task	Goals	Steps required to complete the task
Getting Started	<ul style="list-style-type: none"> • Install all required WorkSpace components and external resources. • Start Unwired Server, then use Sybase Control Center to connect to the server. • Open the Mobile Development perspective, and become familiar with the views of the perspective, and the Mobile Application Diagram. 	<ul style="list-style-type: none"> • <i>Installing Sybase Unwired Platform</i> on page 5 • <i>Starting Unwired Platform Services</i> on page 5 • <i>Starting Sybase Unwired WorkSpace</i> on page 6 • <i>Connecting to Sybase Control Center</i> on page 6 • (Optional) <i>Learning the Basics</i> on page 7 <hr/> <p>Note: These steps are prerequisites for the rest of this tutorial. You need to perform them only once.</p>
Developing Database Mobile Business Objects	<ul style="list-style-type: none"> • Create a mobile application project and a connection to the database. • Create two mobile business objects, and create a relationship between them. • Deploy the mobile business objects to Unwired Server. 	Complete the <i>Tutorial: Mobile Business Object Development</i> .

Task Flow

Task	Goals	Steps required to complete the task
Developing a BlackBerry Application	Generate Java code for the BlackBerry platform, create the user interface for the application, and run it on the Simulator.	<ul style="list-style-type: none">• <i>Installing the BlackBerry Java Plugin for Eclipse</i> on page 13• <i>Generating Java Object API Code</i> on page 11• <i>Creating the BlackBerry Project</i> on page 13• <i>Creating the User Interface</i> on page 16• <i>Creating a Launch Configuration for the Project</i> on page 20• <i>Testing the Device Application on the BlackBerry Simulator</i> on page 21

Getting Started

Goal: Install and learn about Sybase Unwired Platform and its associated components.

The following tasks are required, unless otherwise noted, for all tutorials, but you need to perform them only once.

1. *Installing Sybase Unwired Platform* on page 5
2. *Starting Unwired Platform Services* on page 5
3. *Starting Sybase Unwired WorkSpace* on page 6
4. *Connecting to Sybase Control Center* on page 6
5. (optional) *Learning the Basics* on page 7

Installing Sybase Unwired Platform

Goal: Install Sybase Unwired Platform.

Install these Sybase Unwired Platform components:

- Data Tier
- Unwired Server
- Unwired WorkSpace

If Unwired Platform is already installed and any of these components are missing:

1. Start the Sybase Unwired Platform installer.
2. Follow the instructions in the installation wizard.
3. Select the required components, and complete the installation.

For complete installation instructions, see the *Sybase Unwired Platform Installation Guide* and *Release Bulletin*.

Starting Unwired Platform Services

Goal: Start Unwired Server and the sample database.

Select **Start > Programs > Sybase > Unwired Platform > Start Unwired Platform Services**.

Starting Sybase Unwired WorkSpace

Goal: Start Unwired WorkSpace.

1. Select **Start > Programs > Sybase > Unwired Platform > Unwired WorkSpace**.

The Welcome page displays links to product information, and to the product.

2. To read more about Sybase Unwired WorkSpace concepts and tasks, select **Help > Help Contents** from the main menu.

Connecting to Sybase Control Center

Goal: Open the Web-based Sybase Control Center administration console to manage Unwired Server and its components.

From Sybase Control Center, you can:

- View servers and their status
- Start and stop a server
- View server logs
- Deploy a mobile application package
- Register devices
- Set role mappings

For information on configuring, managing, and monitoring Unwired Server, select **Help > Online Documentation**.

1. Select **Start > Programs > Sybase > Sybase Control Center**.

Note: If Sybase Control Center does not launch, make sure that the Sybase Unified Agent service is started. See the Installation Guide for details.

2. Log in using the default login:

- User name – supAdmin
- Password – s3pAdmin

Logging in to Sybase Control Center allows you access to Unwired Platform administration features that you are authorized to use.

Learning the Basics

Goal: Learn about Sybase Unwired WorkSpace and how to access help.

Prerequisites

Start Unwired WorkSpace.

Task

1. From the Welcome page, select any of the links to familiarize yourself with the Unwired WorkSpace environment.

To close this page, click the **X**. You can reopen this page by selecting **Help > Welcome**.

2. Select **Start Development** to access the Sybase Unwired WorkSpace development environment.

Look at the area (window or view) that you will be working in to access, create, define, and update mobile business objects (MBOs).

View	Description
WorkSpace Navigator	This view displays mobile application project folders, each of which contains all project-related resources in subfolders, including MBOs, data source references to which the MBOs are bound, personalization keys, and so on. Use this view to review and modify MBO-related properties.
Enterprise Explorer	A window that provides functionality to connect to various enterprise back-end systems; for example, database servers, SAP® servers, and Sybase Unwired Server.

View	Description
Mobile Application Diagram	<p>A graphical editor where you create and define mobile business objects.</p> <p>Use the Mobile Application Diagram to create MBOs (including attributes and operations), then define relationships with other MBOs. You can:</p> <ul style="list-style-type: none"> • Create MBOs in the Mobile Application Diagram using Palette icons and menu selections – either bind or defer binding to a data source, when creating an MBO. For example, you may want to model your MBOs before creating the data sources to which they bind. This is sometimes called the top-down approach. • Drag items from Enterprise Explorer and drop them onto the Mobile Application Diagram to create the MBO – quickly creates the operations and attributes automatically based on the data source being dropped on the Mobile Application Diagram. This is sometimes called the bottom-up approach. <p>Each new mobile application project generates an associated Mobile Application Diagram.</p>
Palette	Access the Palette from the Mobile Application Diagram. It provides controls, such as the ability to create MBOs, add attributes and operations, and define relationships, by dragging and dropping the corresponding icon onto the Mobile Application Diagram or existing MBO.
Properties view	Select an object in the Mobile Application Diagram to display and edit its properties in the Properties view. You cannot create an MBO from the Properties view, but generally, most development and configuration is performed here.
Outline view	Displays an outline of the file that is currently open in the editor area, and lists structural elements. The contents are editor-specific.
Problem view	Displays problems, errors, or warnings that you may encounter.

3. To access the online help, select **Help > Help Contents** from the main menu bar.

4. Expand any of the documents that appear in the left pane.

Some documents are for Sybase Unwired Platform, while others are for the Eclipse development environment.

Developing a BlackBerry Application

Generate code for the BlackBerry platform, develop a BlackBerry device application with code, and test its functionality.

Prerequisites

Complete these tasks:

- *Getting Started* on page 5.
- *Tutorial: Mobile Business Object Development*, which provides the foundation tasks for this tutorial:
 1. Create a mobile application project.
 2. Create the database mobile business objects (MBOs).
 3. Deploy the database MBOs.

Task

The device application communicates with the database mobile business objects that are deployed to Unwired Server. Develop the device application:

1. In Unwired Workspace, open the SUP101 mobile application project.
In Workspace Navigator, right-click the SUP101 folder and select **Open in Diagram Editor**.

Note: If you do not see the SUP101 project in Workspace Navigator, you must first complete the *Tutorial: Developing Mobile Business Objects*, which is a prerequisite for this tutorial.

2. *Generate Java object API code* on page 11.
3. *Install the BlackBerry Java plug-in for Eclipse* on page 13.
4. *Create the BlackBerry project* on page 13.
5. *Create the user interface* on page 16.
6. *Create a launch configuration for the project* on page 20.
7. *Test the device application on the BlackBerry simulator* on page 21.

Generating Java Object API Code

Goal: Generate object API code for the SUP101 mobile application project.

Prerequisites

You must be connected to both the sampledb database and Unwired Server. Code generation fails if the server-side (run-time) enterprise information system (EIS) data sources referenced

by the MBOs in the project are not running and available to connect to when you generate object API code.

Task

Tip: If you are performing other tutorials, you can add a new folder to the project in which to generate code for each device platform. You must create the new folder prior to code generation.

1. Right-click the SUP101 Mobile Application Diagram and select **Generate Code**.
2. Select **Continue without a configuration**, and click **Next**.

Note: You can select the code generation configuration if you are using the Advanced developer profile.

3. Make sure the Customer and Sales_order MBOs are selected, then click **Next**.
4. Enter the information for the listed configuration options, and use the default values for the others.

Option	Description
Language	Select Java .
Platform	Select Java ME for BlackBerry .
Unwired Server	Select My Unwired Server .
(Optional) Clean up destination before code generation	Select this option to delete all items in the destination folder before generating the device client files.
Replication-based	Make sure that replication-based synchronization is selected for the application.
Generate JavaDoc	Unselect this option for purposes of this tutorial.

5. Click **Finish**.

Error icons appear next the SUP101 project and the SUP101DB.java file because the SUP101DB.java file calls the net_rim_api.jar, yet it does not appear in the project build path. Because you build the application in the BlackBerry Java Plug-in for Eclipse, you can ignore these errors.

Next

Install the BlackBerry Java Plug-in for Eclipse.

Installing the BlackBerry Java Plug-in for Eclipse

The BlackBerry Java Plug-in for Eclipse enables you to finish developing the BlackBerry application using BlackBerry smartphone-specific development, debugging, and simulation tools.

1. Download the BlackBerry Java Plug-in for Eclipse (full installer) from <http://us.blackberry.com/developers/javaappdev/>.
The full installer includes the Eclipse IDE and the BlackBerry Java plug-in.
2. Launch the installer and install the plug-in in its own location (not in the Unwired WorkSpace Eclipse directory).

Creating the BlackBerry Project

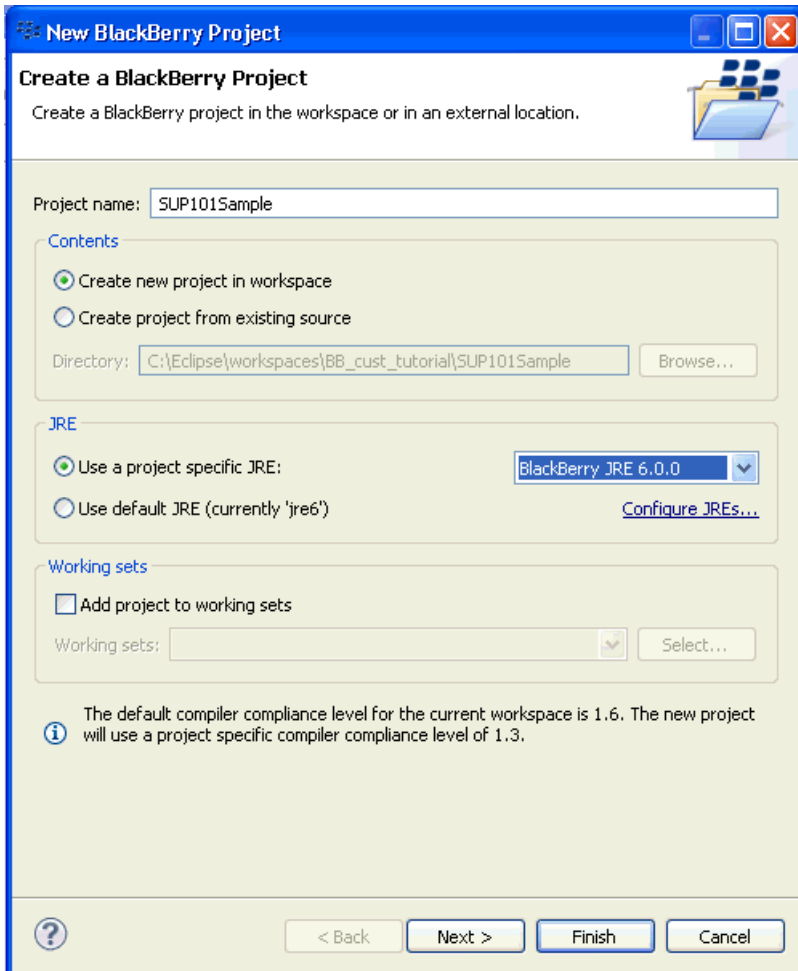
Goal: Create a new BlackBerry project in the BlackBerry Java Plug-in for Eclipse, where you add functionality and finish developing the application.

Prerequisites

Install the BlackBerry Java Plug-in for Eclipse.

Task

1. Start the BlackBerry Java Plug-in for Eclipse.
2. From the toolbar, select **New > BlackBerry Project**.
3. In the New BlackBerry Project wizard, use these values and click **Next**.
 - Name – enter SUP101Sample
 - Use a project specific JRE – select **BlackBerry JRE 6.0.0**



4. In Java Settings, modify the build path to point to the correct location for `sup_client_rim.jar` and `UltraLiteJ.jar`.
 - a) Click the **Libraries** tab.
 - b) Click **Add External Jars**.
 - c) Browse to `<UnwiredPlatform_InstallDir>\ClientAPI\RBS\BB`.
 - d) Ctrl-click to select both JARs, then click **Open**.
 - e) Click **Finish**.
If required, restart Eclipse.

Next

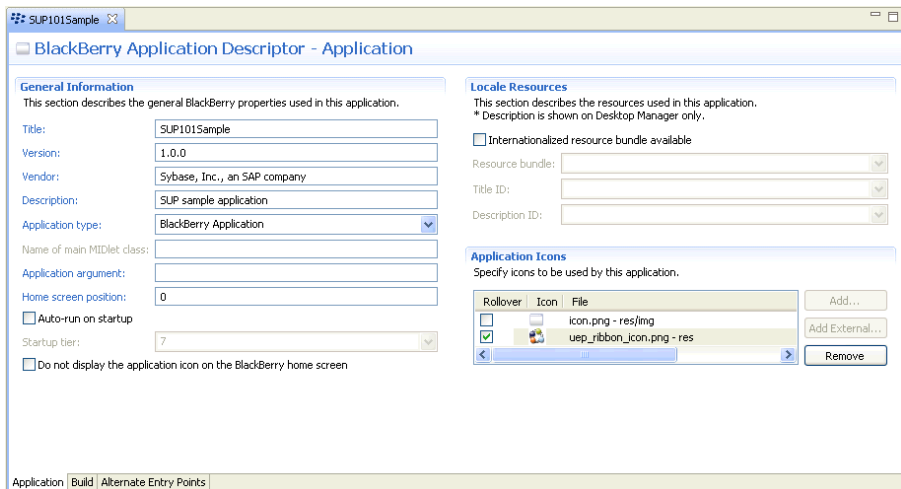
Indicate BlackBerry application properties.

Indicating BlackBerry Application Properties

Goal: Indicate the general BlackBerry properties used in this application.

1. Click the SUP101Sample tab to open the BlackBerry Application Descriptor for the application.
2. In **Title**, enter SUP101Sample.
3. (Optional) Enter a **Version**, **Vendor**, or **Description**.
4. In **Application Icons**, indicate the icon used to launch the application.
 - a) Click **Add External**.
 - b) Browse to an image file to use as the rollover application icon that is displayed on focus, select it, then click **Open**.

As an example, this tutorial uses the Sybase mobile application icon file, uep_ribbon_icon.png. This file is not included in the Unwired Platform installation.



5. Save the SUP101Sample descriptor file.

Next

Copy Unwired Platform BlackBerry runtime files and generated code to the SUP101Sample project.

Copy Unwired Platform Files to Sample Project

Goal: Copy Unwired Platform BlackBerry runtime files and generated code to the SUP101Sample project.

1. Browse to <UnwiredPlatform_InstallDir>\ClientAPI\RBS\BB.

2. Copy the `CommonClient.cod`, `sup_client_rim.cod`, and `UltraLiteJ.cod` files.
3. Paste the COD files in the BlackBerry Java Plug-in simulator directory, located in `<BlackBerry_Eclipse_InstallDir>\plugins\net.rim.ejde.componentpack<version>\components\simulator`.
4. In the Sybase Unwired WorkSpace SUP101 project workspace, copy the SUP101 folder, by default in `SUP101\Generated Code\src`, to the BlackBerry Application Development SUP101Sample workspace in `SUP101Sample\src`.

Next

Configure the generated `Customer.java` file.

Configuring the Generated Customer.java File

Goal: Modify the `Customer.java` file so that the `KeywordFilterField` displays the data properly.

1. In Package Explorer, expand the `SUP101Sample\src\SUP101` folder.

Tip: If you do not see the SUP101 package, refresh the project.

2. Open the `Customer.java` file, and add this code to the end of the file, after the line `/** End code region: JSON methods */`:

```
public String toString()
{
    return getFname() + " " + getLname();
}
```

3. Save the `Customer.java` file.

Creating the User Interface

Goal: Create the user interface for the SUP101Sample application.

Prerequisites

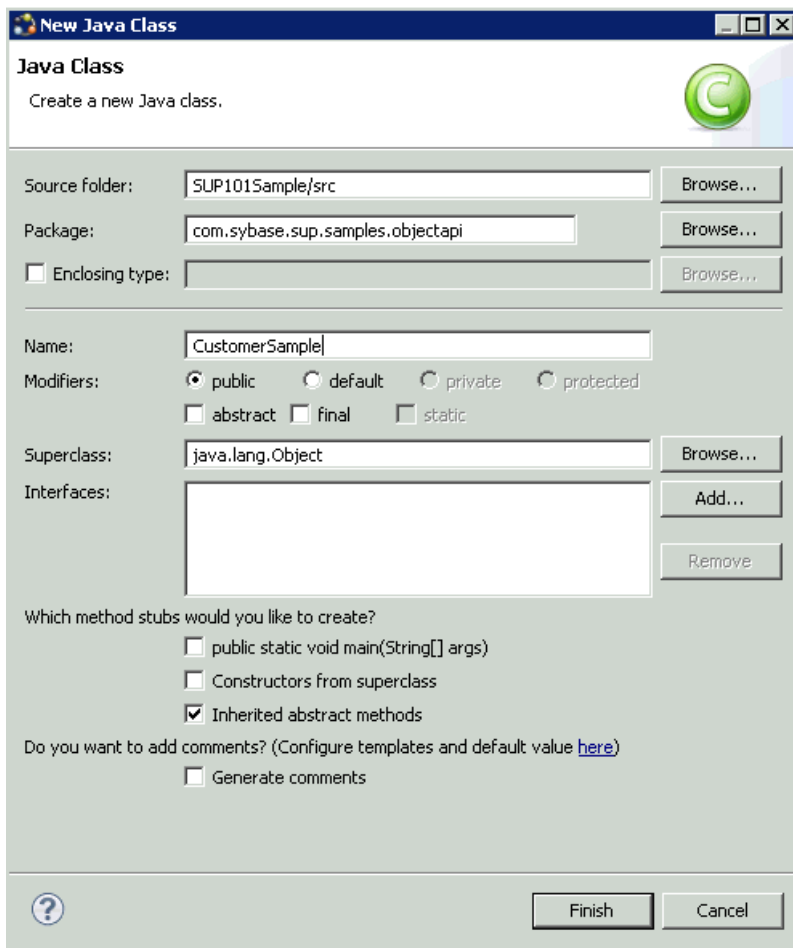
Obtain the text files that contain the code snippets you need to build the user interface from the `SUP_BB_Custom_Dev_Tutorial_code.zip` file. The code snippets are used to create these classes: `CustomerSample`, `CustomerList`, and `CustomerSampleScreen`.

- If you are viewing this guide as a PDF, you can obtain the text files from the Sybase Product Documentation Web site at <http://sybooks.sybase.com/nav/summary.do?prod=1289&lang=en&submit=%A0Go%A0&prodName=Sybase+Unwired+Platform&archive=0>. Navigate to this topic in the tutorial, then click the link for the zip file to access the text files.

- If you are viewing this guide online from the Sybase Product Documentation web site, click *SUP_BB_Custom_Dev_Tutorial_code.zip* to access the text files.

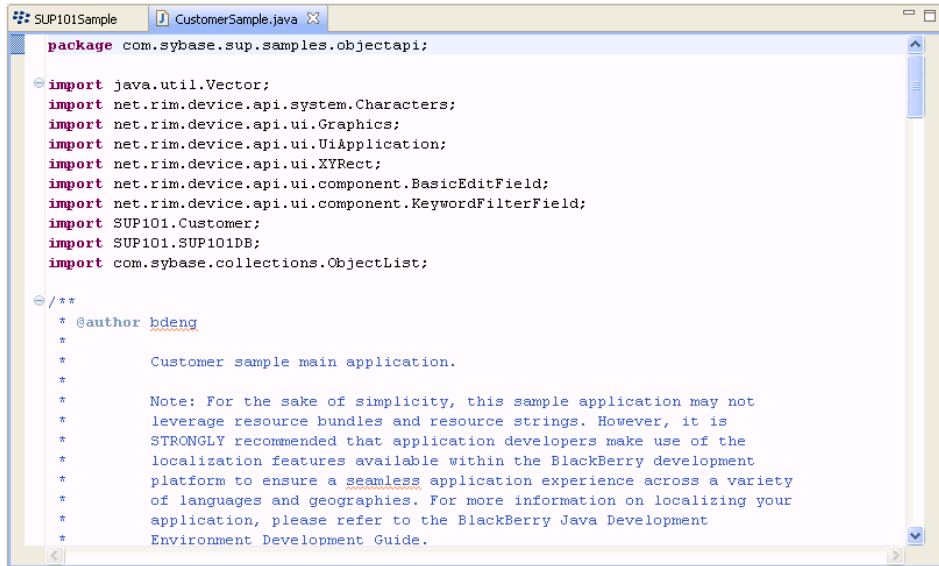
Task

1. In Package Explorer, right-click **SUP101Sample**, and select **New > Package**.
2. For the **Name**, enter `com.sybase.sup.samples.objectapi` and click **Finish**.
3. Right-click the `com.sybase.sup.samples.objectapi` package and select **New > Class**.
4. For the **Name**, enter `CustomerSample`, and click **Finish**.



5. In the `CustomerSample.java` file, copy and paste the code from the provided `CustomerSample.java` text file.

Overwrite any existing contents. The provided code creates the main Customer application.

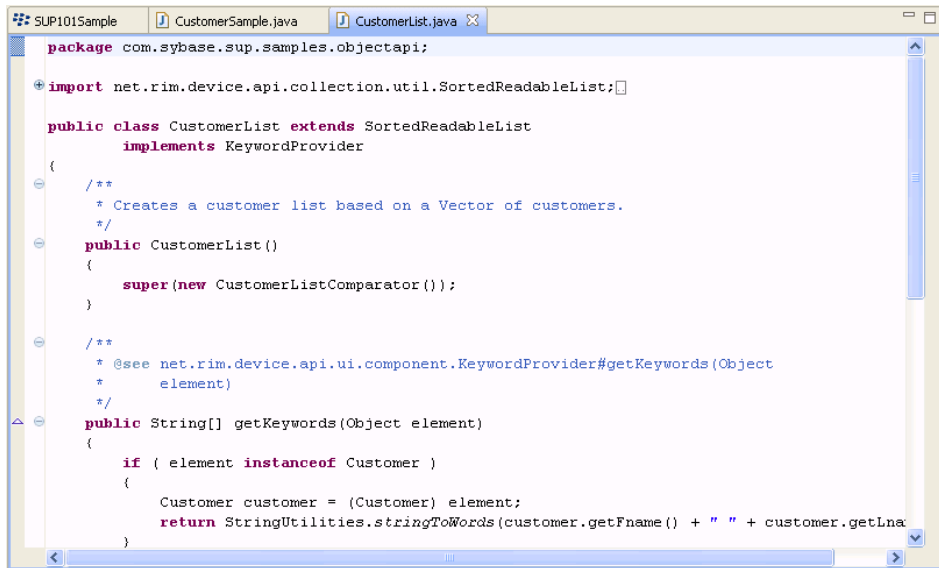


```
package com.sybase.sup.samples.objectapi;

import java.util.Vector;
import net.rim.device.api.system.Characters;
import net.rim.device.api.ui.Graphics;
import net.rim.device.api.ui.UiApplication;
import net.rim.device.api.ui.XYRect;
import net.rim.device.api.ui.component.BasicEditField;
import net.rim.device.api.ui.component.KeywordFilterField;
import SUP101.Customer;
import SUP101.SUP101DB;
import com.sybase.collections.ObjectList;

/**
 * @author bdeng
 *
 * Customer sample main application.
 *
 * Note: For the sake of simplicity, this sample application may not
 * leverage resource bundles and resource strings. However, it is
 * STRONGLY recommended that application developers make use of the
 * localization features available within the BlackBerry development
 * platform to ensure a seamless application experience across a variety
 * of languages and geographies. For more information on localizing your
 * application, please refer to the BlackBerry Java Development
 * Environment Development Guide.
 */
```

6. Save the `CustomerSample.java` file.
The package contains errors until you create the two other classes. Ignore these errors and continue.
7. Right-click the `com.sybase.sup.samples.objectapi` package, and select **New > Class**.
8. For **Name**, enter `CustomerList`, and click **Finish**.
9. In the `CustomerList.java` file, copy and paste the code from the provided `CustomerList.java` text file.
Overwrite any existing contents.



```

package com.sybase.sup.samples.objectapi;

import net.rim.device.api.collection.util.SortedReadableList;

public class CustomerList extends SortedReadableList
    implements KeywordProvider
{
    /**
     * Creates a customer list based on a Vector of customers.
     */
    public CustomerList()
    {
        super(new CustomerListComparator());
    }

    /**
     * @see net.rim.device.api.ui.component.KeywordProvider#getKeywords(Object
     *      element)
     */
    public String[] getKeywords(Object element)
    {
        if ( element instanceof Customer )
        {
            Customer customer = (Customer) element;
            return StringUtilities.stringToWords(customer.getFname() + " " + customer.getLna

```

10. Save the CustomerList.java file.

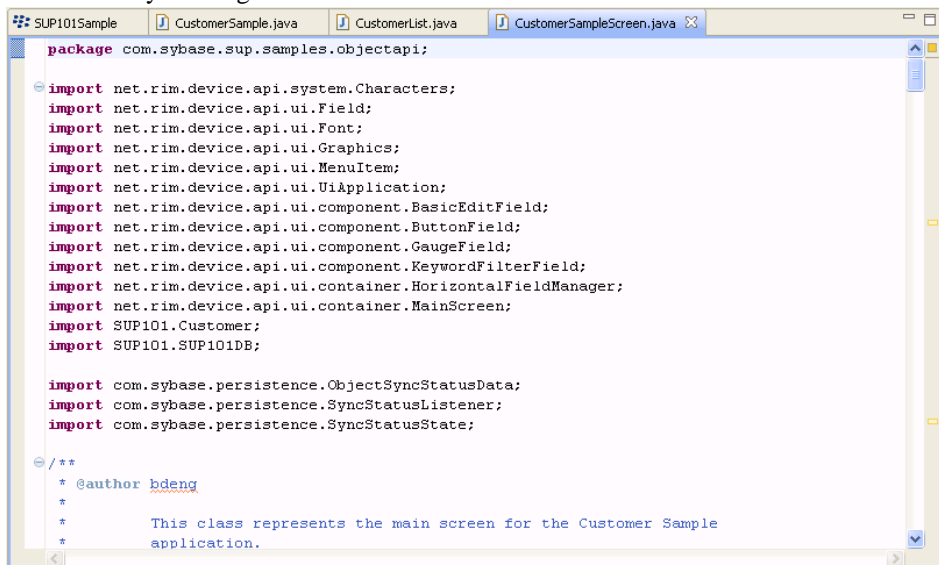
Ignore the errors, which resolve once you create the next class.

11. Right-click the `com.sybase.sup.samples.objectapi` package, and select **New > Class**.

12. For **Name**, enter CustomerSampleScreen, and click **Finish**.

13. In the CustomerSampleScreen.java file, copy and paste the code from the provided CustomerSampleScreen.java text file.

Overwrite any existing contents.



```

package com.sybase.sup.samples.objectapi;

import net.rim.device.api.system.Characters;
import net.rim.device.api.ui.Field;
import net.rim.device.api.ui.Font;
import net.rim.device.api.ui.Graphics;
import net.rim.device.api.ui.MenuItem;
import net.rim.device.api.ui.UiApplication;
import net.rim.device.api.ui.component.BasicEditField;
import net.rim.device.api.ui.component.ButtonField;
import net.rim.device.api.ui.component.GaugeField;
import net.rim.device.api.ui.component.KeywordFilterField;
import net.rim.device.api.ui.container.HorizontalFieldManager;
import net.rim.device.api.ui.container.MainScreen;
import SUP101.Customer;
import SUP101.SUP101DB;

import com.sybase.persistence.ObjectSyncStatusData;
import com.sybase.persistence.SyncStatusListener;
import com.sybase.persistence.SyncStatusState;

/**
 * @author bdeng
 *
 * This class represents the main screen for the Customer Sample
 * application.

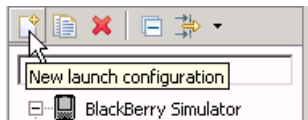
```

14. Save the `CustomerSampleScreen.java` file.

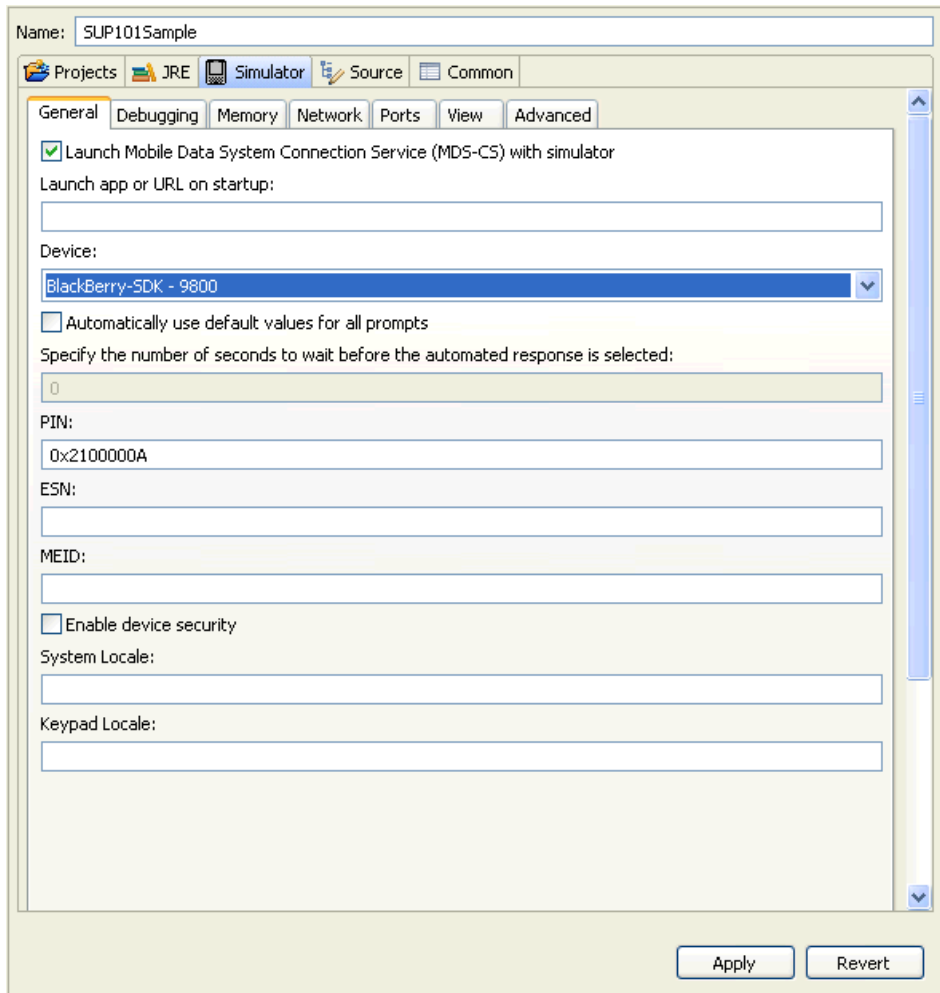
Creating a Launch Configuration for the Project

Goal: Create and configure a new launch configuration for the SUP101Sample project.

1. In Package Explorer, right-click the **SUP101Sample** project, and select **Run-as > Run Configurations**.
2. Select **BlackBerry Simulator** in the left pane, click the new launch configuration icon, and select the **SUP101Sample** project in the right pane.



3. In **Name**, enter `SUP101Sample`.
4. In the **JRE** tab, select the JRE to use, in this case, **BlackBerry JRE 6.0.0**.
5. In the **Simulator** tab, select **Launch Mobile Data System Connection Service (MDS-CS) with simulator**, then select **BlackBerry-SDK - 9800** as the device.

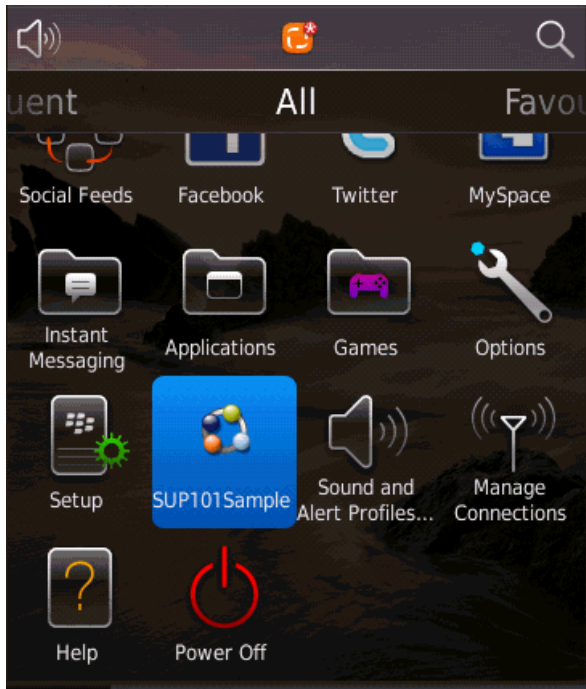


6. Click **Apply**, then **Close**.

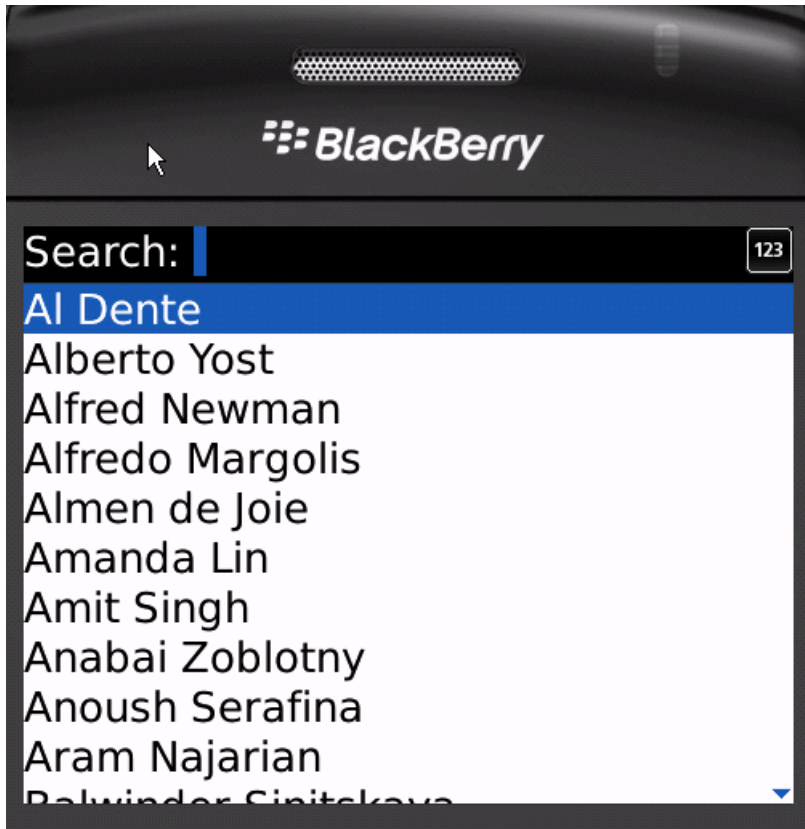
Testing the Device Application on the BlackBerry Simulator

Goal: Run and test the SUP101Sample application on the BlackBerry simulator.

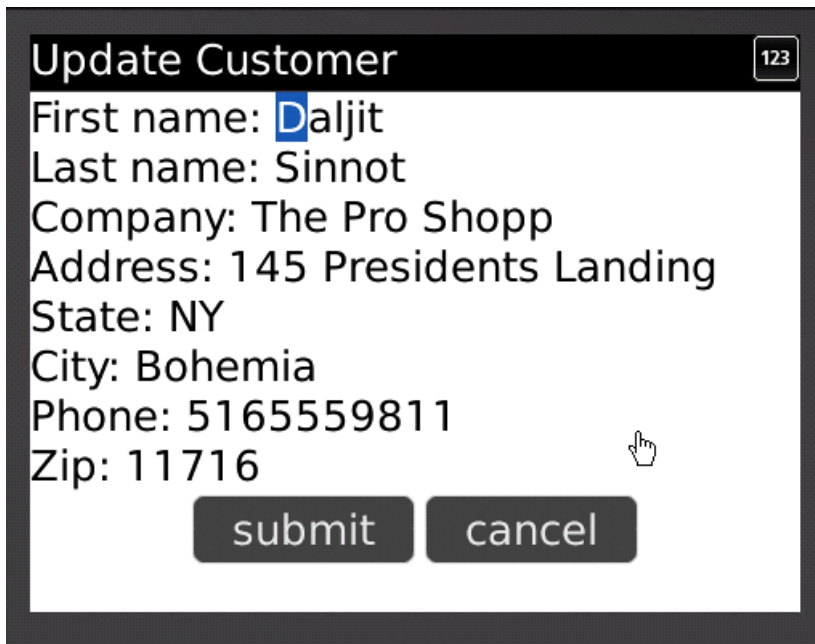
1. In Package Explorer, right-click the **SUP101Sample** project and select **Run As > BlackBerry Simulator**.
If this is the first time running the simulator, cancel the setup screen.
2. On the main window, click **All** to access the applications screen, then scroll until you see the SUP101Sample application.



3. Click to launch the SUP101Sample application.
4. Click the BlackBerry menu button, then select **Synchronize**. The customer list appears.



5. Focus on the customer list and enter `dal` in the **Search** bar.
The customer list is filtered and only customers with a first or last name beginning with 'dal' are shown, in this case, Daljit Sinnot.
6. Select the customer, **Daljit Sinnot**, and click the trackball.
The detail screen for Daljit Sinnot appears.



7. In the customer detail screen, change the first name of the customer to abc and click **Submit**.

The **Submit** button on the Customer Detail screen is mapped to the **update** operation of the customer mobile business object. When the application is synchronized, any pending operations are uploaded to Unwired Server.

8. To upload the new record to the back-end database `sampledb`, click the Menu key, and select **Synchronize**.

Learn More about Sybase Unwired Platform

Once you have finished, try some of the other samples or tutorials, or refer to other development documents in the Sybase Unwired Platform documentation set.

Check the Sybase Product Documentation Web site regularly for updates: <http://infocenter.sybase.com/help/index.jsp?topic=/com.sybase.infocenter.pubs.docset-SUP-2.0.0/doc/html/title.html>.

Tutorials

Try out some of the other getting started tutorials to get a broad view of the development tools available to you.

Samples

Sample applications are fully developed, working applications that demonstrate the features and capabilities of Sybase Unwired Platform.

Check the SAP Development Network (SDN) Web site regularly for updates: <http://www.sdn.sap.com/irj/sdn/mobile>. Click on Sybase Unwired Platform and navigate to Samples.

Online Help

See the online help that is installed with the product, or the Product Documentation Web site.

Developer Guides

Learn about using the API to create device applications:

- *Developer Guide for BlackBerry*
- *Developer Guide for iOS*
- *Developer Guide for Mobile Workflow Packages*
- *Developer Guide for Windows and Windows Mobile*

Customize and automate:

- *Developer Guide for Unwired Server Management API* – customize and automate system administration features.
- *Developer Guide for Unwired Server* – customize and automate server-side implementations for device applications, and administration, such as data handling.

Javadoc and HeaderDoc are also available in the installation directory.

Learn More about Sybase Unwired Platform

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