JDBC Lab on Liberty

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# JDBC and **Liberty**

Deploying a data access application includes more than installing your web application archive (WAR) or enterprise archive (EAR) file onto a Liberty. Deployment can include tasks for configuring the data access resources of the server and overall runtime environment.

In this lab exercise, you will learn:

* 1. Configure Derby Database on Liberty
  2. Create a sample JDBC servlet
  3. Run the sample JDBC Servlet

To run this lab, your workstation must meet the following requirements:

* Approximately 8GB of storage available for the Windows 7 virtual image
* Approximately 3 GB of memory free to run the developer workbench and the server
* Connectivity to the internet is NOT required
* Please refer to the following table for file and resource location references on different operating systems.

|  |  |  |
| --- | --- | --- |
| Location Ref. | OS | Absolute Path |
| *{LAB\_HOME}* | Windows | *C:\WLP\_<version>* |
| Linux | ~/ *WLP\_<version* |
| Mac OSX |  |

As prerequisites, you should:

* 1. Complete Setup lab to set up the lab environment, and learn how to create a server using WebSphere Developer Tools.
  2. Install Derby Database
     1. If you are not a Virtual POT attendee: Download Derby on your own and extract it to a directory of your choosing.
     2. For Virtual POT attendees:
        1. **For Windows**:

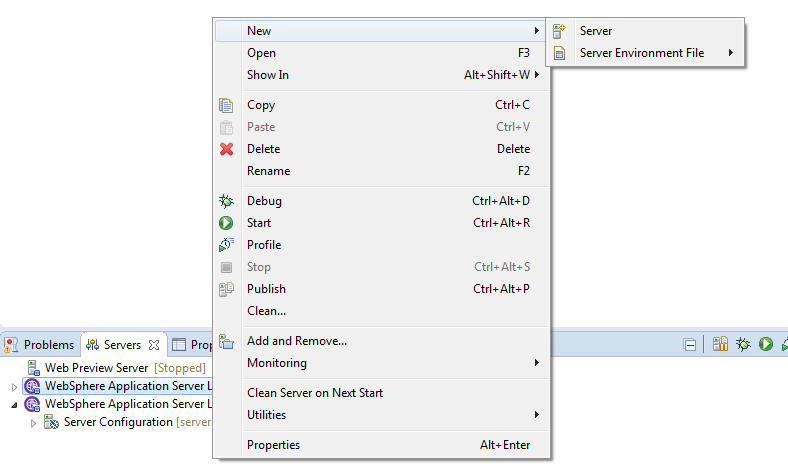
extract **{LAB\_HOME}\derby\ db-derby-10.14.1.0-lib.zip** **to {LAB\_HOME}\ db-derby-10.14.1.0-lib** directory.

* + - 1. **For Linux or Mac** :

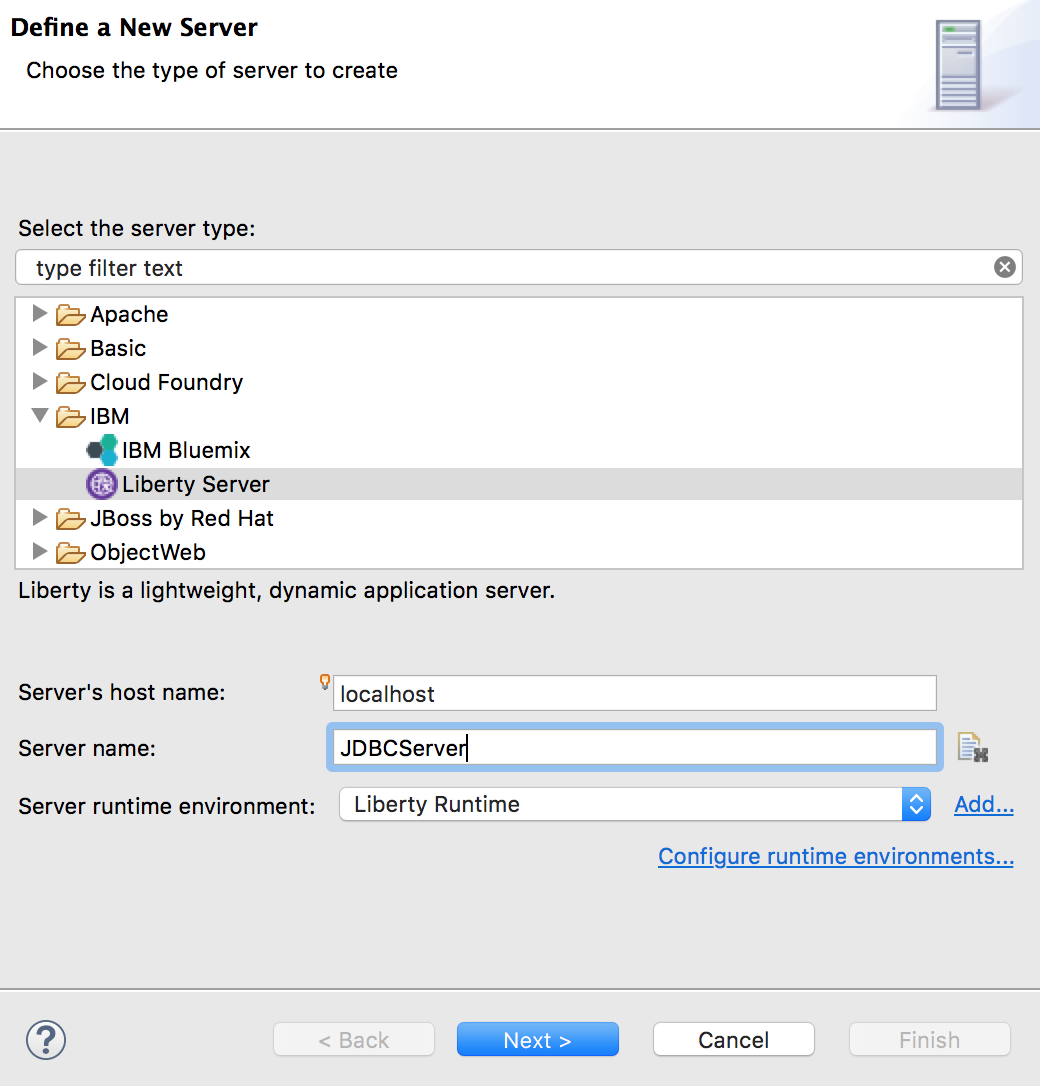
extract **{LAB\_HOME}/derby/ db-derby-10.14.1.0-lib.tar.gz** **to {LAB\_HOME}/was855/ db-derby-10.14.1.0-lib** directory

## Create and Configure Liberty Server for JDBC

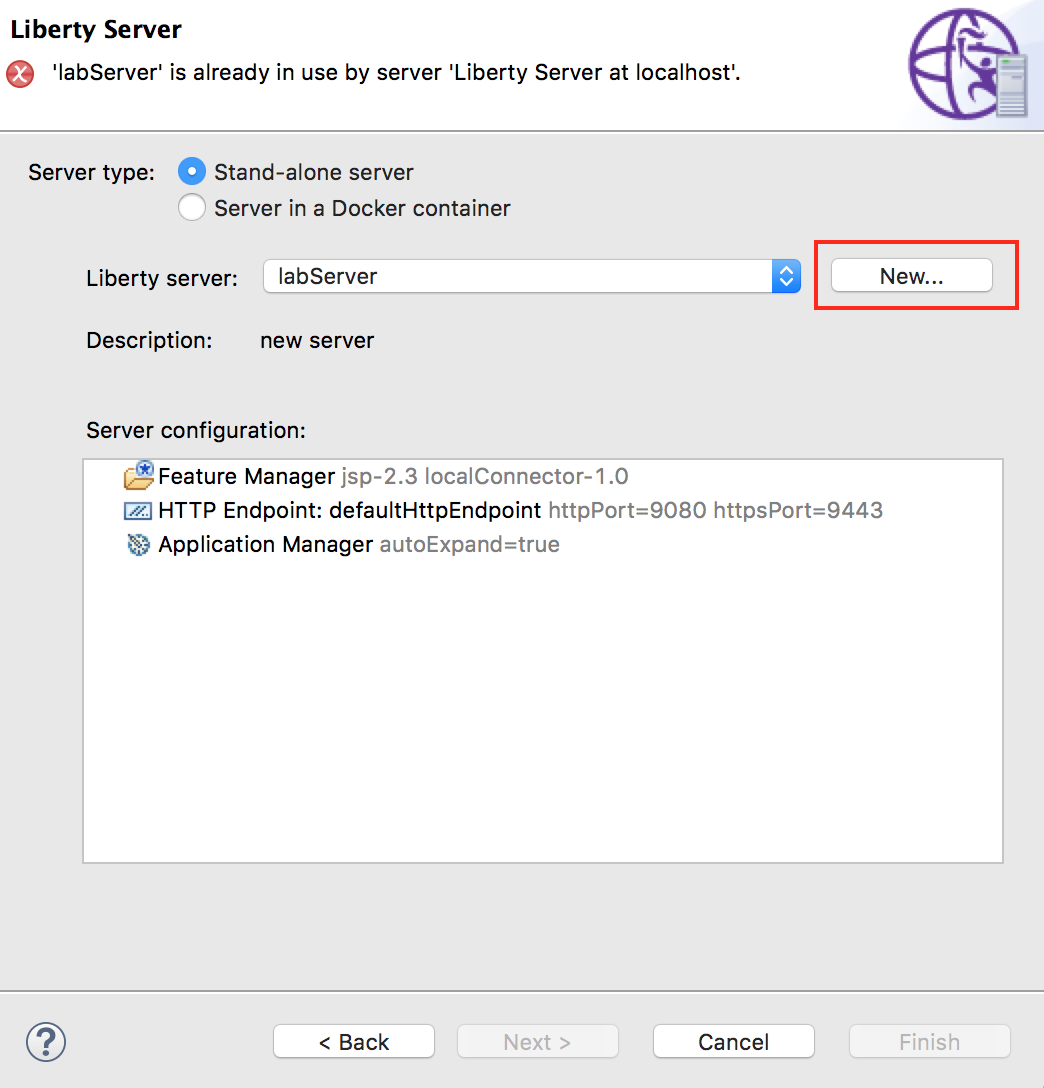
1. Start **Eclipse** from **{LAB\_HOME}/wdt/eclipse** directory
2. Create a new Liberty application server called **JDBCServer.**
   1. Right Click on the **Servers** tab and Select **New 🡪 Server**

****

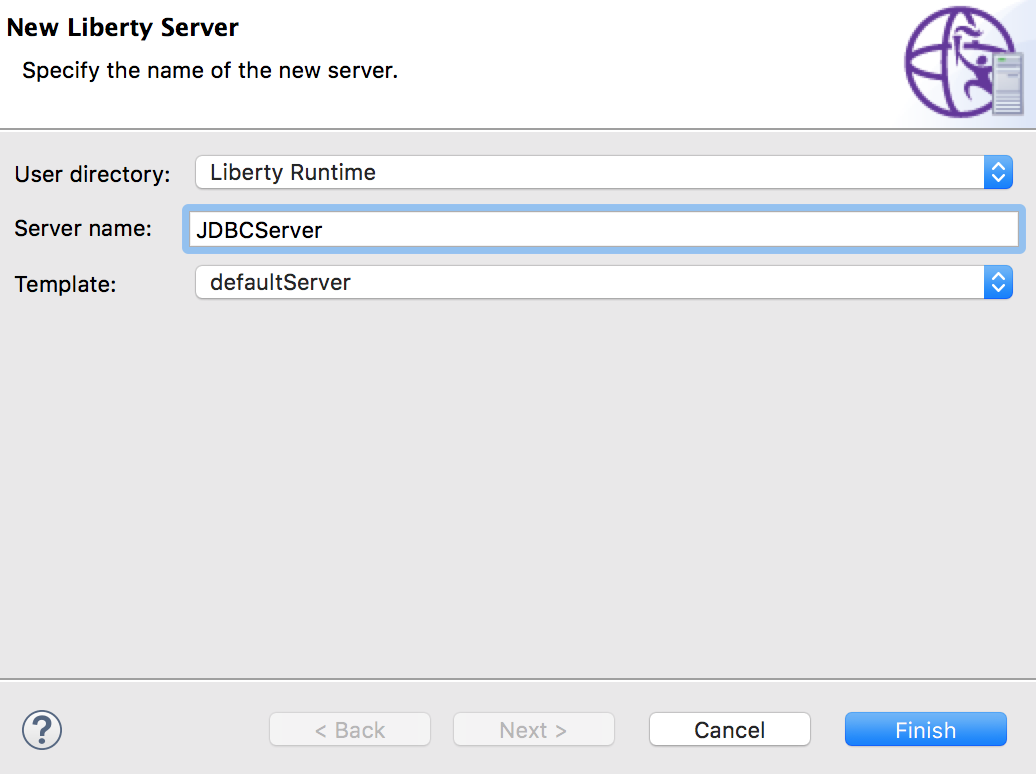
* 1. Select **Liberty Server**. Click **Next**

****

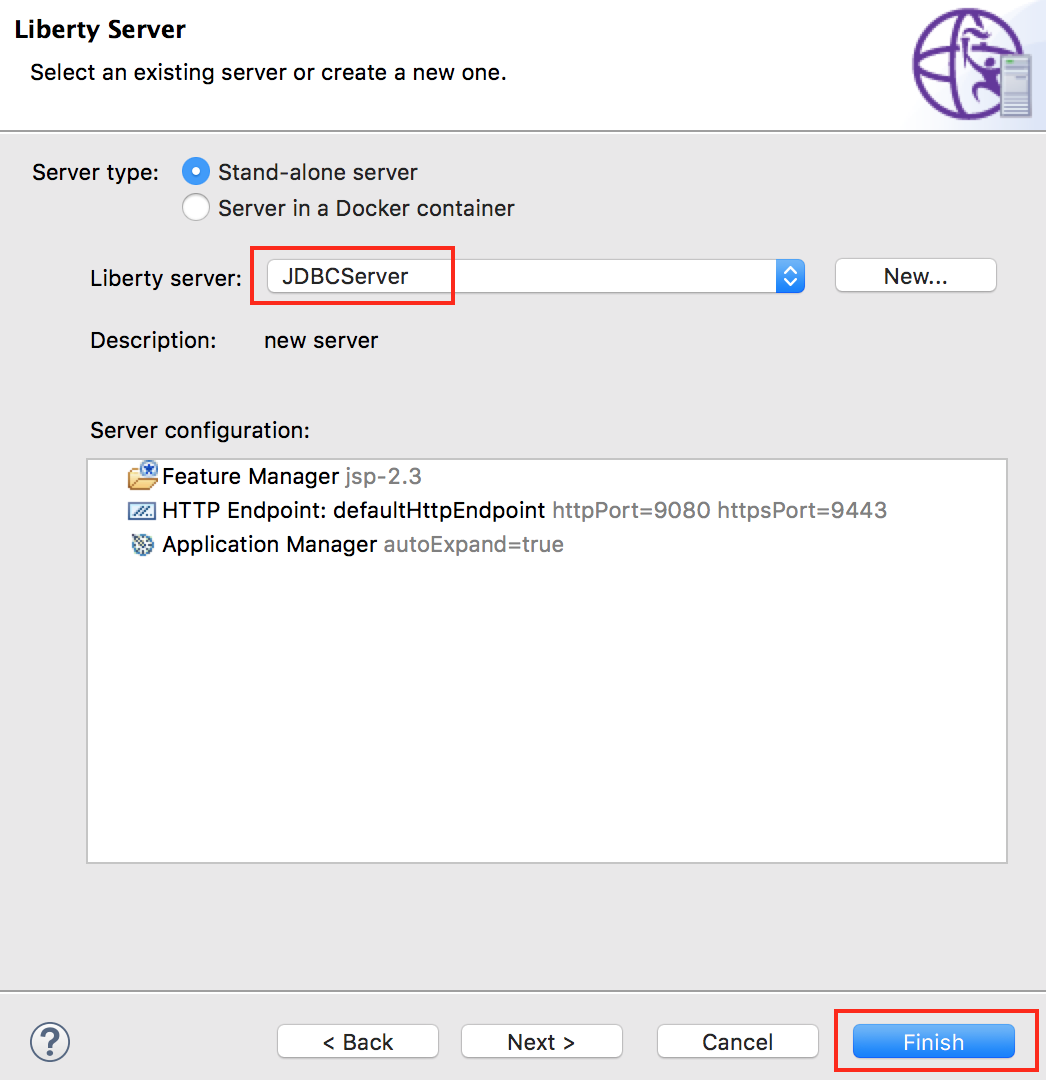
* 1. Click **New** in the New Server window to create a new Liberty Server



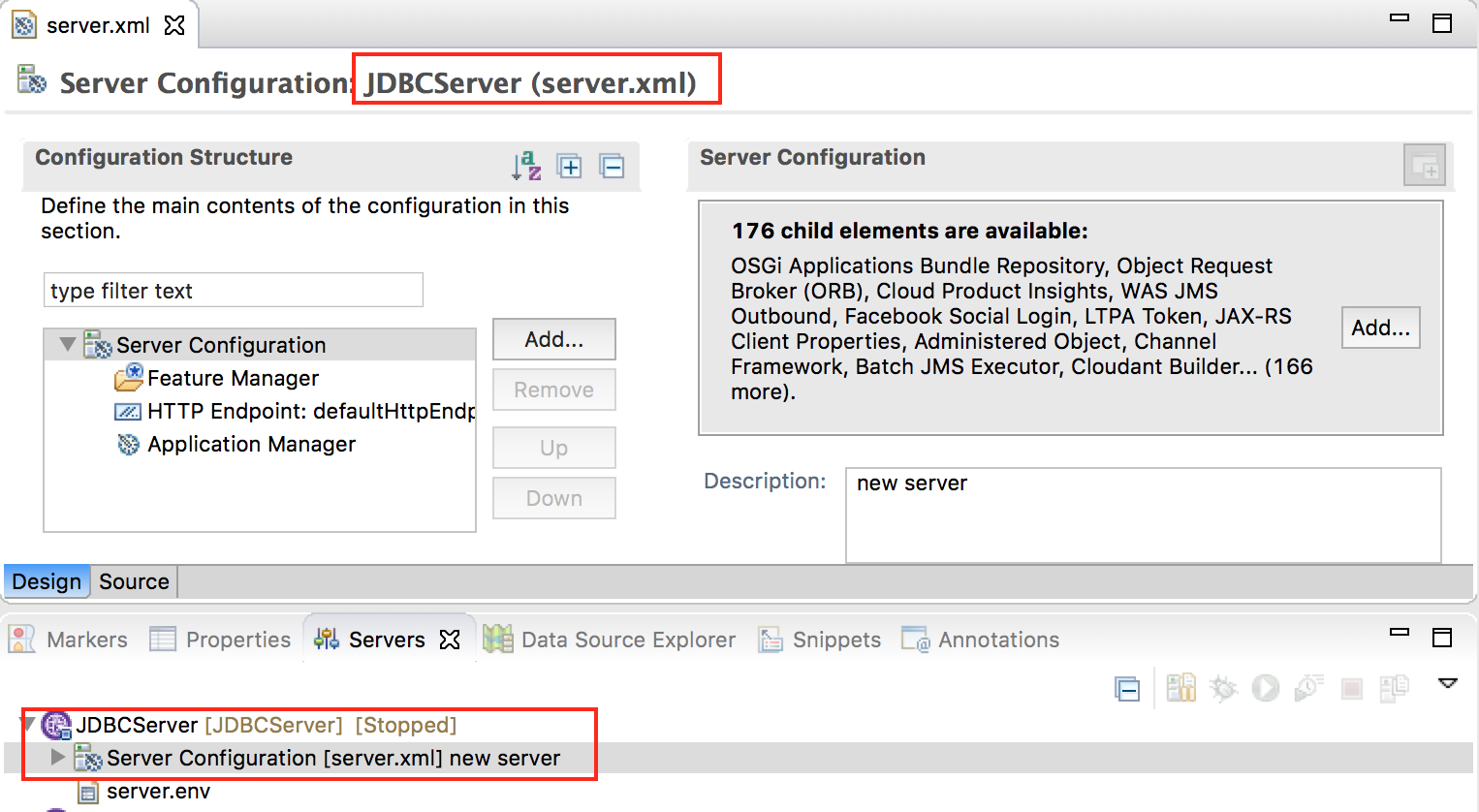
* 1. Enter the server name as **JDBCServer** and Click **Finish**

****

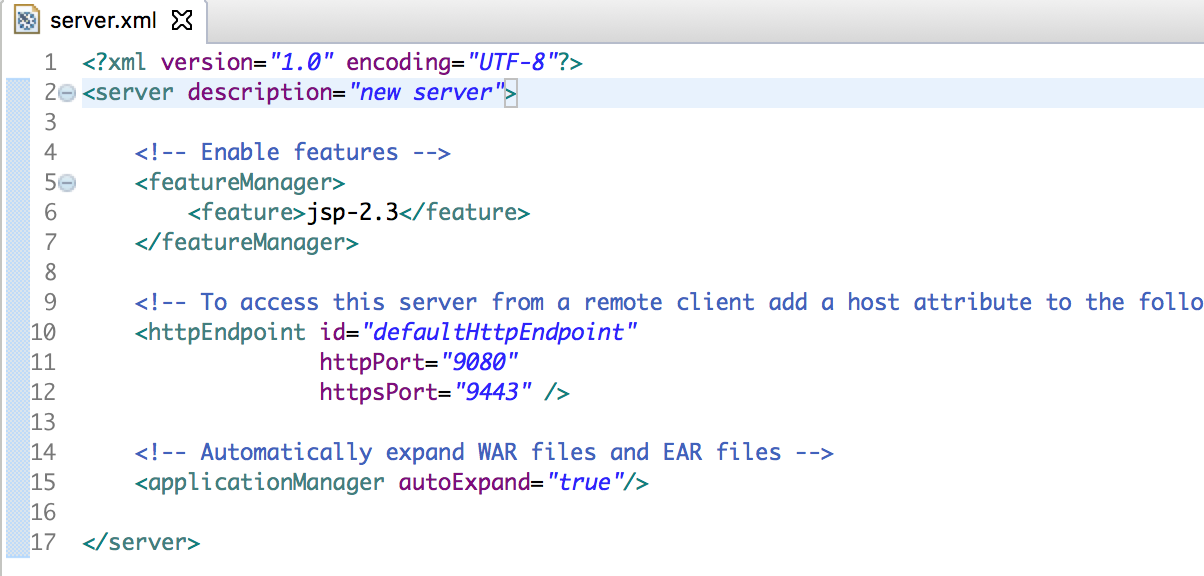
* 1. Click **Finish** in the New Server window after the new Liberty Server has been created, making sure **JDBCServer** shows in the combo box



1. Double click Server Configuration for the **JDBCServer** to bring up **server.xml**



1. Click on the **Source** tab.



1. Remove the **jsp-2.3** feature from **server.xml**, and add the following features:

**<feature>jdbc-4.0</feature>**

**<feature>servlet-3.1</feature>**

1. Paste the following **DataSource** definition into **server.xml**. If you are using Linux or Mac you need to update directory location for the ***fileset*** tag to the following value: “**{LAB\_HOME}/db-derby-10.14.1.0-lib/lib”**

<library id="JDBCSampleDerbyLibs">

<fileset dir="{LAB\_HOME}\db-derby-10.14.1.0-lib\lib" includes="derby.jar"/>

</library>

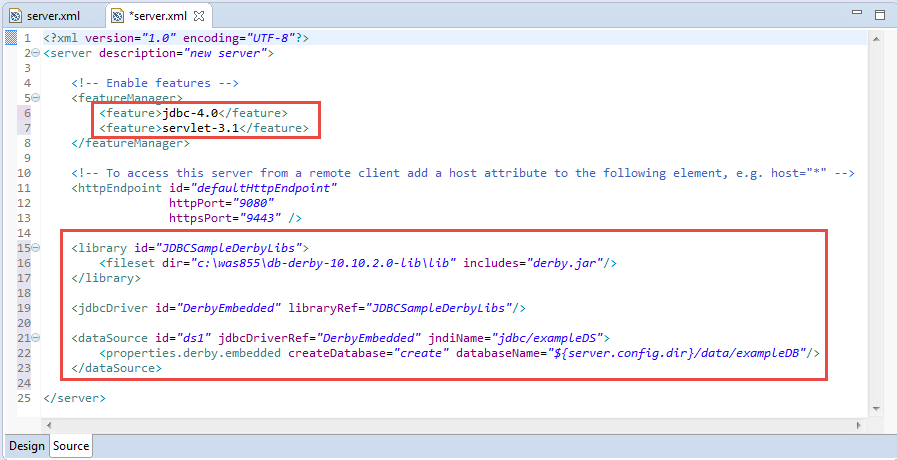
<jdbcDriver id="DerbyEmbedded" libraryRef="JDBCSampleDerbyLibs"/>

<dataSource id="ds1" jdbcDriverRef="DerbyEmbedded" jndiName="jdbc/exampleDS">

<properties.derby.embedded createDatabase="create" databaseName**="${server.config.dir}/data/exampleDB**"/>

</dataSource>

1. Note that we had used **${server.config.dir}\data\exampleDB** as the location of the database. Once the **server.xml** has been updated you should see it as shown below.

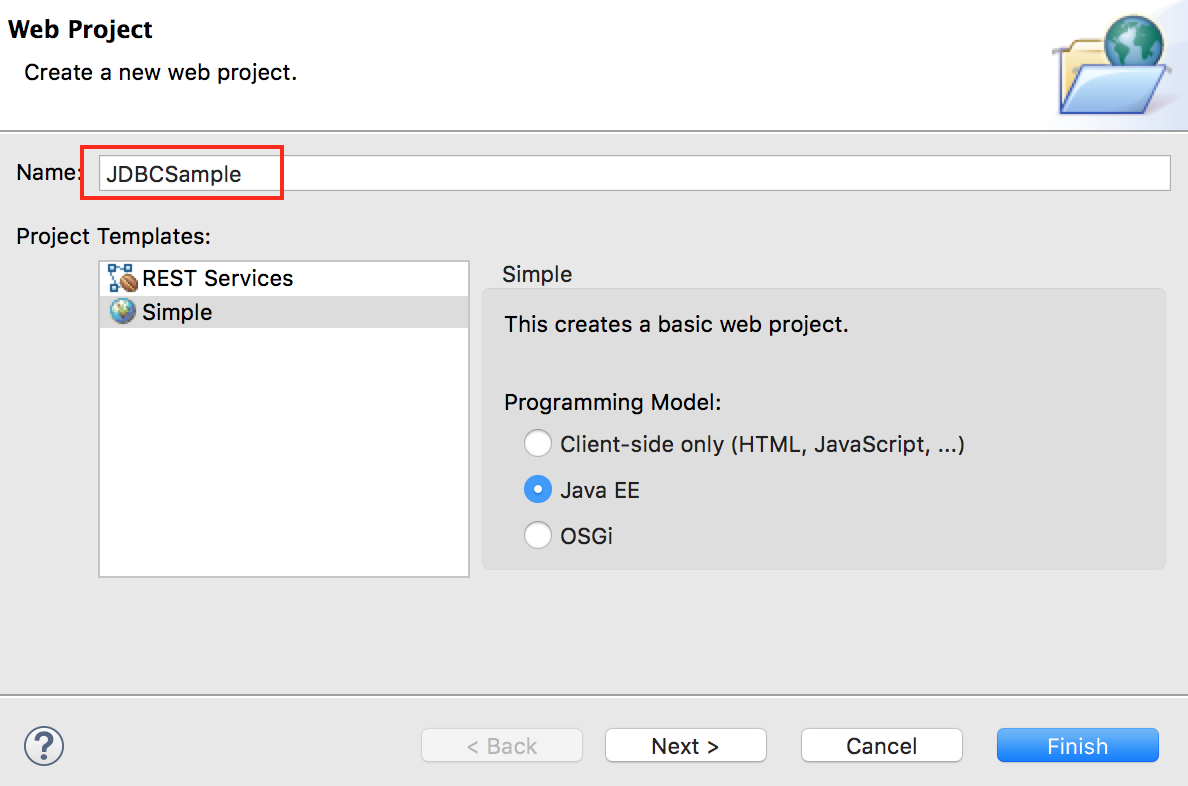


1. **Save** the configuration

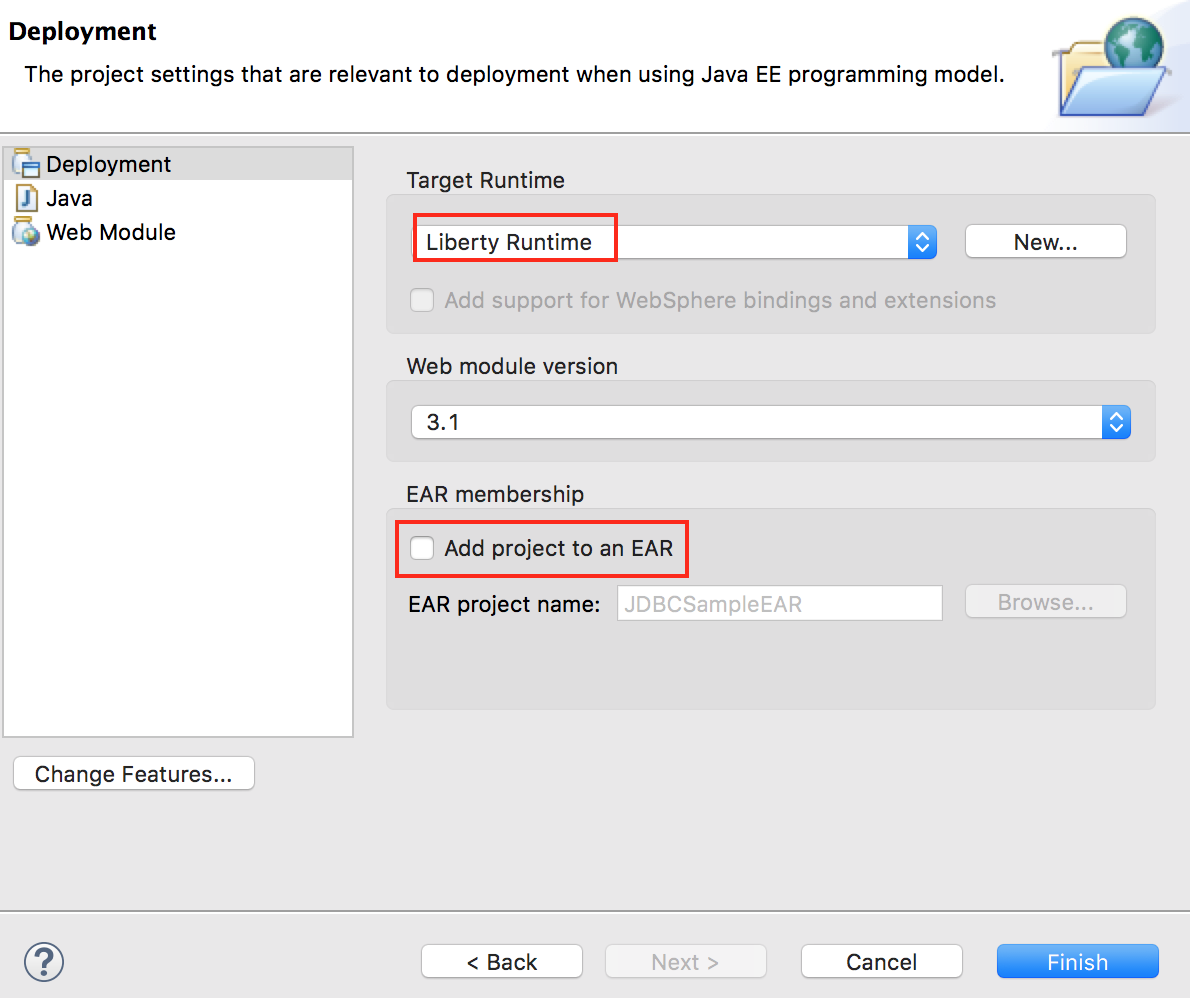
## Create New Web Project

In this section we will create a new web project called **JDBC Sample** to deploy and run the JDBC servlet.

1. Create a **Web Project** called **“JDBCSample”**
   1. Select **File 🡪 New 🡪 Web Project**
   2. Enter **JDBCSample** as the name



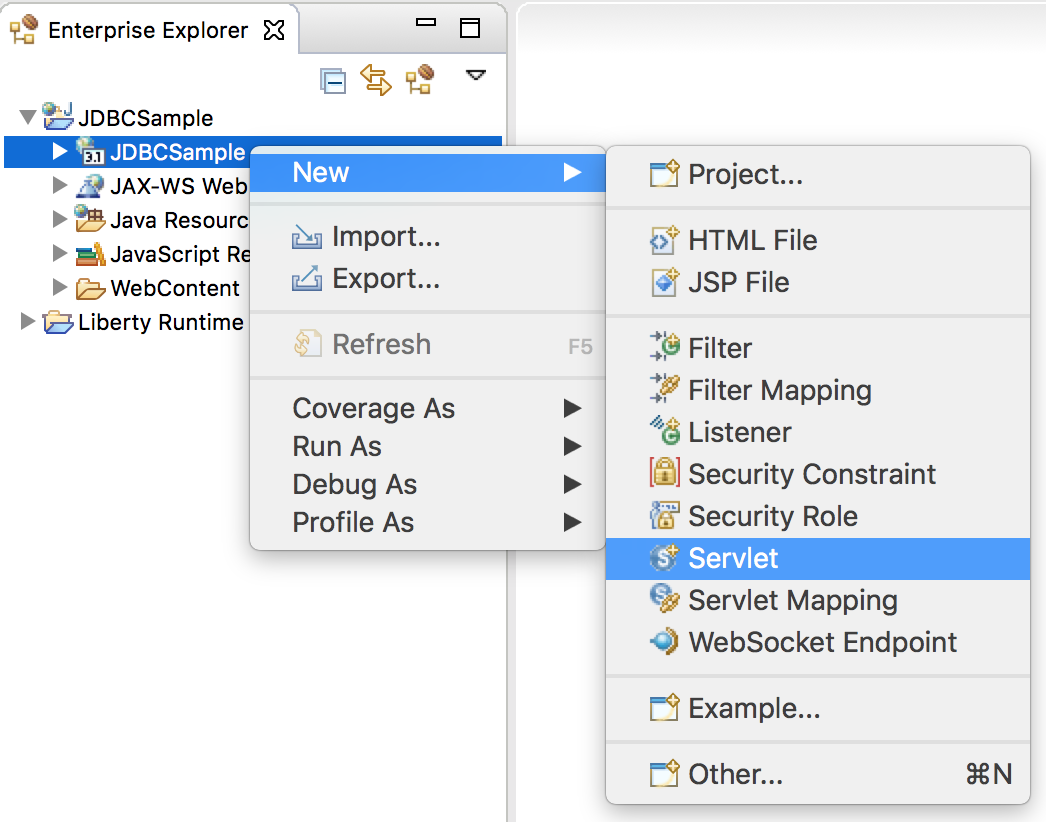
* 1. Click **Next**
  2. Under **Target Runtime** select **Liberty Runtime**
  3. Deselect **Add project to EAR**



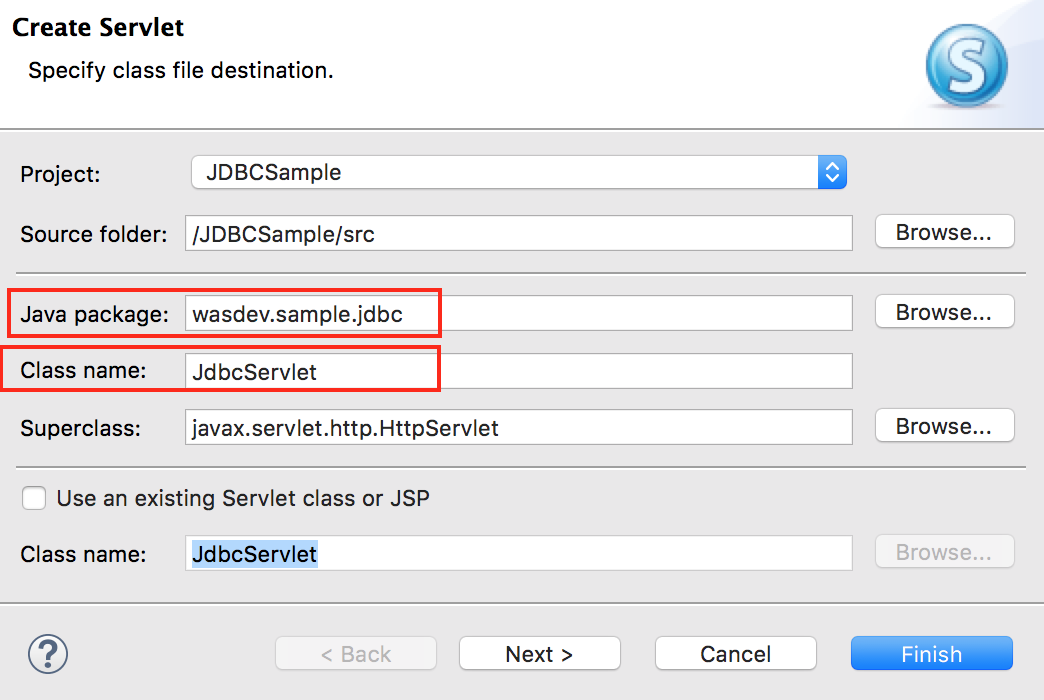
* 1. Click **Finish**
  2. Click **Open** if prompted to switch to **Web perspective**

## Create JDBC Servlet

1. From the **Enterprise Explorer**, Right click **“JDBCSample”** project, and select **New 🡪 Servlet**



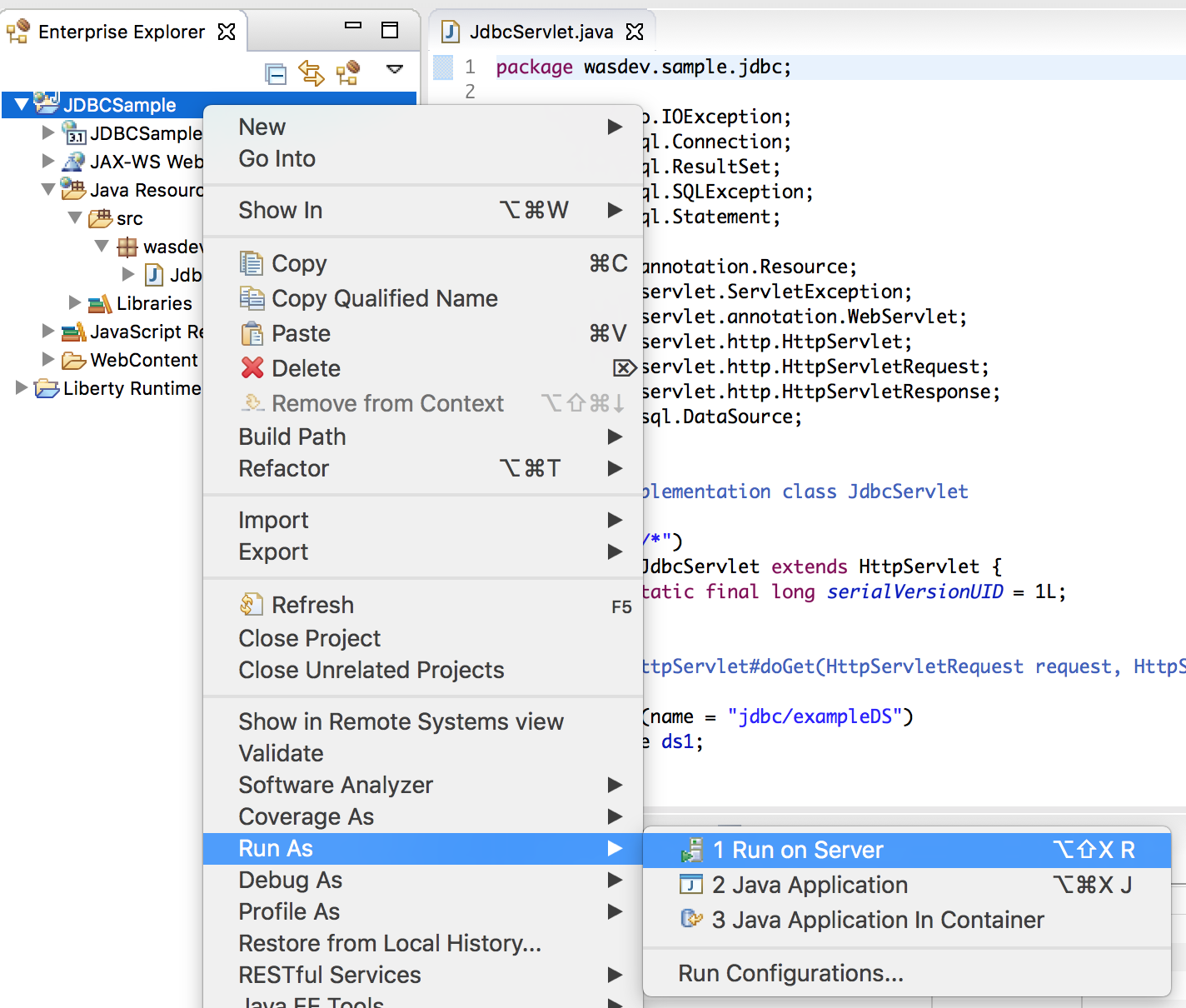
1. Use **wasdev.sample.jdbc** as the package, and **JdbcServlet** as the class



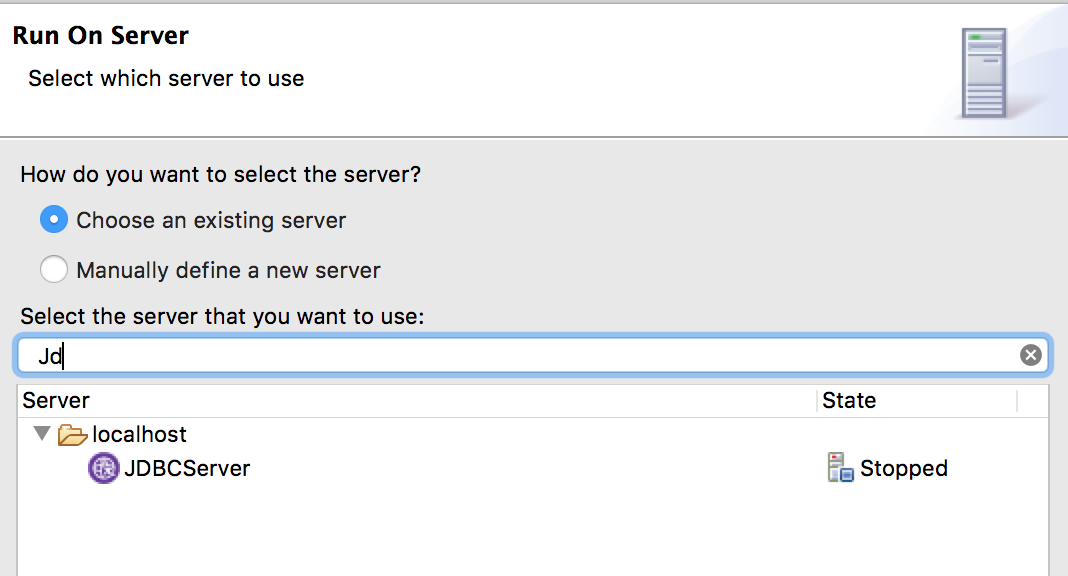
1. Click **Finish**
2. Replace the contents of **JdbcServlet.java** with **{LAB\_HOME}/labs/development/2\_JDBC\_<timestamp>\JdbcServlet.java**
3. Review the servlet source code to learn how it is calling JDBC.

## Running the Sample JDBC Servlet

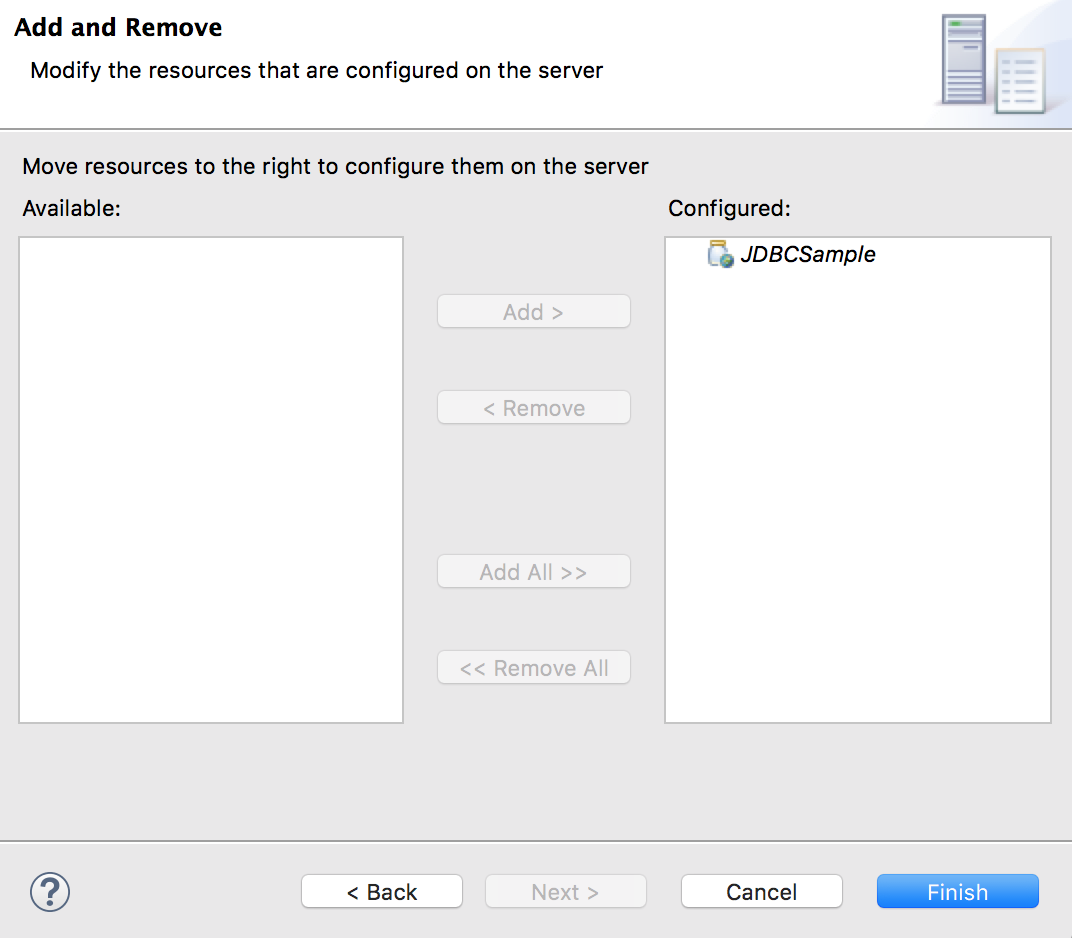
1. Right click the “**JDBCSample”** project, and choose **Run As 🡪 Run on Server**

****

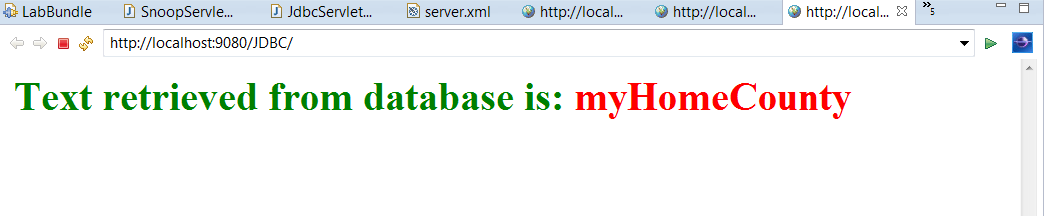
1. Choose the **JDBCServer** (if you have multiple servers created), then click **Next.**

****

1. If you have multiple projects, just select **JDBCSample** as the project to run, and then click **Finish**



1. WDT will run and open a browser to the application automatically as shown below:

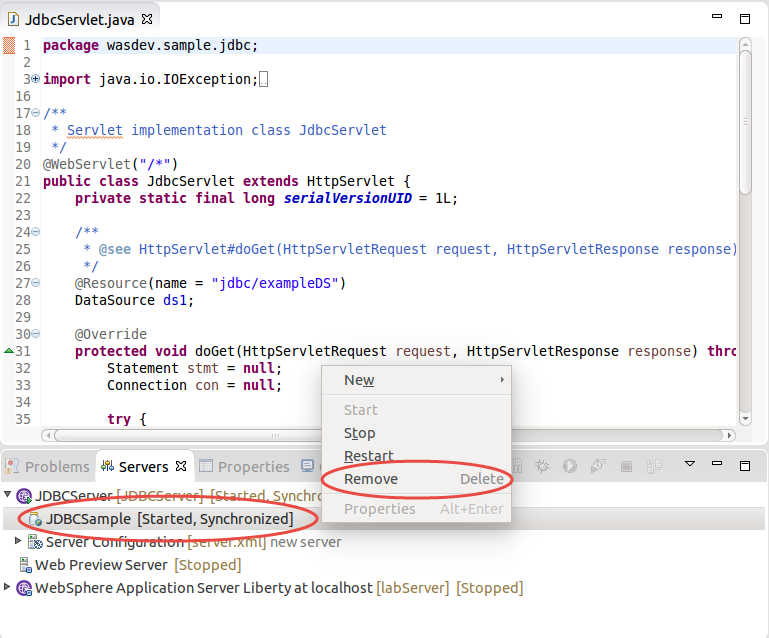


1. Check that **{LAB\_HOME}\wlp\usr\servers\JDBCServer\data\exampleDB** is created.
2. Check the contents of **server.xml.** WDT adds additional configuration automatically to set up a development environment.

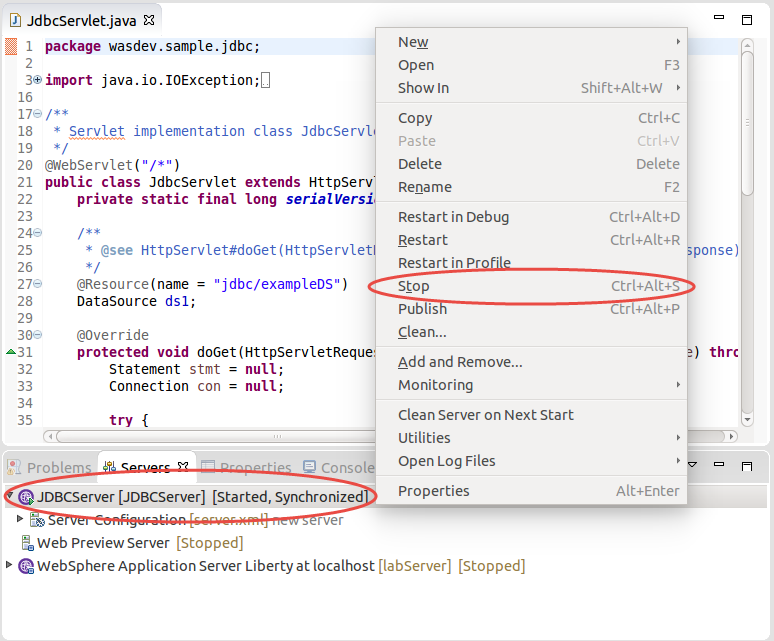


## Clean up

1. Right click on the **JDBC project** and select **Remove**



1. Right click on the **JDBCServer** and select **Stop** to stop the server



## Summary

In this lab you have learned:

* Configuring Derby Database on Liberty
* Create a sample JDBC servlet
* Run the sample JDBC Servlet

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