

Stateful Session Bean

{scrollbar}

This application will take you through the basics of Stateful Session Bean. This application will demonstrate how annotations like `@Stateful`, `@Resource`, `@PostConstruct`, `@PreDestroy`, `@PrePassivate`, `@PostActivate`, `@Remove` are used in an EJB3 application.

Basically a Stateful Session EJB is used whenever there is a requirement to maintain a session. The example is a user registration process wherein the registration process is a two step process. First page prompts to enter your personal credentials and second page prompts to enter your billing and credit card information. The session is maintained till the user has filled up both the jsp pages. Later the complete information is populated on to a database. The application has a Controller servlet which routes the call received from the jsp client to the Bean class, setter methods and jsp pages.

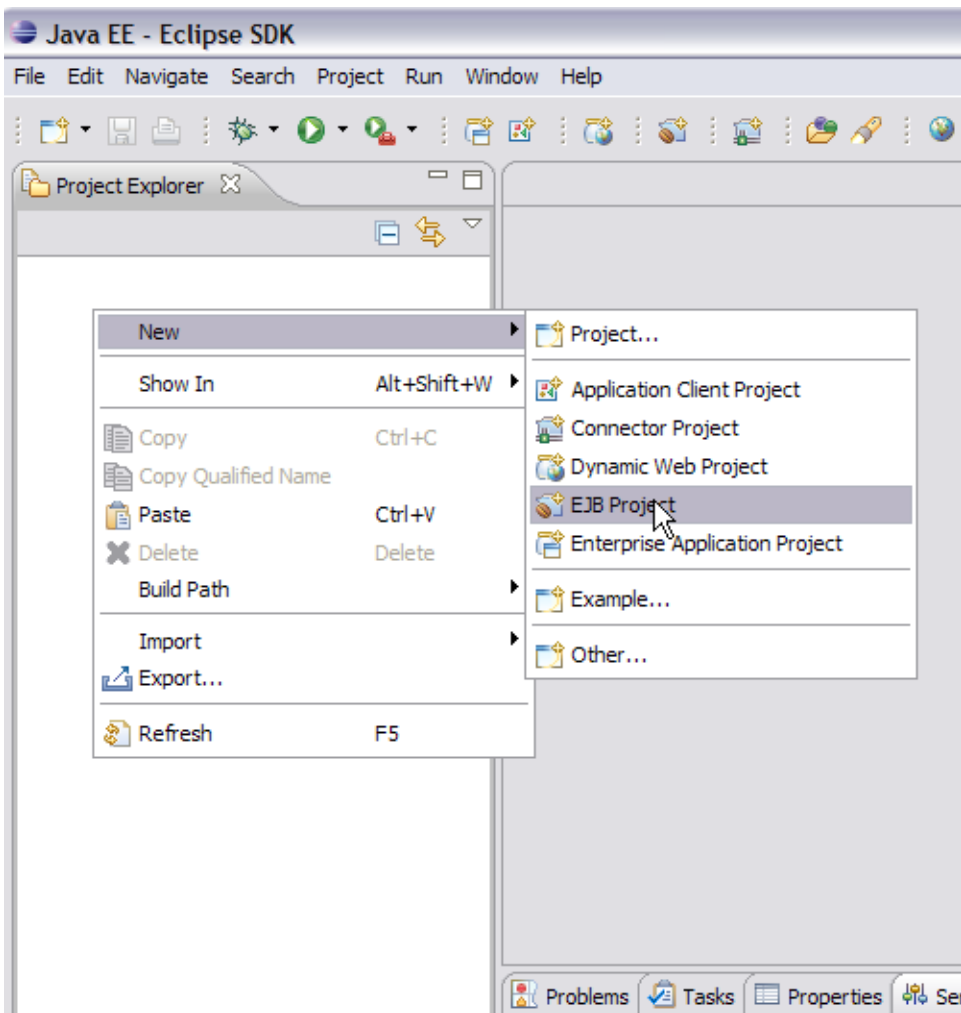
To run this tutorial, as a minimum you will be required to have installed the following prerequisite software.

- Sun JDK 5.0+ (J2SE 1.5)
- Eclipse 3.3.1.1 (Eclipse Classic package of Europa distribution), which is platform specific
- Web Tools Platform (WTP) 2.0.1
- Data Tools Platform (DTP) 1.5.1
- Eclipse Modeling Framework (EMF) 2.3.1
- Graphical Editing Framework (GEF) 3.3.1

Details on installing eclipse are provided in the [Development environment](#) section.
This tutorial is organized in the following sections:

Creating a EJB Project

1. Right click Under Project Explorer and Select New->EJB Project.



2. Name the project as StatefulBean. Select Next.

New EJB Project

Create an EJB Project and add it to a new or existing Enterprise Application.

Project name:

Project contents:

☒ Use default

Directory:

Target Runtime

Configurations

A good starting for working with Apache Geronimo v2.1 runtime. Additional facets can later be installed to add new functionality to the project.

EAR Membership

☐ Add project to an EAR

EAR Project Name:

3. Mark the fields as suggested in the screenshot and Select Next.

New EJB Project

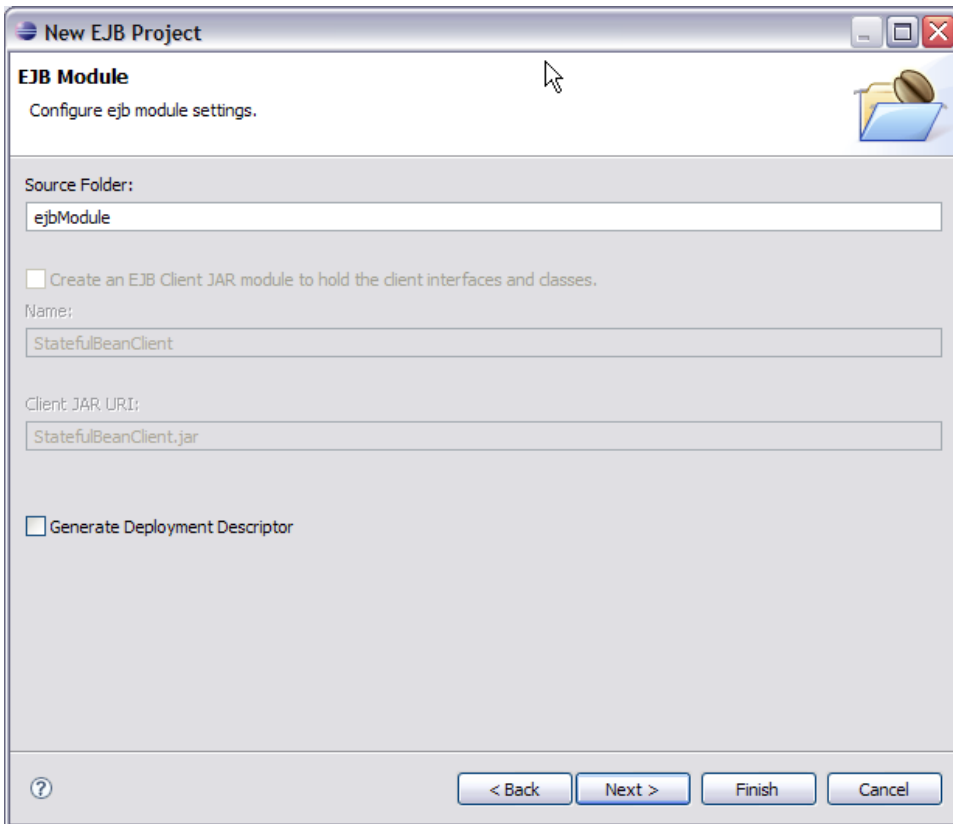
Project Facets

Select the facets that should be enabled for this project.

Configurations:

Project Facet	Version
☒ EJB Module	3.0
☐ EJBDoclet (XDoclet)	1.2.3
☒ Geronimo Deployment	1.2
☒ Java	5.0
☐ Java Persistence	1.0

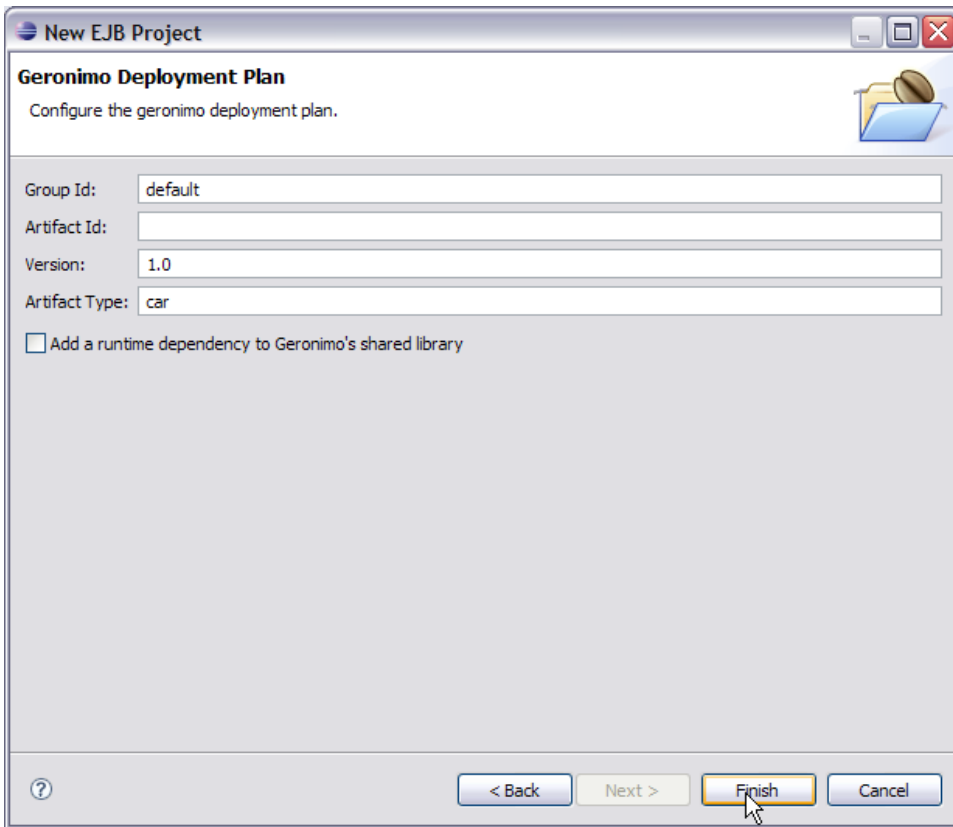
4. Uncheck **Generate Deployment Descriptor**. This is because we are using annotations in our applications and so deployment descriptors are redundant entities. Select Next.



The image shows a 'New EJB Project' dialog box with the following fields and options:

- EJB Module** (Section Header)
- Configure ejb module settings.
- Source Folder:
- ☐ Create an EJB Client JAR module to hold the client interfaces and classes.
- Name:
- Client JAR URI:
- ☐ Generate Deployment Descriptor
- Buttons: < Back, Next >, Finish, Cancel

5. On next screen select all default values and Select finish.



The image shows a 'New EJB Project' dialog box with a title bar containing a question mark icon and standard window controls. The main area is titled 'Geronimo Deployment Plan' with a subtitle 'Configure the geronimo deployment plan.' and a folder icon. It contains four text input fields: 'Group Id' (filled with 'default'), 'Artifact Id' (empty), 'Version' (filled with '1.0'), and 'Artifact Type' (filled with 'car'). Below these is a checkbox labeled 'Add a runtime dependency to Geronimo's shared library' which is unchecked. At the bottom, there is a help icon (question mark), and four buttons: '< Back', 'Next >', 'Finish' (highlighted with a mouse cursor), and 'Cancel'.

New EJB Project

Geronimo Deployment Plan
Configure the geronimo deployment plan.

Group Id: default

Artifact Id:

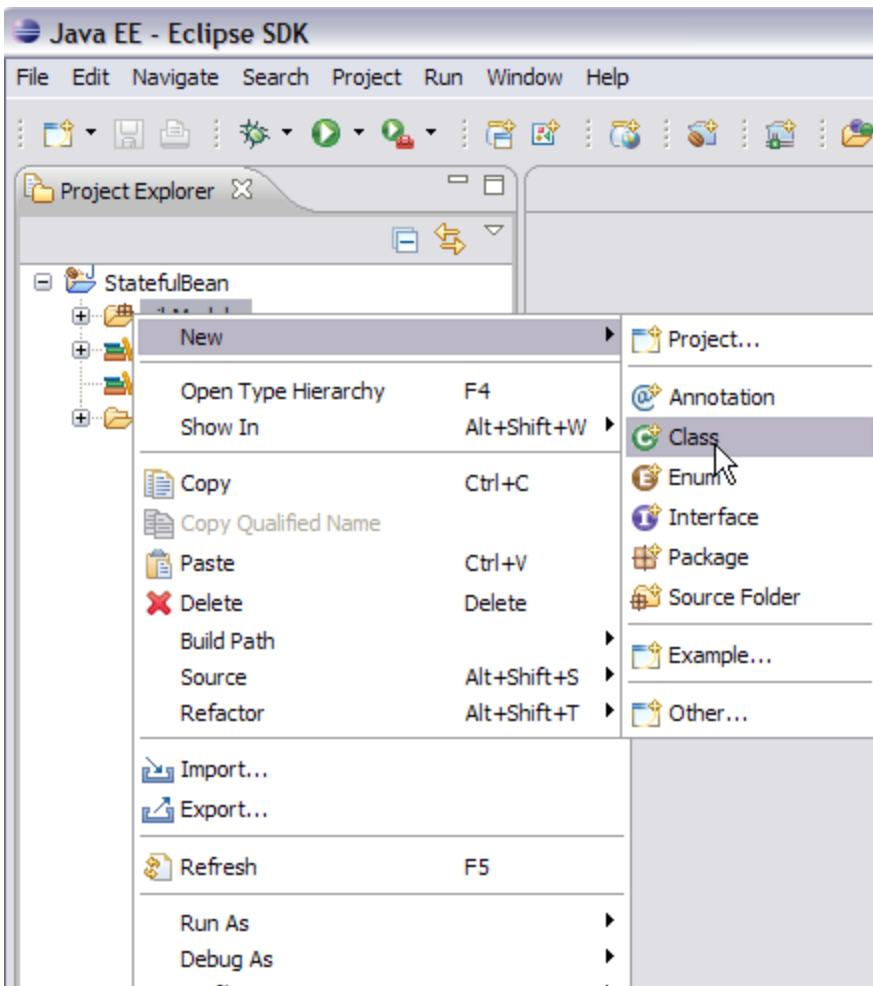
Version: 1.0

Artifact Type: car

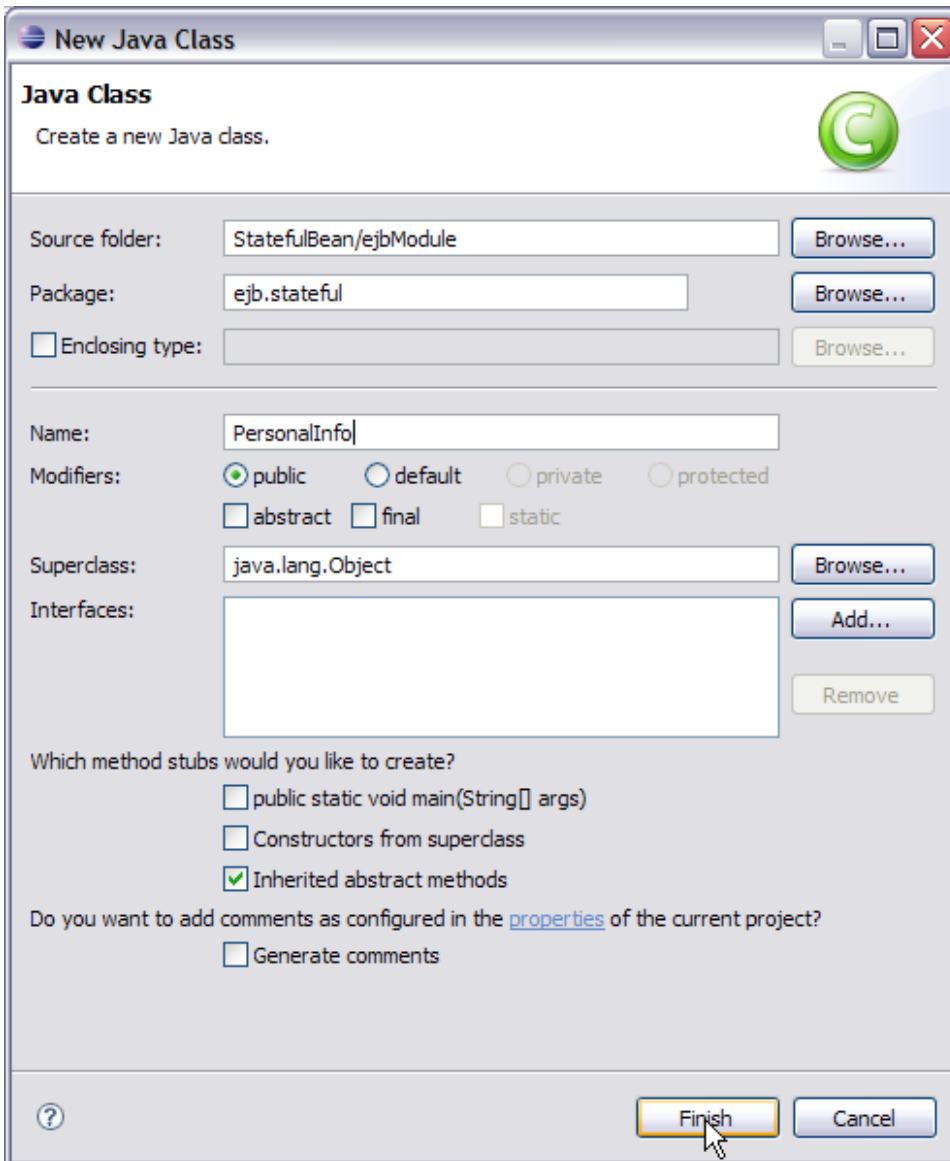
☐ Add a runtime dependency to Geronimo's shared library

? < Back Next > Finish Cancel

- This creates a skeleton for the EJB project. Next steps are adding the bean class, bean interface and setter/getter methods.
6. Right click on ejbModule in StatefulBean project and select New->class.



7. Name the class as PersonalInfo and package as ejb.stateful. Select Finish.



8. Add the following code to PersonalInfo.java. PersonalInfo.java

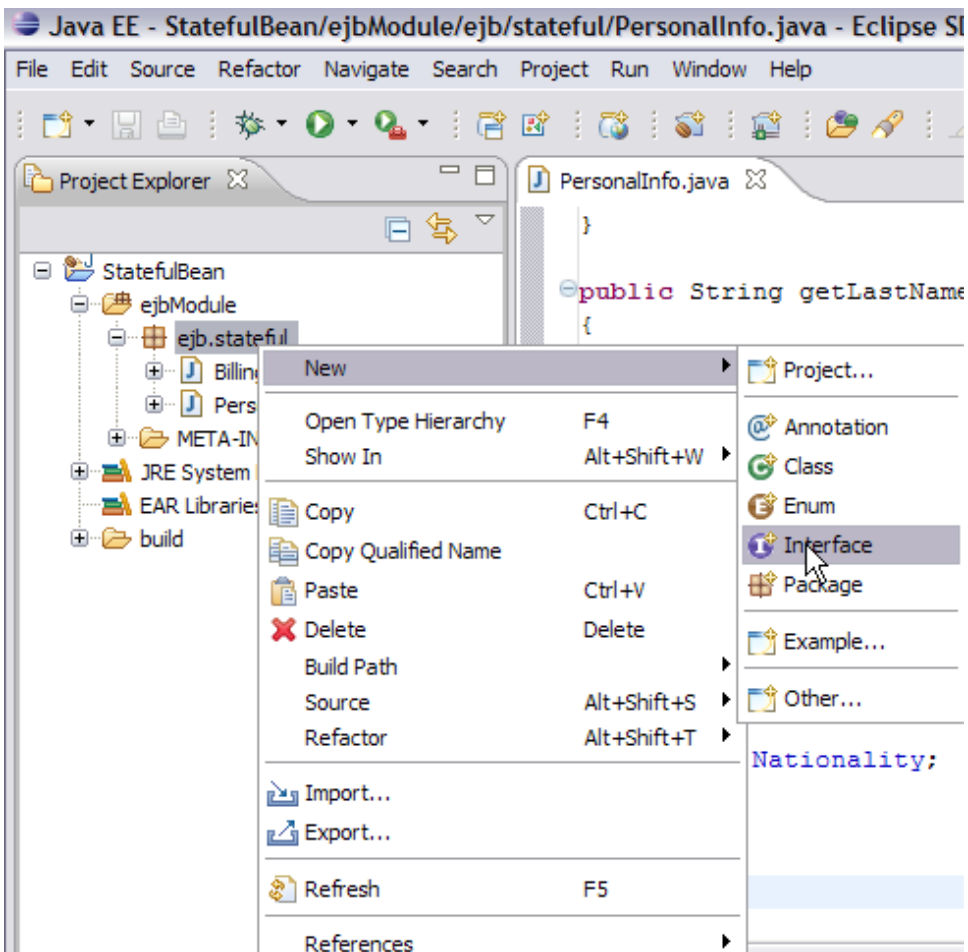
```
package ejb.stateful;
public class PersonalInfo implements java.io.Serializable {
    private static final long serialVersionUID = 1L;
    private String FirstName;
    private String LastName;
    private String UserName;
    private String Password;
    private String Nationality;
    public void setFirstName(String FirstName) { this.FirstName=FirstName; }
    public void setLastName(String LastName) { this.LastName=LastName; }
    public void setUserName(String UserName) { this.UserName=UserName; }
    public void setPassword(String Password) { this.Password=Password; }
    public void setNationality(String Nationality) { this.Nationality=Nationality; }
    public String getFirstName() { return FirstName; }
    public String getLastName() { return LastName; }
    public String getUserName() { return UserName; }
    public String getPassword() { return Password; }
    public String getNationality() { return Nationality; }
}
```

9. Similarly create a class BillingInfo.java and add the following code.

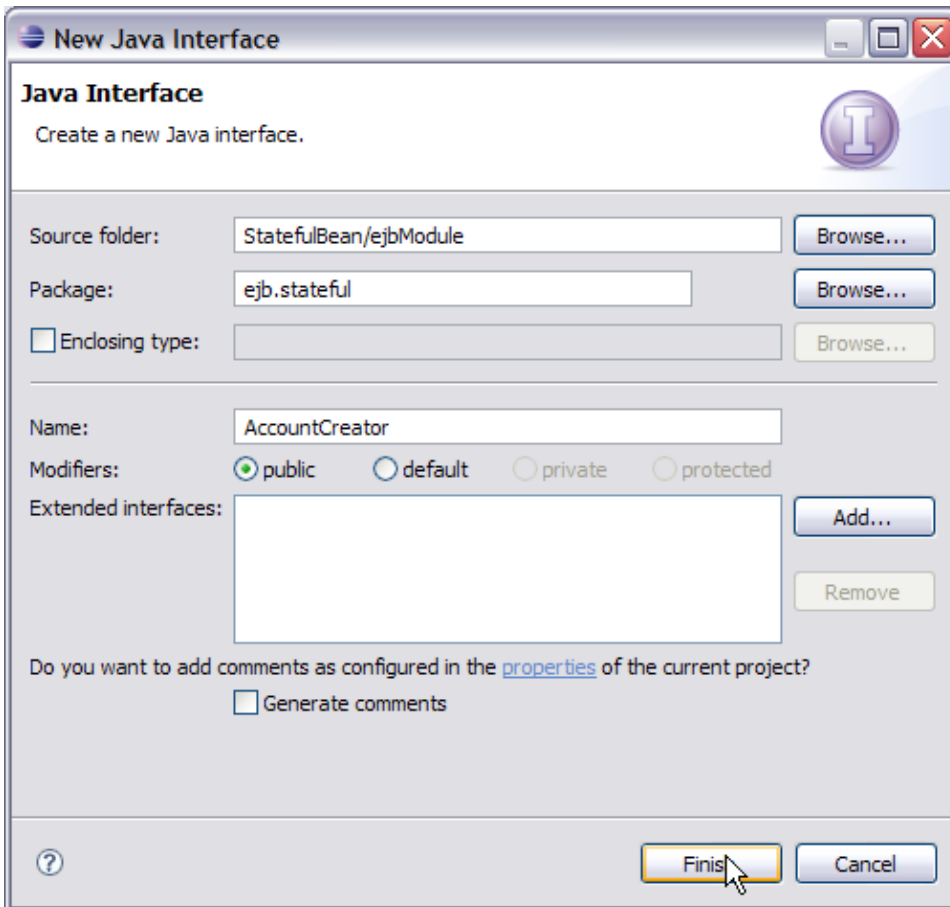
```
BillingInfo.java
package ejb.stateful;
public class BillingInfo implements java.io.Serializable {
    private static final long serialVersionUID = 1L;
    private String houseNo;
    private String street;
    private String city;
    private String pincode;
    private String country;
    private String bank;
    private String cardno;
    public void setBank(String bank) { this.bank=bank; }
    public void setCardno(String cardno) { this.cardno=cardno; }
    public void setHouseNo(String houseNo) { this.houseNo=houseNo; }
    public void setStreet(String street) { this.street=street; }
    public void setCity(String city) { this.city=city; }
    public void setPincode(String pincode) { this.pincode=pincode; }
    public void setCountry(String country) { this.country=country; }
    public String getBank() { return bank; }
    public String getCardno() { return cardno; }
    public String getHouseNo() { return houseNo; }
    public String getStreet() { return street; }
    public String getCity() { return city; }
    public String getPincode() { return pincode; }
    public String getCountry() { return country; }
}
```

PersonalInfo.java and BillingInfo.java are classes for setting and getting the user information.

10. Now we will add the Business interface or bean interface. Right click on the package ejb.stateful and Select New->Interface.



11. Name the interface as **AccountCreator** and Select Finish.

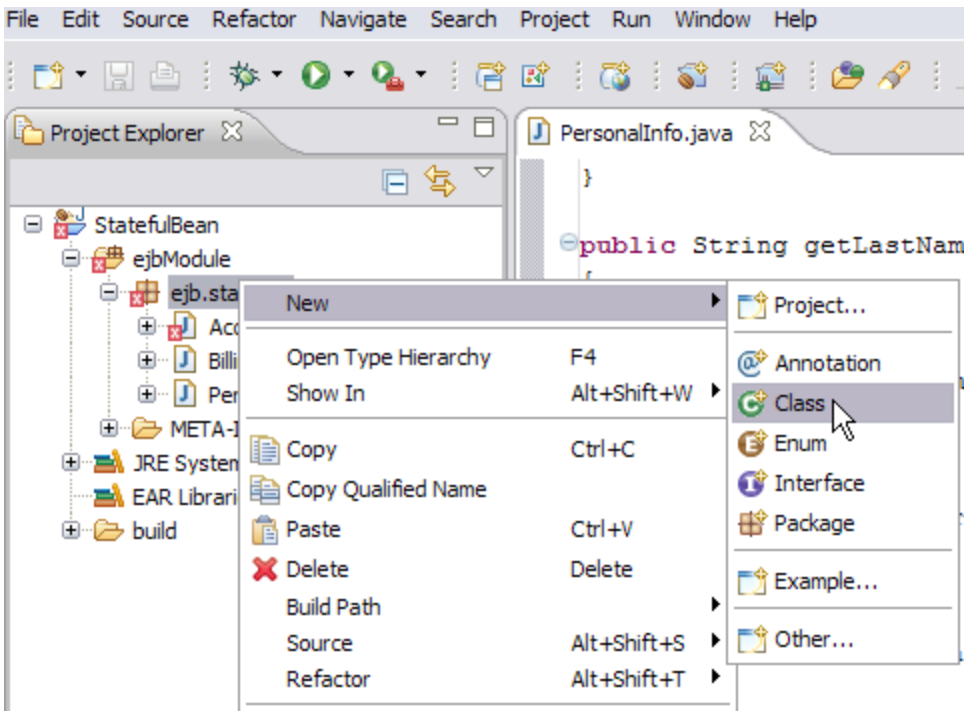


12. Add the following code to AccountCreator interface.

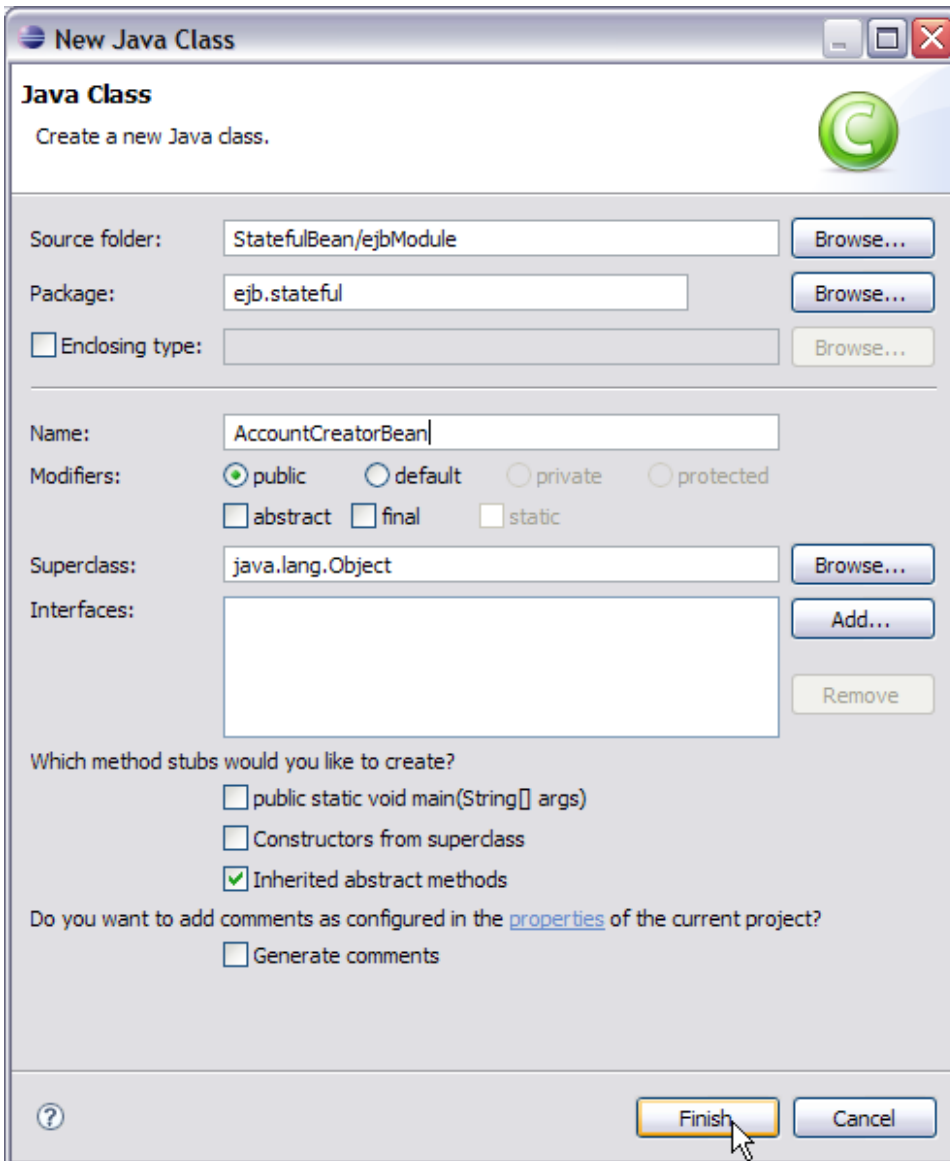
```
AccountCreator.java: solid package ejb.stateful; import javax.ejb.Remote; @Remote public interface AccountCreator { void addPersonalInfo(PersonalInfo personalInfo); void addBillingInfo(BillingInfo billingInfo); void createAccount(); } Information
```

Once you enter this code you might see errors like @EJB can be resolved. Currently there are some limitations with the geronimo eclipse plugin which will be resolved soon. We will soon suggest you how to get rid of those errors.

13. Next step is to add the implementation to the interface. Right click on ejb.stateful interface and select New->class.



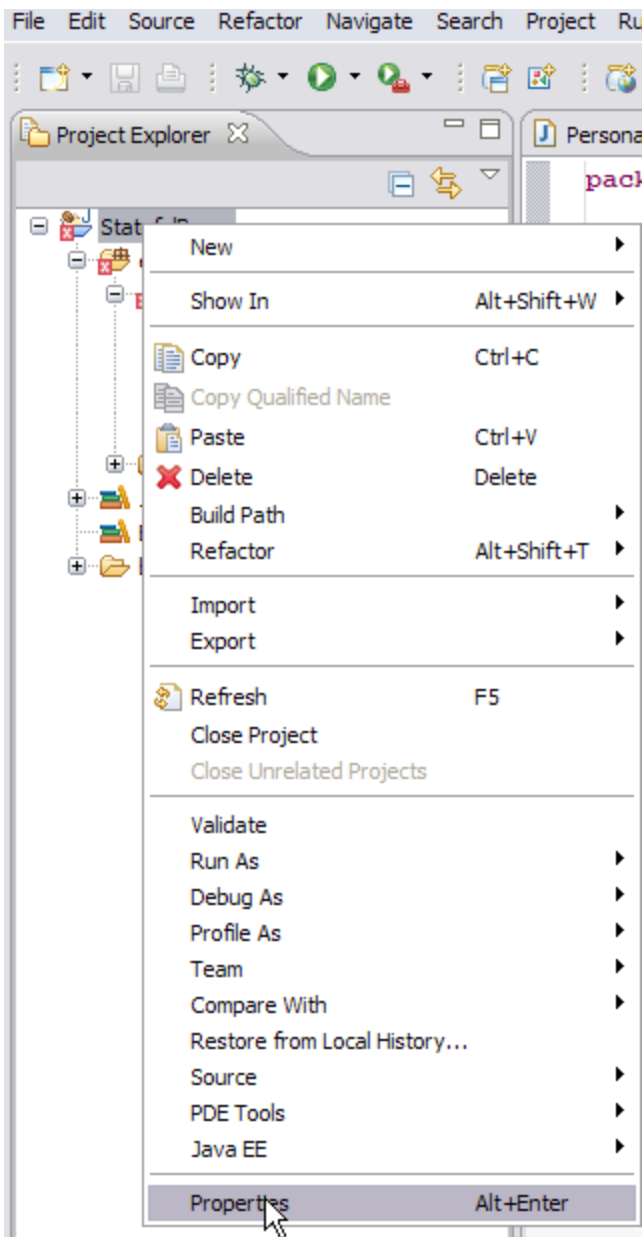
14. Name the bean class as **AccountCreatorBean** and Select **Finish**.



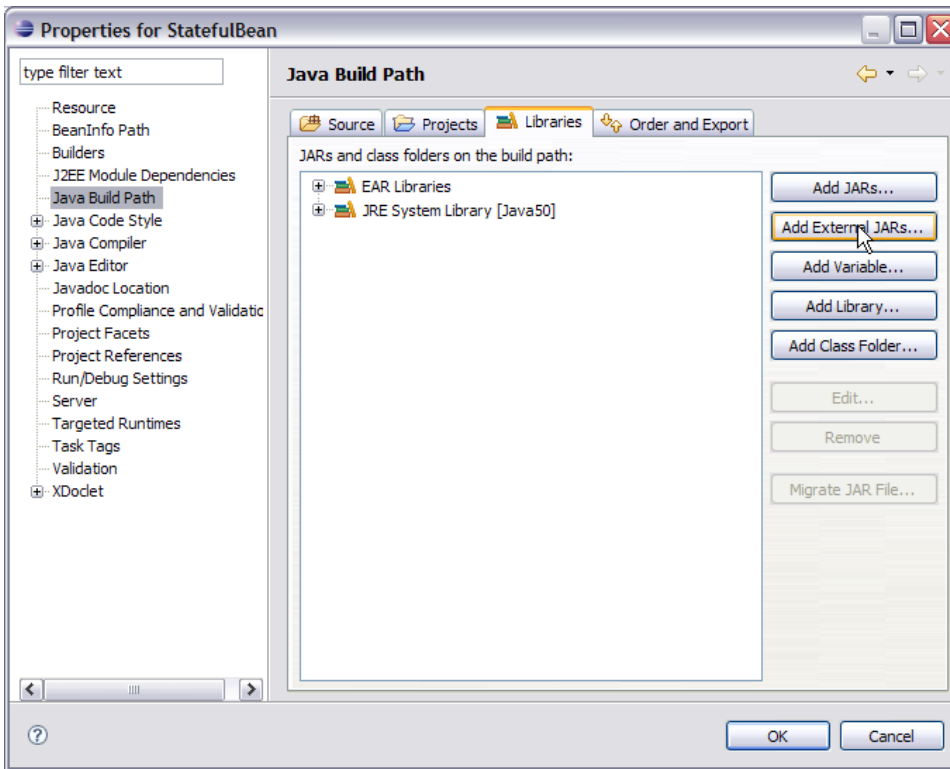
15. Add the following code to **AccountCreatorBean**.

```
AccountCreatorBean.javasolid package ejb.stateful; import java.sql.Connection; import java.sql.Statement; import javax.annotation.
PostConstruct; import javax.annotation.PreDestroy; import javax.annotation.Resource; import javax.ejb.PostActivate; import javax.ejb.
PrePassivate; import javax.ejb.Remove; import javax.ejb.Stateful; import javax.sql.DataSource; @Stateful public class AccountCreatorBean
implements AccountCreator { @Resource(name="jdbc/userds") private DataSource datasource; private Connection connection; private
PersonalInfo personalinfo=new PersonalInfo(); private BillingInfo billinginfo=new BillingInfo(); public AccountCreatorBean() { super(); }
@PostConstruct @PostActivate public void openConnection() { try{ connection=datasource.getConnection(); } catch(Exception e) { e.
printStackTrace(); } } @PreDestroy @PrePassivate public void closeConnection() { connection=null; } public void addPersonalInfo(PersonalInfo
personalinfo) { this.personalinfo=personalinfo; } public void addBillingInfo(BillingInfo billinginfo) { this.billinginfo=billinginfo; } @Remove public void
createAccount() { try{ System.out.println(personalinfo.getFirstName()); Statement statement = connection.createStatement(); String sql =
"INSERT INTO USERINFO(" + "FIRSTNAME, " + "LASTNAME, " + "USERNAME, " + "PASSWORD, " + " PINCODE, " + " CARDNO ) VALUES ("
+ "" + personalinfo.getFirstName() + "", " + "" + personalinfo.getLastName() + "", " + "" + personalinfo.getUserName() + "", " + "" + personalinfo.
getPassword() + "", " + "" + billinginfo.getPincode() + "", " + "" + billinginfo.getCardno() + "" + ")"; statement.execute(sql); statement.close(); } catch
(Exception e) { e.printStackTrace(); } } } Once you have added the code you will see lot of errors but this can be resolved easily and is shown in
next step.
```

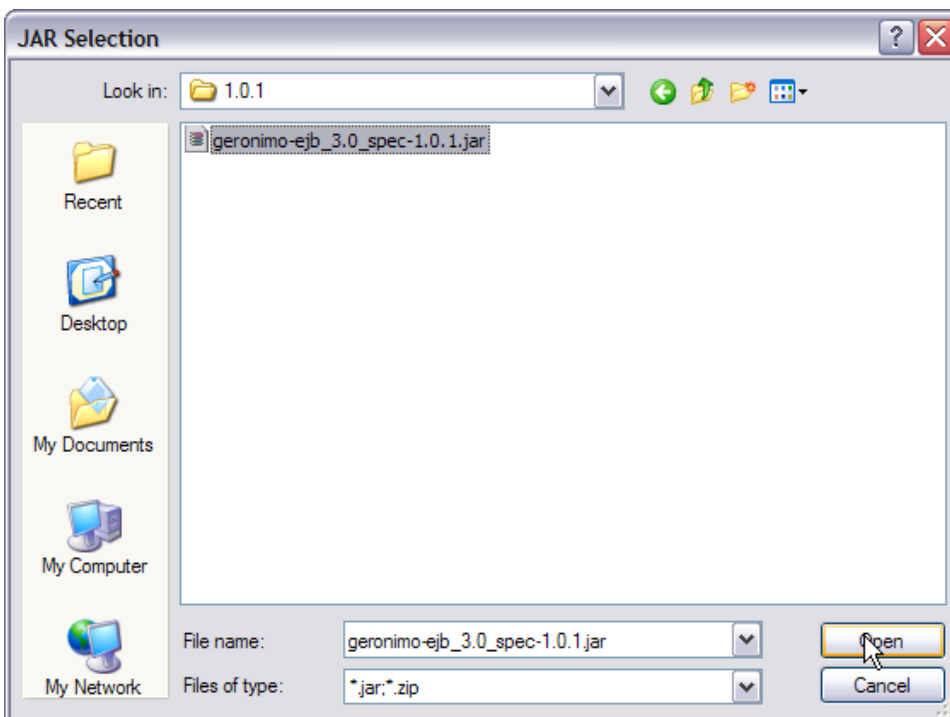
16. The errors in the code is due to missing classes from our server runtime. This can be resolved as follows.
Right click on StatefulBean project and select Properties.



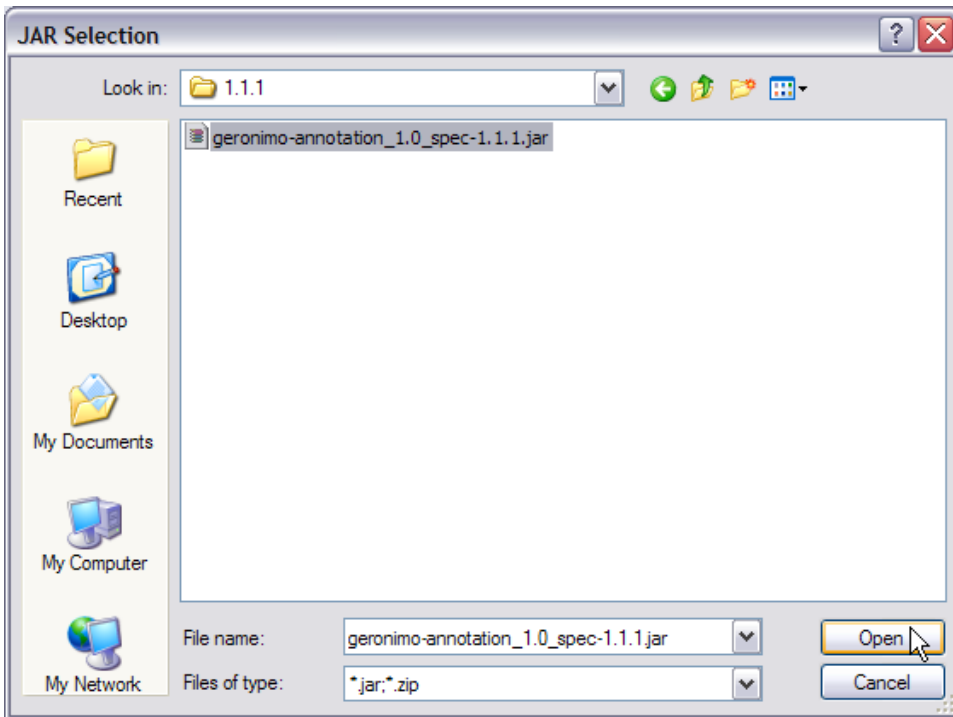
17. On the next screen select Java Build Path->Libraries->Add External Jars.



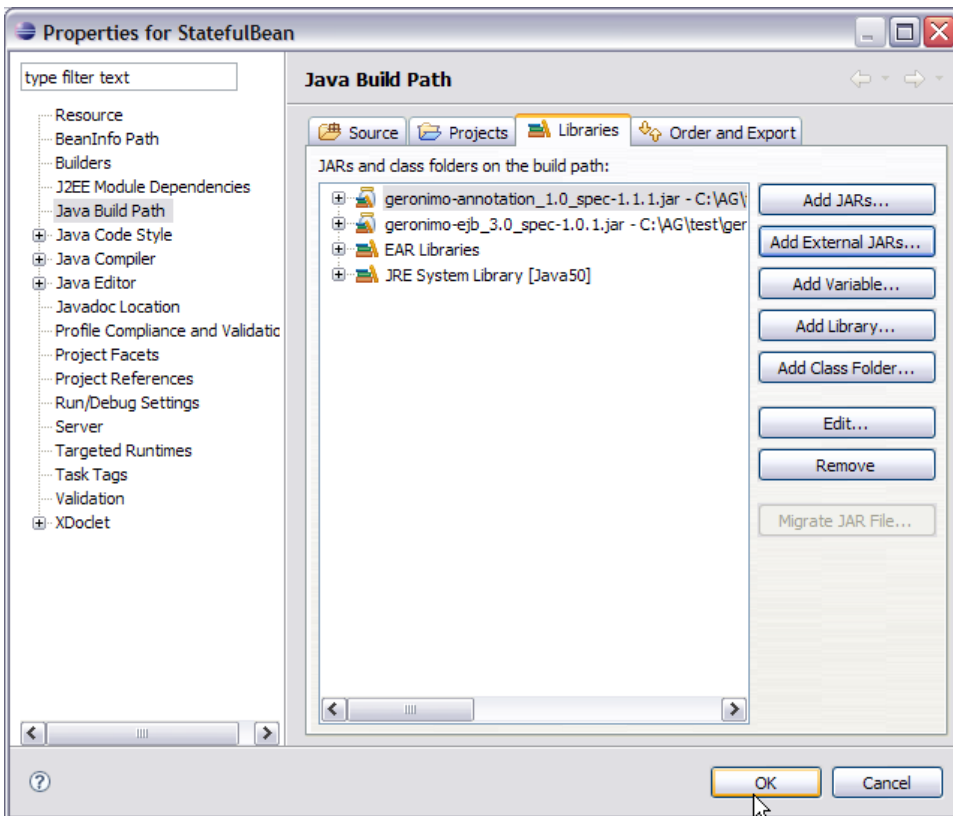
18. Browse to `<GERONIMO_HOME>/repository/org/apache/geronimo/specs/geronimo-ejb_3.0_spec/1.0.1` and select **geronimo-ejb_3.0_spec-1.0.1.jar**. Select Open.



19. Similarly browse to `<GERONIMO_HOME>/repository/org/apache/geronimo/specs/geronimo-annotation_1.0_spec/1.1.1` and add **geronimo-annotation_1.0_spec-1.1.1.jar**.



20. Once done you can see both the jars enlisted. Select Ok.



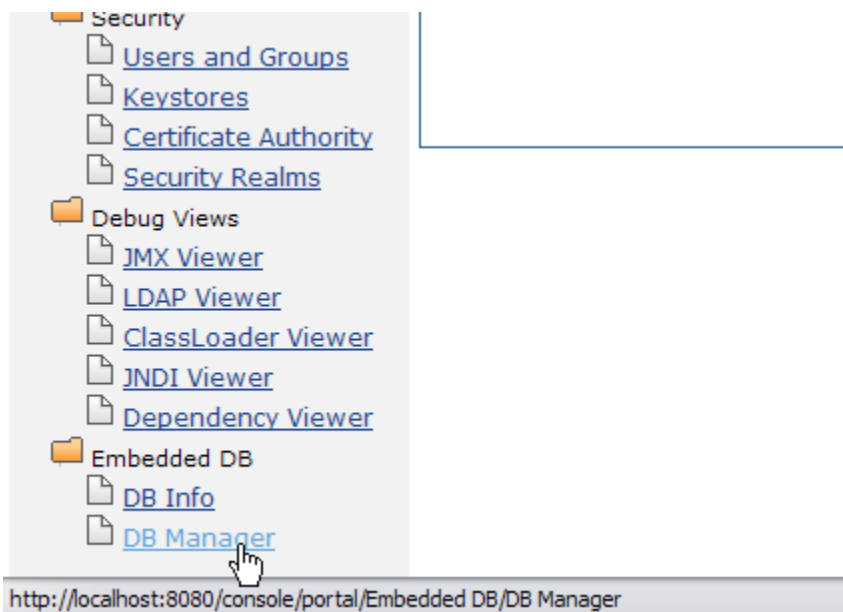
21. Let us walkthrough the EJB bean class code

- @Stateful public class AccountCreatorBean implements AccountCreator- @ Stateful annotation declares the Bean class as Stateful class.
- @Resource(name="jdbc/usersds") DataSource datasource;- This is a resource injection into the bean class wherein a datasource is injected using the @Resource annotation. We will shortly see how to create a datasource in geronimo.

- `public AccountCreatorBean()` -This is a constructor for the bean class and it will be used to create a bean instance whenever a request is received from new client connection.
- `@PostConstruct @PostActivate public void openConnection()`- `@PostConstruct` and `@PostActivate` are annotations which are basically called lifecycle callback annotation. The lifecycle for these annotation is as follows
 - New bean instance is created using the default constructor.
 - Resources are injected
 - Now the `PostConstruct` method is called which in our case is to open a database connection.
 - `PostActivate` is called on the bean instances which have been passivated and required to be reactivated. It goes on the same cycle as being followed by `PostConstruct`.
- `@PreDestroy @PrePassivate public void closeConnection()`- Again `@PreDestroy` and `@PrePassivate` are Lifecycle callback annotation. The lifecycle of these annotation is as follows
 - Bean instances in the pool are used and business methods are invoked.
 - Once the client is idle for a period of time container passivates the bean instance. The `closeConnection` function is called just before container passivates the bean.
 - If the client does not invoke a passivated bean for a period of time it is destroyed.
- `public void addPersonalInfo(PersonalInfo personalInfo)` and `public void addBillingInfo(BillingInfo billingInfo)`- These two functions are invoked to store client data across various calls.
- `@Remove public void createAccount()`- There are two ways in which a bean is destroyed and hence this where a client session ends in stateful bean. One is when a bean has been passivated and is not reinvoked by client hence the bean instance is destroyed. Another way is to use `@Remove` annotation. Once the client confirms and submits all the required information the data is populated into the database and that is where the session ends.

Creating a database using Administrative Console

1. Start the server and Launch the Administrative Console using the URL <http://localhost:8080/console>.
2. Enter default username and password.
3. In the welcome page, Under Embedded DB, Select DB Manager.



4. On the next page create a database **userdbs** and Select create.

DB Viewer

Database List	
Databases	
ActiveMRCDB	Application
ArchiveMRCDB	Application
SystemDatabase	Application
test	Application
UddiDatabase	Application

Run SQL

Create DB:

Delete DB:

Use DB:

SQL Command/s:

- Once done you can see the userdbs database listed in DB Viewer portlet under Databases. This confirms that the database has been successfully created.

DB Viewer

Database List	
Databases	View
ActiveMRCDB	Application
ArchiveMRCDB	Application
SystemDatabase	Application
test	Application
UddiDatabase	Application
userdbs	Application

Run SQL

- As shown in the figure under **Use DB**, select userdbs from the dropdown box.

Run SQL

Create DB:

Delete DB:

Use DB:

ActiveMRCDB
ArchiveMRCDB
SystemDatabase
test
UddiDatabase
userdbs

- Run the `userinfo.sql` script. Select **Run Sql**.

Run SQL

Create DB:

Delete DB: ActiveMRCDB

Use DB: userdb

SQL Command/s:

```
create table userinfo( firstname varchar(20), lastname varchar(20),
username varchar(20), password varchar(20), pincode varchar(20),
cardno varchar(20));
```

userinfo.sqlsolid create table userinfo(firstname varchar(20),lastname varchar(20), username varchar(20), password varchar(20), pincode varchar(20), cardno varchar(20))

8. To verify the table creation succeeded. Select **Application** as shown in the figure.

Database List	
Databases	View Tables
ActiveMRCDB	Application
ArchiveMRCDB	Application
SystemDatabase	Application
UddiDatabase	Application
userdb	Application

9. Next screen suggests the table has been successfully created. To view the contents of the table select **VIEW CONTENTS**.

DB: userdb	
Tables	
APP	View Contents
View Databases	

10. The table is currently empty as shown in the figure.

DB Viewer

DB: userdb Table: APP.USERINFO

FIRSTNAME	LASTNAME	USERNAME	PASSWORD	PINCODE	CARDNO
*** Empty ***					

[View Tables](#) | [View Databases](#)

Creating a datasource using Administrative Console

1. Start the server and Launch the Administrative Console using the URL <http://localhost:8080/console>.
2. Enter default username and password.
3. Once in the welcome page. In console navigation, Under Services, Select Database Pools.

APACHE GERONIMO
Server Console

Console Navigation

- Welcome
- Server
 - Information
 - Java System Info
 - Server Logs
 - Shutdown
 - Web Server
 - Thread Pools
 - Apache HTTP
 - JMS Server
 - Monitoring
- Services
 - Repository
 - Database Pools
 - JMS Resources

Welcome

Welcome to the Apache Geronimo™ Administration Console!

The administration console provides a convenient, user friendly way to administer many aspects of the Geronimo Server. It is currently a work in progress, and will continue to evolve over time. The navigation panel on the left-hand side of the screen provides easy access to the individual tasks available in the console.

This space is the main content area where the real work happens. Each view contains one or more portlets (self contained view fragments) that typically include a link for help in the header. Look at the top of this portlet for an example and try it out.

The references on the right are provided so that you can learn more about Apache Geronimo, its capabilities, and what might be coming in future releases.

Mailing lists are available to get involved in the development of Apache Geronimo or to ask questions of the community:

- On the next screen, Create a new database pool using Geronimo database pool wizard.

Database Pools

This page lists all the available database pools.

For each pool listed, you can click the **usage** link to see examples of how to use

Name	Deployed As
MonitoringClientDS	Server-wide
NoTxDatasource	Server-wide
SystemDatasource	Server-wide
jdbc/ActiveDS	Server-wide
jdbc/ArchiveDS	Server-wide
jdbc/testds	Server-wide
jdbc/juddiDB	org.apache.geronimo.configs/uddi-tomcat/2.1/car

Create a new database pool:

- Using the Geronimo database pool wizard
- Import from JBoss 4
- Import from WebLogic 8.1

- On the next screen give the name as suggested in the figure. This will initiate the process to create a Derby Embedded XA datasource.

Database Pools

Create Database Pool -- Step 1: Select Name and Database

Name of Database Pool: A name that is different than the name for any other database pool in the server (no spaces in the name please).

Database Type: The type of database the pool will connect to.

6. Select the Driver jar and give the database name as userds (Remember this is the database we created in the previous step). Rest all fields can be set to default.

Database Pools

This page edits a new or existing database pool.

Pool Name: A name that is different than the name for any other database pools in the server (no spaces in the name please).

Pool Type: A resource adaptor that provides access to an embedded Apache Derby database with XA support.

Basic Connection Properties

Driver JAR: The JAR(s) required to make a connection to the database. Use CTRL-click or SHIFT-click to select multiple jars. The JAR(s) should already be installed under Geronimo/repository/ (or)

Database Name: Name of the database to connect to.

Password:

7. Select **Deploy** to deploy the connector plan.

This config-property is currently ignored by Derby.

Create Database: Flag indicating that the database should be created if it does not exist. This is a

Connection Pool Parameters

Pool Min Size: The minimum number of connections in the pool. The default is 0.

Pool Max Size: The maximum number of connections in the pool. The default is 10.

Blocking Timeout: (in milliseconds) The length of time a caller will wait for a connection. The default is 5000.

Idle Timeout: (in minutes) How long a connection can be idle before being closed. The default is 15.

8. Once done you can see the Database Pool **jdbc/userds** listed in the available database pools.

Database Pools

This page lists all the available database pools.

For each pool listed, you can click the **usage** link to see examples of how to use the

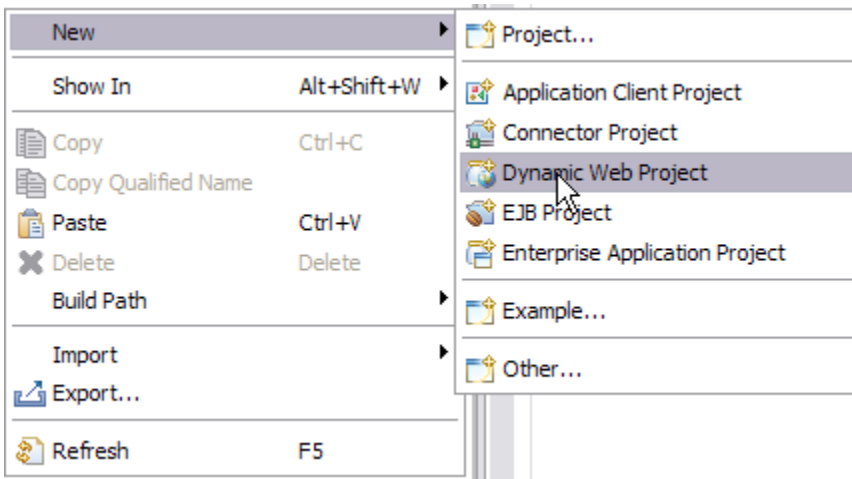
Name	Deployed As
MonitoringClientDS	Server-wide
NoTxDataSource	Server-wide
SystemDataSource	Server-wide
jdbc/ActiveDS	Server-wide
jdbc/ArchiveDS	Server-wide
jdbc/testds	Server-wide
jdbc/userds	Server-wide
jdbc/juddiDB	org.apache.geronimo.configs/uddi-tomcat/2.1/car

Create a new database pool:

- ♦ [Using the Geronimo database pool wizard](#)
- ♦ [Import from JBoss 4](#)
- ♦ [Import from WebLogic 8.1](#)

Creating a web based application client

1. Right click under Project Explorer and Select **New->Dynamic Web Project**.



2. Name the project as **StatefulClient** and Select Next.

New Dynamic Web Project

Dynamic Web Project
Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

Project name:

Project contents:
☒ Use default
Directory:

Target Runtime

Configurations

A good starting for working with Apache Geronimo v2.1 runtime. Additional facets can later be installed to add new functionality to the project.

EAR Membership
☐ Add project to an EAR
EAR Project Name:

3. Keep the default settings as shown in the figure. Select Next.

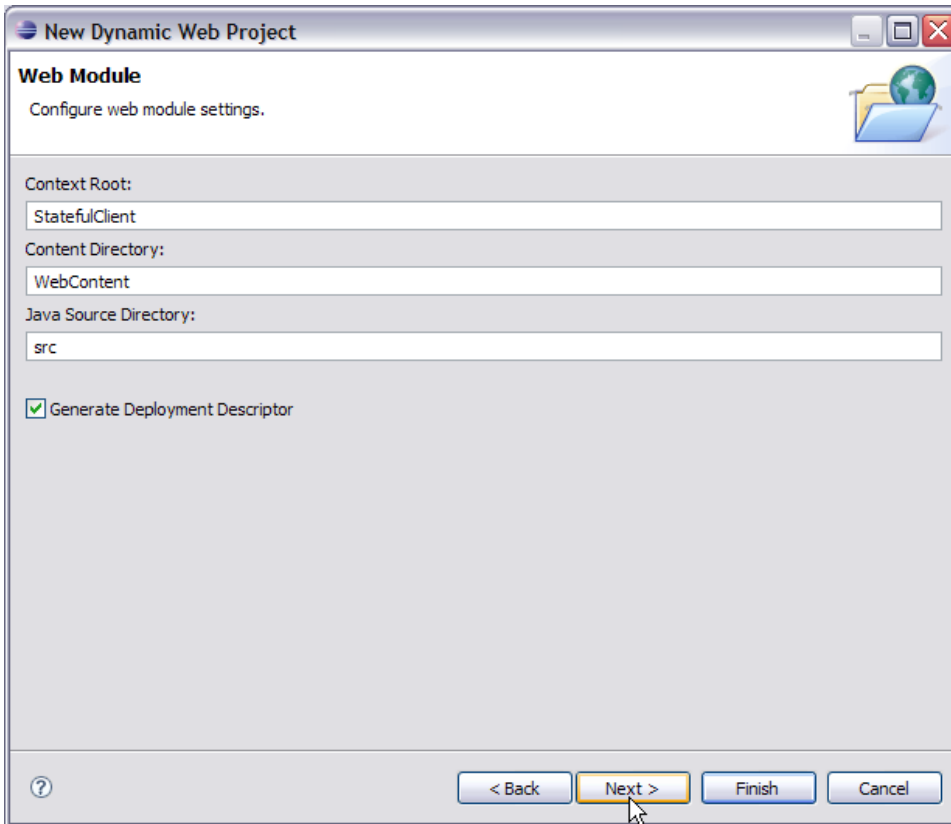
New Dynamic Web Project

Project Facets
Select the facets that should be enabled for this project.

Configurations:

Project Facet	Version
☐ Axis2 Web Services	
☒ Dynamic Web Module	2.5
☒ Geronimo Deployment	1.2
☒ Java	5.0
☐ Java Persistence	1.0
☐ JavaServer Faces	1.1
☐ WebDodet (XDodet)	1.2.3

4. On the next screen keep default values. Select Next.



New Dynamic Web Project

Web Module
Configure web module settings.

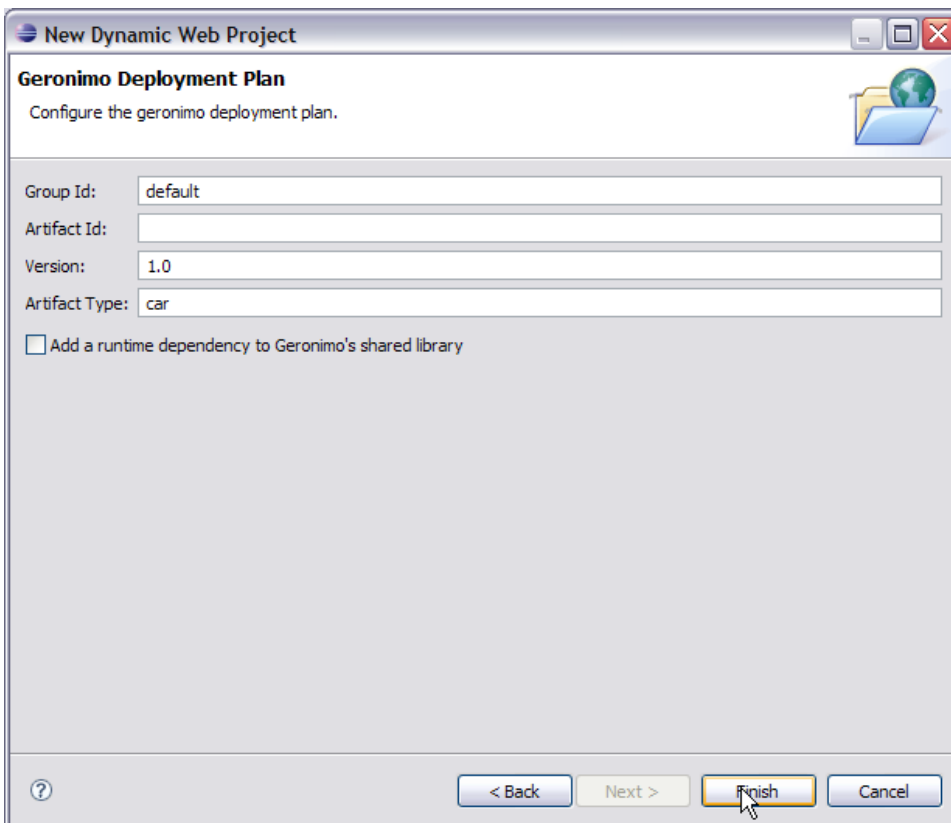
Context Root:
StatefulClient

Content Directory:
WebContent

Java Source Directory:
src

☒ Generate Deployment Descriptor

5. Default values on this screen too. Select Finish.



New Dynamic Web Project

Geronimo Deployment Plan
Configure the geronimo deployment plan.

Group Id: default

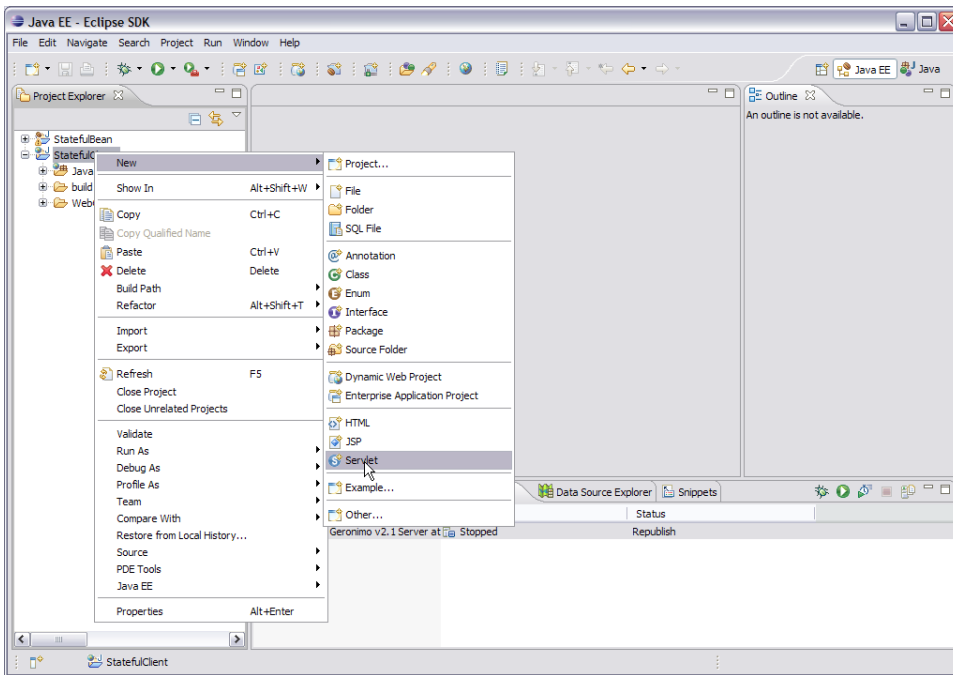
Artifact Id:

Version: 1.0

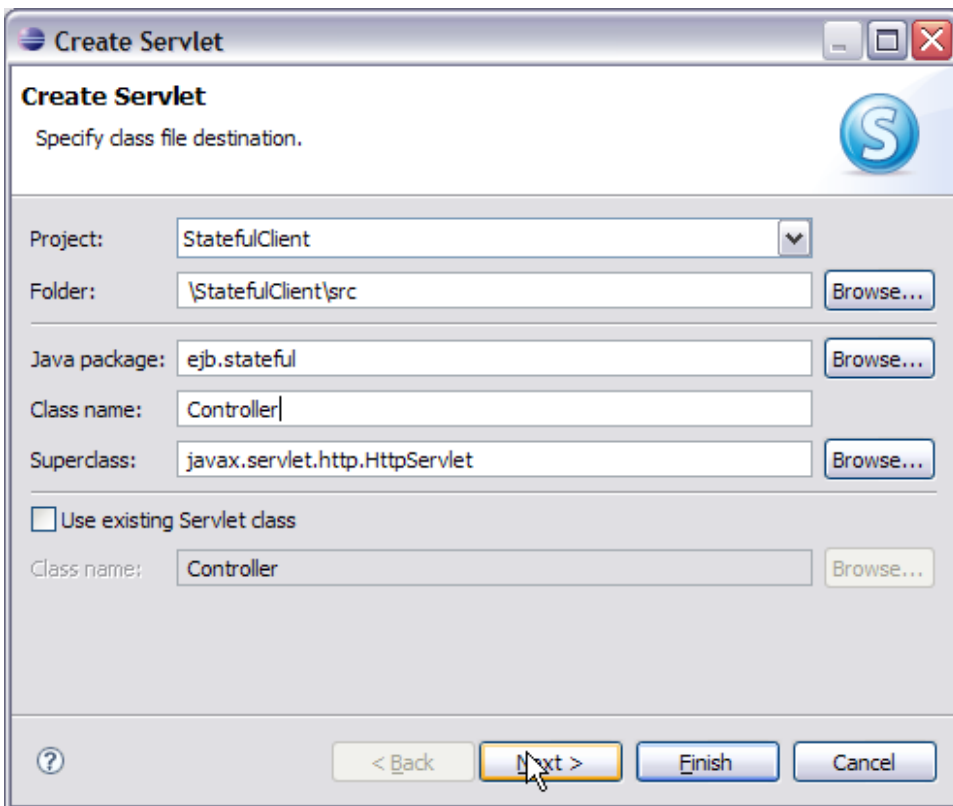
Artifact Type: car

☐ Add a runtime dependency to Geronimo's shared library

6. Right click on the **StatefulClient** project and Select New->Servlet.



7. Name the package as **ejb.stateful** and Servlet as **Controller**.



8. Keep the default values and Select Next.

Create Servlet

Enter servlet deployment descriptor specific information.

Name:

Description:

Initialization Parameters:

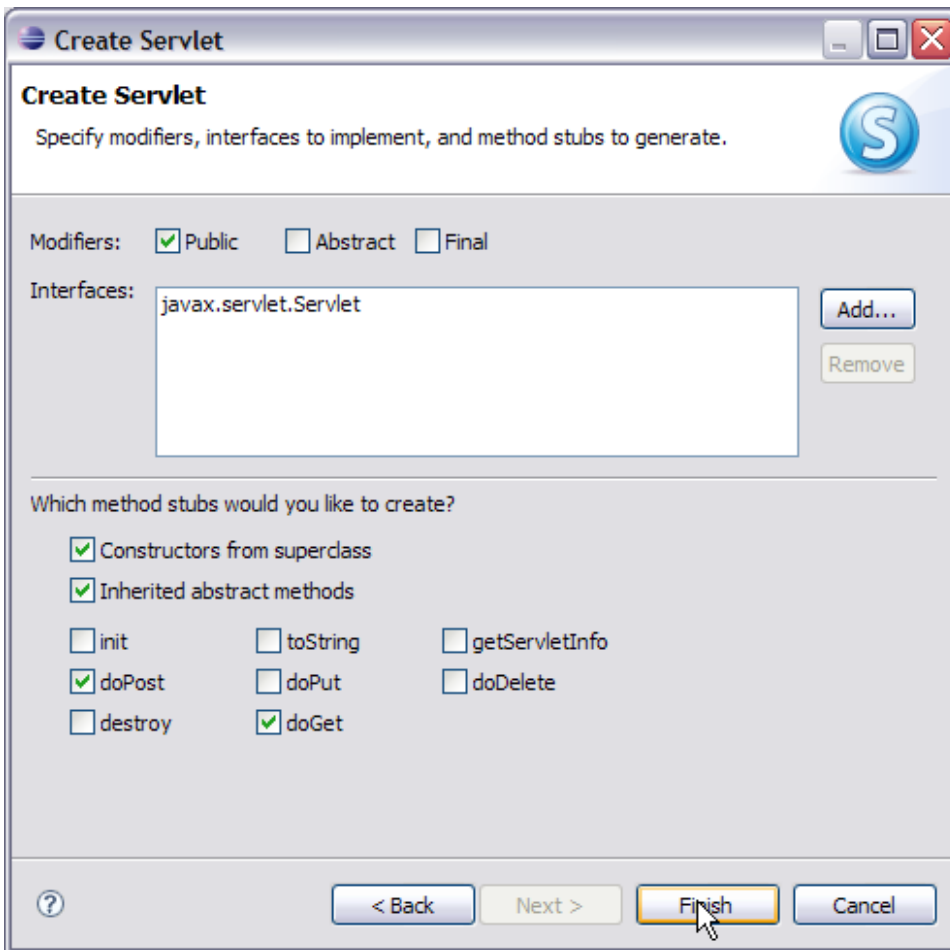
Add... Edit... Remove

URL Mappings:

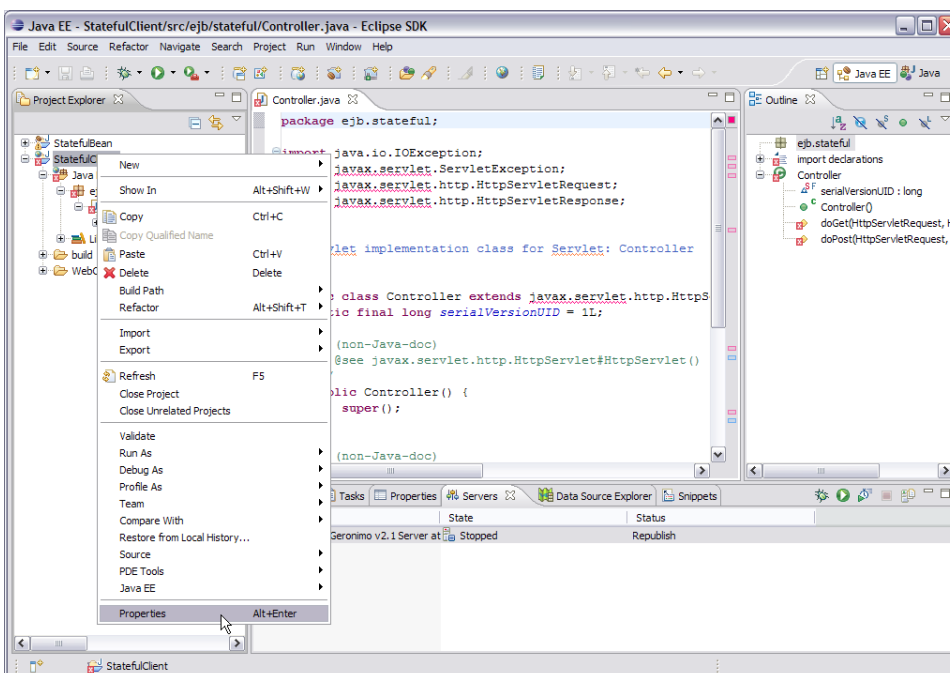
Add... Edit... Remove

? < Back Next Finish Cancel

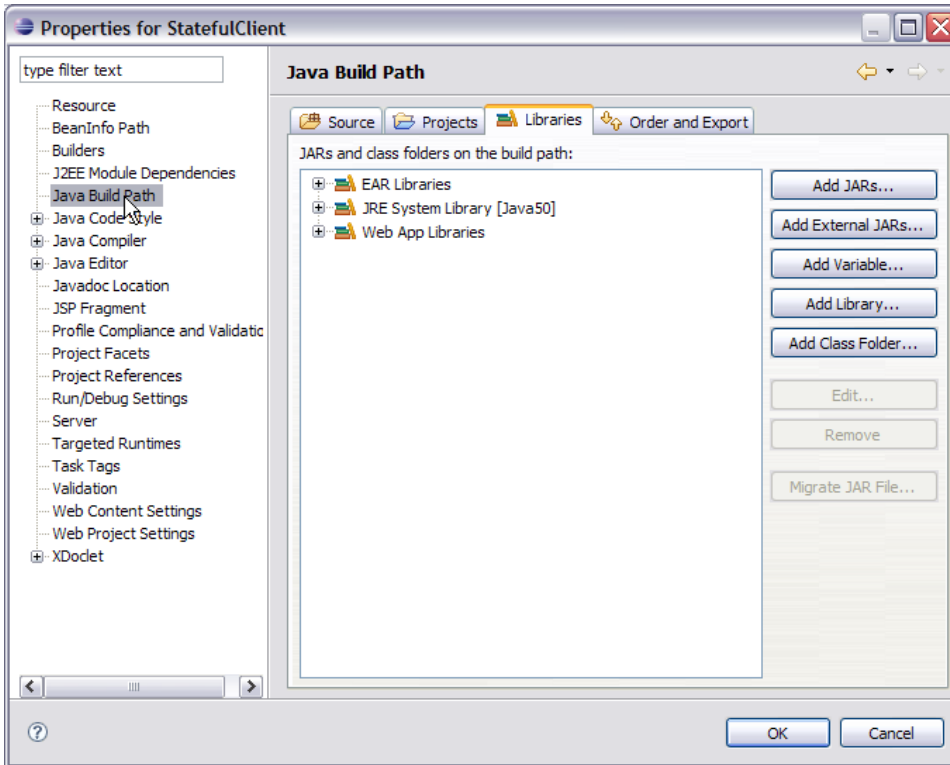
9. Keep the default values and Select Finish.



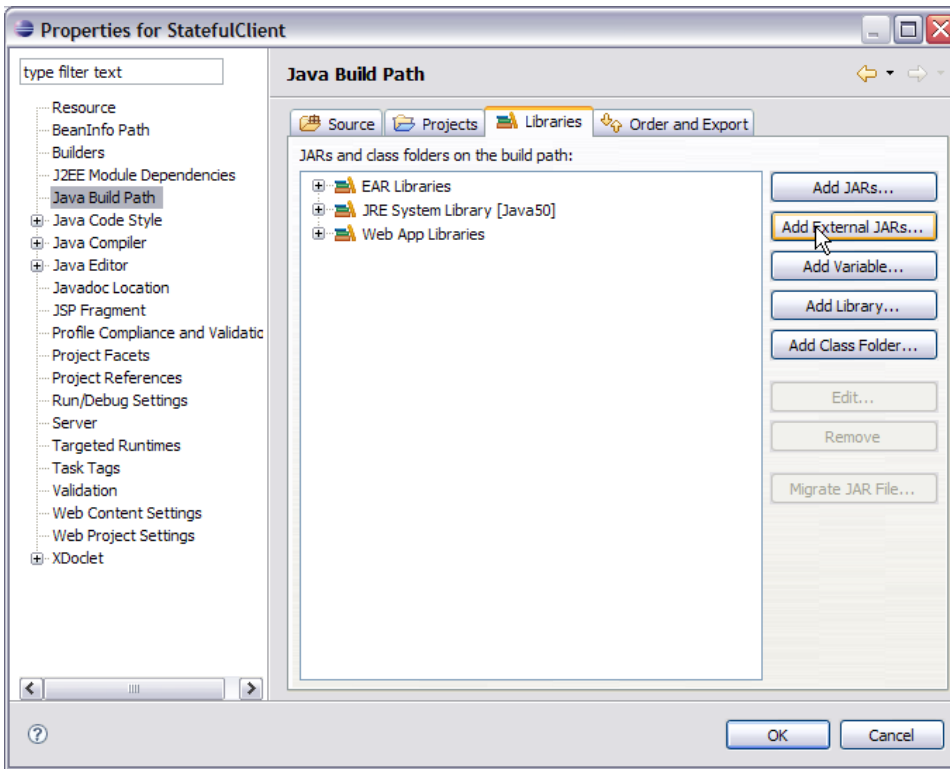
10. Once the servlet is created it shows error. This is due to servlet api missing from the runtime. This can be easily resolved. Right click on **StatefulClient** project and Select properties.



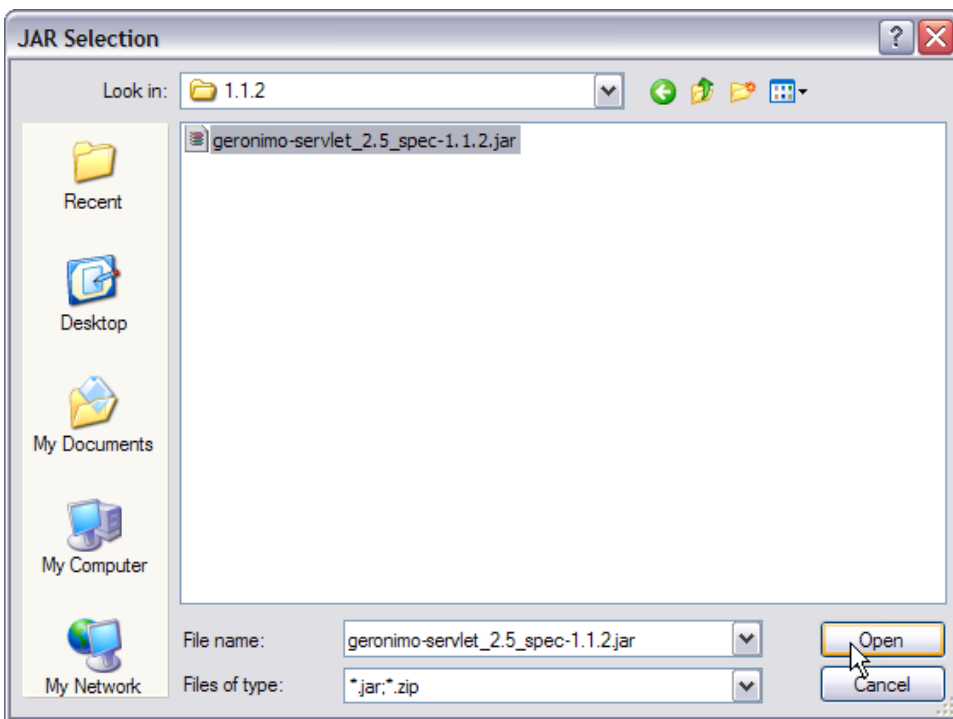
11. On the next screen select **Java build path** and select **Libraries**.



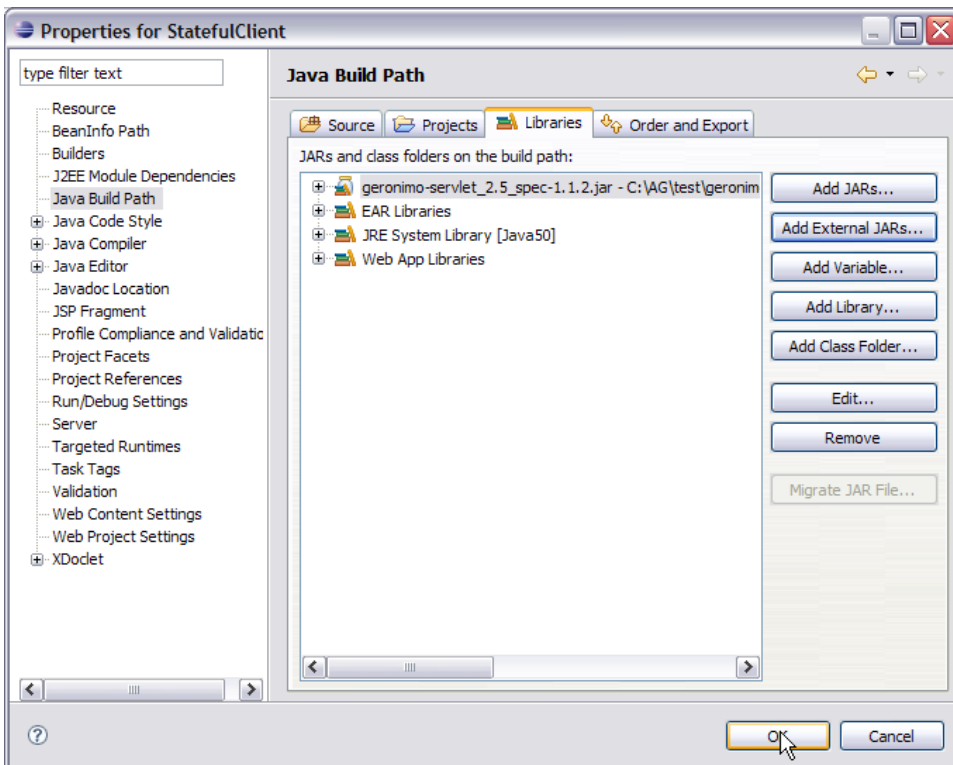
12. Select **Add External jars**.



13. Browse to your <GERONIMO_HOME>\repository\org\apache\geronimo\specs\geronimo-servlet_2.5_spec\1.1.2 and select geronimo-servlet_2.5_spec-1.1.2.jar and Select Open.



14. Select Ok on the next screen this will remove all the errors.



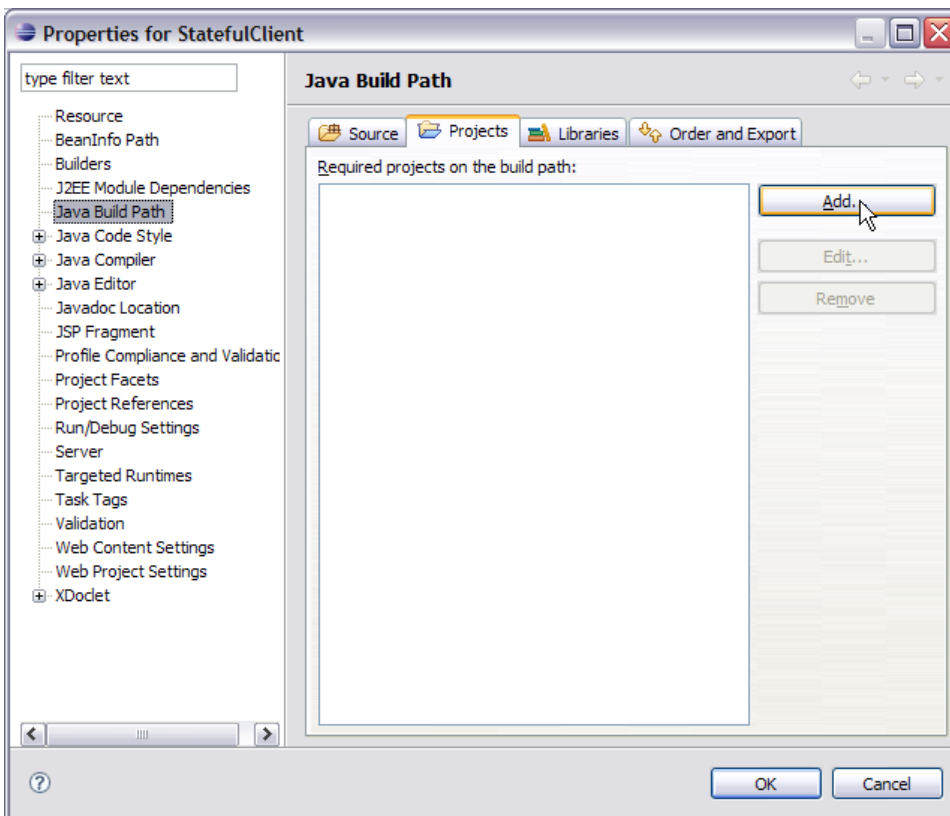
15. Add the following code to **Controller.java** servlet. Controller.javasolid package ejb.stateful; import java.io.IOException; import java.util.Properties; import javax.naming.Context; import javax.naming.InitialContext; import javax.servlet.RequestDispatcher; import javax.servlet.ServletException; import javax.servlet.http.HttpServletRequest; import javax.servlet.http.HttpServletResponse; import javax.servlet.http.HttpSession; /** Servlet implementation class for Servlet: Controller */ public class Controller extends javax.servlet.http.HttpServlet implements javax.servlet.Servlet { static final long serialVersionUID = 1L; AccountCreator ac; /* (non-Java-doc) * @see javax.servlet.http.HttpServlet#HttpServlet() */ public Controller() { super(); } /* (non-Java-doc) * @see javax.servlet.http.HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response) */ protected void doProcess(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

```

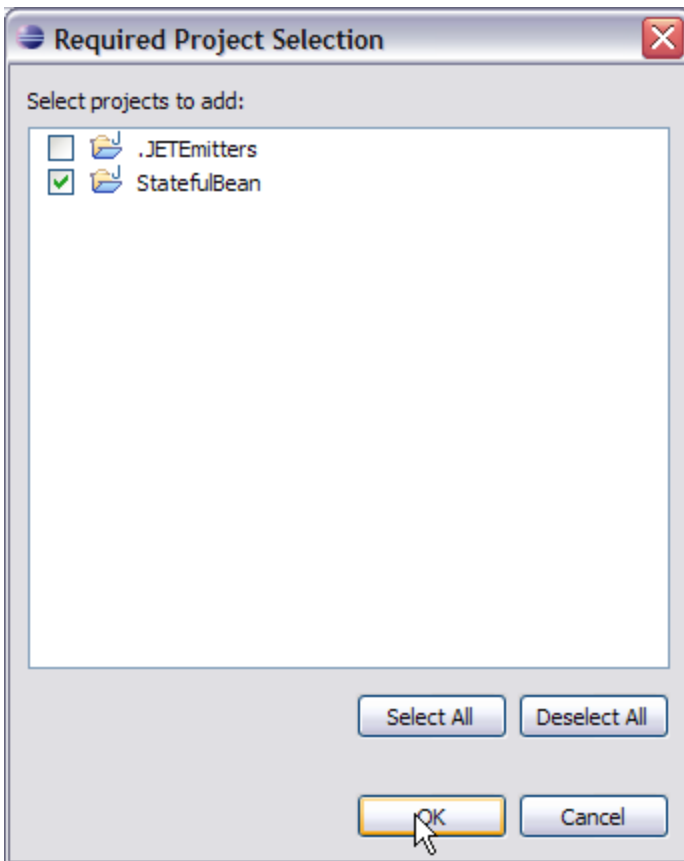
/*PrintWriter out =response.getWriter(); out.println(request.getRequestURI());*/ try{ Properties prop=new Properties(); prop.put(Context.
INITIAL_CONTEXT_FACTORY, "org.apache.openejb.client.RemoteInitialContextFactory"); prop.put("java.naming.provider.url", "ejbd://localhost:
4201"); Context context = new InitialContext(prop); ac=(AccountCreator)context.lookup("AccountCreatorBeanRemote"); } catch(Exception e) { e.
printStackTrace(); } if ( (request.getRequestURI()).equals("/StatefulClient/Controller")) { PersonalInfo personalinfo=new PersonalInfo();
personalinfo.setFirstName(request.getParameter("FirstName")); personalinfo.setLastName(request.getParameter("LastName")); personalinfo.
setNationality(request.getParameter("Nationality")); personalinfo.setUserName(request.getParameter("UserName")); personalinfo.setPassword
(request.getParameter("Password")); ac.addPersonalInfo(personalinfo); HttpSession hs= request.getSession(true); hs.setAttribute("handle", ac);
RequestDispatcher rd=request.getRequestDispatcher("BillingInfo.jsp"); rd.forward(request, response); } else { BillingInfo billingInfo=new
BillingInfo(); billingInfo.setBank(request.getParameter("Bank")); billingInfo.setCardno(request.getParameter("CardNo")); billingInfo.setCity(request.
getParameter("City")); billingInfo.setCountry(request.getParameter("Country")); billingInfo.setHouseNo(request.getParameter("HouseNo"));
billingInfo.setPincode(request.getParameter("PinCode")); billingInfo.setStreet(request.getParameter("Street")); HttpSession hs= request.
getSession(true); ac=(AccountCreator)hs.getAttribute("handle"); ac.addBillingInfo(billingInfo); ac.createAccount(); PrintWriter out=response.
getWriter(); out.println("Account successfully created"); } } protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException { // TODO Auto-generated method stub doProcess(request, response); } /* (non-Java-doc) * @see javax.
servlet.http.HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response) */ protected void doPost(HttpServletRequest
request, HttpServletResponse response) throws ServletException, IOException { doProcess(request, response); // TODO Auto-generated method
stub } }

```

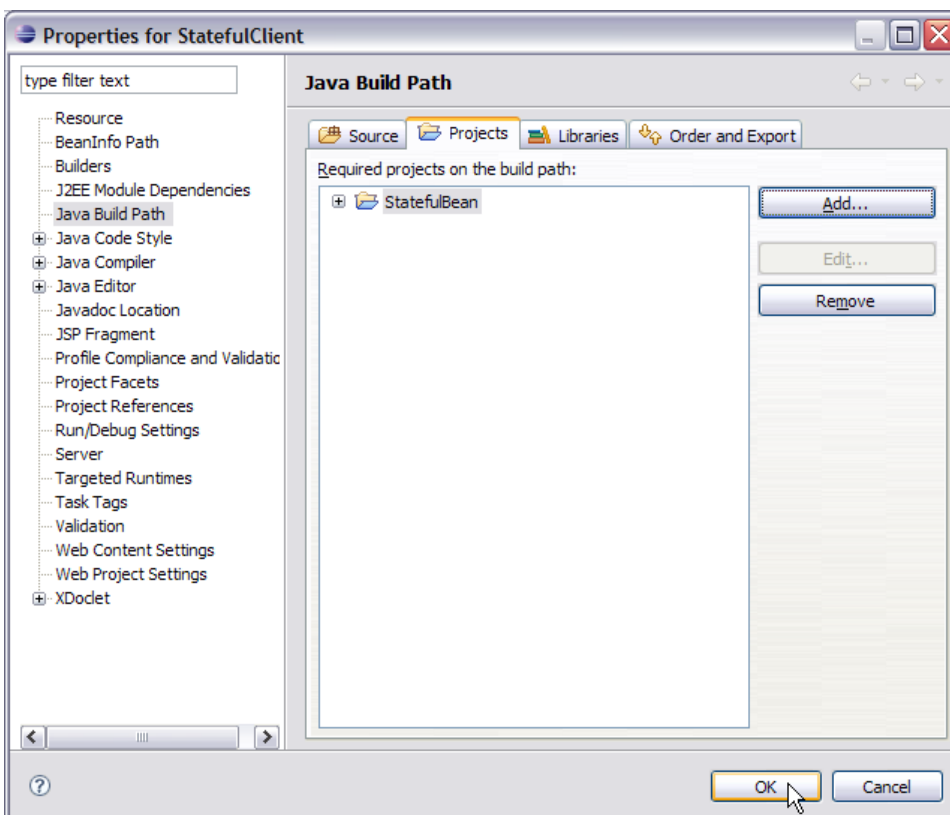
16. This servlet contains code referring to bean interface class and PersonalInfo and BillingInfo class. We need to add these projects to the build path so that the classes can be compiled. Right click on **StatefulClient** project and Select **Properties->Java Build Path->Projects**. Select Add.



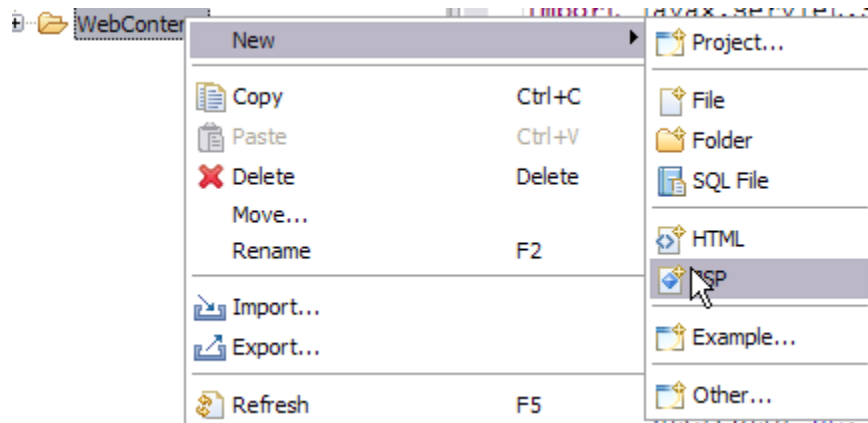
17. Check **StatefulBean** and Select Ok.



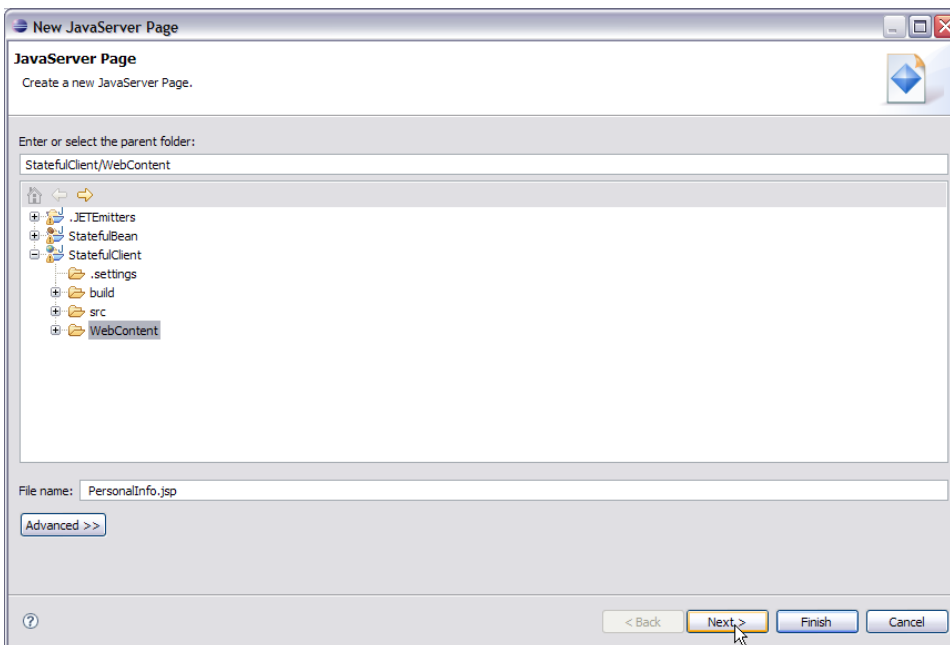
18. Once done the project will be visible in the build path. Select Ok.



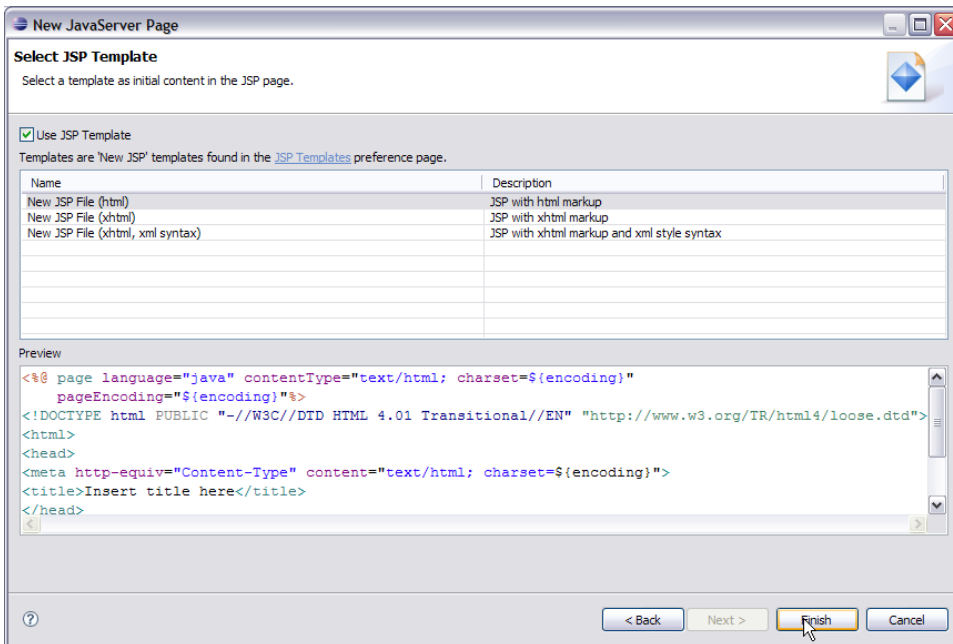
19. Next step is to add jsp pages to our client project. Right click on **WebContent** under **StatefulClient** project and Select New->jsp.



20. Name the jsp as PersonalInfo.jsp and Select Next.



21. On the next screen select Finish.



22. Add the following code to **PersonalInfo.jsp**.

```
PersonalInfo.jsp<%@ page language="java" contentType="text/html; charset=ISO-8859-1" pageEncoding="ISO-8859-1"%> <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd"> <html> <head> <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1"> <title>User Personal Information</title> </head> <body> <form action="Controller"> <h1>Enter your personal information</h1> <table> <tr> <td><h3>Name</h3></td> </tr> <tr> <td><h3>First Name</h3></td> <td><input type="text" name="FirstName"></td> </tr> <tr> <td><h3>Last Name</h3></td> <td><input type="text" name="LastName"></td> </tr> <tr> <td><h3>Nationality</h3></td> <td><input type="text" name="Nationality"></td> </tr> <tr> <td><h3>Login</h3></td> <td><input type="text" name="UserName"></td> </tr> <tr> <td><h3>Password</h3></td> <td><input type="password" name="Password"></td> </tr> <tr> <td colspan="2"><input type="submit" Name="Next"> </td> </tr> </table> </form> </body> </html>
```

23. Similarly add another jsp with the name **BillingInfo.jsp** and add the following code.

```
BillingInfo.jsp<%@ page language="java" contentType="text/html; charset=ISO-8859-1" pageEncoding="ISO-8859-1"%> <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd"> <html> <head> <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1"> <title>User Billing Information</title> </head> <body> <form action="Controller1"> <h1>Enter your Billing information</h1> <table> <tr> <td><h3>Address</h3></td> </tr> <tr> <td><h3>House No</h3></td> <td><input type="text" name="HouseNo"></td> </tr> <tr> <td><h3>Street</h3></td> <td><input type="text" name="Street"></td> </tr> <tr> <td><h3>City</h3></td> <td><input type="text" name="City"></td> </tr> <tr> <td><h3>Pin Code</h3></td> <td><input type="text" name="PinCode"></td> </tr> <tr> <td><h3>Country</h3></td> <td><input type="text" name="Country"></td> </tr> <tr> <td><h3>Credit Card Information</h3></td> </tr> <tr> <td><h3>Bank</h3></td> <td><input type="text" name="Bank"></td> </tr> <tr> <td><h3>Card No</h3></td> <td><input type="text" name="CardNo"></td> </tr> <tr> <td colspan="2"><input type="submit" name="Submit"> </td> </tr> </table> </form> </body> </html>
```

24. Let us walkthrough the servlet and jsp code. First through Controller servlet code.

- **if (request.getRequestURI().equals("/StatefulClient/Controller"))**- This code act as a controller on the jsp which is making a request. This is possible only when the jsp's make a call to th servlet with different names. How this can be done will be illustrated in the next section.
- **HttpSession hs= request.getSession(true); hs.setAttribute("handle", ac);** This part of the code saves the remote interface handle and later in the second call same handle is used to make another call to bean methods.
- **RequestDispatcher rd=request.getRequestDispatcher("/BillingInfo.jsp")**- This code section and the next line forwards the control to next jsp that is **BillingInfo.jsp**.
- Rest of the servlet deals with calling the setter methods and later sets the object so as to persist the data between different calls.

25. Next walkthrough the jsp code.

- **PersonalInfo.jsp** has **<form action="Controller">** whereas **BillingInfo.jsp** has **<form action="Controller1">** as the action element but both internally calling the same servlet. This can be easily done by modifying **web.xml** this will be shown in the next section.

Modifying openejb-jar.xml, web.xml and geronimo-web.xml

1. In **StatefulBean** project select **META-INF/openejb-jar.xml** and replace the existing code with following code **openejb-jar.xml**

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?> <openejb-jar xmlns="http://www.openejb.org/xml/ns/openejb-jar-2.2" xmlns:nam="http://geronimo.apache.org/xml/ns/naming-1.2" xmlns:pkgen="http://www.openejb.org/xml/ns/pkgen-2.0" xmlns:sec="http://geronimo.apache.org/xml/ns/security-1.2" xmlns:sys="http://geronimo.apache.org/xml/ns/deployment-1.2"> <environment> <moduleId> <groupId>default</groupId> <artifactId>StatefulBean</artifactId> <version>1.0</version> <type>car</type> <moduleId> <sys:dependencies> <sys:dependency> <sys:groupId>console.dbpool</sys:groupId> <sys:artifactId>jdbc%2Fuserds</sys:artifactId> </sys:dependency> </sys:dependencies> </environment> </openejb-jar>
```

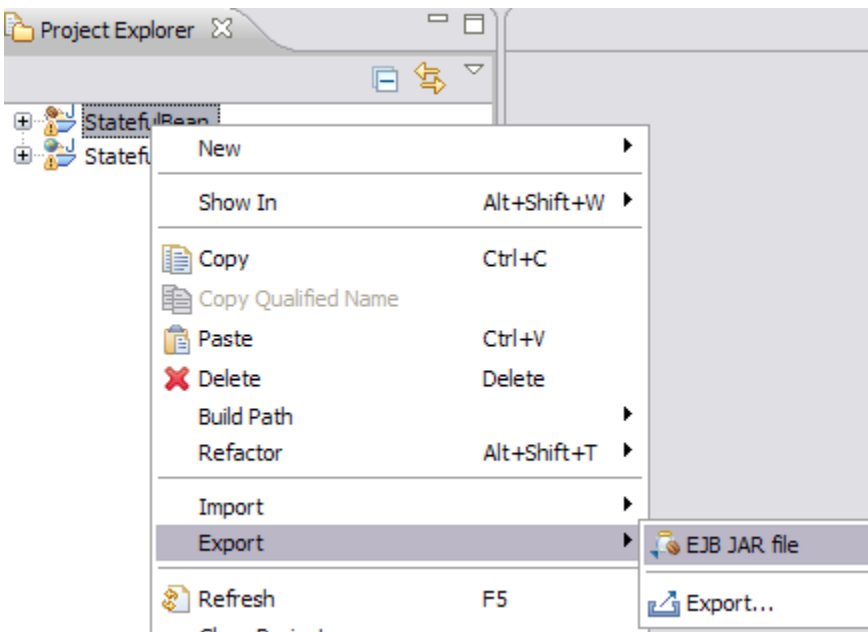
The above deployment plan is different from the above one in the following way
 - The namespace generated by geronimo eclipse plugin are not to AG 2.1 level. This is due to some limitation which will be fixed soon.

- Since the ejb bean class refers to jdbc/usersds datasource a **<dependency>** element has to be added in EJB deployment plan.
2. In **StatefulClient** project select WEB-INF/web.xml and replace the existing code with the following web.xmlsolid `<?xml version="1.0" encoding="UTF-8"?> <web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://java.sun.com/xml/ns/javaee" xmlns:web="http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd" xsi:schemaLocation="http://java.sun.com/xml/ns/javaee http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd" id="WebApp_ID" version="2.5"> <display-name>StatefulClient</display-name> <welcome-file-list> <welcome-file>index.html</welcome-file> <welcome-file>index.htm</welcome-file> <welcome-file>index.jsp</welcome-file> <welcome-file>default.html</welcome-file> <welcome-file>default.htm</welcome-file> <welcome-file>default.jsp</welcome-file> </welcome-file-list> <servlet> <description></description> <display-name>Controller</display-name> <servlet-name>Controller</servlet-name> <servlet-class>ejb.stateful.Controller</servlet-class> </servlet> <servlet> <description></description> <display-name>Controller1</display-name> <servlet-name>Controller1</servlet-name> <servlet-class>ejb.stateful.Controller</servlet-class> </servlet> <servlet-mapping> <servlet-name>Controller</servlet-name> <url-pattern>/Controller</url-pattern> </servlet-mapping> <servlet-mapping> <servlet-name>Controller1</servlet-name> <url-pattern>/Controller1</url-pattern> </servlet-mapping> </web-app>`
 3. In **StatefulClient** project select WEB-INF/geronimo-web.xml and add a dependency element for the StatefulBean EJB project. The final web deployment plan will look as follows geronimo-web.xmlsolid `<?xml version="1.0" encoding="UTF-8" standalone="yes"?> <ns8:web-app xmlns="http://geronimo.apache.org/xml/ns/deployment-1.2" xmlns:ns2="http://geronimo.apache.org/xml/ns/j2ee/connector-1.2" xmlns:ns3="http://geronimo.apache.org/xml/ns/naming-1.2" xmlns:ns4="http://geronimo.apache.org/xml/ns/j2ee/ejb/openejb-2.0" xmlns:ns5="http://geronimo.apache.org/xml/ns/j2ee/application-2.0" xmlns:ns6="http://geronimo.apache.org/xml/ns/security-2.0" xmlns:ns7="http://java.sun.com/xml/ns/persistence" xmlns:ns8="http://geronimo.apache.org/xml/ns/j2ee/web-2.0.1" xmlns:ns9="http://geronimo.apache.org/xml/ns/j2ee/application-client-2.0"> <environment> <moduleId> <groupId>default</groupId> <artifactId>StatefulClient</artifactId> <version>1.0</version> <type>car</type> </moduleId> <dependencies> <dependency> <groupId>default</groupId> <artifactId>StatefulBean</artifactId> <version>1.0</version> <type>car</type> </dependency> </dependencies> </environment> <ns8:context-root>/StatefulClient</ns8:context-root> </ns8:web-app>`

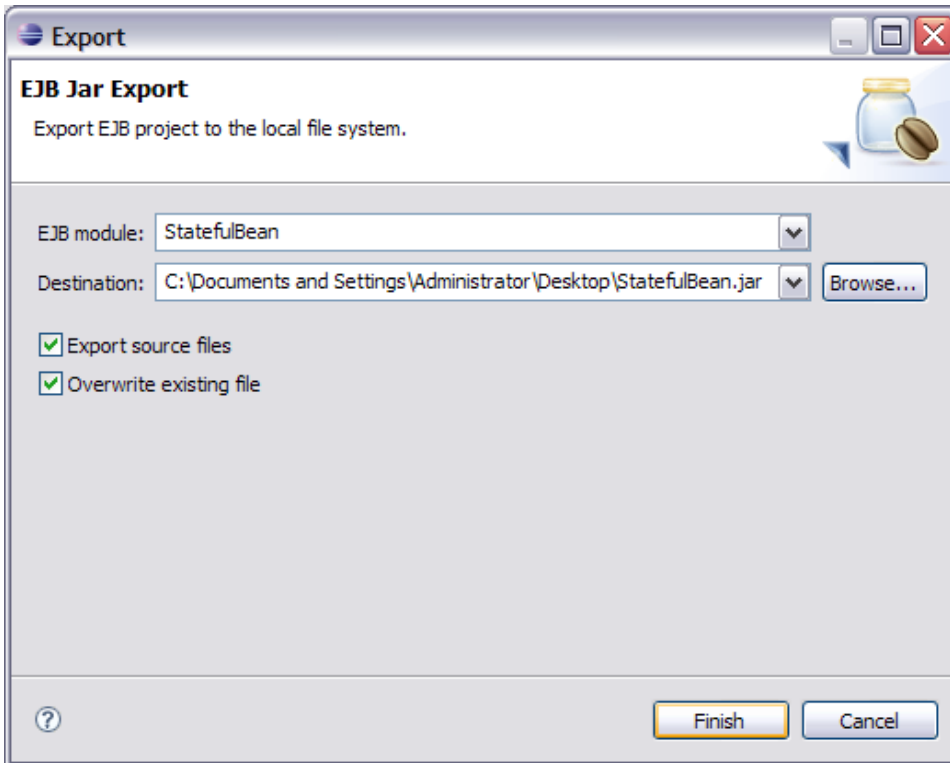
The above code is different from the original one in the sense that we have added another **<servlet>** for Controller1 which is mapped to the same servlet class. Similarly adding a **<servlet-mapping>** element for the Controller1 servlet. This feature is basically mapping of more than one servlet with same servlet class. This helps in routing each call from jsp in the Controller servlet.

Deploy and Run

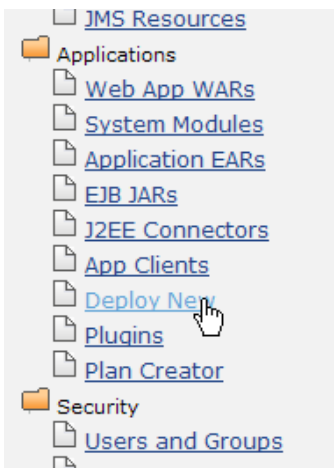
1. Under project explorer right click on **StatefulBean** project and select **Export->EJB jar file**.



2. Browse to a destination and Select Finish.



3. Similarly export **StatefulClient** project.
4. Launch the administrative console with <http://localhost:8080/console>. Under application select **Deploy New**.



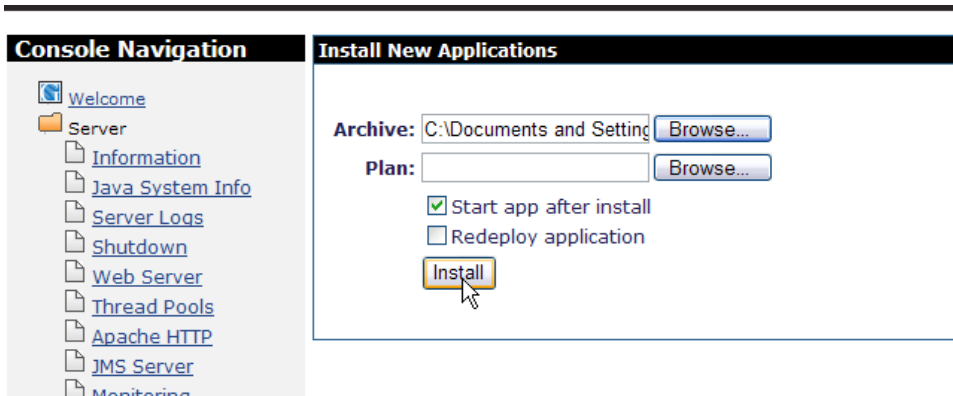
Training notes are available to get involved in the server or to ask questions of the community:

- user@geronimo.apache.org ([archives](#)) for general configuring and using Geronimo
- dev@geronimo.apache.org ([archives](#)) for developing Geronimo

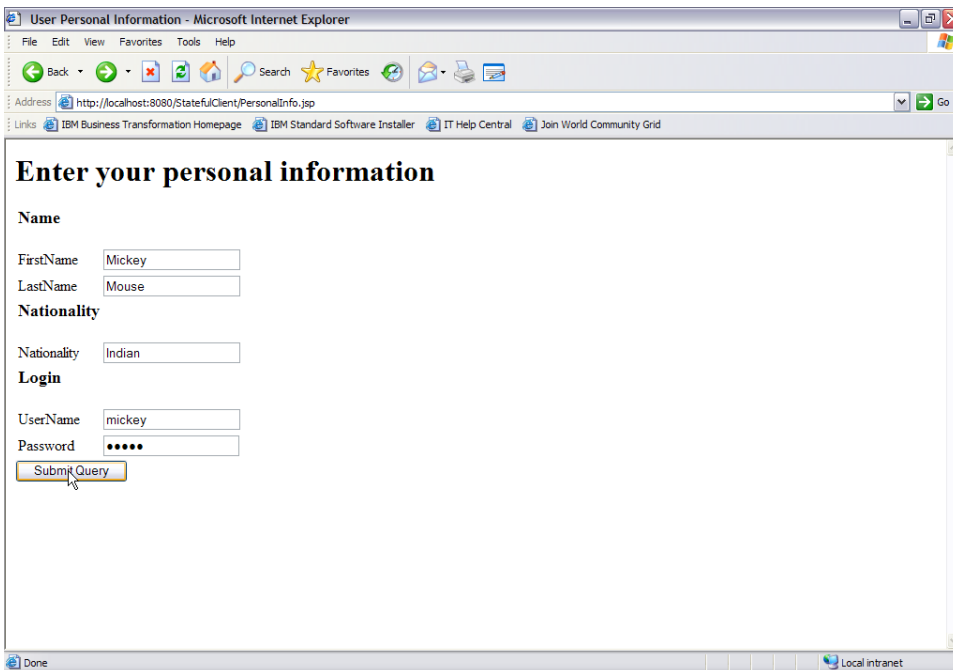
So share your experiences with us and let us know how we can even better.

Thanks for using Geronimo

5. Browse to the StatefulBean project and select Install.



6. Similarly deploy StatefulClient project.
7. Launch the application using the link <http://localhost:8080/StatefulClient/PersonalInfo.jsp>. Fill up the form and select SubmitQuery.



8. Once you submit the current page, next page will be displayed wherein you need to enter your Billing Information. Once done select SubmitQuery.

User Billing Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Search Favorites Print

Address <http://localhost:8080/StatefulClient/Controller?FirstName=Mickey&LastName=Mouse&Nationality=Indian&UserName=mickey&Password=mouse&Next=Submit+Query> Go

Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid

Enter your Billing information

Address

House No

Street

City

PinCode

Country

Credit Card Information

Bank

Card No

Done Local intranet

9. Later you can verify the database which is populated with the user data.

DB Viewer					
DB: userdb Table: APP.USERINFO					
FIRSTNAME	LASTNAME	USERNAME	PASSWORD	PINCODE	CARDNO
Mickey	Mouse	mickey	mouse	560071	560071560071
View Tables View Databases					