

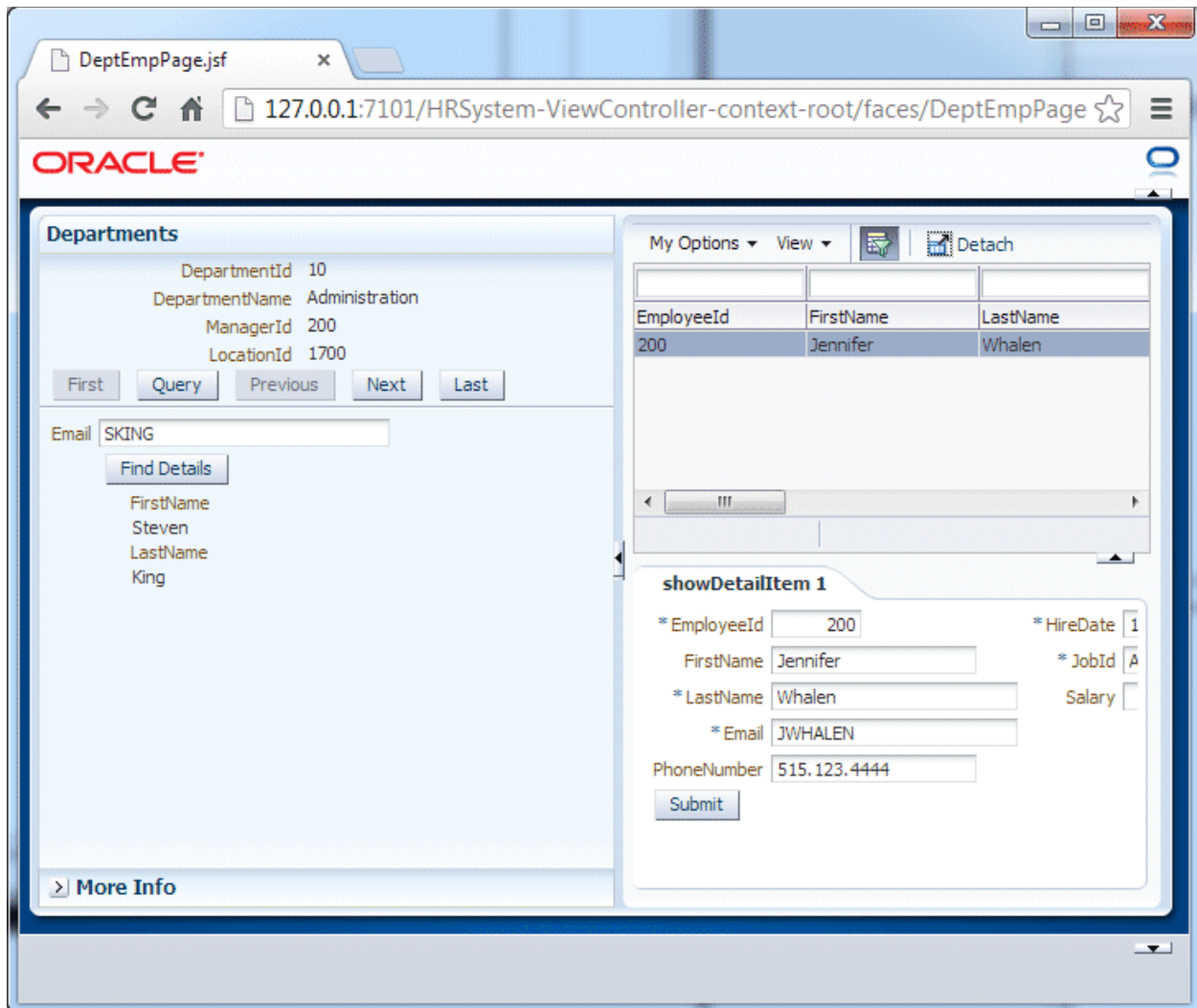
How-To: Develop Rich Web Applications With Oracle ADF


This tutorial shows you how to build a rich Web application that interacts with a database. You'll be using Oracle JDeveloper 12c Version 12.1.2 and the Oracle ADF framework to build the application, and in the process you'll work with Oracle ADF Business Components, Oracle ADF Faces Rich Client Components and Oracle ADF Task Flows.

The tutorial takes you through a simple scenario of building a Web application that provides a user interface to access database tables. You use Oracle JDeveloper 12c Version 12.1.2 and Oracle ADF to create a complete application including business services, user interface and page flows. The focus of the tutorial is to illustrate the visual and declarative approach that Oracle ADF provides for Java EE application development. While working through the tutorial notice how ADF saves you from writing low level code and speeds up your development process.

Before starting this tutorial you should:

1. Have access to or have installed Oracle JDeveloper 12.1.2. You can download it from [Oracle Technology Network](#). Install it into a directory of your choice, which, in this tutorial is referred to as JDEVELOPER_HOME.
2. Have access to, or have installed an Oracle 11g database, including the HR schema. (Note that the schema may be locked for security purposes. If this is the case you will need to log in to sqlplus using the system user, and unlock it). The image below shows you an example of the page you'll create.



Purpose	Duration	Application
<p>The application that you create displays information about departments and employees. You create several JSF pages that enable you to query and update the data in the database. You also create a page that is used as a display container for several task flows.</p> <p>To see the completed application, click the Download button to download a zip of the completed application, and then unzip it in your JDeveloper mywork folder.</p>	2 hours	

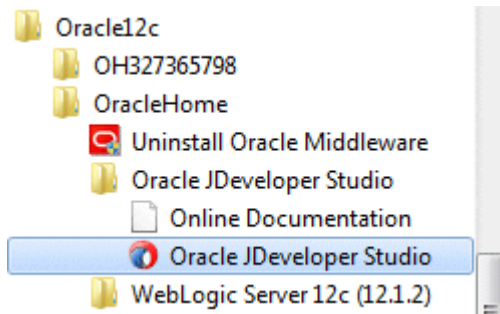
Part 1: Creating a Fusion Web Application and Building the Business Service

When you work in JDeveloper, you organize your work in projects within an application. JDeveloper provides several template applications that you can use when creating an application and projects. The template applications are pre-configured with a basic set of technologies that are needed for developing the various types of applications. You create your working environment by selecting the template that best fits your needs and then configure it to add any additional technologies you plan to use.

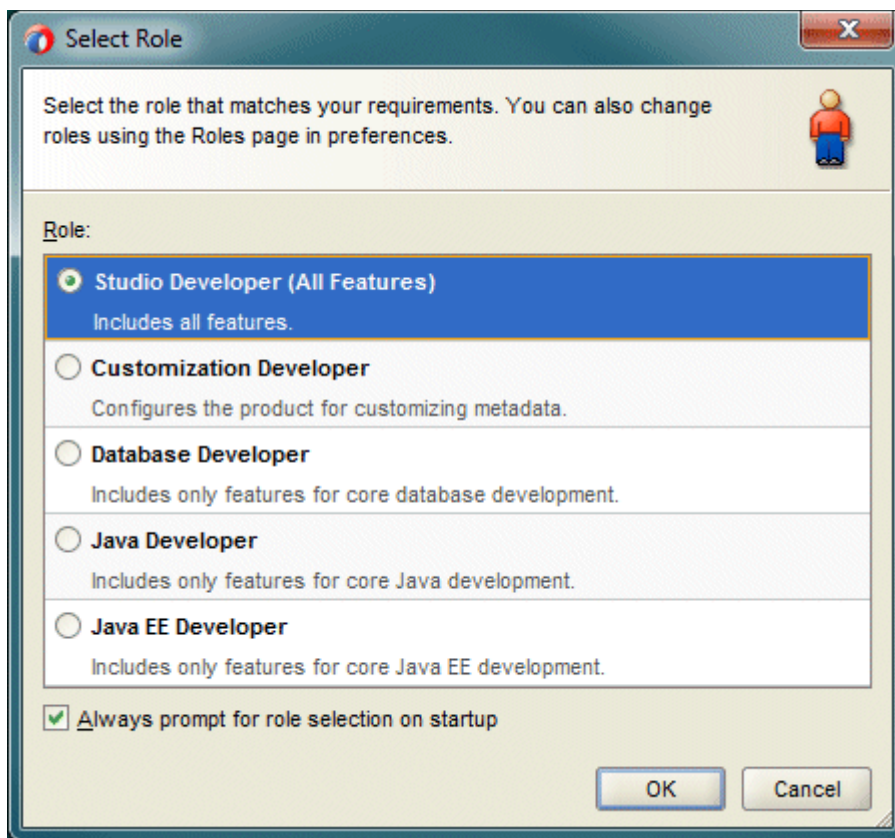
In the first part of this tutorial you are going to create a new Fusion Web application and build reusable business components that will access the database. You'll be using Oracle ADF Business Components to map Java objects to existing tables in your database.

Step 1: Create a Fusion Web Application

1. Start JDeveloper by selecting **Start - Programs - <JDEVELOPER_HOME>- OracleHome - Oracle JDeveloper Studio - Oracle JDeveloper Studio**



2. In the Select Role dialog, select **Studio Developer (All Features)** and click **OK**.



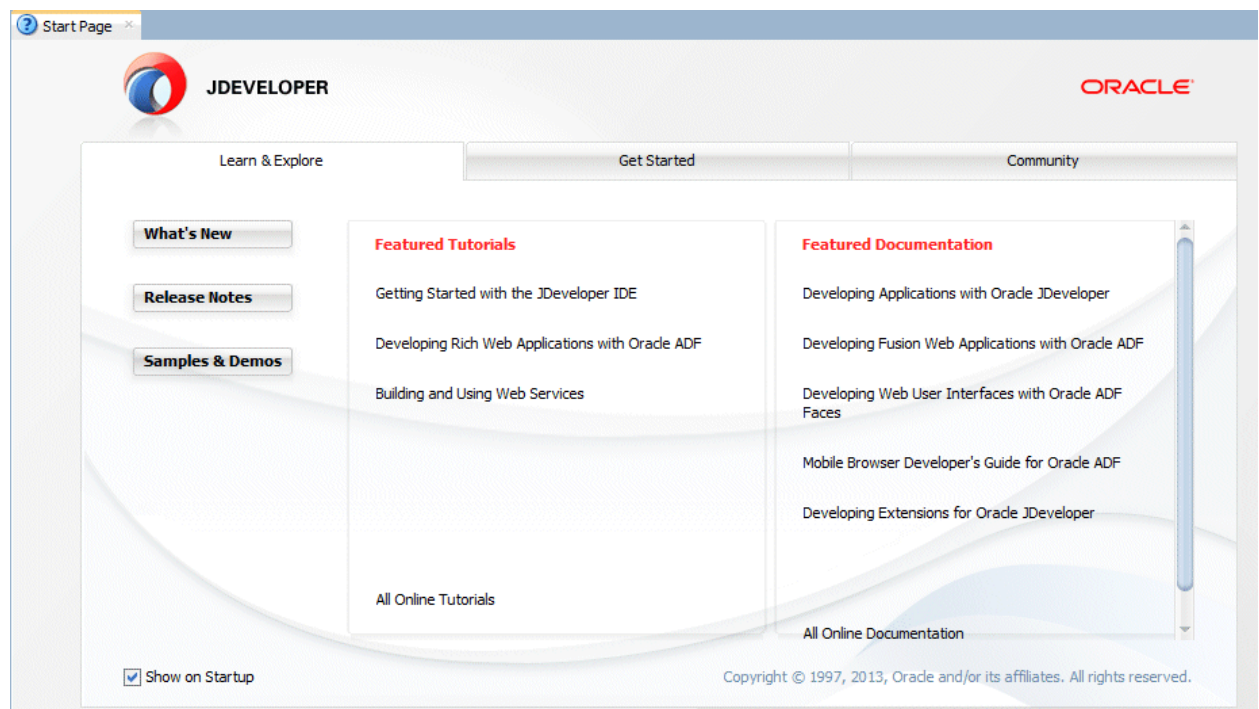
Shaping, which is based on the role of the user, allows the JDeveloper environment to tailor itself. It does this by removing unneeded items from the menus, preferences, new gallery, and even individual fields on dialogs.

Shaping can even control the default values for fields on dialogs within the tool. When you first start JDeveloper, you are prompted to choose a role that describes how you are going to use JDeveloper. If you choose a role of "Java Developer" versus "Database Developer " versus "Customization Developer " you will get a totally different experience!

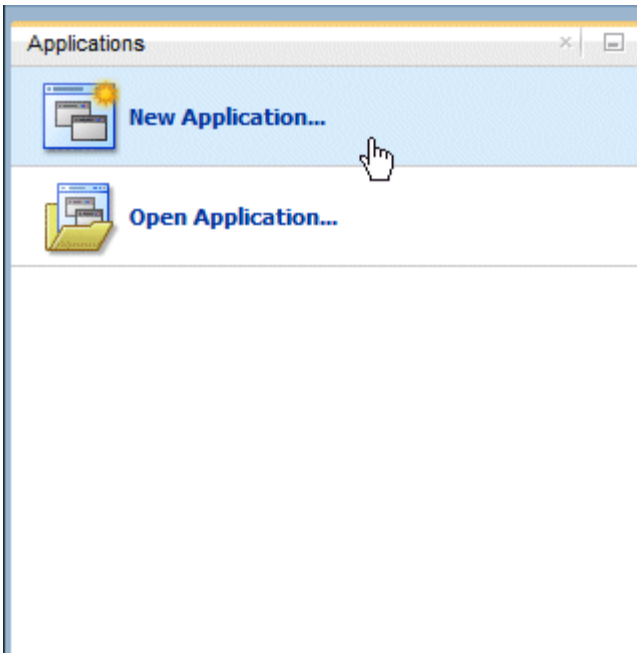
If a dialog box opens asking if you would like to import preferences from a previous JDeveloper installation, click **NO**. Close the **Tip of the Day** window.

3. Once loaded, the JDeveloper IDE appears. The very first time you open JDeveloper, the Start Page displays. You can re-invoke the Start Page later by choosing **Help > Start Page**.

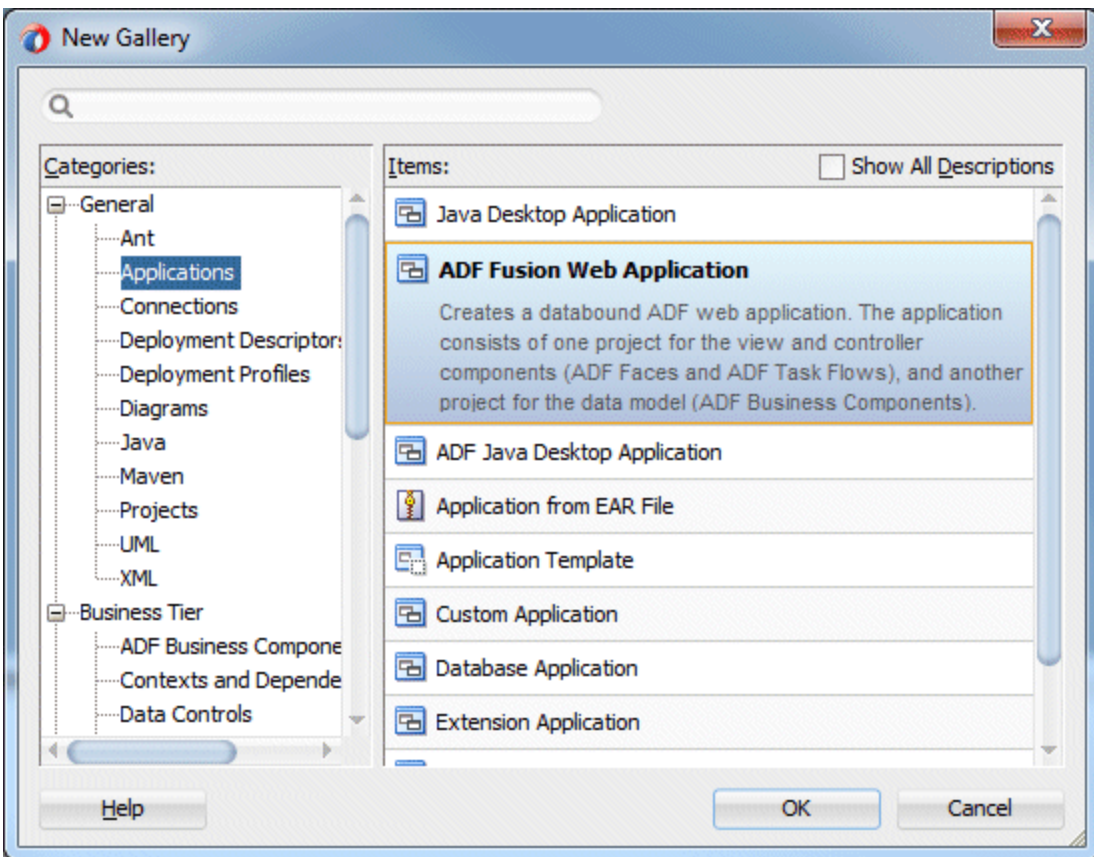
Notice the various options available to help you learn about JDeveloper. After exploring some of these options, close the Start Page by clicking the **X** on its tab (the X appears when you mouse over the tab).



4. Click the **New Application** link in the Applications window.

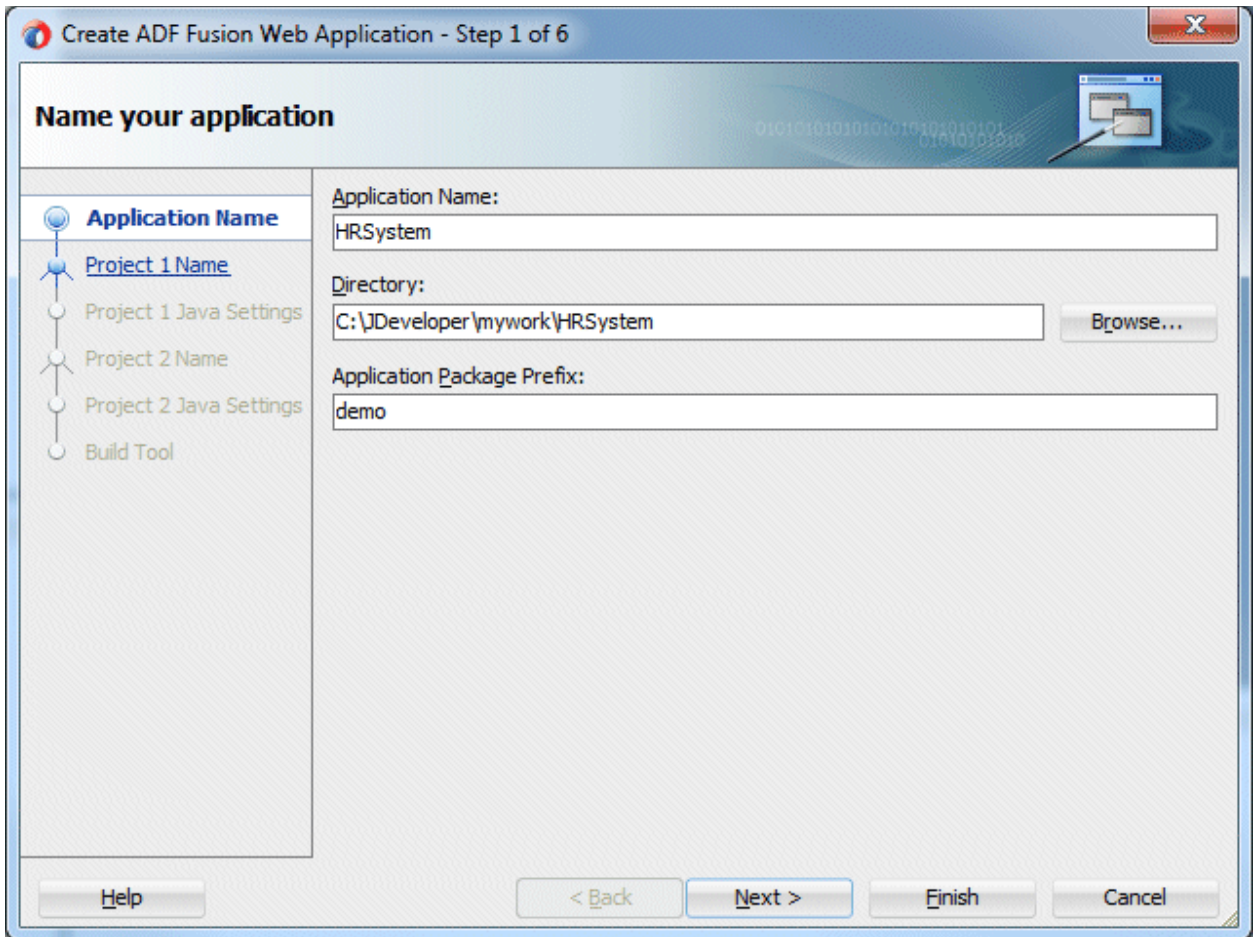


5. In the New Gallery, select **ADF Fusion Web Application** and click **OK**.

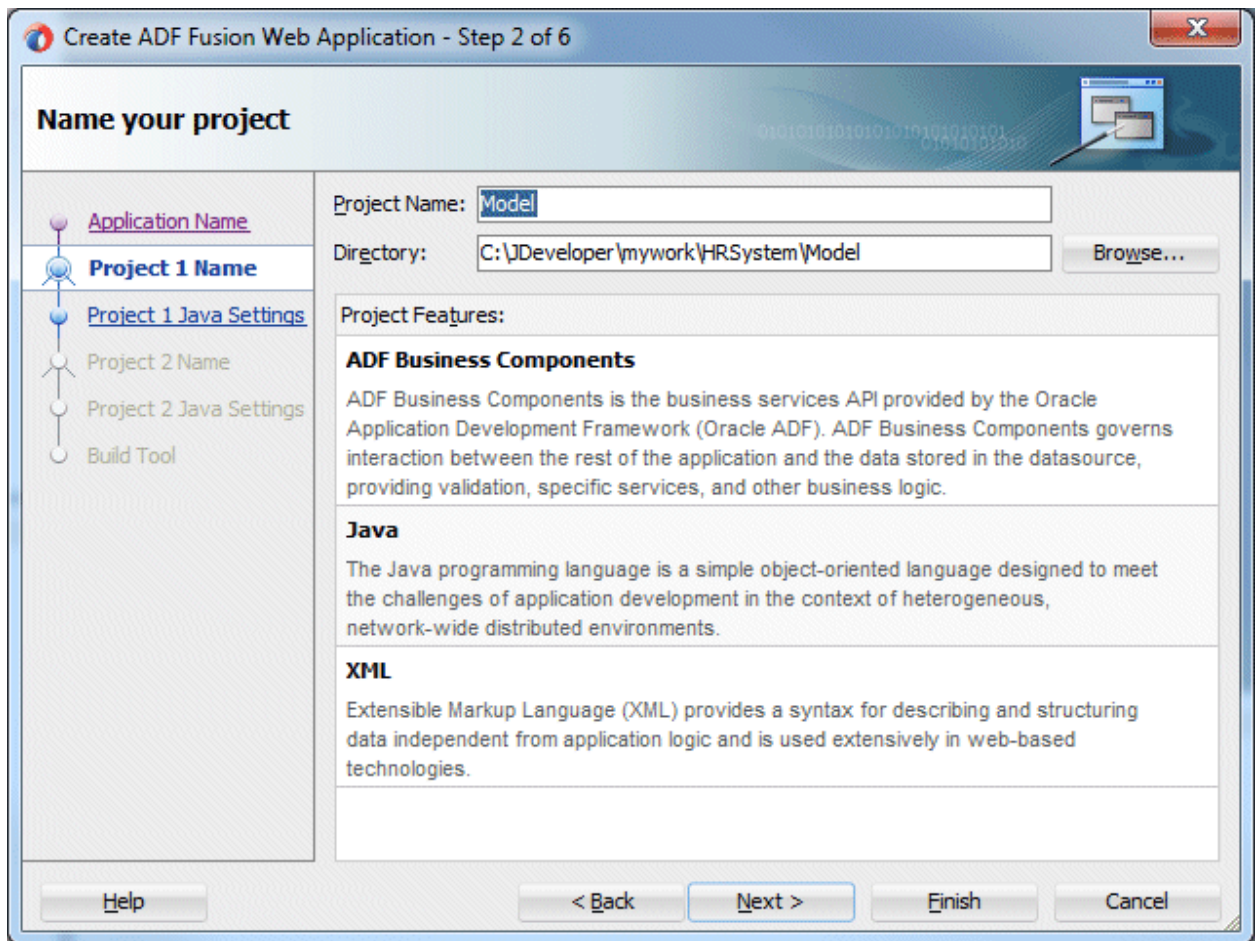


6. JDeveloper loads the required features for a Fusion Web application and the Create Fusion Web Application (ADF) wizard launches.

In the Name your application page of the wizard, type **HRSystem** as the name. If required, you can change the directory path to create your files in another location. In the Application Package Prefix field set the value to be **demo** and click **Next**.

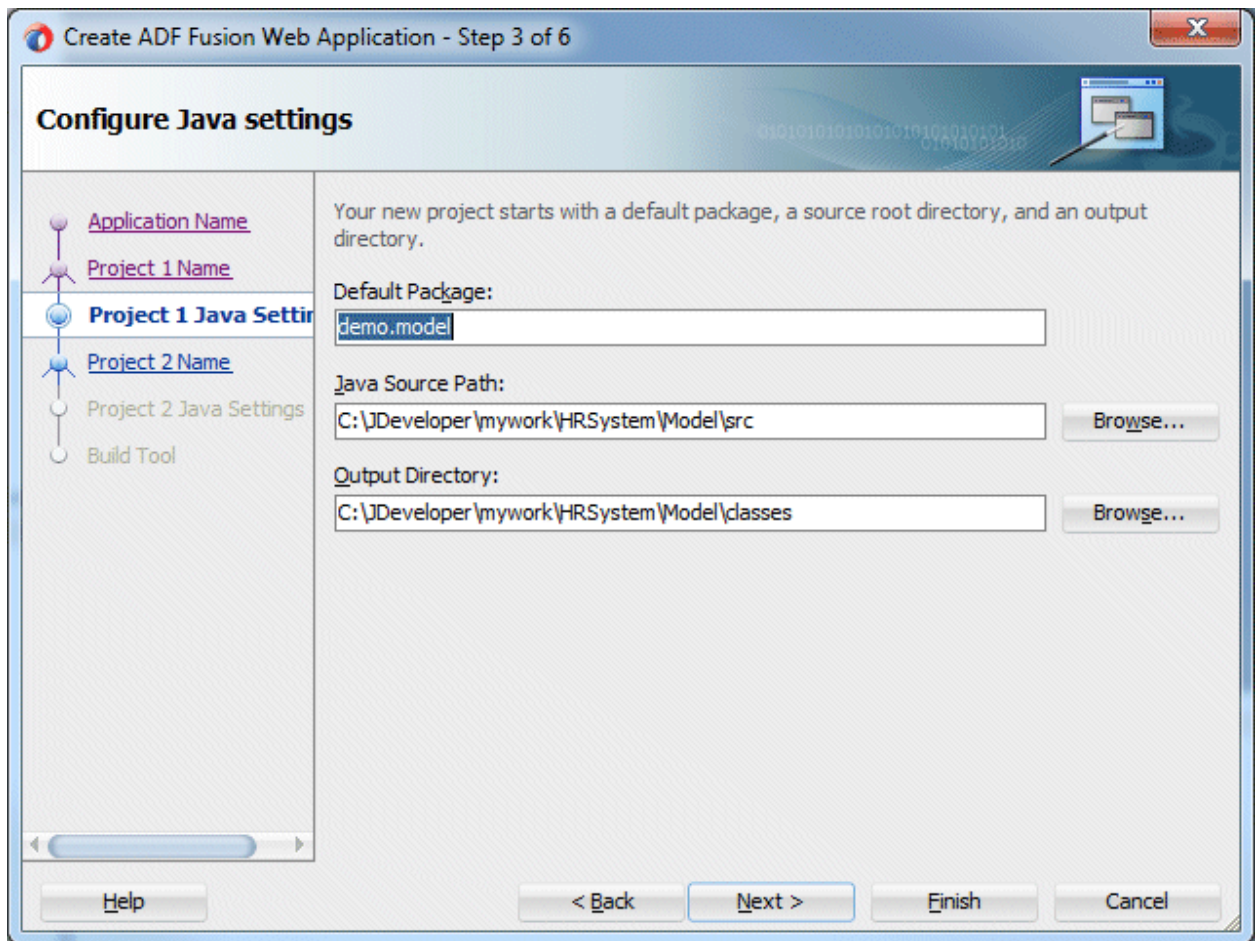


7. In the Name your project page ensure that the project name is **Model** (the default). Notice that ADF Business Components and Java are listed as the project features of a Fusion Web application.

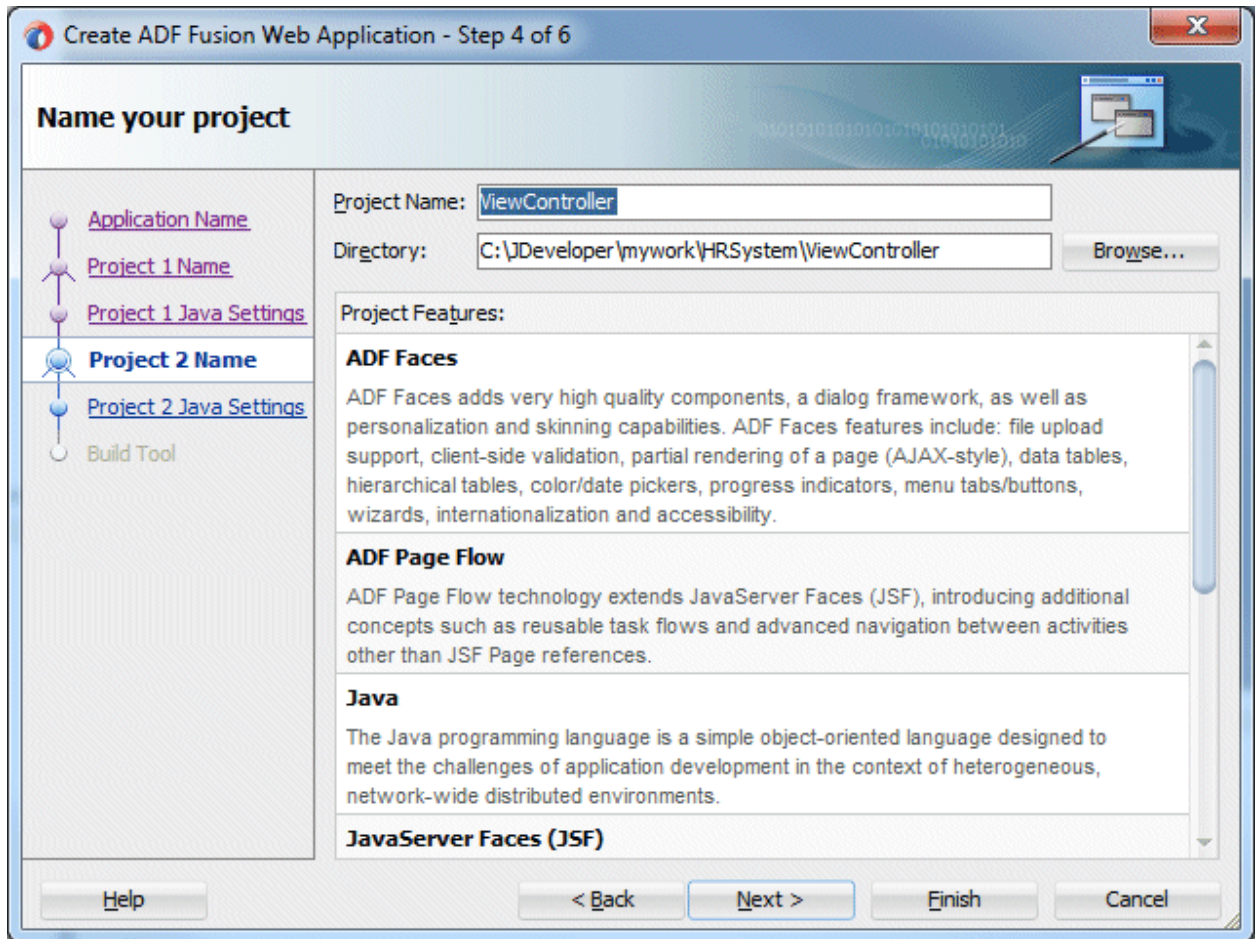


Click **Next**.

8. The Configure Java settings page allows you to define a default package, a Java source path and an output directory. Click **Next** to accept the default values.

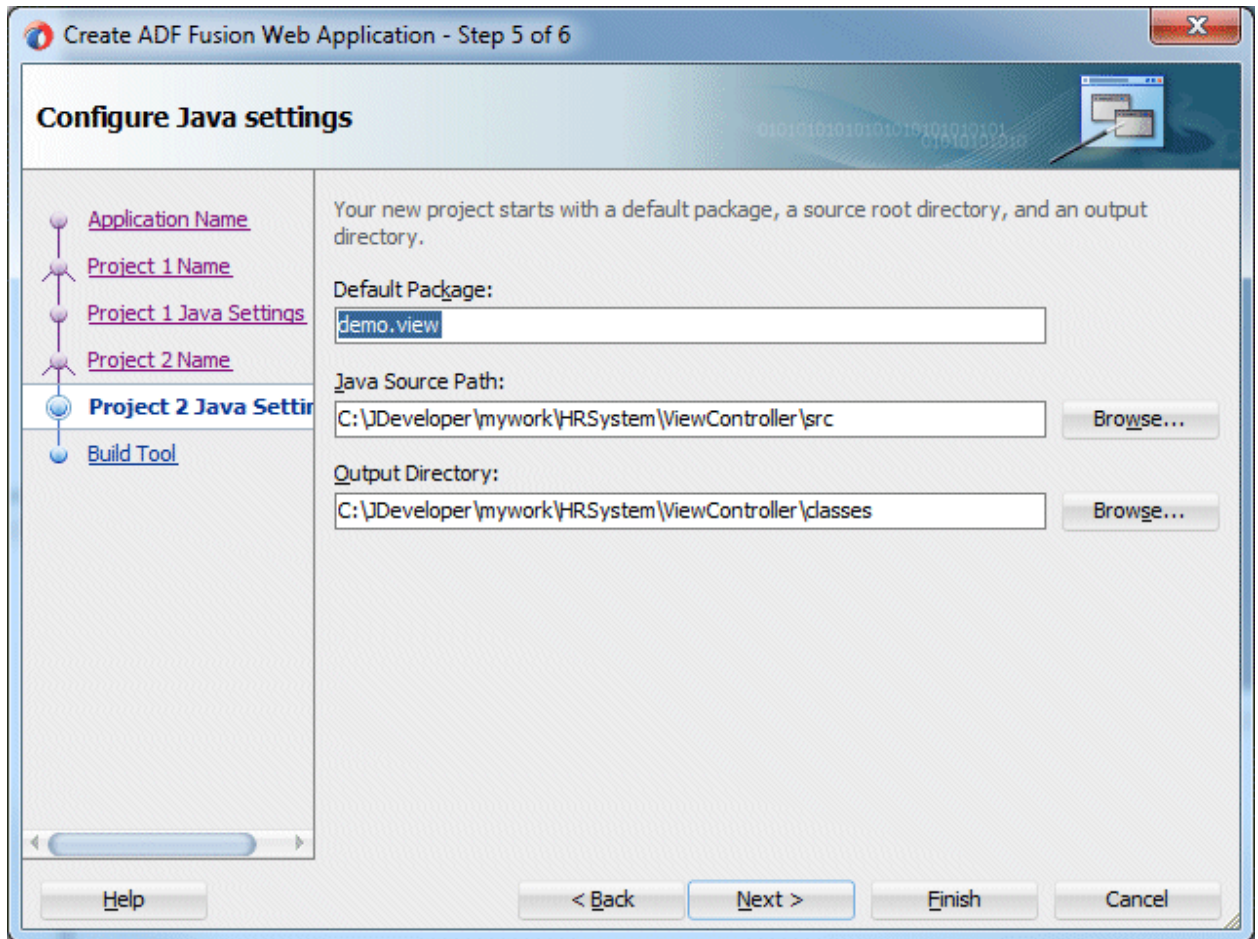


9. In the second Name your project page, ensure that the Project Name is **ViewController**. Scroll through the list of project features to see the types of technologies that can be used with a Fusion Web application.

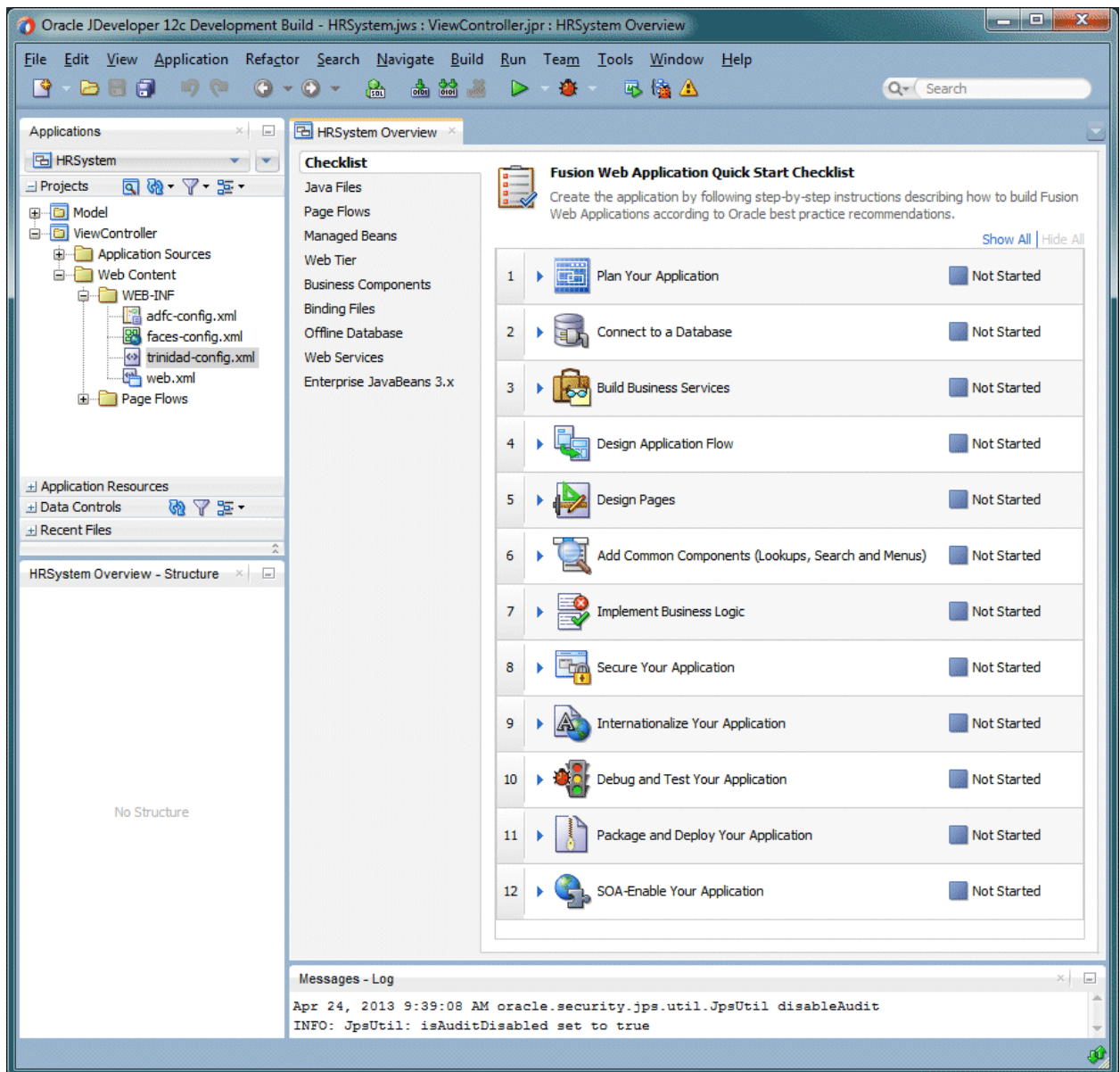


Click **Next**.

10. In the Configure Java settings page accept the defaults and click **Finish** to create your Fusion Web application and projects.



11. The HRSystem application and the two projects are displayed in the Applications Navigator on the left of the screen. Save your work.




Notice too, the Checklist on the right side of the screen.




This checklist is displayed by default when a Fusion Web application is created. It is designed as a guide to lead you through the tasks involved in building this type of application. The next steps show you how the checklist might be used while developing an application.

Step 2: Build the Business Service

1. In the CheckList Overview, click the **Connect to a Database** step.

 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.



[Show All](#) | [Hide All](#)

1	 Plan Your Application	<input type="checkbox"/> Not Started
2	 Connect to a Database	<input type="checkbox"/> Not Started
3	 Build Business Services	<input type="checkbox"/> Not Started

2. The step expands showing useful information such as prerequisites required for performing the task and detailed instructions on how to perform the task. Click the **Create a Database Connection** button.


Fusion Web Application Quick Start Checklist
 Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Show All](#) | [Hide All](#)


- 1  Plan Your Application Not Started
- 2  **Connect to a Database** Not Started ▼

Prerequisites


 - You have a database containing the schema on which you want to build your application.
 - You must know the following information: host name, port, SID or service name, username and password.

 [Step-by-Step Instructions](#)

 [What Happens When I Create a Database Connection?](#)

 [User's Guide](#)

To access objects in the database, Oracle ADF uses a database connection that is defined in the application. You can create your connection directly in the application; or you can create it as an IDE resource and then copy it to your application. You can change the details of your application's database connection at any time, or modify your application to use a different database connection. You can also configure your application to use a JDBC data source when the application is deployed.

Possible Next Steps
- 3  Build Business Services Not Started


3. Specify the following properties for the new connection you are creating:

Connection Name	HRConn
UserName	hr
Password	hr



4. Enter the appropriate Oracle JDBC Settings to point to the right host, port and SID for your database. Click the **Test Connection** button to verify that you can connect successfully.

The screenshot shows the 'Create Database Connection' dialog box. The title bar reads 'Create Database Connection'. Below the title bar, it says 'Configure a new database connection and add it to the current application (HRSystem)'. The 'Create Connection In:' dropdown is set to 'Application Resources'. The 'Connection Name' field contains 'HRConn'. The 'Connection Type' dropdown is set to 'Oracle (JDBC)'. The 'Username' field contains 'hr'. The 'Password' field is masked with two dots. The 'Role' dropdown is empty. The 'Save Password' checkbox is checked. Under the 'Oracle (JDBC) Settings' section, the 'Enter Custom JDBC URL' checkbox is unchecked. The 'Driver' dropdown is set to 'thin'. The 'Host Name' field contains 'localhost'. The 'JDBC Port' field contains '1521'. The 'SID' radio button is selected, and its field contains 'XE'. The 'Service Name' radio button is unselected, and its field contains 'XE'. A 'Test Connection' button is located below the settings. Below the button is a text area that displays 'Success!'. At the bottom of the dialog are 'Help', 'OK', and 'Cancel' buttons.

- 5.
6. Click **OK**.
7. Click the down arrow to shrink the Connect to a Database step.

 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Show All](#) | [Hide All](#)

1	 Plan Your Application	<input type="checkbox"/> Not Started
2	 Connect to a Database	<input type="checkbox"/> Not Started





Prerequisites

- You have a database containing the schema on which you want to build your application.
- You must know the following information: host name, port, SID or service name, username and password.

8. In the Checklist, set the status of the **Connect to a Database** step to **Done**.

 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Show All](#) | [Hide All](#)

1	 Plan Your Application	<input type="checkbox"/> Not Started
2	 Connect to a Database	<input type="checkbox"/> Not Started
3	 Build Business Services	<input type="checkbox"/> Not Started
4	 Design Application Flow	<input type="checkbox"/> Not Started






Dropdown menu for step 2:

- Not Started
- Not Started
- In Process
- Done
- Will Not Do


9. Click the **Build Business Services** step to expand it, then click the **Go to Substeps** button.

 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Show All](#) | [Hide All](#)

1	 Plan Your Application	<input type="checkbox"/> Not Started
2	 Connect to a Database	<input checked="" type="checkbox"/> Done
3	 Build Business Services	<input type="checkbox"/> Not Started ▾
<p>Prerequisites</p> <ul style="list-style-type: none">You have a database schema and have identified the tables you want to use for your application. If you have not created a database connection, you will be prompted to do so. <p>ADF Business Components implements your application's database access and business logic functionality. A typical model project consists of a number of different types of business components: entity objects represent rows of data and handle business logic, view objects represent SQL queries, associations define relationships between entity objects, view links define relationships between view objects, and an application module defines the data model that is exposed to the client.</p>		Go to Substeps 
4	 Design Application Flow	<input type="checkbox"/> Not Started


10. In the list of substeps, click the **Create Entity Objects and Associations** sub step.

 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Back to Checklist](#) [Show All](#) | [Hide All](#)

3	 Build Business Services	
▶	3.1 Create Entity Objects and Associations	<input type="checkbox"/> Not Started
▶	3.2 Create View Objects	<input type="checkbox"/> Not Started
▶	3.3 Create View Links	<input type="checkbox"/> Not Started
▶	3.4 Create an Application Module	<input type="checkbox"/> Not Started

11. Click the **Create Entity Objects and Associations** button.


 **Fusion Web Application Quick Start Checklist**
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.


[Back to Checklist](#) [Show All](#) | [Hide All](#)


3  **Build Business Services**


▼ **3.1 Create Entity Objects and Associations** Not Started ▼

☐ Prerequisites

- You have a database schema and have identified the tables you want to use for your application.  **Create Entity Objects and Associations**
Hint: Click Finish in Step 1

 **Step-by-Step Instructions**

 **What Happens When I Create Entity Objects and Associations?**

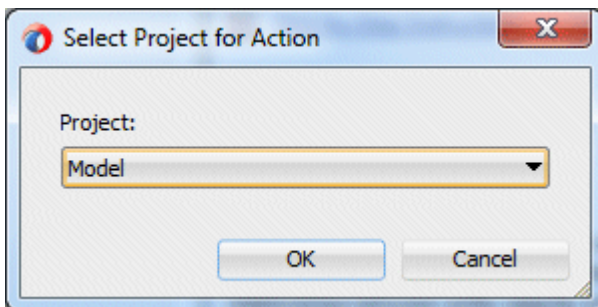
 **Developer's Guide**

Entity objects handle data modification and encapsulate business logic. You should create an entity object for each database table that your application will use. Associations are relationships between entity objects which reflect the foreign keys in the underlying database.

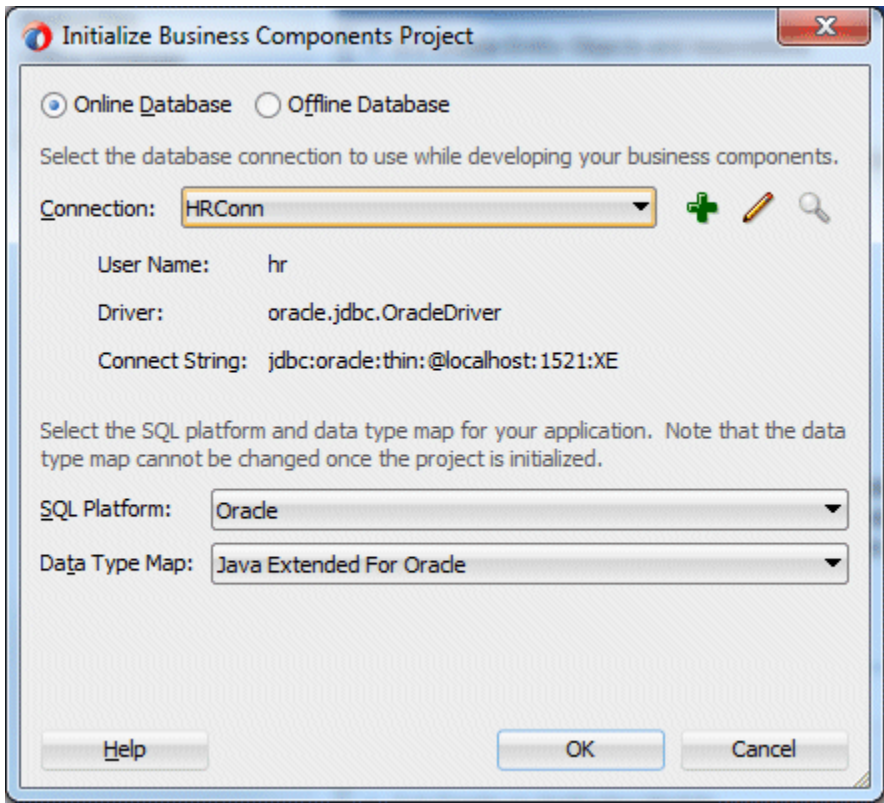
☐ Possible Next Steps

▶ 3.2 Create View Objects	<input type="checkbox"/> Not Started
▶ 3.3 Create View Links	<input type="checkbox"/> Not Started
▶ 3.4 Create an Application Module	<input type="checkbox"/> Not Started

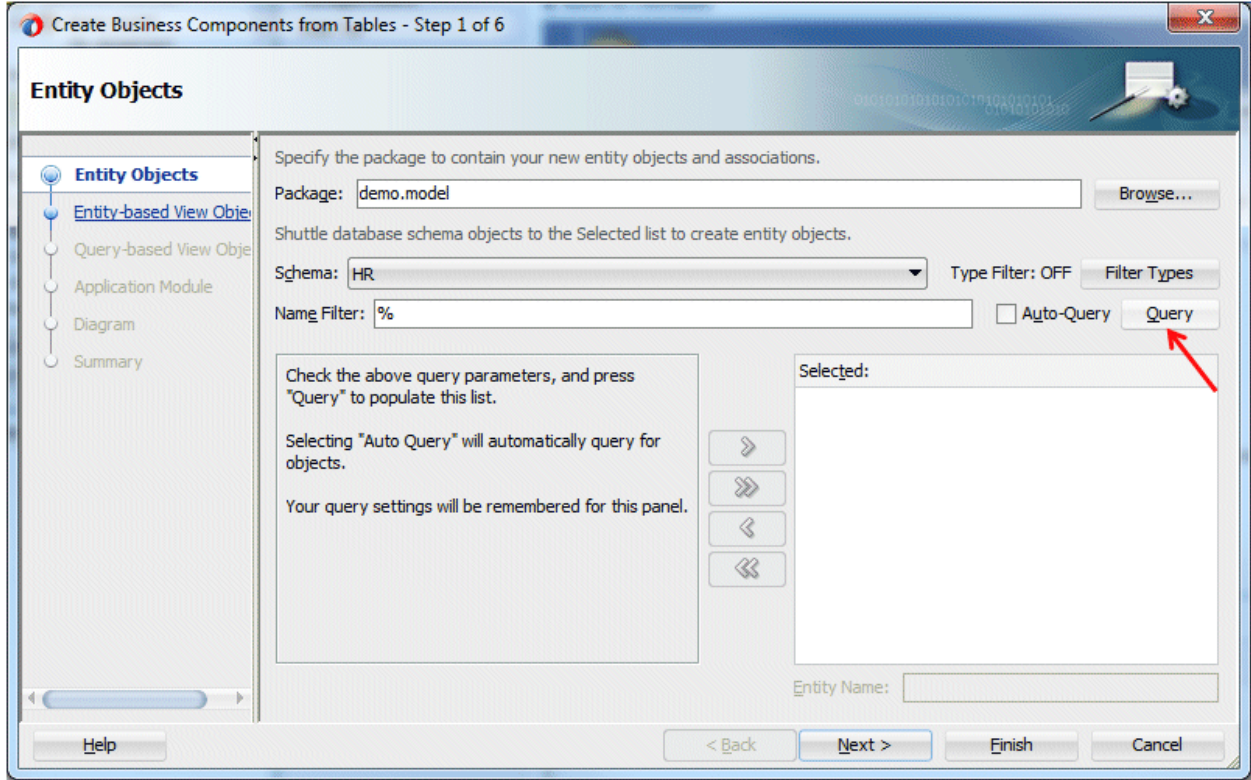
12. In the Select Project for Action dialog, select the **Model** project and click **OK**.



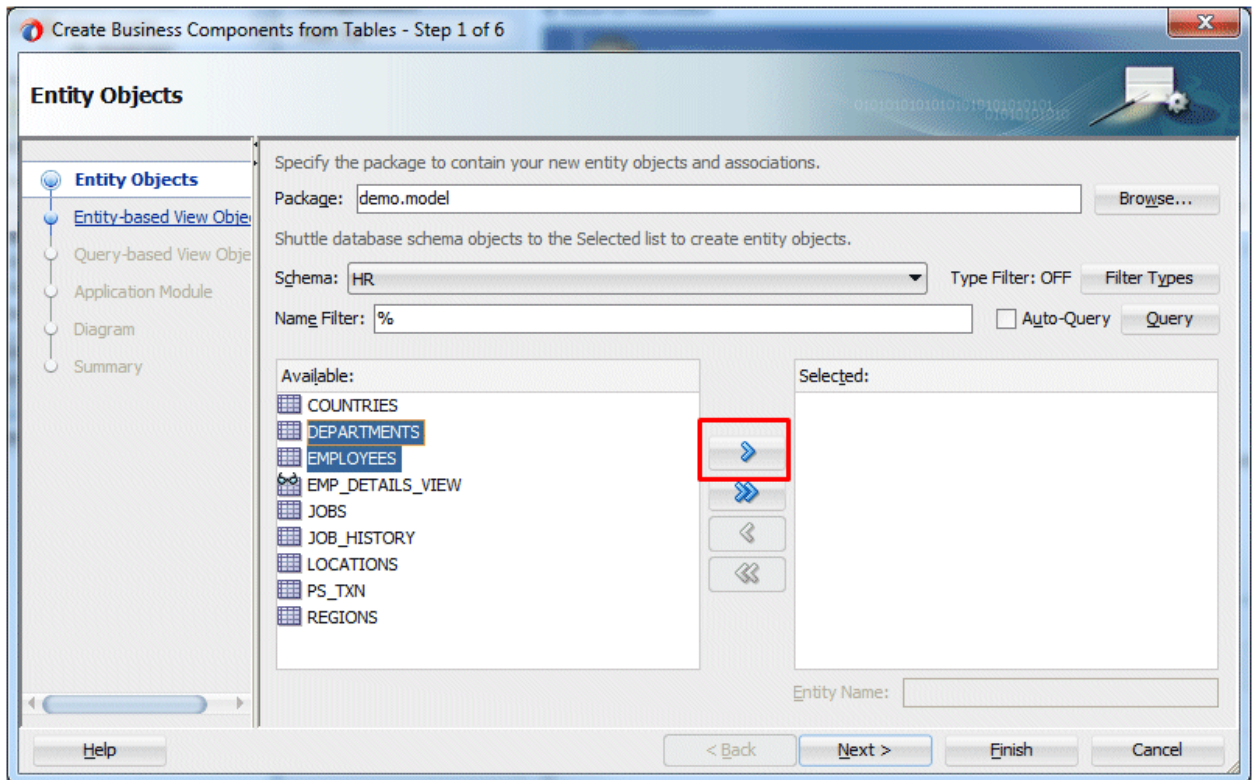
13. In the Initialize Business Components Project dialog select the **HRConn** connection if it is not already selected. Click **OK**.



- 14. The Create Business Components from Tables wizard launches. In the Entity Objects page, click the **Query** button to examine the data dictionary and see available tables.

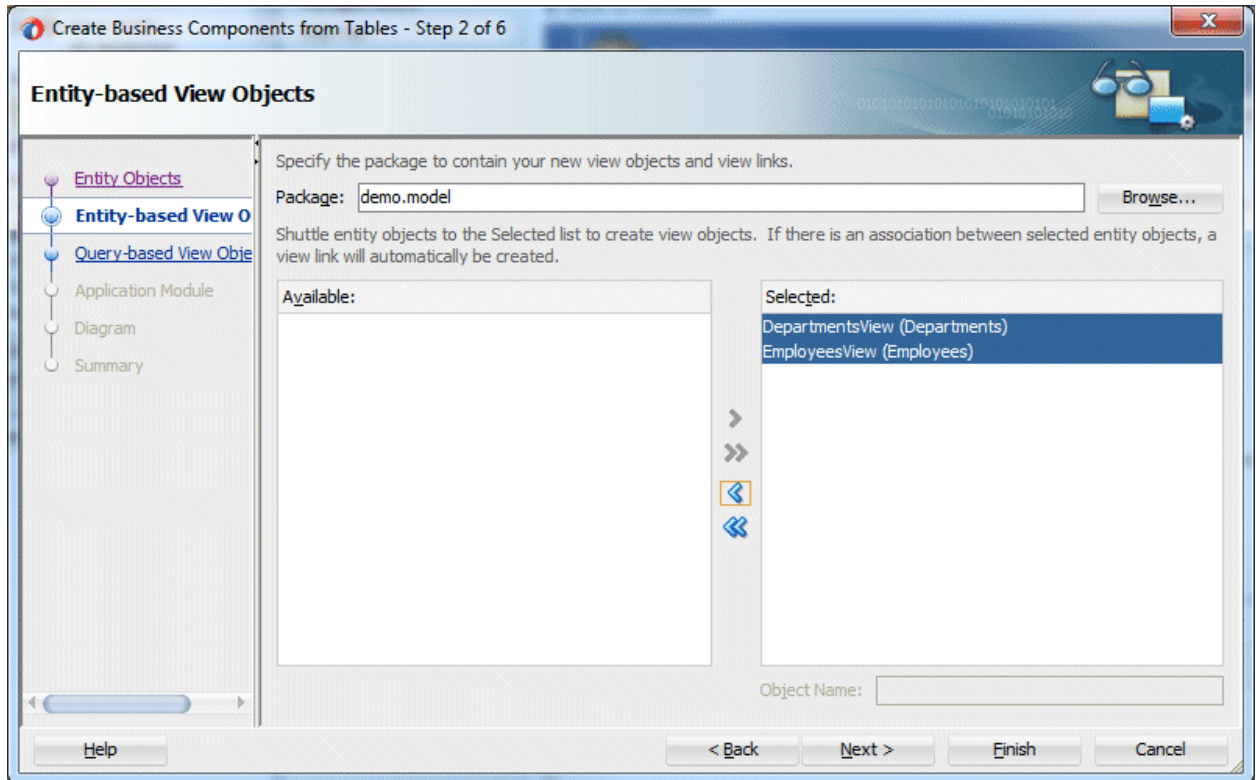


15. Select the **DEPARTMENTS** and **EMPLOYEES** tables in the Available list, and click the right arrow to move your selections to the Selected list. This step creates updatable entity objects based on the tables selected.



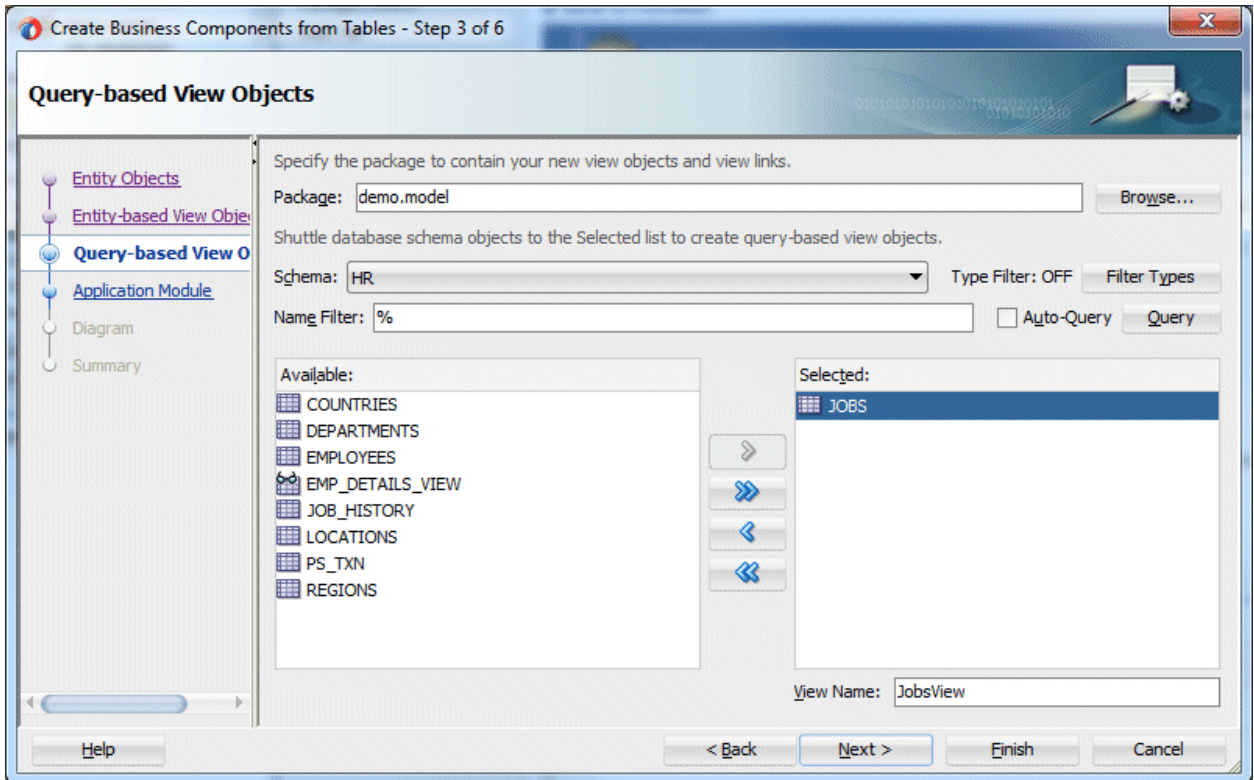
Click **Next** to continue.

16. In the Entity-based View Objects page of the wizard, move **Departments** (HR.DEPARTMENTS) and **Employees** (HR.EMPLOYEES) to the Selected list. This step creates matching view objects DepartmentsView and EmployeesView for performing queries on the entity objects you just created.

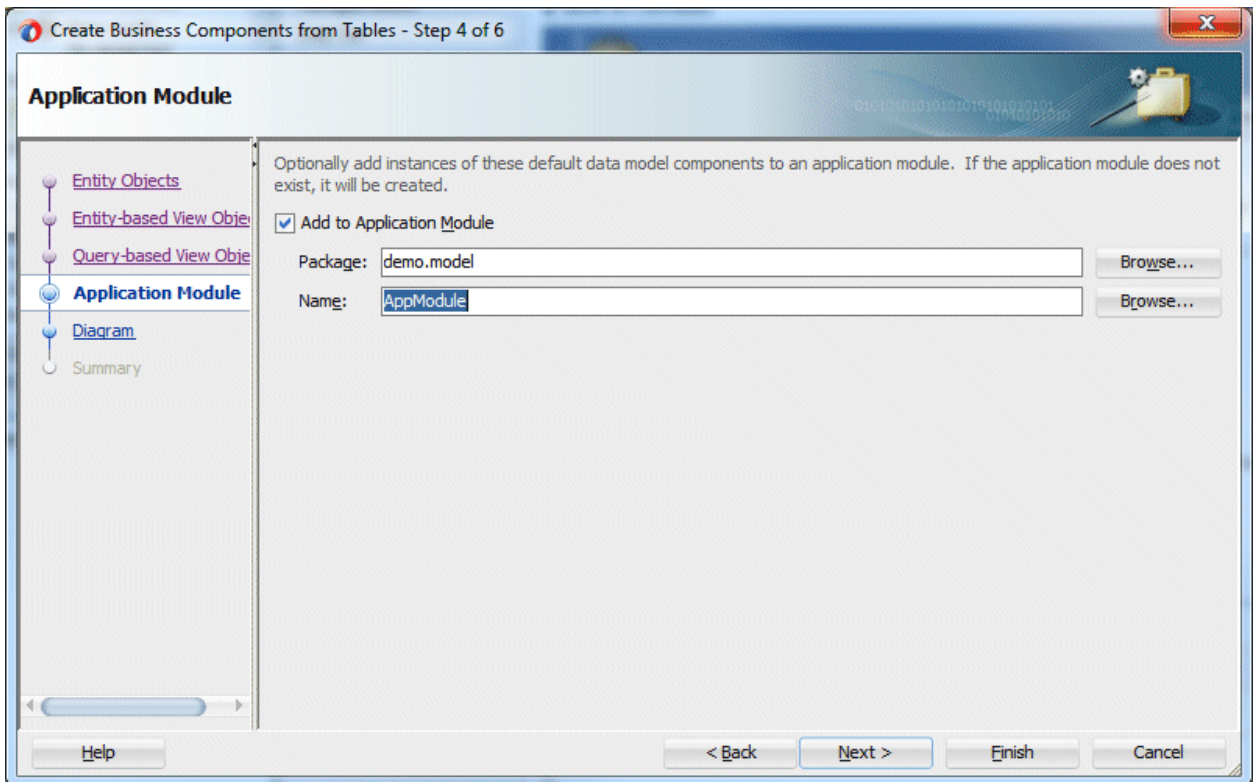


Click **Next** to continue.

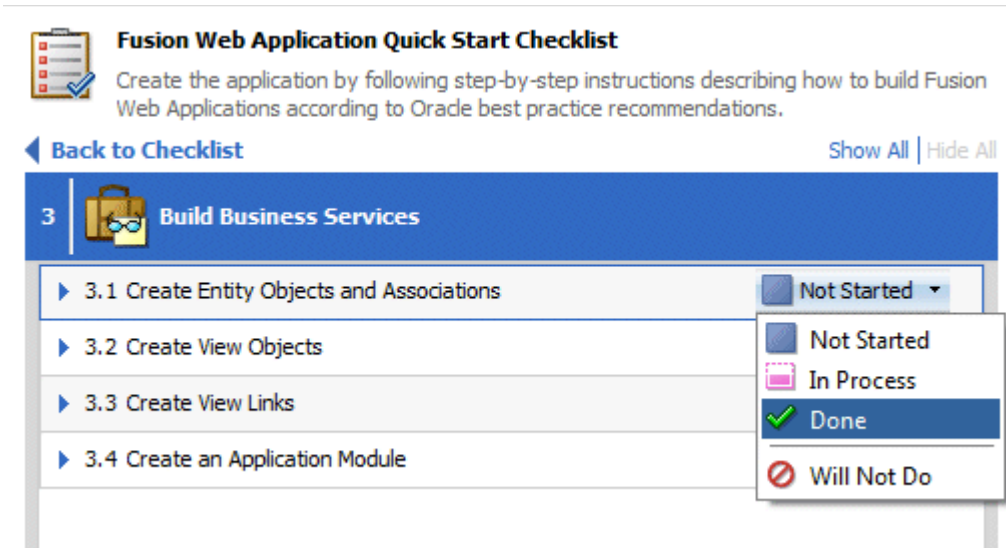
17. In the Query-based View Objects page, click the **Query** button and then move **JOBS** to the Selected list. This step creates a read-only view object that queries the Jobs table. Then click **Next** to continue.



18. In the Application Module page, click **Finish** to create the business components in the Model project.




19. In the Checklist, set the status of the **Create Entity Objects and Associations** step to **Done**.



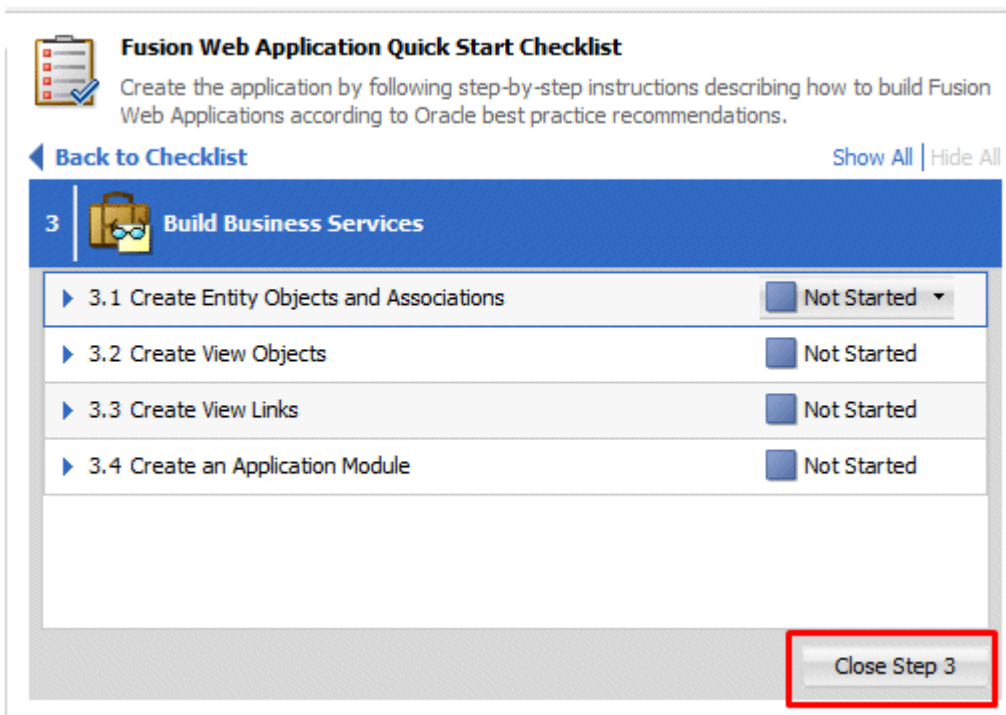
Fusion Web Application Quick Start Checklist
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.

[Back to Checklist](#) [Show All](#) | [Hide All](#)

3  **Build Business Services**


▶ 3.1 Create Entity Objects and Associations	<input type="checkbox"/> Not Started
▶ 3.2 Create View Objects	<input type="checkbox"/> Not Started
▶ 3.3 Create View Links	<input checked="" type="checkbox"/> Done
▶ 3.4 Create an Application Module	<input type="checkbox"/> Will Not Do

20. Click the **Close Step 3** button.



Fusion Web Application Quick Start Checklist
Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.

[Back to Checklist](#) [Show All](#) | [Hide All](#)

3  **Build Business Services**

▶ 3.1 Create Entity Objects and Associations	<input type="checkbox"/> Not Started
▶ 3.2 Create View Objects	<input type="checkbox"/> Not Started
▶ 3.3 Create View Links	<input type="checkbox"/> Not Started
▶ 3.4 Create an Application Module	<input type="checkbox"/> Not Started





Close Step 3

21. Click the **Back to Checklist** link and set the status of the **Build Business Services** step to **Done**

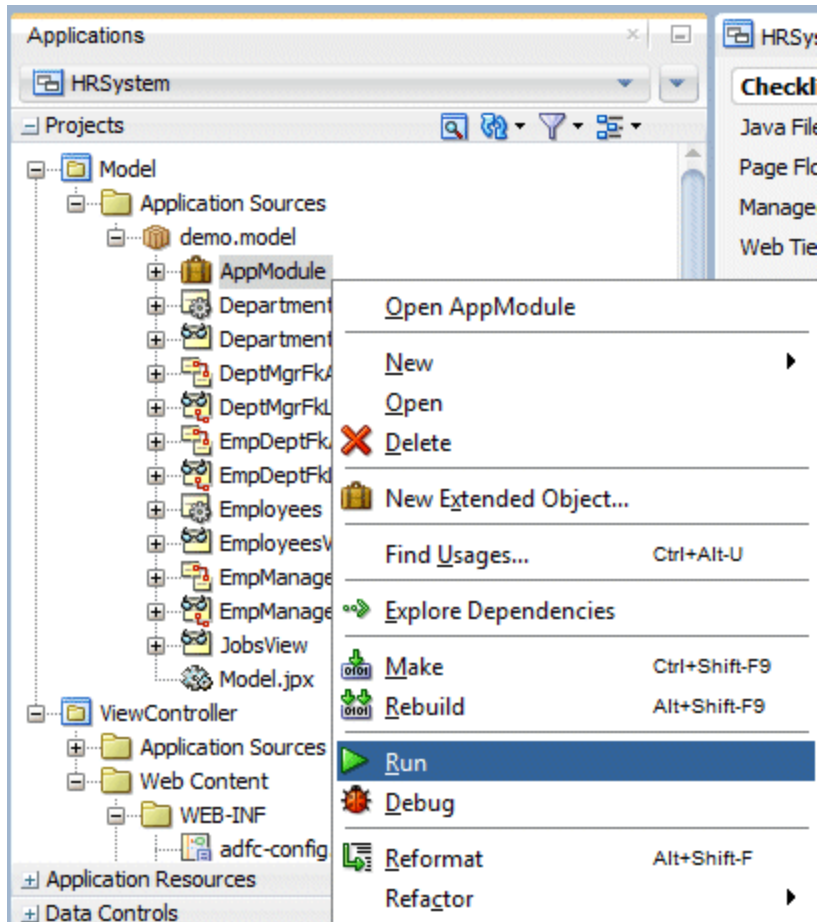
Fusion Web Application Quick Start Checklist

Create the application by following step-by-step instructions describing how to build Fusion Web Applications according to Oracle best practice recommendations.

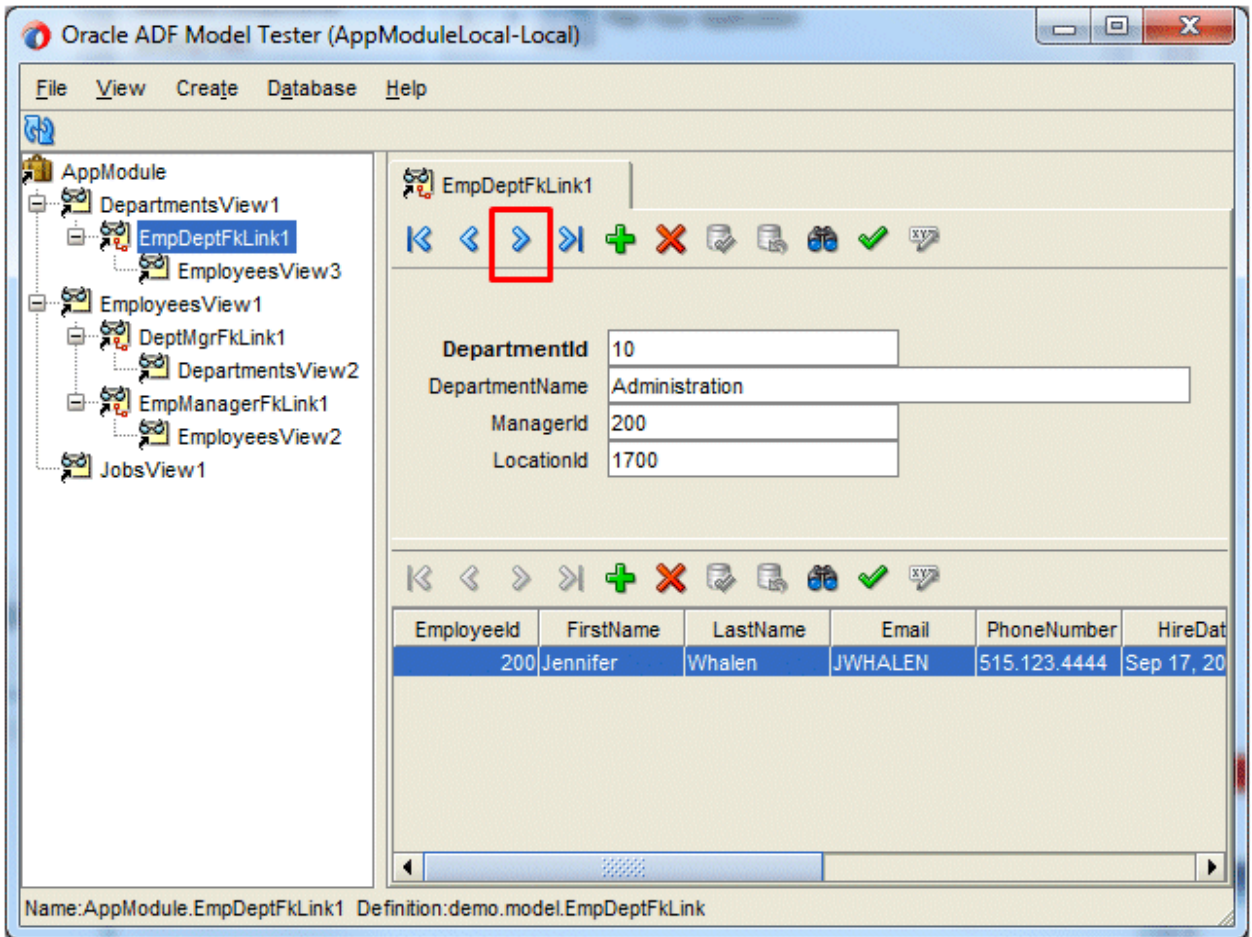
[Show All](#) | [Hide All](#)


1	 Plan Your Application	<input type="checkbox"/> Not Started
2	 Connect to a Database	<input checked="" type="checkbox"/> Done
3	 Build Business Services <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <input type="checkbox"/> Not Started <input type="checkbox"/> Not Started <input checked="" type="checkbox"/> In Process <input checked="" type="checkbox"/> Done <input type="checkbox"/> Will Not Do </div>	<input type="checkbox"/> Not Started
	<div style="border: 1px solid gray; padding: 5px;"> <p>Prerequisites</p> <ul style="list-style-type: none"> You have a database schema and have identified the tables you want to use for your application. If you have not created a database connection, you will be prompted to do so. <p>ADF Business Components implements your application's database access and business logic functionality. A typical model project consists of a number of different types of business components: entity objects represent rows of data and handle business logic, view objects represent SQL queries, associations define relationships between entity objects, view links define relationships between view objects, and an application module defines the data model that is exposed to the client.</p> </div>	
4	 Design Application Flow	<input type="checkbox"/> Not Started

22. In the Applications Navigator right-click **AppModule** and select **Run** to invoke the application module tester. This is a small Swing-based application that allows you to test the ADF Business Components you have just created.



23. In the Oracle ADF Model Tester window, double-click the **EmpDeptFkLink1** node to show the department and employees data. Navigate between the records using the **Next** button and notice the automatic master-detail synchronization.



24. Click the **Specify View Criteria** button (binocular icon)  in the master toolbar, to enter search criteria for your data. Specify **1700** in the **LocationID** field and click the **Find** button to execute the query.

View Criteria X

Select predefined criteria, or define ad hoc criteria

Predefined criteria:

Available: Selected:

Ad hoc criteria:

Criteria

Enter an operator followed by a value:

Departmentid:

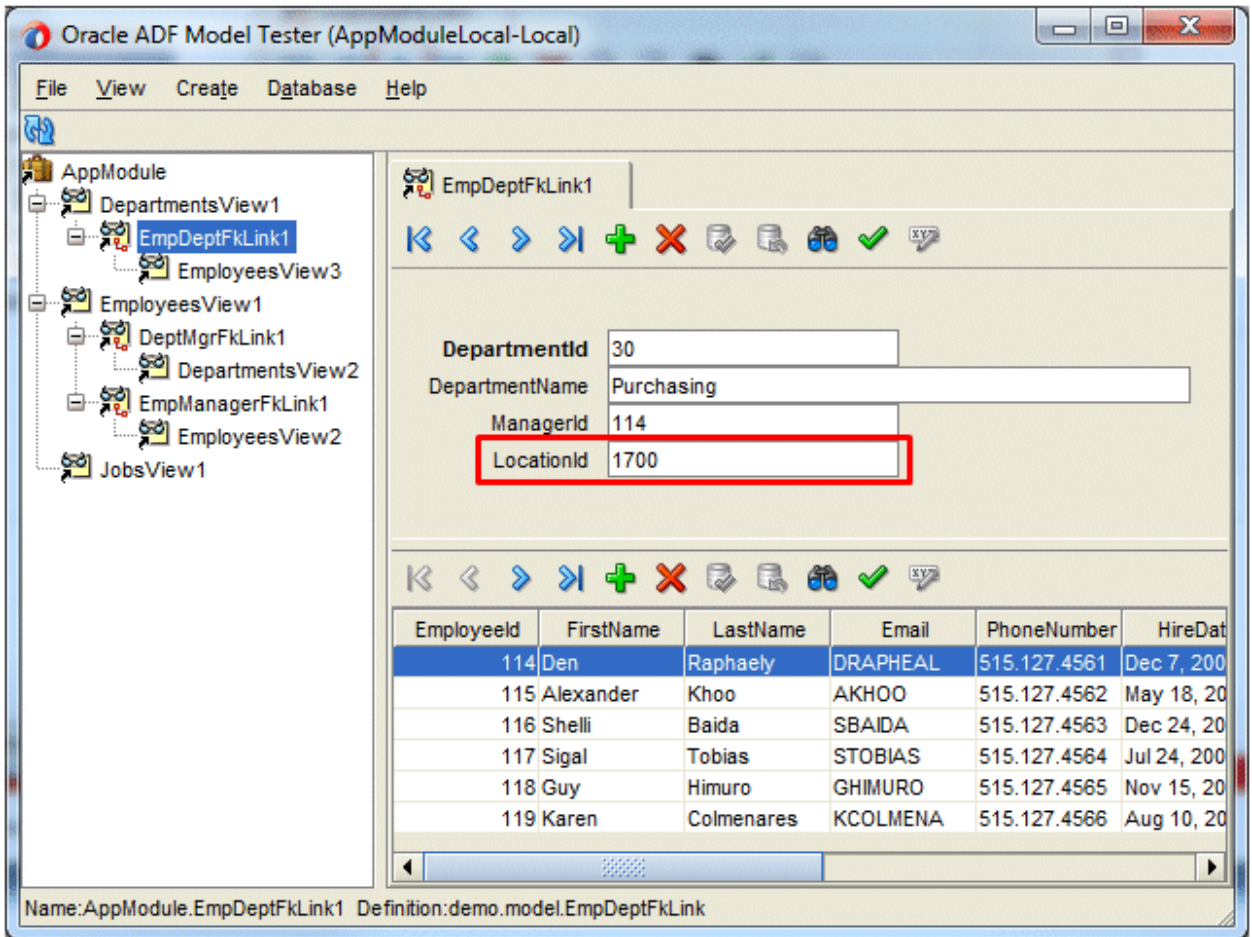
DepartmentName:

Managerid:


Locationid:

EmloyeesView:

25. The form now only shows departments in this location. Use the **Next** button to scroll through the departments at Location 1700.



You need to remove the parameter value of the search criteria to access all departments again.

26. Close the Oracle ADF Model Tester window, and back in JDeveloper, click the **Save All**  icon on the JDeveloper menu bar, or select **File > Save All** from the menu.

Courtesy: https://docs.oracle.com/cd/E37547_01/tutorials/tut_rich_app/tut_rich_app.html

Modified: 2021.10.04.7.45.AM

Dököll Solutions, Inc.