How-To Develop Oracle JDeveloper User Interface

JavaServer Faces (JSF) is a standard Java EE technology that simplifies Web development. In this part of the tutorial you create a JSF page to access the business components that you created in the previous part.

You create a form that can be used to display and modify data. You use a master-detail relationship to display information about employees in a department. To build the page you'll use Oracle ADF Faces Rich Client components. These components allow you to build an Ajax-based rich Web UI without writing low-level HTML and Javascript code.



Step 1: Create a JSF Page

1. Right-click the **ViewController** project node in the Applications window, and select **New > From Gallery...**



The Web part of the application is developed in a separate project called the ViewController project, which you created in the previous part of this tutorial when you created the Fusion Web application.

Maintaining a separation between the Model layer and the user interface by developing them in separate projects, makes the business services layer more reusable.

2. In the New Gallery, navigate to **JSF/Facelets** under the **Web Tier** node, and choose **Page** in the Items pane. Click **OK**.

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<u>C</u> ategories:	Items:	Show All Description
	Page Launches the Create J new JavaServer Faces a Facelets or JSP docu select a project or a file Navigator.	SF Page dialog, in which you create a s 2.0 page that can be implemented as iment. To enable this option, you must e within a project in the Application
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	ADF Task Flow ADF Task Flow Templat Composite Component	ie

3. In the Create JSF Page dialog, rename the page to **DeptEmpPage.jsf**; make sure the Document Type radio button is set to **Facelets**, and in the Page Layout tab select the Reference ADF Page Template radio button and choose **Oracle Three Column Layout**.



- 4. Click **OK**.
- 5. The page displays in the Design Editor. The temp late has three columns in it, but you only need two in the page, so delete the third one.

In the Structure window, expand af:form > af:pageTemplate > Template facets. Right-click af:facet - end and choose **Delete**. You will notice that the end facet is not deleted from the list of page template facets. It is however removed from the page usage.

6. With **af:pageTemplate** selected in the Structure window, in the Properties window set the **startColumnSize** property to **350**.

DeptEmpPage.jsf - Structure	Template - Properties × Me	essages - Log	
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Next, add some layout components to the page.

7. In the Components window expand the **Layout** group of components and locate the **Panel** Accordion component in the Interactive Containers and Headers section. Drag it into the start facet of your page.

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	± Text and Selection
	± Data Views
	Menus and Toolbars
	Layout Separator
	Spacer
	Interactive Containers and Headers
	Navigation Item
	Navigation Pane
	Panel Accordion
	Panel Box
f:view • > af:document#d1 • > af:form#f1 • > af:pagetemplate#pt1 • > f:facet >	Panel Dashboard

8. Select **af:showDetailItem** (the panel accordion that you just added to the page in the previous step) in the Structure window and in the Properties window change its Text property to **Departments**.

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	Text: Departments
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9. Right-click the new **Departments** Show Detail Item, and choose **Insert after Show Detail Item** - **Departments** > **Show Detail Item**. This adds another accordion to your page.

10. Change the Text property to More Info.

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This is another way of adding components to a page using context menus directly inside the Design Editor (instead of dragging and dropping from the Components window).

11. From the **Layout** components, click and drag a **Panel Splitter** component onto the **center** facet of your page.

		ADF Faces
		± General Controls
Facet center		
		🛨 Data Views
		± Menus and Toolbars
		🖃 Layout
		Panel Drawer
		Panel Header
		Panel Splitter
		Panel Springboard

12. In the Properties window change the **Orientation** property of the new splitter to **vertical**.

13. From the **Layout** components, drag a **Panel Collection** component into the **first** facet at the top of the splitter on your page.

It might be easiest to use the Structure window to drop the component in the correct position.

A panel collection is a component that aggregates collection components like table, treeTable and tree to display standard/application menus, toolbars and status bar items.

14. Using the Structure window, drag a **Panel Tabbed** component into the **second** facet of the splitter on your page.

15. Double-click the tab **DeptEmpPage.jsf** at the top of the page to view it in its entirety. The page should look like the screen shot below.

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16. Click the **Save All** icon on the JDeveloper menu bar to save your work.

Step 2: Bind Data Controls to the Page

In this step you bind the business components you created in Part 1 of this tutorial to the user interface. You do this with simple drag and drop operations; behind the scenes the ADF Model layer takes care of binding the data for you.

1. In the Design Editor click the **Departments** accordion to expand it.

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 In the Applications Navigator expand the Data Controls accordion, and in it expand AppModuleDataControl to expose the business services you defined in the first part of this tutorial.

3. Drag the **DepartmentsView1** data control into the **Departments** accordion in your JSF page. When prompted to choose the type of component you want to create, choose **ADF Form**.

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4. In the Edit Form Fields dialog, check the Read-Only Form and Row Navigation Controls checkbox and click OK.

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5. In the Data Controls accordion expand **DepartmentsView1** to expose the fields it contains, as well as the related **EmployeesView3** control for the employees in each department. Note that these are the "detail" employees for the "master" departments - they are linked and therefore at runtime, the employees you see in this view object are the ones who belong to the selected (or viewable) department.

6. Drag the **EmployeesView3** data control onto the **Panel Collection** that you created in the first facet of the PanelSplitter. Create it as an **ADF Table...**

7. In the Edit Table Columns dialog, choose **Single Row** in **Row Selection**, and check the checkboxes for **Sorting** and **Filtering and Read-Only Table** checkboxes. Click **OK**.

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8. Drag the **EmployeesView3** data control again but this time onto **showDetailItem 1** in the **panelTabbed** component in the second facet of the **panelSplitter**. Create it as an **ADF Form**.

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9. In the Edit Form Fields dialog, check the **Include Submit Button** check box. Using your mouse and the Shift key select the bottom three fields from the list: **CommissionPCT, Managerld**,

DepartmentID and delete them by clicking the **Delete** button lpha.

Click OK.

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Configure the components that you want components after you click OK. You can	to display in your form. Note that you ca also add more components directly to th	in remove or edit the resulting e layout later.	
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10. Click the **Save All** icon on the JDeveloper menu bar to save your work. Right-click in the page and choose **Run**. This will compile your project, build it, and launch the integrated WebLogic Server to run it. The default web browser opens to display the page. You can follow the progress of these steps in the Log window in JDeveloper.

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11. Once the page displays in the browser, resize the page area using the **splitter** to display the department data. Then use the **Next** button to scroll through the departments. Notice that the employee data changes to show the employees within the displayed department. Notice also that the employee form displays the currently selected employee.

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12. Close the browser window.

Step 3: Refine the Business Services

In these steps you refine the business services by adding validation rules, formatting and default values.

1. In the Applications window under the **Model** project, locate the **Employees** entity object and double-click it to open it for editing.

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2. In the Employees.xml window, click the **Attributes** finger tab and locate and select the **Salary** attribute. Scroll down in the page to the Validation Rules tab and click the **Add** icon to add a new validation rule.

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Business Rules Java	Entity attributes can be based	upon columns in the sche	ma object or can be based upor	n transient values. 🛟 🕶 💥 ा	verride
usiness Events	Name	Type	Column Name	Column Type	-
2w Accessors	EmployeeId	Integer	EMPLOYEE_ID	NUMBER(6, 0)	
	FirstName	String	FIRST_NAME	VARCHAR2(20)	
	LastName	String	LAST_NAME	VARCHAR2(25)	
	Email	String	EMAIL	VARCHAR2(25)	
	PhoneNumber	String	PHONE_NUMBER	VARCHAR2(20)	
	HireDate	Timestamp	HIRE_DATE	DATE	222
	JobId	String	JOB_ID	VARCHAR2(10)	
	Salary	BigDecimal	SALARY	NUMBER(8, 2)	
	CommissionPct	BigDecimal	COMMISSION_PCT	NUMBER(2, 2)	
	ManagerId	Integer	MANAGER_ID	NUMBER(6, 0)	-
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	Details UI Hints Valid	ation Rules Security	Dependencies Custom Pro	perties	
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	Name	Type	Validatio	n Rule	

3. Keep the default Name and in the Add Validation Rule dialog choose **Range** from the Rule Type drop down list. Note the various other types of rules you can define here. In the Operator field ensure that the value is set to **Between**, and type **0** for the minimum value and **99000** for the maximum value fields.

🕜 Add Valida	ation Rule for: Salary	×
Define the Va	alidation you want to perform with this rule and c	onfigure the Validation Failure response.
<u>N</u> ame:	SalaryRule0	
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Hint: Enter	valid values for the selected attribute's type.	
Help		OK Cancel

4. Click the **Failure Handling** tab to define an error message that will display when the validation fails. In the **Message Text** field type an error message like **"Salary out of range 0 to 99,000"** and click **OK**.

👌 Add Valid	ation Rule for: Salary	
Define the V	alidation you want to perform with this rul	e and configure the Validation Failure response.
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Help		OK Cancel

5. Next you add a default value to the hire date field - so that when a new employee is created the hire date defaults to the current date.

In the **Employees.xml** window, locate the **HireDate** attribute, and select it. In the **Value** section of the Properties window, locate the **Default Value Type** property and select **Expression**, then set the **Default Value** property to **adf.currentDate**. This will ensure the default value for a new record is set to today's date.

Employees.xml	× .					
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General Attributes	Attributes			Set Source Or		
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Business Events	Name	Туре	Column Name	Column Type		
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	FirstName	String	FIRST_NAME	VARCHAR2(20)		
	LastName	String	LAST_NAME	VARCHAR2(25)		
	Email	String	EMAIL	VARCHAR2(25)		
	PhoneNumber	String	PHONE_NUMBER	VARCHAR2(20)		
	HireDate	Timestamp	HIRE_DATE	DATE		
	JobId	String	JOB_ID	VARCHAR2(10)		
	Salary	BigDecimal	SALARY	NUMBER(8, 2)		
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You can also specify UI Hints for attributes to control how they display by default in the forms and pages that use them. In this step you add a default format mask for the hire date field. You can also specify labels and tooltip help here.

6. In the **UI Hints** section of the Properties window locate the **Format Type** property and select **Simple Date**.

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	HireDate		Timestamp	HIRE_DATE	DATE
	JobId		String	JOB_ID	VARCHAR2(10)
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Advanced	Format Type:	Format Type: Simple Date			▼
Other	Format:	rmat: <default></default>			-

Set the **Format** property to **dd/MMM/yyyy**. You should get a warning message indicating that this will change the format in a resource bundle. Click **Yes** to acknowledge the message.

HireDate - P	roperties 👋 Running: Ir	ntegratedWebLogicServer - Log		
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7. Run the page again to test the refinements you have made.

8. Test the **HireDate** field. Notice that as soon as you click in the field you are provided with an example of the format for the date (as you defined it).

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9. Use the **Clock/Calendar** icon next to the field to display a pop-up calendar and choose a valid date.

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	showDetailItem 1 * EmployeeId 200 FirstName Jennifer * LastName Whalen * Email JWHALEN PhoneNumber 515.123.4444 * HireDate 17/Sep/2003
More Info 127.0.0.1:7101/ViewController/faces/DeptEmpPage.jsf#	April 2013 SUN MON TUE WED THU FRI SAT 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4

10. Update the **Salary** field to a value that will break the validation you created earlier (e.g. -9) and click the **Submit** button to see the error message you created.

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11. Browse to department **50** and notice that you can now sort the data in the employees table. Click on one of the column headers in the table to sort the data in the table.

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EmployeeId	FirstName	LastName	Email	PhoneNumber	HireDate	
130	Mozhe	Atkinson	MATKINSO	650.124.6234	30/Oct/2005	
192	Sarah	Bell	Sort Ascending	650.501.1876	04/Feb/2004	
129	Laura	Bissot	LBISSOT	650.124.5234	20/Aug/2005	
185	Alexis	Bull	ABULL	650.509.2876	20/Feb/2005	
187	Anthony	Cabrio	ACABRIO	650.509.4876	07/Feb/2007	
188	Kelly	Chung	KCHUNG	650.505.1876	14/Jun/2005	
.42	Curtis	Davies	CDAVIES	650.121.2994	29/Jan/2005	
186	Julia	Dellinger	JDELLING	650.509.3876	24/Jun/2006	
189	Jennifer	Dilly	JDILLY	650.505.2876	13/Aug/2005	
.93	Britney	Everett	BEVERETT	650.501.2876	03/Mar/2005	
.97	Kevin	Feeney	KFEENEY	650.507.9822	23/May/2006	
81	Jean	Fleaur	JFLEAUR	650.507.9877	23/Feb/2006	
21	Adam	Fripp	AFRIPP	650.123.2234	10/Apr/2005	
.90	Timothy	Gates	TGATES	650.505.3876	11/Jul/2006	
135	Ki	Gee	KGEE	650.127.1734	12/Dec/2007	
183	Girard	Geoni	GGEONI	650.507.9879	03/Feb/2008	
199	Douglas	Grant	DGRANT	650.507.9844	13/Jan/2008	

12. Click a column heading in the table and drag it to reposition it in the table.

					1)
EmployeeId		FirstName	LastName	PhoneNumber	HireDate	JobId
130		Mozhe	Atkinson	650.124.6234	30/Oct/2005	ST_CLERK
192		Sarah	Bell	650.501.1876	04/Feb/2004	SH_CLERK
129	T	Laura	Bissot	650.124.5234	20/Aug/2005	ST_CLERK
185	T	Alexis	Bull	650.509.2876	20/Feb/2005	SH_CLERK
187	Email	Arthony	Cabrio	650.509.4876	07/Feb/2007	SH_CLERK
.88	MATKINSO	Kelly	Chung	650.505.1876	14/Jun/2005	SH_CLERK
.42	SBELL	Curtis	Davies	650.121.2994	29/Jan/2005	ST_CLERK
.86	LBISSOT	Julia	Dellinger	650.509.3876	24/Jun/2006	SH_CLERK
.89	ABULL	Jennifer	Dilly	650.505.2876	13/Aug/2005	SH_CLERK
93	ACABRIO	Britney	Everett	650.501.2876	03/Mar/2005	SH_CLERK
.97	KCHUNG	Kevin	Feeney	650.507.9822	23/May/2006	SH_CLERK
.81	CDAVIES	Jean	Fleaur	650.507.9877	23/Feb/2006	SH_CLERK
21	JDELLING	Adam	Fripp	650.123.2234	10/Apr/2005	ST_MAN
.90	JDILLY	Timothy	Gates	650.505.3876	11/Jul/2006	SH_CLERK
35	BEVERETT		Gee	650.127.1734	12/Dec/2007	ST_CLERK
.83	KFEENEY	Girard	Geoni	650.507.9879	03/Feb/2008	SH_CLERK
.99	JFLEAUR	Douglas	Grant	650.507.9844	13/Jan/2008	SH_CLERK
105	AFRIPP	Non-	lonor	2 EO EO 1 4072	17/M-r/2007	CU CIERV
•	TGATES	11		and a second		

The new column order looks as follows:

						5	
EmployeeId	Email	FirstName	LastName 🔺 🗸	PhoneNumber	HireDate	JobId	
130	MATKINSO	Mozhe	Atkinson	650.124.6234	30/Oct/2005	ST_CLERK	-
192	SBELL	Sarah	Bell	650.501.1876	04/Feb/2004	SH_CLERK	
129	LBISSOT	Laura	Bissot	650.124.5234	20/Aug/2005	ST_CLERK	
185	ABULL	Alexis	Bull	650.509.2876	20/Feb/2005	SH_CLERK	
187	ACABRIO	Anthony	Cabrio	650.509.4876	07/Feb/2007	SH_CLERK	-
188	KCHUNG	Kelly	Chung	650.505.1876	14/Jun/2005	SH_CLERK	
42	CDAVIES	Curtis	Davies	650.121.2994	29/Jan/2005	ST_CLERK	
186	JDELLING	Julia	Dellinger	650.509.3876	24/Jun/2006	SH_CLERK	
.89	JDILLY	Jennifer	Dilly	650.505.2876	13/Aug/2005	SH_CLERK	
.93	BEVERETT	Britney	Everett	650.501.2876	03/Mar/2005	SH_CLERK	
.97	KFEENEY	Kevin	Feeney	650.507.9822	23/May/2006	SH_CLERK	
81	JFLEAUR	Jean	Fleaur	650.507.9877	23/Feb/2006	SH_CLERK	
21	AFRIPP	Adam	Fripp	650.123.2234	10/Apr/2005	ST_MAN	
.90	TGATES	Timothy	Gates	650.505.3876	11/Jul/2006	SH_CLERK	
135	KGEE	Ki	Gee	650.127.1734	12/Dec/2007	ST_CLERK	
83	GGEONI	Girard	Geoni	650.507.9879	03/Feb/2008	SH_CLERK	
.99	DGRANT	Douglas	Grant	650.507.9844	13/Jan/2008	SH_CLERK	
105	MICHIEC	Vanco	10000	200 E01 4076	17/Mar/2007	CH CLEDV	

13. In the Filter field above the **LastName** column, type **B%** and press **Enter** to filter the table to show only those employees whose surname begins with the letter B.

EmployeeId Email FirstName LastName PhoneNumber HireDate 192 SBELL Sarah Bell 650.501.1876 04/Feb/2004	JobId	
192 SBELL Sarah Bell 650,501,1876 04/Feb/2004		S
	SH_CLERK	4
129 LBISSOT Laura Bissot 650.124.5234 20/Aug/2005	ST_CLERK	3
185 ABULL Alexis Bull 650.509.2876 20/Feb/2005	SH_CLERK	4

14. Experiment with the other menus and buttons of the table to see additional functionality. Once you are finished, close the browser and return to JDeveloper.

Step 4: Enhance the JSF Page

In the next steps you enhance the user interface by modifying the table of employees to add the ability to do column selection, by reordering the fields in the Employee details tab, and by binding the business components to a graph representation. You do this with simple drag and drop operations - behind the scenes the ADF Model layer handles the data binding for you.

 Click the DeptEmpPage.jsf tab to return to the page in the Design Editor. Select the Employees (t1) table in the Design Editor or in the Structure window. Set the Column Selection property of the table to Single.

2. In the Structure window select the **panelFormLayout** that surrounds the employee details fields in the showDetailItem tab.

3. In the Properties window set the Rows property to 5.

Panel Form Layout	- Properties × Running: Integrated\
🥒 🛃 Q Find	
Common	
● Id:	pfl2
Rendered:	<default> (true)</default>
MaxColumns:	
Rows:	5
FieldWidth:	
LabelWidth:	
LabelAlignment:	<default></default>
Appearance	
🗄 Style	
Behavior	
Advanced	

When you run the page in a later step you will see that the fields in the tab are now arranged in two columns.

Notice that you can control layout of the objects within a layout container by setting the properties of the container.

Next you add a graph representation of the data to the page; this is done using the ADF Data Visualization set of JSF components.

4. In the Design Editor click the **More Info** accordion to expand it. Then drag the **EmployeesView3** data control into the **More Info** accordion and create it as a **Graph**.

The graph can be displayed as static PNG image or an interactive Flash component.

You control these behaviors through the properties of the graph component.

5. In the Component Gallery choose **Pie** from the list of graphs on the left and **Pie** again as the graph type. In the bottom pane, select the **third** Quick Start Layout.

Click the OK.

6. In the Create Pie Graph dialog select **Salary** in the Pie drop down and then, drag and drop **LastName** into the Slices field. Click **OK**.

Create Pie Graph			X
Select the data values you w See Configuring Pie Graphs for Configuration Preview Available: III CommissionPct III DepartmentId III DepartmentId III Email III EmployeeId	Pie: 123 Salary Slices: Dra Catributes here from the	r graph, and then configure their labels. Available list Change l	Data Shape
FirstName	Attribute	Label	•
 HireDate JobId LastName ManagerId PhoneNumber 	Image: Salary Image: Salary <td< td=""><td><use attribute="" name=""></use></td><td></td></td<>	<use attribute="" name=""></use>	
Help		ОК	Cancel
Configuration Preview Available:	Pie: 123 Salarv		
123 CommissionPct			
123 DepartmentId	siices: 🖉 LastName		
🍼 Email		Chano	e Data Shape
123 EmployeeId	Attribute Labels:		
🖉 FirstName	Attribute	Label	
🧭 HireDate	LastName	<use attribute="" value=""></use>	
Ø JobId	123 Salary	<use attribute="" name=""></use>	
123 ManagerId	· ·		

Click OK.

7. Click the **Save All** icon on the JDeveloper menu bar to save your work and then right-click within the page and select **Run** from the context menu.

8. Browse to department **50**. Because you set the column selection to single, note the additional behaviors for the table that are available once you choose a column - such as **Freeze** and **Wrap**.

Select a column, then click the **Freeze** button. Now use the horizontal scroll bar to view the rightmost columns. The Columns Frozen value is the number of columns (inclusive) to the left of the frozen column.

		Freeze				20
mployeeId	FirstName	Lasulame	Email	PhoneNumber	HireDate	JobI
.20	Matthew	Weiss	MWEISS	650.123.1234	18/Jul/2004	ST_I
21	Adam	Fripp	AFRIPP	650.123.2234	10/Apr/2005	ST_[
22	Payam	Kaufling	PKAUFLIN	650.123.3234	01/May/2003	ST_I
23	Shanta	Vollman	SVOLLMAN	650.123.4234	10/Oct/2005	ST_I
24	Kevin	Mourgos	KMOURGOS	650.123.5234	16/Nov/2007	ST_I
25	Julia	Nayer	JNAYER	650, 124, 1214	16/Jul/2005	ST_(
26	Irene	Mikkilineni	IMIKKILI	650, 124, 1224	28/Sep/2006	ST_
27	James	Landry	JLANDRY	650, 124, 1334	14/Jan/2007	ST_(
28	Steven	Markle	SMARKLE	650, 124, 1434	08/Mar/2008	ST_(
29	Laura	Bissot	LBISSOT	650, 124, 5234	20/Aug/2005	ST_(
30	Mozhe	Atkinson	MATKINSO	650.124.6234	30/Oct/2005	ST_(
31	James	Marlow	JAMRLOW	650.124.7234	16/Feb/2005	ST_(
32	L	Olson	TJOLSON	650.124.8234	10/Apr/2007	ST_(
33	Jason	Mallin	JMALLIN	650.127.1934	14/Jun/2004	ST_(
34	Michael	Rogers	MROGERS	650, 127, 1834	26/Aug/2006	ST_(
35	Ki	Gee	KGEE	650.127.1734	12/Dec/2007	ST (

EmployeeId	FirstName	LastName	JobId	Salary	CommissionPct	Mar
.20	Matthew	Weiss	ST_MAN	8000		100
21	Adam	Fripp	ST_MAN	8200		100
122	Payam	Kaufling	ST_MAN	7900		100
23	Shanta	Vollman	ST_MAN	6500		100
124	Kevin	Mourgos	ST_MAN	5800		100
.25	Julia	Nayer	ST_CLERK	3200		120
.26	Irene	Mikkilineni	ST_CLERK	2700		120
.27	James	Landry	ST_CLERK	2400		120
.28	Steven	Markle	ST_CLERK	2200		120
.29	Laura	Bissot	ST_CLERK	3300		121
.30	Mozhe	Atkinson	ST_CLERK	2800		121
31	James	Marlow	ST_CLERK	2500		121
.32	τJ	Olson	ST_CLERK	2100		121
.33	Jason	Mallin	ST_CLERK	3300		122
.34	Michael	Rogers	ST_CLERK	2900		122
.35	Ki	Gee	ST_CLERK	2400		122
			4		III	E.

9. In department 50 expand the **More Info** accordion and notice the graph and the popup that displays when you hover over it with your mouse. Since we plotted salary by last name, each slice of the pie represents the salary amount relative to the other employees. In this case Weiss, Fripp and Kaufling make the most.

> Departments	View 👻 Format 🗸	Freez	e 🛃 Detach
More Info			
We Fripp Ma Bis Atki Ma Ols Malin Ro Gee Phil La Stiles Seo Patel Rajs Da Mat Va Ta Fle Sull Ge Sar Bull Dell Ca Ch Dilly Gat Per Bell Ev Mc LastName: Fripp 2.046% 2.558% 1.558% 1.854% 2.302% 2.434% 2.619% 2.621% 2.621% 2.621% 2.621% 2.621% 2.621% 2.625% 1.538% 1.538% 1.538% 1.538% 1.538% 1.538% 1.538% 1.538% 1.646% 1.720% 1.333% 2.110% 1.333% 2.110% 1.333% 2.110% 1.333%	EmployeeId 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135	FirstName Matthew Adam Payam Shanta Kevin Julia Irene James Steven Laura Mozhe James TJ Jason Michael Ki	LastName Weiss Fripp Kaufling Vollman Mourgos Nayer Mikkilineni Landry Markle Bissot Atkinson Marlow Olson Mallin Rogers Gee

10. Scroll over to the **showDetailItem1** tab, and notice how the fields have been reordered into two columns.

EmployeeId	FirstName	LastNam	e	Email	PhoneNumber	
120	Matthew	Weiss		MWEISS	650, 123, 1234	
121	Adam	Fripp		AFRIPP	650.123.2234	Ξ
122	Payam	Kaufling		PKAUFLIN	650.123.3234	
123	Shanta	Vollman		SVOLLMAN	650.123.4234	
124	Kevin	Mourgos		KMOURGOS	650.123.5234	
125	Julia	Nayer		JNAYER	650.124.1214	
100	Teene	Mikkilinen		IMIKKII I	650 124 1224	1.00
∢	III		11	THURLE	4	
* EmployeeId	rene III eem 1	*****	[*] HireDate	18/10/2004	030.124.1224	
showDetailIt * EmployeeId	rem 1	****	* HireDate	18/Jul/2004	000.124.1221	
showDetailIt * EmployeeId FirstName	mene m sem 1 120 Matthew	**************************************	" "HireDate * JobId	18/Jul/2004 ST_MAN	030.124.1224	
showDetailIt * EmployeeId FirstName * LastName	mene III 120 Matthew Weiss	*	* HireDate (* JobId (Salary (18/Jul/2004 ST_MAN 8000	000.124.1224	
ShowDetailIt * EmployeeId FirstName * LastName * Email	MWEISS	*	* HireDate (* JobId (Salary (18/Jul/2004 ST_MAN 8000	000.121.1221	
showDetailIt * EmployeeId FirstName * LastName * Email PhoneNumber	Image:		* HireDate (* JobId (Salary (18/Jul/2004 ST_MAN 8000	000.121.1221	

When you are done, close the browser and return to JDeveloper.

Step 5: Add More Complexity to the Business Services

In this step you add a new business service to the application to display a subset of the fields from the Employees table, along with the department name from the Departments table. You also add a field that calculates the annual salary of an employee and a list of values field for department names. Oracle ADF Business Components allows you to create such complex updatable components in a declarative way.

1. In the Applications window right-click the **demo.model** package and choose **New View Object**.

2. In the Name page of the Create View Object wizard, type **EmpDetails** as the Name and retain **Entity object** as the default data source.

🕜 Create View Object - Ste	p 1 of 9	(initiante filialitation)	Contactor Property	(Romanone)	×
Name				oreroratoral orgita/64490Y	
😡 Name	• Packa <u>q</u> e:	demo.model			Browse
Entity Objects	Na <u>m</u> e:	EmpDetails			
Attributes	Display Name:	Emp Details			Q
Attribute Settings	Extends:				Browse
U Query	Property Set:	<none></none>			-
U Bind Variables					
ပုံ Java	Data Source:				
Application Module	Entity object	t			
U Summary	O SQL query				
	O Programmat	ic			
	◯ S <u>t</u> atic list				
Help				< Back Next >	Einish Cancel

Click Next.

3. In the Entity Objects page of the wizard first select **Employees** and shuttle it to the right, and then select the **Departments** entity and add it also to the Selected pane.

Note that only the Employees entity has the updatable checkbox checked - the departments entity is used to read data only.

👌 Create View Object - Ste	ep 2 of 9	(Calaster Pages)			×
Entity Objects			01010		
Name Entity Objects Attributes	Select entity objects to include them. Available: demo.model.Model demo.model		<u>S</u> elected: Employees Departments		Sub <u>t</u> ypes
 Attribute Settings Query Bind Variables Java Application Module 	Employees	8			
Summary			Enţity Usage: Assogiation: Source Usage: Join Type:	Employees	Reference row delete
Help			< <u>B</u> ack	<u>N</u> ext >	Einish Cancel

Selected.	Sub <u>types</u> .
Employees	
Departments	
En <u>t</u> ity Usage:	Departments
Entity Usage: Association:	Departments
Ențity Usage: Assogiation: Source Usage:	Departments EmpDeptFkAssoc.Departments Employees
Ențity Usage: Assogiation: Source Usage: Join Type:	Departments EmpDeptFkAssoc.Departments Employees inner join
Ențity Usage: Association: Source Usage: Join Type:	Departments EmpDeptFkAssoc.Departments Employees inner join Updatable Reference

Click Next.

4. In the Attributes page of the wizard, shuttle the following **Employees** attributes into the Selected pane:

Employeeld, FirstName, LastName, Email, Salary, HireDate, Jobld. The order you select the attributes will become the order they're displayed.

And from the **Departments** entity, shuttle the following attributes into the Selected pane: **DepartmentId**, **DepartmentName**.

Click **Finish** to complete the view object creation.

5. Next you add a calculated attribute to the view object, that displays the employee's annual salary. If it is not already open, double-click **EmpDetails** in the Applications Navigator.

6. Click the Attributes finger tab and from the drop down list select New Attribute...

General Entity Objects	Attributes			Set Source Order
Attributes	View object attributes co	an be mapped to entit	y attributes, calculated or SQL-de	erived.
Business Rules	Q- Name			🕂 🕶 🗶 Override
Query	Name	Туре	Alias Name	New Attribute
	EmployeeId	Integer	EMPLOYEE_ID	Add Attribute from Entity
lava	FirstName	String	FIRST_NAME	Employees
	LastName	String	LAST_NAME	Employees
iet I II Hinte	Email	String	EMAIL	Employees
II Categories	Salary	BigDecimal	SALARY	Employees
of categories	HireDate	Timestamp	HIRE_DATE	Employees
	JobId	String	JOB_ID	Employees
	DepartmentId	Integer	DEPARTMENT_ID	Departments
	DepartmentName	String	DEPARTMENT_NAME	Departments

7. In the New View Object Attribute dialog type **Annual Salary** as the name for the new attribute and **Number** as the Type, then click **OK**.

🕐 New	View Object Attribute
Name: Type:	AnnualSalary Number
He	lp OK Cancel

8. In the Details tab at the bottom of the attributes list, set the following properties for the AnnualSalary attribute:

Field	Value
Name	AnnualSalary
Туре	Number

Default Value	Expression (Checked)
Value	(Salary = null ? 0 : Salary) * 12

	Email	Strina	EMAIL	Employees
ist UI Hints	Salary	BigDecimal	SALARY	Employees
JI Categories	HireDate	Timestamp	HIRE_DATE	Employees
	JobId	String	JOB_ID	Employees
	DepartmentId	Integer	DEPARTMENT_ID	Departments
	DepartmentName	String	DEPARTMENT_NAME	Departments
	AnnualSalary	Number	VIEW_ATTR	
	•			
	Dependencies C	Custom Properties Lis	t of Values Validation Ru	les
	Details	UI	Hints	Entity Attribute
	Name : An	inualSalary	Updatable: N	ever
	Display Name: An	inual Salary	- O Persiste	nt 🕢 Transient
	Description:		Mandator	/ Key Attribute
		mbor		
	Type.	IIIDEI	Selected in	n Query 💟 Queryable
	Property Set:	None>	Passivate	
	Polymorphic Dis	scriminator	Alias: VIEW	_ATTR
	💿 View 🔘) Entity	Type: NUMB	ER
	Subtype Value	5	Default Value	
	Effective Date		Literal () Expression 🔘 SQL
	Start Date (End Date	(Salary =	= null ? 0 : Salary) * 12 🥖
	Service		Refresh Expre	ession Value:

- Overview Diagram Source History
 In the next steps you add a list of values to a field based on a set of values stored in another table. In this case you create a list of values for possible job titles based on the Jobs table.
 In the EmpDetails.xml editor click the Attributes tab and select the JobId attribute. Click
- the List Of Values tab at the bottom of the attributes list.

eneral tity Objects	Attributes	n he manand to entit	u attributes, calculated or SOL do	Set So	urce Order
isiness Rules	O . (Name	ar be mapped to endt	y attributes, calculated or SQL-de	ali - Y	Override
iery Criteria	Name	Туре	Alias Name	Entity Usage	▼
v Criteria v Einders	FirstName	String	FIRST_NAME	Employees	-
ninders	LastName	String	LAST_NAME	Employees	
ssors	Email	String	EMAIL	Employees	
JI Hints	Salary	BigDecimal	SALARY	Employees	
ategories	HireDate	Timestamp	HIRE_DATE	Employees	
-	JobId	String	JOB_ID	<u>Employees</u>	200 (A)
	DepartmentId	Integer	DEPARTMENT_ID	Departments	
	DepartmentName	String	DEPARTMENT_NAME	Departments	
	AnnualSalary	Number	VIEW_ATTR		-
	•	·/////			•
	Details UI Hints	Entity Attribute	Dependencies Custom Properti	Es List of Values	

12. In the List of Values tab click the **Add** button to create a list of values.

List UI Hints	Salary	BigDecimal	SALARY	Employees	
UI Categories	HireDate	Timestamp	HIRE_DATE	Employees	
-	JobId	String	JOB_ID	Employees	228
	DepartmentId	Integer	DEPARTMENT_ID	Departments	
	DepartmentName	String	DEPARTMENT_NAME	Departments	
	AnnualSalary	Number	VIEW_ATTR		-
	1	1111			
	Details UI Hints Enable this attribute to Lists of Values:	Entity Attribute	Dependencies Custom Prop alues to use in the user interface	List of Values	
	Name		List Data Source	List Attribute	dd list of values

13. In the Create List of Values dialog click the green plus to the right of the List Data Source field. In the View Accessors dialog, select JobsView.

Create List	of Values	£
ist of Values <u>N</u>	Name: LOV_JobId	
Configuration	vn UI Hints	
Select a view	w accessor for the list data source, and then choose the list attribute that mans to the current view object attribute	
Delect a view		
List <u>D</u> ata Sou	urce: <none specified=""></none>	1
List <u>A</u> ttribu	👌 View Accessors	
List Return Map any su	Select a view object or shared view instance to create a view accessor.	
defined).	A <u>v</u> ailable View Objects:	
	D demo.model.Model	5
	🖻 👘 demo.model	-
	50 Emerclaria	
	mpuetalis	
	Sol DobsView	
	News Tabatant	
	Name: Dopsview1	
	Help OK Cancel	
Hala		-1
Help	OK Cance	21

Click OK.

14. Back in the Create List of Values dialog, choose **JobId** as the List Attribute.

🕜 Create List of Va	lues		Really and another a second	annae ar ar ann	×	
List of Values Name:	LOV JobId					
	JI HINTS					
Select a view acce	ssor for the list data source, a	and then choose the list a	tribute that maps to the	current view object attri	bute.	
List <u>D</u> ata Source:	JobsView1					
List <u>A</u> ttribute:	<none specified=""></none>				-	
	<none specified=""></none>					
List Return Values	JobId					
Map any suppleme	JobTitle				st is	
denned).	Maxodidi y MinSələriy					
	Min Salar y					
	View Attribute			List Attribute		
Hala					OK Caped	

15. Still in the Create List of Values dialog click the **UI Hints** tab and choose **Combo Box with List Of Values** as the Default List Type and then shuttle the **Job Title** attribute into the Selected pane.

of Values <u>N</u> ame: LOV_JobId			
Configuration UI Hints			
Default List Type: Combo Box v	with List of Values		
Display Attributes			
Select display attributes for the l	ist of values and combo box. Option	ally show a subset in the combo box (m	ultiple values are separated by
white spacey.			
A <u>v</u> ailable:		Selected:	
JobId		JobTitle	
Maxsalary MinSalary	>		
,	8	>	+
		2	
		5	
		Show in Combo Box: All	1
.ist Search			
nclude Search Region: All Que	ryable Attributes		- /
Query List Automatically			
Choice List Options		10	
Choice List Options			
Choice List Options		10 -	
Choice List Options			
Choice List Options Query Limit: Most Recently Used Count: Eilter Combo Box Using:	<pre></pre> < No View Criteria Defined >		
Choice List Options Query Limit: Most Recently Used Count: Eilter Combo Box Using: Include "No Selection" Item:	<pre></pre> < No View Criteria Defined > Blank Item (First of List)		

16. Click **OK** and save your work.

Now you add the new object that you've created to the data model.

17. In the Applications window double-click **AppModule** to open it for editing and choose the **Data Model** tab.

Applications	×	💼 AppModule.xm	🛛 🐣 💽 DeptEmpPage.jsf 🗡	
🔁 HRSystem	• •			
_ Projects Q Q ▼ Y	• ﷺ •	General	Data Model Components	
Model		Data Model		
immi demo.model		Java	Select a view object from the Model tree, and use the shutt	
🗄 🛗 AppModule		Web Service	Proder d cer and doe are brace	
🗈 🥳 Departments		Configurations	View Object Instances	
🗄 🔤 DepartmentsView			The data model contains a list	
DeptMgrFkAssoc				

 Click the EmpDetails view object and shuttle it into the Data Model pane. Notice how the name for the new instance is EmpDetails1.
 Save your work.

AppModule.xm	/ 🔀 🖸 DeptEmpPage.jsf 💉 🐼 Employees.xml 💉 😂 /	EmpDetails.xml ×			
			¢		
General	Data Model Components				
Java Web Service Configurations	odel Select a view object from the Available tree, select the desired parent instance or application module f Model tree, and use the shuttle control to create a named view instance in the data model. ations View Object Instances				
	The data model contains a list of view object and view link in	nstances, displaying master-detail relati	ionships.		
	Available View Objects:	Data Model:	Subtypes Edit		
	demo.model.Model demo.model DepartmentsView EmployeesView via EmpDeptFkLink EmployeesView EmployeesView EmployeesView DepartmentsView via DeptMgrFkLink EmployeesView JobsView	AppModule DepartmentsView1 EmployeesView3 EmployeesView1 Add Instance (Alt-D) JobsView1			
	New View Instance: EmoDetails2	View Instance: EmpDetails1	/		
	New View Link Instance:	View Link Instance:	1		

19. Use the Business Component Browser to test the new functionality you have just incorporated through the EmpDetails view object. In the Applications window right-click **AppModule** and select **Run** to invoke the tester.

20. Double-click the EmpDetails1 view object.

🕐 Oracle ADF Model Tester (AppModuleLocal-Local)			
File View Create Database	Help		
AppModule DepartmentsView1 EmpDeptFkLink1 EmployeesView3 EmployeesView1 DeptMgrFkLink1 EmpManagerFkLink1 EmpManagerFkLink1 JobsView1			
Name:AppModule.EmpDetails1 Definition:demo.model.EmpDetails			

21. Notice that the new calculated AnnualSalary field is displayed, along with DepartmentId and DepartmentName. None of the them are updatable here.

Oracle ADF Model Tester (AppModuleLocal-Local)				
<u>F</u> ile <u>V</u> iew Crea <u>t</u> e D <u>a</u> tabase	Help			
63				
AppModule	EmpDetails1			
EmpDeptFkLink1				
EmployeesView3				
EmpDetails1				
EmployeesView1				
DepartmentsView2	Employeeld 200			
	FirstName Jennifer			
EmployeesView2	LastName Whalen			
	Email JWHALEN			
	Salary 4400			
	HireDate 17/Sep/2003			
	Jobld Administration Assistant			
	Departmentid 10			
	AnnualSalary 52800			
	Cool Cool			
Name:AppModule.EmpDetails1 Definition:demo.model.EmpDetails				

22. Use the drop down list for the **Jobld** field to choose a new job.

Oracle ADF Model Tester (AppModuleLocal-Local)				
<u>File View Create Da</u> tabase	Help			
ଜ୍ୟ				
AppModule AppModule DepartmentsView1 EmpDetFkLink1 EmpDetails1 EmployeesView1 DeptMgrFkLink1 EmpManagerFkLink1 EmployeesView2 JobsView1	EmpDetails1 Image: Second system Employeeld 200 FirstName Jennifer LastName Whalen Email JWHALEN Salary 4400			
	HireDate 17/Sep/2003			
	Jobld Administration Assistant			
	DepartmentId Administration Assistant DepartmentName AnnualSalary Accountant Accounting Manager Public Accountant Sales Manager Sales Representative Purchasing Manager			
Name:AppModule.EmpDetails1 Definition:demo.model.EmpDetails				

23. The field is populated with the new job.

Oracle ADF Model Tester (AppModuleLocal-Local)				
<u>File ⊻iew Creat</u> e D <u>a</u> tabase	<u>H</u> elp			
AppModule DepartmentsView1 EmpDeptFkLink1 EmployeesView3 EmpDetails1 EmployeesView1 DepartmentsView2 EmpManagerFkLink1 EmployeesView2 JobsView1	EmpDetails1 Constraints Employeeld FirstName LastName Email Salary HireDate Jobld DepartmentId DepartmentName AnnualSalary	200 Jennifer Whalen JWHALEN 4400 17/Sep/2003 Sales Manager 10 Administration 52800		
Name:AppModule.EmpDetails1 Definition:demo.model.EmpDetails				

24. Close the Business Component Browser window without committing the changes.

Courtesy: <u>https://docs.oracle.com/cd/E37547_01/tutorials/tut_rich_app/tut_rich_app_2.html</u>

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