How-To Develop an ADF Client Using a Web Service Data Control

Web services allow enterprises to expose business functionality irrespective of the platform or language of the originating application. The business functionality is exposed in such a way that it is abstracted to a message composed of standard XML constructs that can be recognized and used by other applications. Oracle ADF provides an access layer that can be used to access many types of business or data services, including web services.

The most common way of using web services in an application developed using Oracle ADF, is to create a data control for an external web service. A typical reason for doing this is to add functionality that is readily available as a web service, but which would be time consuming to develop within the application.

Step 1: Creating the Web Service Data Control

In this section you use the WSDL deployed to the integrated server and create a data control from it. Your application will not contain the original Java code as in the previous scenarios; it creates the data control from the deployed WSDL. Once you create the data control, any ADF client application can use it.

1. In the Applications window, click the **down-arrow** to the far right of the Application name and select **New > Project** from the menu.



2. In the New Gallery, select **Web Project** and click **OK**.

🕐 New Gallery	×	-
Q		
Categories:	Items: Show All Descriptions	
Deployment Descriptors	Extension Project	
Diagrams	Import Maven Projects	
Java Maven	Java Application Project	
Projects	Project from Existing Source	
XML	Project from WAR File	
Business Tier	Project Template	
Contexts and Dependency Injecti	REST Web Service Project	
Data Controls	SOAP Web Service Project	
Security	DI UML Project	
·····TopLink/JPA	D View and Controller	
	🔁 Web Project	
Database Tier	Launches the Create Web Project wizard, with which you create a project that	
All Items	you must select an application, a project, or a file within a project in the Application Navigator.	
Help	OK Cancel	

3. In the Create Web Project wizard, name the project Web Client. Click **Next** and **Next** again.

00	reate Web Project - Ste	ep 1 of 6	X
Loc	cation		
	Location Web Application Page Flow Technology	The location and the file name of the new project are initialized based on det current workspace. Change these values to create the project in another loc another name. Changing the location will also update the locations of any pr directories under the project's directory.	faults for the cation or with oject-related
Ĭ	Web Project Profile	WebClient	
-5	Finish	C:\JDeveloper\mywork\webservice\WebClient	B <u>r</u> owse
	Help	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

4. In the Page Flow Technology step of the wizard, select JavaServer Faces (JSF), and click Next.

👌 Create Web Project - Step	p 3 of 6	X
Page Flow Technolog	y la	
Q Location	Choose a page flow technology to add to the web project.	
Web Application Page Flow Technolog	JavaServer Faces (JSF) JavaServer Faces (JSF) supports the authoring of JavaServer Pages (JSP) web applications with standard reusable UI components.	
 Taq Libraries Web Project Profile 	None	
Ú Finish		
Help	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish Car	ncel

5. In the tag libraries, shuttle the ADF Faces Components 11 from **Available Libraries** to **Selected Libraries**. Notice that it automatically includes JSF Core 2.1 and JSF HTML 2.1.



6. Click Next.

🕜 Create Web Project - Ste	p 5 of 6	×
Web Project Profile		
Q Location	Create a Web Project by specifying the Document Root of your web applic Context Root to be used by the application server.	ation and the
Veb Application	Document Root:	
Page Flow Technology	C:\JDeveloper\mywork\webservice\WebClient\public_html	Browse
Tag Libraries	Java EE Web Application Name:	
🧅 Web Project Profile	WebService-WebClient-webapp	
<u>Finish</u>		
	WebService-WebClient-context-root	
	Add Page	
Help	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

- 7. Click Next and Finish.
- In the Applications window, right-click the WebClient node and select New > From Gallery from the context menu.



9. In the New Gallery Business Tier Category, select the Web Services node and choose the Web Service Data Control (SOAP/REST) in the Items list and click OK.



- 10. In the first step of the Create Web Service Data Control wizard, name the data control **MyCompanyDC**, and then paste the WSDL URL that you copied earlier: http://localhost:7101/WebService-Annotation-context-root/MyCompanyPort?WSDL.
- 11. Press [Tab], and the wizard will populate the Service field from the web service.

👌 Create Web Service Data Cont	rol - Step 1 of 5
Data Source	
Data Source Data Control Operations Response Format Endpoint Authentication Finish	Ngme: MyCompanyDC • ③ SOAP ● REST Specify a WSDL URL or a Java source file with JAX-WS annotations that describes the service. Click the Services µRI: http://localhost:7101/WebService-Annotation-context-root/MyCompanyPort?WSDL µRI: http://localhost:7101/WebService-Annotation-context-root/MyCompanyPort?WSDL µrevices Browse µrevices µrevices Services Select the service to create the data control. Service: <u>http://annotation/}MyCompanyWS </u>
Help	< Back Next > Einish Cancel

12. Click Next.

13. In the **Data Control Operations** page, shuttle the getDeptInfo method to the Selected side.

Oreate Web Service Data Contro Data Control Operations	I - Step 2 of 5
Pata Source Data Control Operations Response Format. Endpoint Authentication Finish	Select the operations that you want the data control to support. Include Http Header Parameter Available: MyCompanyWS MyCompanyPort MyCo
Help	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish Cancel

14. Click Next, then Finish.

The Applications window should look something like:

Applications × Processes	
🔁 WebService	• •
_ Projects	Signature Si
Projects Annotation ClientTester EJB-Anno ClientTester ClientTester DataControls.dcx ClientAll META-INF ClientAll META-INF	
Burning Page Flows	

- 15. Click Save All to save your work.
 16. Expand the Data Controls accordion in the Applications window to expose the MyCompanyDC data control that has just been created. If it's not visable, then click the blue reload arrow to see the data control.

Applications × Processes	
🔁 WebService	• •
- Projects	Solution (State State Stat
🗄 🛅 ClientTester	
🗊 🛅 EJB-Anno	
🗄 🖓 🛅 TopDown	
🛱 🖓 📴 WebClient	
Application Sources	
🛱 🗐 🥮 webdient	
DataControls.dcx	
🖻 ··· 🧰 META-INF	
adfm.xml	
adf-settings.xml	
E	
🖃 🛁 Web Content	
Taces-config.xmi	
web vml	
Page Flows	
🖃 Data Controls	• 🖅 🕼

At this point you are ready to create the JSF page and use the data controls.

Step 2: Creating a JSF Page to Consume the Web Service Data Control

In this section you update the client class to invoke the web service proxy and return the result to the message window.

1. Invoke the New Gallery > From Gallery from the WebClient project.



2. Expand the **Web Tier** node and select the **JSF/ Facelets** sub node. In the Items column, select **Page** and click **OK**.

Categories:	Items:	Show All Description
General Business Tier Client Tier Database Tier Web Tier HTML JSF/Facelets SP Servlets All Items	Page Launches the Create JSF Page dialog 2.0 page that can be implemented as option, you must select a project or MDF Declarative Component Image: ADF Page Fragment Image: ADF Page Template Image: ADF Task Flow Image: ADF Task Flow Template Image: Composite Component Image: Facelets Tag Library Image: JSF Page Flow and Configuration (face)	og, in which you create a new JavaServer Faces s a Facelets or JSP document. To enable this a file within a project in the Application Navigator
	Facelets Tag Library	aces-config.xml)

3. Name the page Dept_Emp.jsf and set the **Document Type** to Facelets. In the **Page Layout** tab, select Copy Quick Start Layout and in **Categories** select the Three Column Layout and click **OK**.

er the name ar	nd directory, and choose a type for the JSF Page. It can be implemented as a Facelets or JSP XML docu	ment.
Name:	Dept_Emp.jsf	
ectory:	C:\JDeveloper\mywork\webservice\WebClient\public_html	
ument Type:	● Facelets ○ JSP XML	
age Layout	Managed Bean	
Create <u>B</u> lan	Reference <u>A</u> DF Page Template Opy <u>Quick Start Layout</u>	
ategories	Ivpes	Description
		Three Column Split Left (Stretched)
One Column		Child components will be stretched to fill
Two Column		Splitter showing collapse direction
	Layouts	Scrollable panel
Three Column		When you copy a Quick Start Layout into your page, you can delete or modify the generated components as needed. Unlike a template, there is no permanent link between your page and the
Apply color t		started.

The page will open in the page editor

HTTP Analyzer : Unsent Message Dept_Emp.jsf	-
🔞 🗸 Design True 🔲 Focus 🛄 🔲 🗍 📼 门 🖛 🤗 🗸 🖉	
f:view - af:document#d1 - af:form#f1 - af:panelsplitter#ps1 - f:facet -	
Design Source History Bindings	

In the next few steps, you add the data controls for the method. The page will accept a parameter, execute the call to the web service, and return the results in a Master Detail layout.

4. In the Data Control panel, expand the **MyCompanyDC** data control and select the **getDeptInfo(Integer)** method.



5. Drag the **getDeptInfo(Integer)** method onto the **first** facet of the page. When you drop it, a menu is displayed. Select **ADF Parameter Form**.

HTTP Analyzer : Unsent Message 💉 💿 Dept_Emp.jsf 🔀
🔂 👻 Design True 🔲 Focus 🛄 🗔 🗍 📼 🗍 🕶 🕺 - 🤌
Create
🕮 ADF Parameter Form
Method •
Cancel

6. In the **Create Form** dialog, click **OK** to accept the default values.

onfigure the components that you omponents after you click OK. You	want to display in your form. Not can also add more components	e that you can remove or edit the re directly to the layout later.	sulting
ields:		Group	Ungroup
Component To Use	Value Binding	Display Label	
input Text w/Label	🚥 arg0	४४३ <default></default>	
			2 2 2 3

 In the Data Controls panel, expand MyCompanyDC > getDeptInfo(Integer) > Return and select employees.

- Data Controls	🗞 🖓 🏗 -
🚊 🚈 getDeptInfo(Integer)	
😥 🖓 🔁 Parameters	
🖻 🖓 🐺 Return	
·····(XYZ) id	
mame	
🗄 ···· 📒 employees	

8. Drag **employees** onto the **second** facet (just to the right of the first facet). In the dynamic menu select **Master-Detail > ADF Master Form, Detail Table**.



- 9. Click Save All to save your work.
 10. Right-click within the end facet and select Delete from the context menu.

Dept_Emp.jsf ×			Components	
			Q+	
			ADF Faces	
				9
		Insert <u>B</u> efore G	rid Cell	•
		Insert Inside Gr	rid Cell	•
		I <u>n</u> sert After Gri	d Cell	•
		Surround With		
		Focus this Con	tainer	
		Facets - Panel	Splitter	•
		Re <u>f</u> actor		•
	*	Cu <u>t</u>		Ctrl-X
		<u>C</u> opy		Ctrl-C
	i iii	<u>P</u> aste		Ctrl-V
	×	<u>D</u> elete	I	Delete
		Go to <u>S</u> ource		
		Go to P <u>ag</u> e Def	finition	
		<u>G</u> o to Propertie	es	
		Go to D <u>e</u> clarati	ion	Ctrl-Period

11. In the Structure window for the page, expand the **second** facet. Under the second facet, expand the **af:panelGridLayout > af:gridRow > af:gridCell > af:panelGroupLayout > af:panelHeader** - employees. Right-click the af:table - t1 component and select Surround With from the context menu.



12. In the Surround With window select the Panel Collection and click OK.

ADF Faces		•
Select the <u>i</u> tem to be created:		
🏝 Menu Bar		-
i Messages		
Panel Accordion		
🛃 Panel Border Layout		
Panel Box		
Panel Collection		Ļ
📰 Panel Dashboard		
🗣 Panel Drawer		
🕮 Panel Form Layout		
🛃 Panel Group Layout		
🔁 Panel Header		Y
Description:		
A panel component that like table, treeTable and menus, toolbars and stat	aggregates collection components tree to display standard/application cusbar items.	*

13. Expand the **panelCollection** and select the **af:table - t1** component. In the Properties window, set the **Column Selection** property to single.

⊕af:button - getDeptInfo ⊕Panel Form Layout facets	Table - t1 - Properties	Running: ClientTester HTTP Analyzer HTTP Analyzer Instan	
🖻 🛗 f:facet - second	More • C	I Find	0
af:panelGridLayout - pgl1	🖃 Common		-
⊟ laf:gridRow - 100% ⊖- □ af:gridCell - 100%	◎ Id:	t1	
Content	Rendered:	<default> (true)</default>	
⊡≣₂⊿ af:panelGroupLayout - vertical ⊕*⊡ af:panelHeader - Return	RowSelection:	single	
🖨 🗝 🛅 af:panelHeader - employees	ColumnSelection:	<default> (none)</default>	¢ 📗
i⊒ in af;panelCollection - pc1 ip IIII af;table - t1	AllDetailsEnabled:	<default> (none) multiple</default>	
	Value:	none	
⊕ — Carl Header facets ⊕ — Carl Panel Group Layout facets	⊞ Columns	single	_
⊕ 🛅 Document facets	Appearance		_
	∃ Style		_
	Behavior		
Source Design			-

- Save all your work.
 Right-click within the page and select **Run** from the context menu.
 The page loads into your default browser.

Dept_Emp.jsf	×				_ 0 <mark>. X</mark> .
← → C' Ai	127.0.0.1:7101/We	ebService-\	VebClient-context	-root/faces/Dept_Emp.jsf	☆ =
getDeptInfo_arg0]	Return			
ge	etDeptInfo	id location name			
		View -	S Detach		
		id	name	salary	
		No data to	display.		
		4			

C 17. In the parameter field enter 30 as the department value and click the **getDeptInfo** button.

Dept_Emp.jsf	×				
← ⇒ C fi	127.0.0.1:71	01/WebService-\	WebClient-contex	t-root/faces/Dept_E	imp.jsf 🖒 🚍
getDeptInfo_arg0		20 Return			
ge	etDeptInfo	id location name			
		employee	25		
		View 👻	d Detach		
		id No data to	name	salary	

18. The department information and the related employees are retrieved and displayed

getDeptInfo_arg0		20	F	Return			
	getDeptInfo			id	20 Reduced Shares		
				location	Reawood Shores		
				name	JDeveloper		
			•	empioye	es		
				View 🔻	🖌 Detach		
				id	name	salary	
				3	Gary	0	
			•	4	Jeff	0	
				5	Duncan	0	

Summary:

In this tutorial you have seen how to create Web Services from two perspectives; Top-down and Bottomup. In the Top-down approach you created Web Services from scratch based on what you wanted to do. In the Bottom-up sections, you created Web Services based on existing services. You learned how to:

- Create an annotated POJO Web Service
- Create a POJO and use JDeveloper to declaratively annotate the Web Service
- Build a Web Service using an existing WSDL document
- Build a annotated Web Service based an Enterprise Java Bean
- Create a proxy class for an existing Web Service so you can consume it for a Java program
- Create an ADF Data Control based on an existing Web Service

Courtesy: https://docs.oracle.com/cd/E53569_01/tutorials/tut_web_services/tut_web_services_6.html

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