Oracle JDeveloper and ADF: Coming Together for Forms and 4GL Developers

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Download this paper from: http://www.kingtraining.com

Objectives

- Learn how JDeveloper may be used to create ADF-based applications
- Understand how the 4GL features of ADF compare to other 4GLs like Oracle Forms
- Become familiar with ADF Faces and how it is used to create user interfaces
- Use ADF BC to model data and address business rules

Who Am I?

- John King – Partner, King Training Resources
- Oracle Ace
- Providing training to Oracle and IT community for over 20 years – http://www.kingtraining.com
- "Techie" who knows Oracle, SQL, Java, and PL/SQL pretty well (along with other topics)
- Leader in Service Oriented Architecture (SOA)
- Home is Scottsdale, Arizona
- Member of ODTUG (Oracle Development Tools User Group) Board of Directors

Who Are You?

- Oracle Forms Developer
- 4GL Developer
- Java Developer
- All of the above
- None of the above

Why ADF?

- Oracle Application Development Framework (ADF) is a Java-based development tool (much like Forms is a PL/SQL-based tool) designed to take full advantage of Java EE
- Java EE is one of the most widespread application environments today
- ADF’s 4GL features make application development easier than normal Java “coding”
- Oracle is rewriting their ERP stack as “Fusion Applications” using ADF; the already rich toolset gets richer every day

Do I Need To Know Java?

- Probably not well
  - Someone with very basic Java and Web Skills can easily create applications with ADF
(much the same as someone with basic PL/SQL could create very basic Oracle Forms)
  - Someone on your team needs to know Java very well
- Someone on your team needs to understand ADF and its available components very well

Is Forms Going Away?

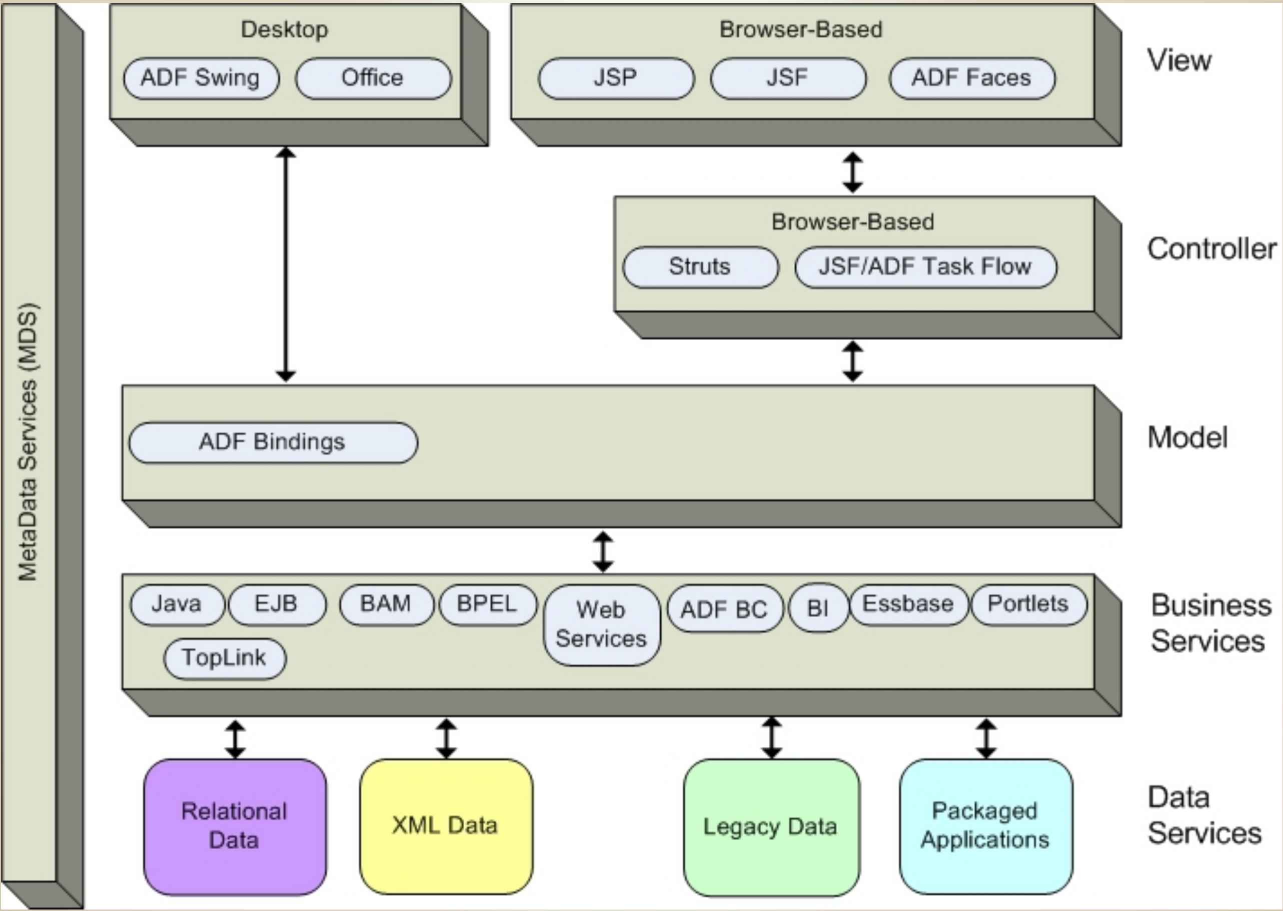
- NO, NO, NO, NO, NO
- Oracle is committed to supporting Oracle Forms for many years to come
- A new version of Oracle Forms (12c) is on the way!

What is ADF?

- ADF is a “meta-Framework” interacting with underlying software components to provide:
  - Database connectivity and transfer
  - Mapping of application views to data sources
  - Database interaction: constraints, keys, data types, master/detail, null handling
  - Data caching via entity objects
  - Transaction management (commit, rollback, etc...)
  - Declarative validation
  - Business logic and event handling
  - User Interface (UI) logic, flow, look & feel
  - Data-bound UI Components
  - UI properties including: formatting, colors, defaults, visual components, LOVs, etc...

ADF Technology Stack

- ADF Technology simplifies interaction with “Java” EE and Oracle’ s Fusion Middleware



ADF: Two Major Pieces

- ADF has many parts but two are central to creating applications:

ADF BC	Business Components (data)
ADF Faces	Graphical User Interface

ADF Business Components (ADF BC)

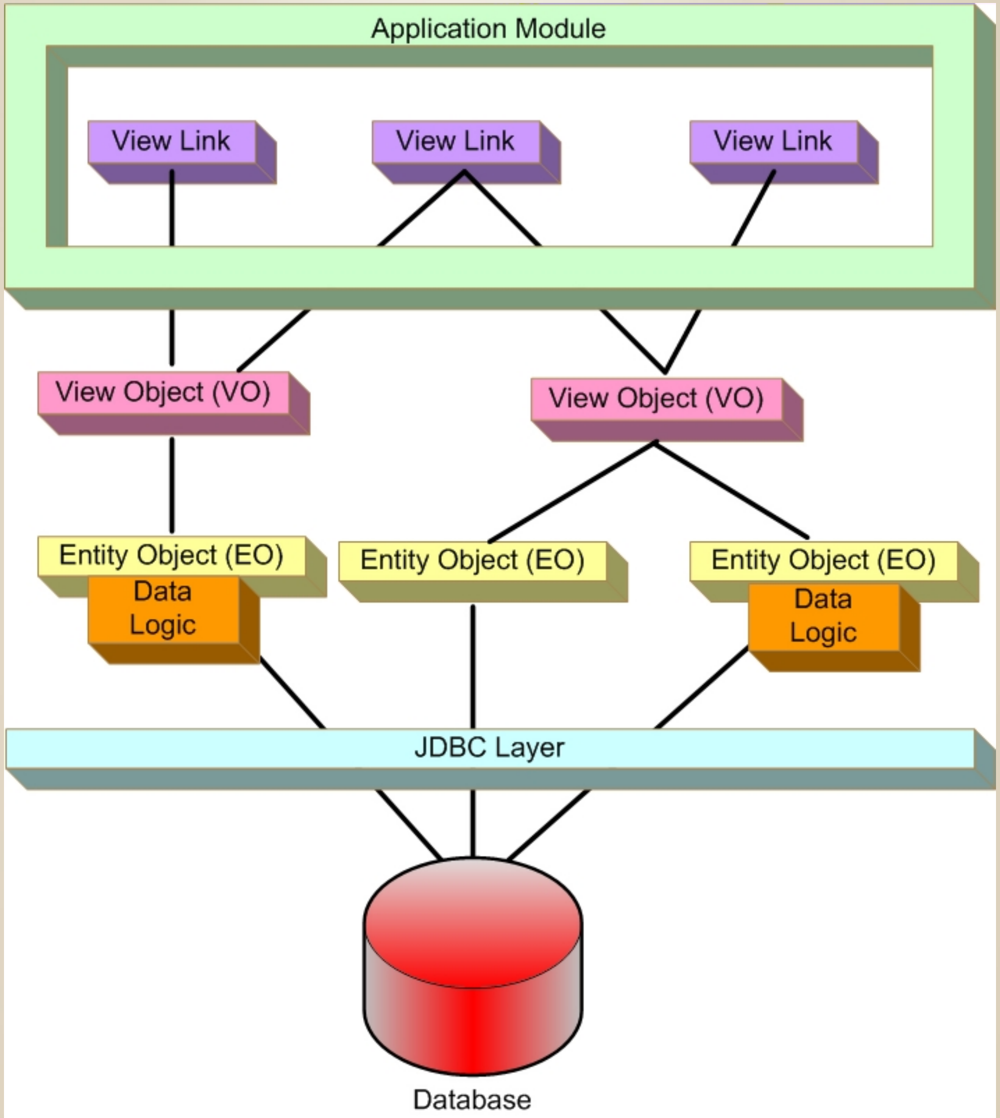
- ADF Business Components is a framework that simplifies developing Java EE business services
- ADF BC is part of the ADF Business Services layer and is used to provide:
  - Persistence and data retrieval with SQL using data views
  - Object-Relational Mapping (ORM) between Java classes and database data
  - Simplified data access, validation, and business logic
  - Transactional infrastructure
  - Implementation of best practices

ADF BC Objects

- ADF BC is implemented using a variety of objects to:
  - Define Insert-Update-Delete views to perform queries and data manipulation
  - Define query views (read-only)
  - Define links between queries

ODTUGKscope12

ADF BC - Component Structure



#Kscope

ADF BC Components

- ADF BC uses a variety of object types to represent data:

• Database tables/views	Application Base Data
• Entity Objects	Bus. rules,validations, defaults for a table
• View Objects	SQL output to query, filter, join, or modify data
• Application Modules	Use View Objects to access/modify data acting as back-end data service
• Appl. Module Data Model	Describes actual View Object uses

- Objects may be reused in multiple Application Modules

ADF Data Binding

- After identifying Entity Objects and View Objects two additional ADF Data Model components are used
  - Data Controls Java objects used to abstract View Object Business Services
  - Binding Containers Java object; provides data access to a single ADF application page, fragment, or activity

Java Server Faces (JSF)

- Java Server Faces (JSF) is a Web-tier framework of JSP technology and JSP Tag libraries to create and use User Interface components
- JSF is extended by components of Oracle ADF Faces
- JSF includes:
  - Runtime architecture
  - Library of JSF components
  - JSF “Life Cycle”
  - Many JSF-Oriented Files

ADF Faces

- Even though JSF sought to simplify user interface; it is often felt to be too complex
- Oracle has extended JSF as "ADF Faces" providing a set of libraries and tags that include enhanced UI components and easier use
- Oracle has presented ADF Faces to the Open Source community where it is part of the Apache Foundation Trinidad MyFaces project

http://myfaces.apache.org/trinidad/index.html

Using ADF

- Using ADF Faces is simple using JDeveloper:
  - Add Application layout containers to describe user interface
  - Add ADF Faces components to layout containers
  - All UI is done with ADF Faces; no HTML coding
- Features added by ADF Faces:
  - Pop-ups and Dialog boxes
  - Data Visualization Tools: Charts, graphics, etc...
  - Declarative AJAX support
  - More…

ADF Controller

- The ADF Controller extends the JSF controller and controls ADF’s MVC (Model-View-Controller) in ADF
- ADF Controller features include:
  - Sequence of page displays (may be conditional)
  - Allows partial-page processing in the same way as full page processing; only the necessary part of a page is rendered, the rest is unchanged
  - Allows reuse of page parts
  - Provides conditional control of page flow

ADF Faces "Rich-Client" Features

- ADF Faces is designed to create "rich-client" (RC) interfaces; full-featured and declarative including:
  - Complete JDeveloper support graphic development (screen-painter) and property palettes
  - Visual Editor
  - Property Inspector
  - Changeable "skins" to easily alter look-and-feel
  - Modifiable look-and-feel properties (declarative)
  - Layout control

Oracle JDeveloper

- JDeveloper is a world-class, easy to use IDE
- JDeveloper goes beyond Java to include:
  - Oracle ADF modeling, business svcs, and GUI design
  - XML edit including Syntax Checking & Validation
  - SQL development with debugging of stored PL/SQL
  - UML Modeling and MDA (Model Driven Architecture)
  - Web Services development
  - ESB design
  - BPEL design
  - Portlets

Downloading JDeveloper

- JDeveloper is Free!
- To learn more about JDeveloper, see Oracle's website:

  http://www.oracle.com/technology/products/jdev/index.html

Oracle WebLogic Server

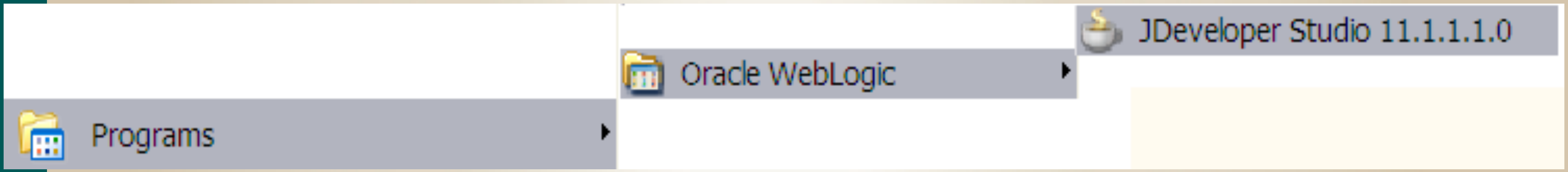
- Oracle WebLogic Server is Oracle's preferred platform to provide both a standard Java EE environment and an environment specifically tailored to Oracle Fusion Middleware; providing:
  - Complete Java EE 5 compatibility
  - Complete Java SE 6 compatibility
  - Web Services support
  - Integration with Oracle's Fusion Middleware tools

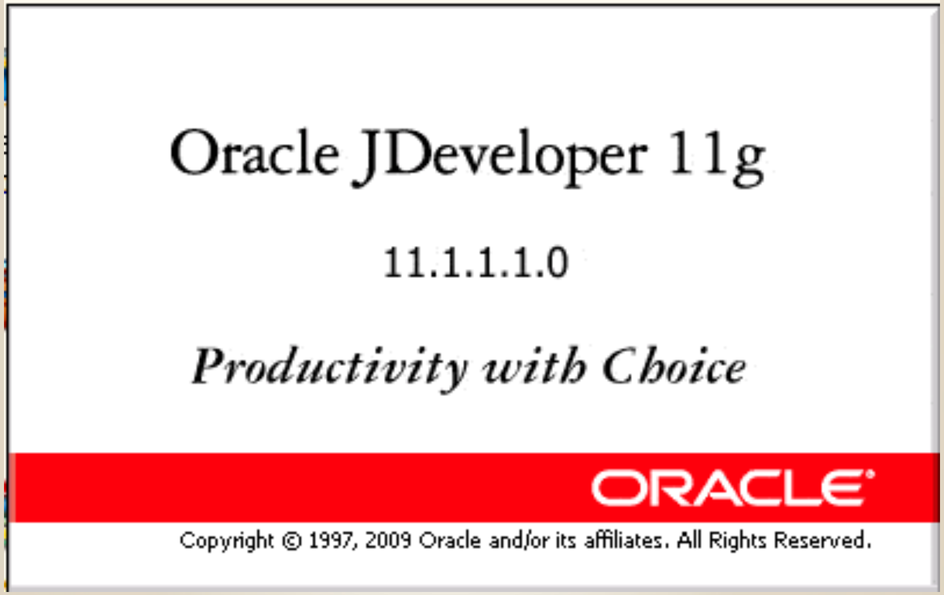
Oracle AS and OC4J?

- Oracle WebLogic Server is the replacement for Oracle Application Server (OAS) and OC4J
- OAS and OC4J are still supported and may be used instead of WebLogic if desired but ADF requires Java 1.5 / Java 5 (needed for ADF)
- To learn more about Oracle WebLogic Server see Oracle's website:

  http://www.oracle.com/appserver/index.html

Starting JDeveloper





Oracle JDeveloper 11g

11.1.1.1.0

Productivity with Choice

ORACLE

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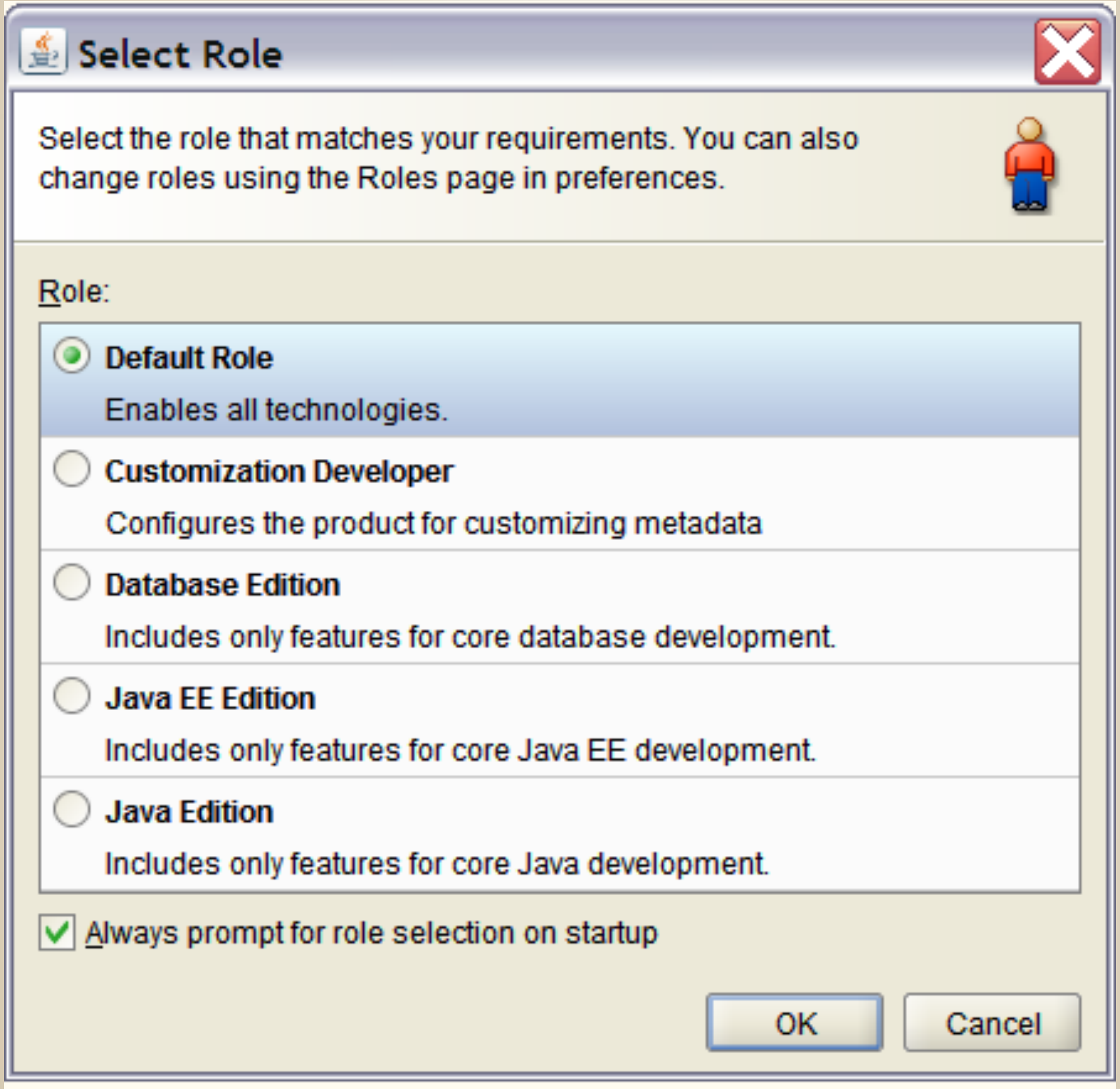
JDeveloper - Select Role



Select Role

Select the role that matches your requirements. You can also change roles using the Roles page in preferences.

Role:

● **Default Role**
Enables all technologies.

○ **Customization Developer**
Configures the product for customizing metadata

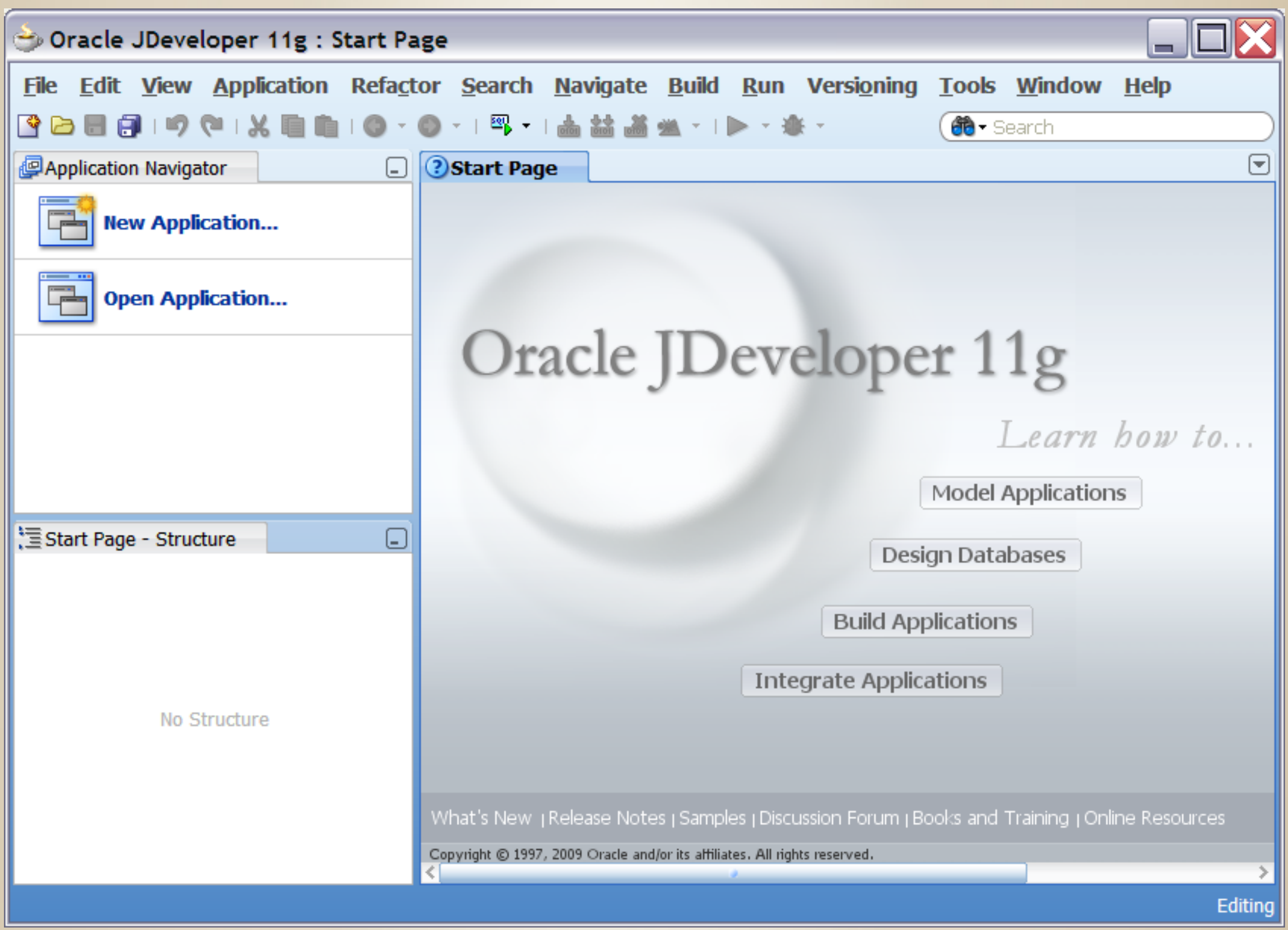
○ **Database Edition**
Includes only features for core database development.

○ **Java EE Edition**
Includes only features for core Java EE development.

○ **Java Edition**
Includes only features for core Java development.

☑ Always prompt for role selection on startup

JDeveloper - Start Page


Oracle JDeveloper 11g : Start Page
File Edit View Application Refactor Search Navigate Build Run Versioning Tools Window Help
Search
Application Navigator
New Application...
Open Application...
Start Page - Structure
No Structure
Start Page
Oracle JDeveloper 11g
Learn how to...
Model Applications
Design Databases
Build Applications
Integrate Applications
What's New | Release Notes | Samples | Discussion Forum | Books and Training | Online Resources
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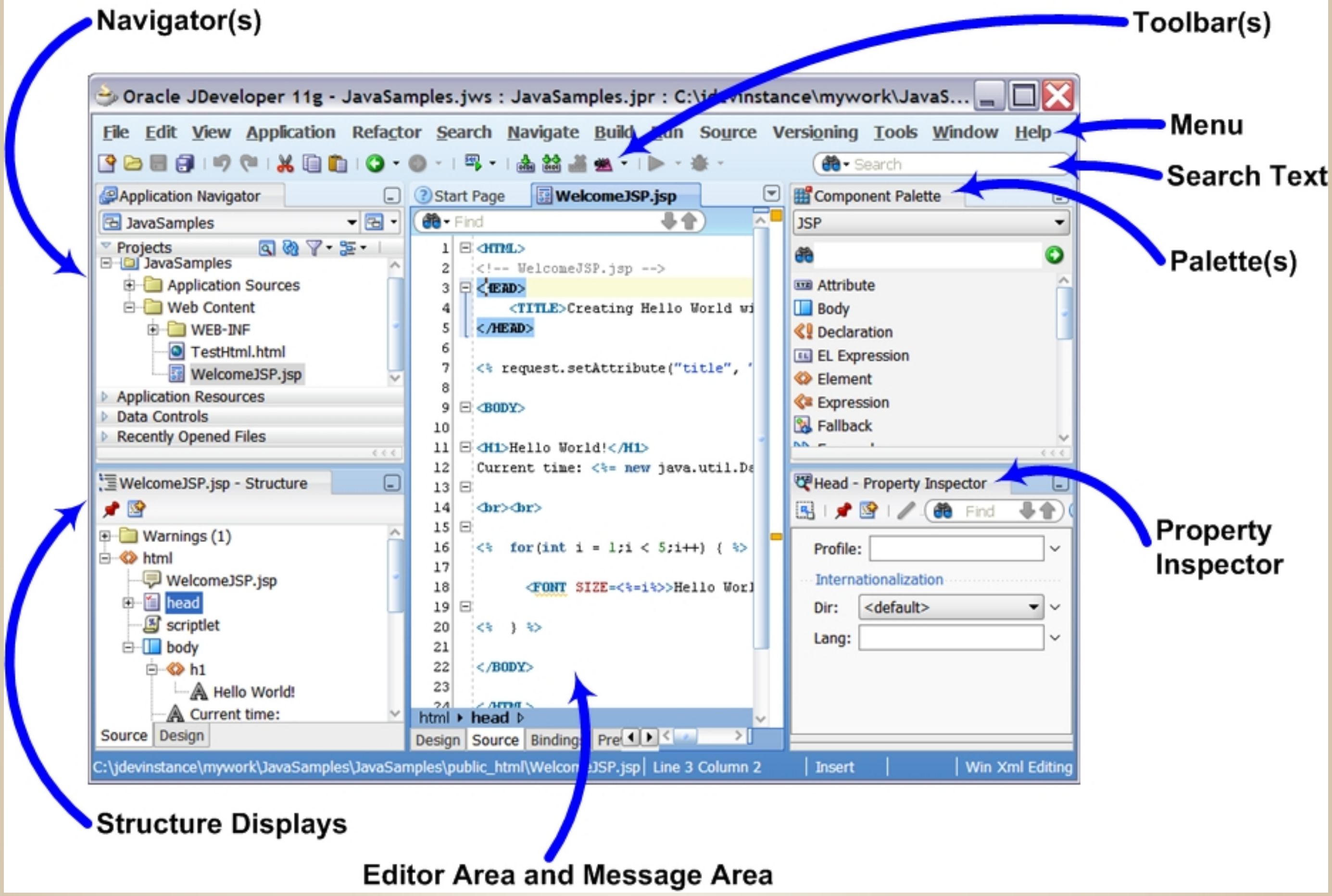
Editing

Exploring JDeveloper



Navigator(s)

Toolbar(s)

Menu

Search Text

Palette(s)

Property Inspector

Structure Displays

Editor Area and Message Area

```
<HTML>
<!-- WelcomeJSP.jsp -->
<HEAD>
    <TITLE>Creating Hello World wi

</HEAD>

<% request.setAttribute("title", '

<BODY>

<H1>Hello World!</H1>
Current time: <%= new java.util.De

<br><br>

<%  for(int i = 1;i < 5;i++) { %>

      <FONT SIZE=<%=i%>>Hello Worl

<%  } %>

</BODY>

</HTML>
```

Profile:

Dir: <default>

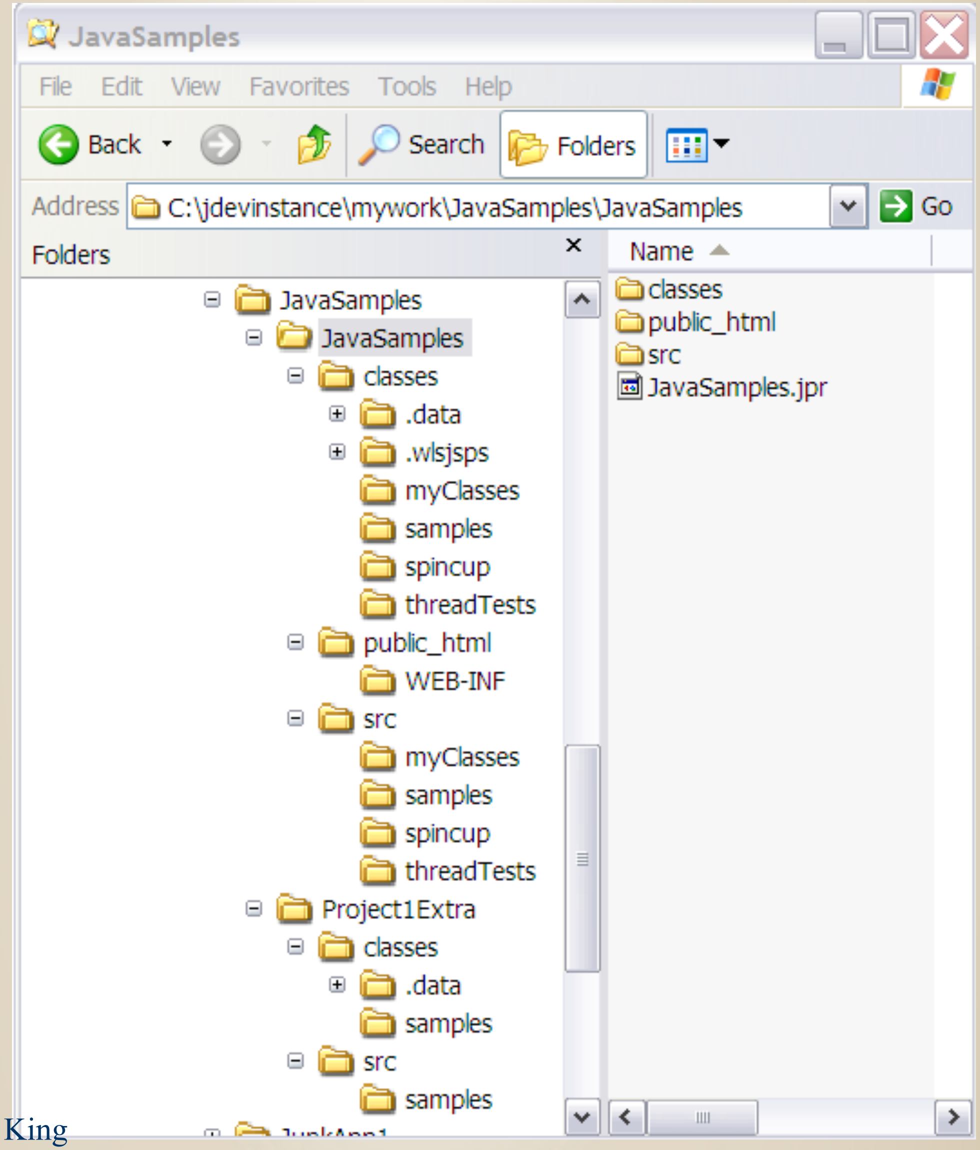
Lang:

C:\jdevinstance\mywork\JavaSamples\JavaSamples\public_html\WelcomeJSP.jsp | Line 3 Column 2 | Insert | Win Xml Editing

Applications and Projects

- JDeveloper uses a non-standard, Oracle-specific “Application” to group a collection of “Projects”
- All files representing an “Application” share a common root directory (folder) on a disk
- Many Applications may be open at once in JDeveloper; but only one at a time will be visible in the Application Navigator

JDeveloper Directory Structure



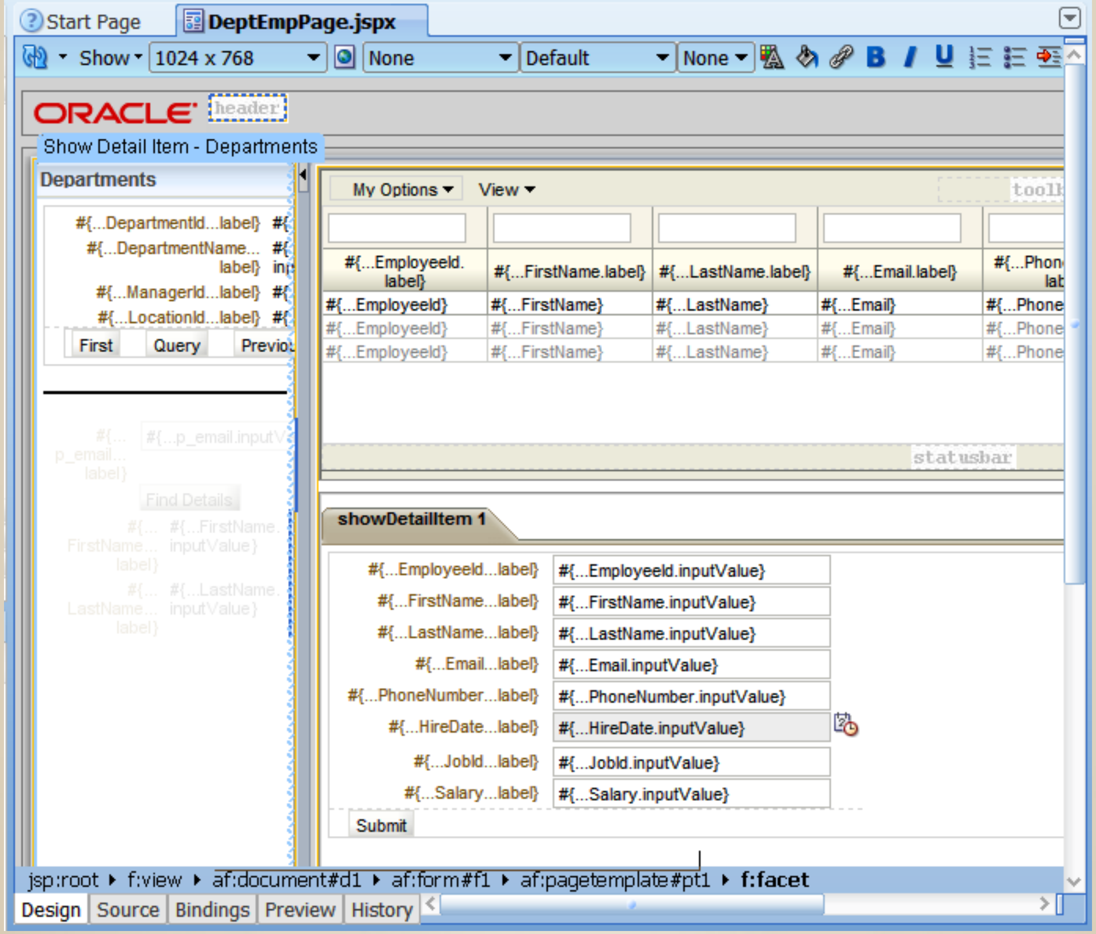
Address C:\jdevinstance\mywork\JavaSamples\JavaSamples

```
⊟ JavaSamples
  ⊟ JavaSamples
    ⊟ classes
      ⊞ .data
      ⊞ .wlsjsps
        myClasses
        samples
        spincup
        threadTests
    ⊟ public_html
        WEB-INF
    ⊟ src
        myClasses
        samples
        spincup
        threadTests
  ⊟ Project1Extra
    ⊟ classes
      ⊞ .data
        samples
    ⊟ src
        samples
⊞ JunkApp1
```

```
classes
public_html
src
JavaSamples.jpr
```

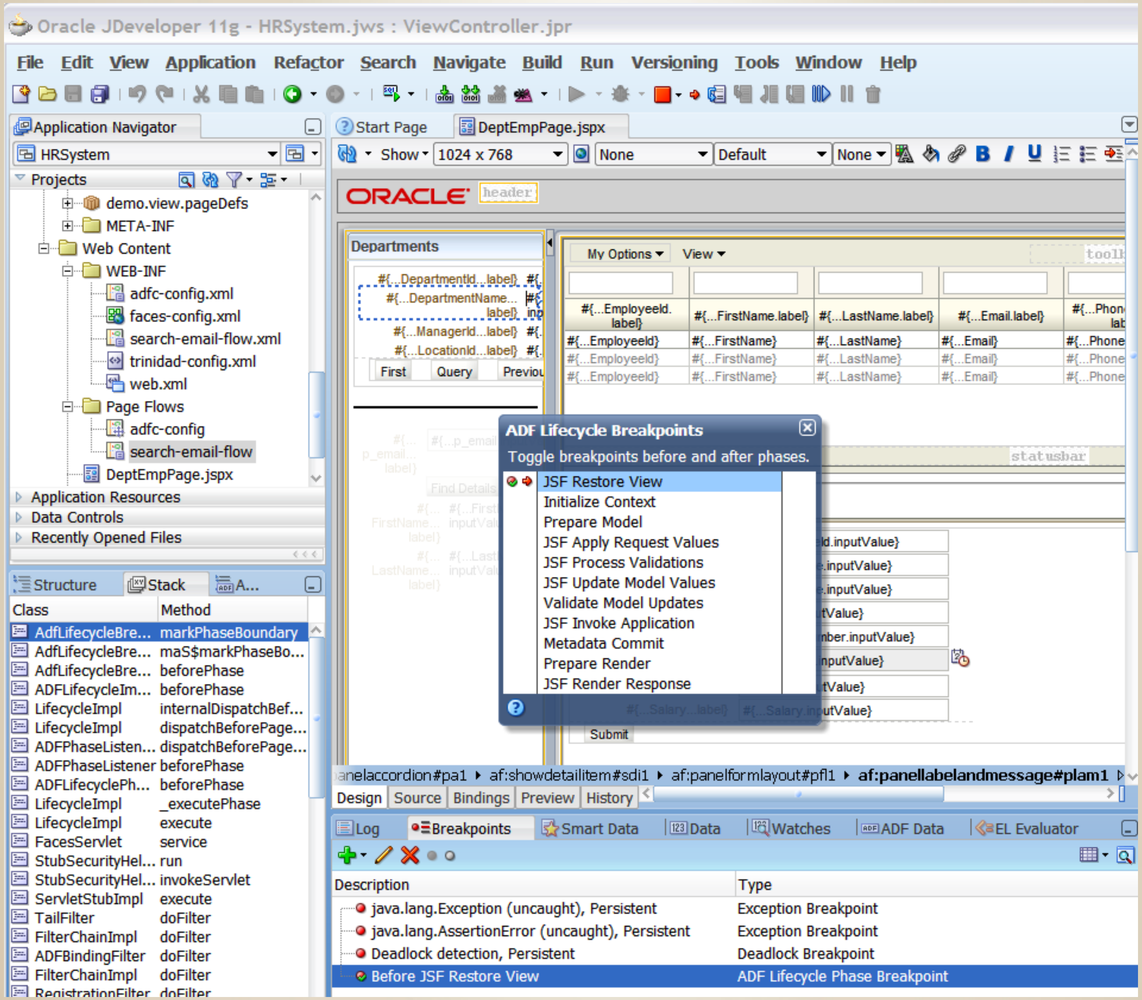
JDeveloper Editing

- JDeveloper has many Code Editors & Visual Editors: Java, XML, HTML, JSP, JSF/ADF Faces, BPEL, & more



JDeveloper Debugging

- JDeveloper allows both local and remote debugging



Oracle JDeveloper 11g - HRSystem.jws : ViewController.jpr

- demo.view.pageDefs
- META-INF
- Web Content
  - WEB-INF
    - adfc-config.xml
    - faces-config.xml
    - search-email-flow.xml
    - trinidad-config.xml
    - web.xml
  - Page Flows
    - adfc-config
    - search-email-flow
  - DeptEmpPage.jspx
- Application Resources
- Data Controls
- Recently Opened Files

Class	Method
AdfLifecycleBre...	markPhaseBoundary
AdfLifecycleBre...	ma$$markPhaseBo...
AdfLifecycleBre...	beforePhase
ADFLifecycleIm...	beforePhase
LifecycleImpl	internalDispatchBef...
LifecycleImpl	dispatchBeforePage...
ADFPhaseListen...	dispatchBeforePage...
ADFPhaseListener	beforePhase
ADFLifecyclePh...	beforePhase
LifecycleImpl	_executePhase
LifecycleImpl	execute
FacesServlet	service
StubSecurityHel...	run
StubSecurityHel...	invokeServlet
ServletStubImpl	execute
TailFilter	doFilter
FilterChainImpl	doFilter
ADFBindingFilter	doFilter
FilterChainImpl	doFilter
RegistrationFilter	doFilter

ADF Lifecycle Breakpoints

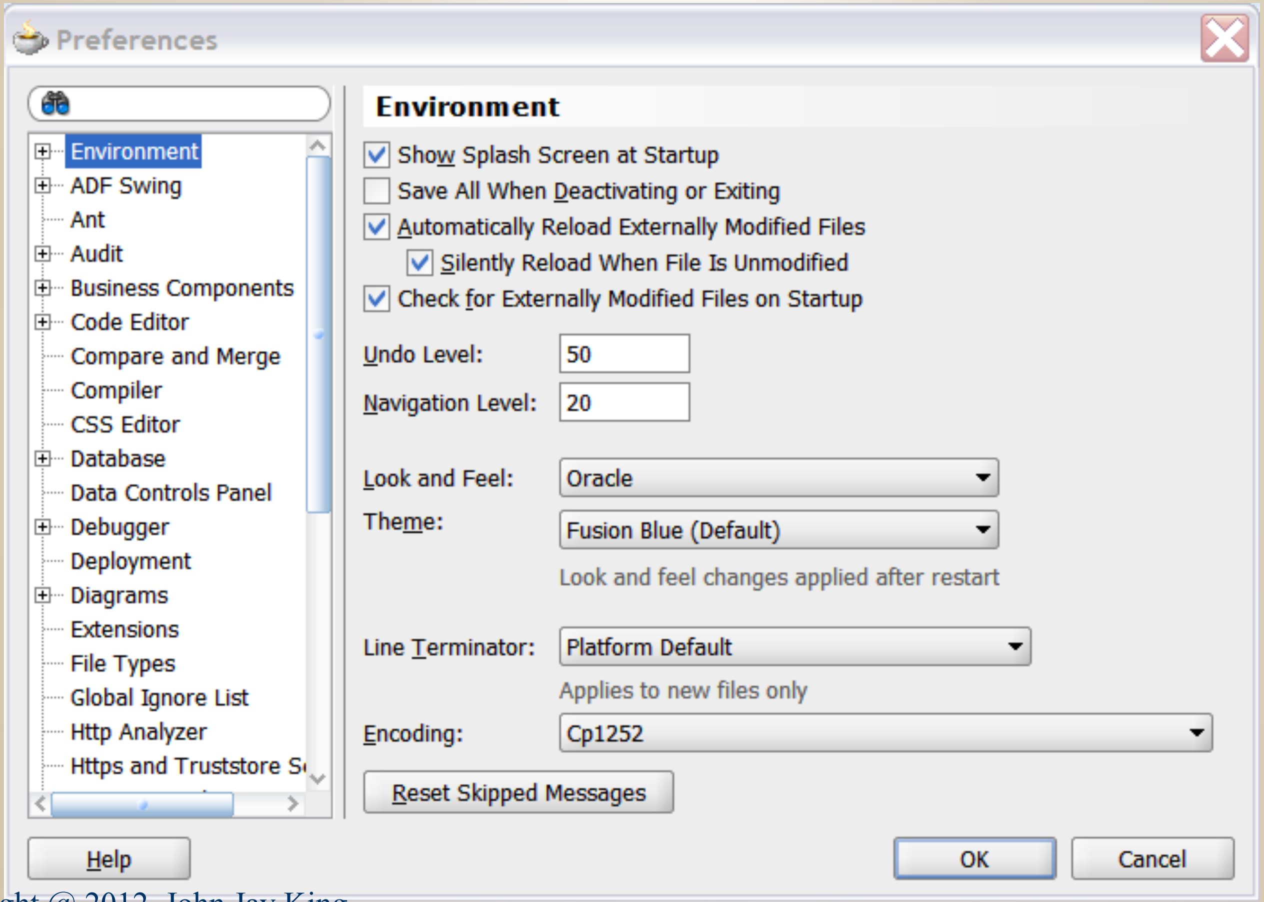
Toggle breakpoints before and after phases.

- JSF Restore View
- Initialize Context
- Prepare Model
- JSF Apply Request Values
- JSF Process Validations
- JSF Update Model Values
- Validate Model Updates
- JSF Invoke Application
- Metadata Commit
- Prepare Render
- JSF Render Response

Description	Type
java.lang.Exception (uncaught), Persistent	Exception Breakpoint
java.lang.AssertionError (uncaught), Persistent	Exception Breakpoint
Deadlock detection, Persistent	Deadlock Breakpoint
Before JSF Restore View	ADF Lifecycle Phase Breakpoint

JDeveloper Preferences

- JDeveloper is customizable; preferences may be viewed/modified using Tools->Preferences



Environment

☑ Show Splash Screen at Startup

□ Save All When Deactivating or Exiting

☑ Automatically Reload Externally Modified Files

☑ Silently Reload When File Is Unmodified

☑ Check for Externally Modified Files on Startup

Undo Level: 50

Navigation Level: 20

Look and Feel: Oracle

Theme: Fusion Blue (Default)

Look and feel changes applied after restart

Line Terminator: Platform Default

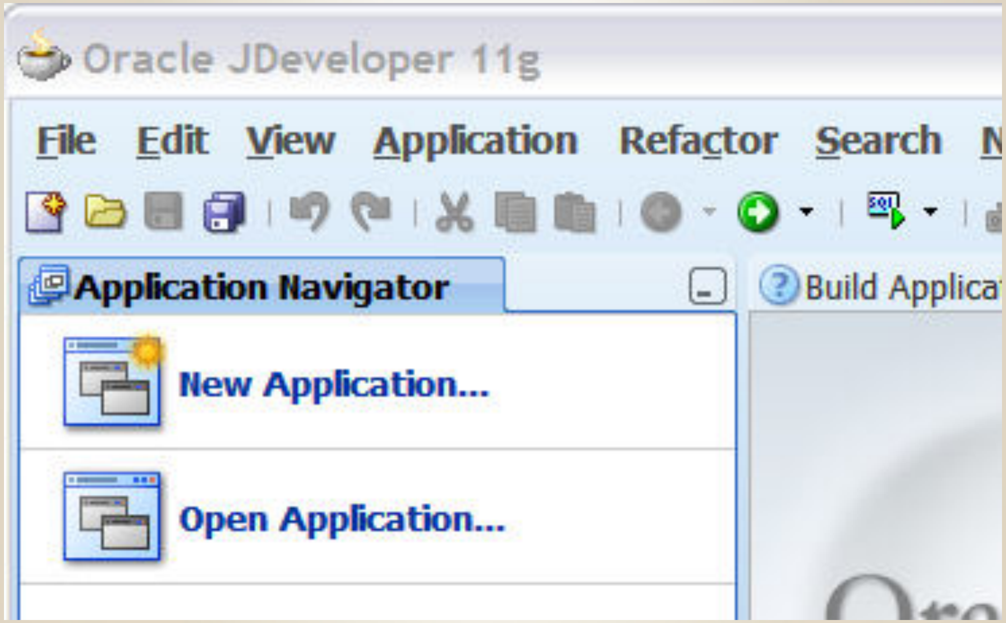
Applies to new files only

Encoding: Cp1252

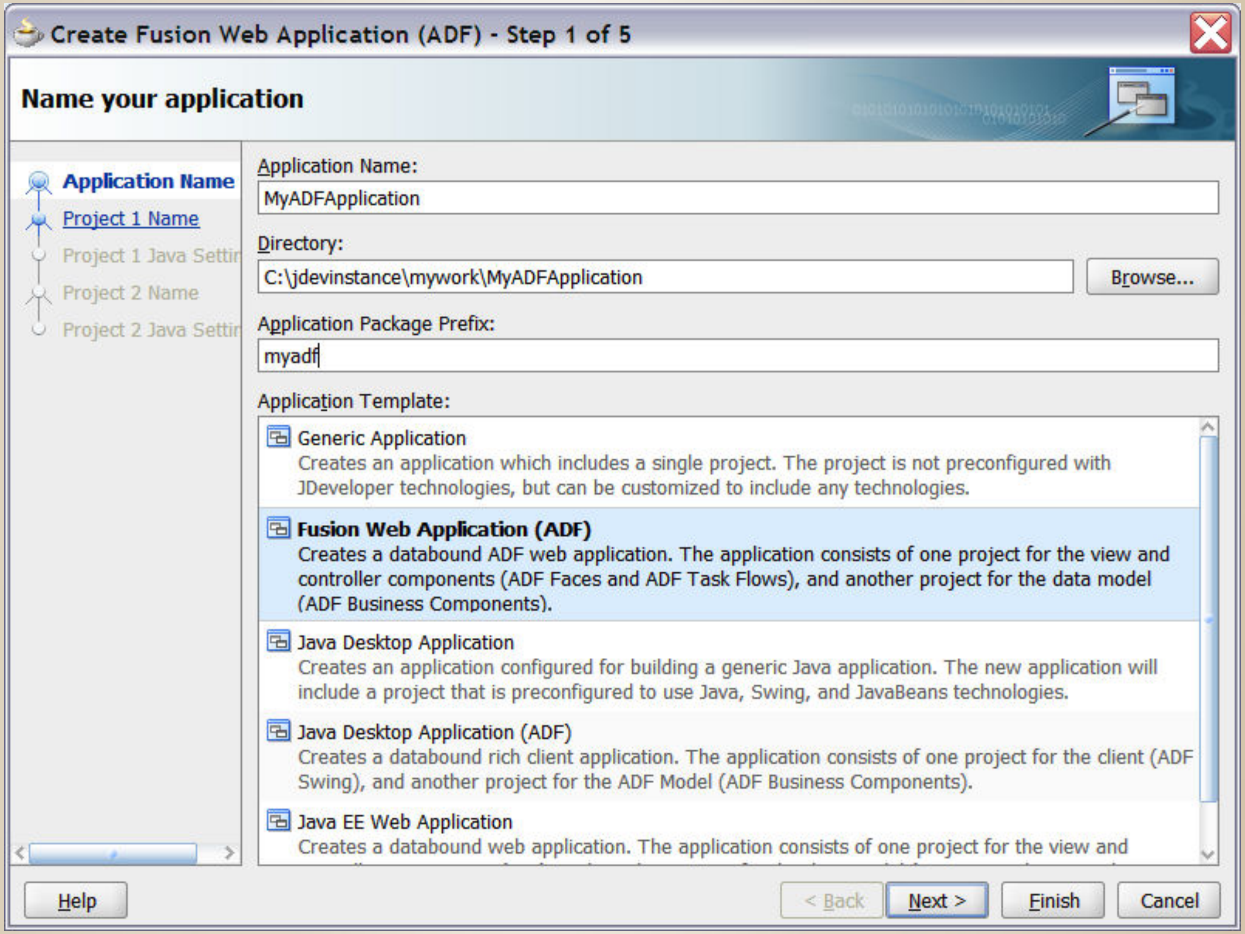
Reset Skipped Messages

New Application

- To create a new application use the JDeveloper menu's File->New->General->Applications option



New Gallery



Create Fusion Web Application (ADF) - Step 1 of 5

Name your application

Application Name: MyADFApplication

Directory: C:\jdevinstance\mywork\MyADFApplication

Application Package Prefix: myadf

Application Template:

Generic Application
Creates an application which includes a single project. The project is not preconfigured with JDeveloper technologies, but can be customized to include any technologies.

Fusion Web Application (ADF)
Creates a databound ADF web application. The application consists of one project for the view and controller components (ADF Faces and ADF Task Flows), and another project for the data model (ADF Business Components).

Java Desktop Application
Creates an application configured for building a generic Java application. The new application will include a project that is preconfigured to use Java, Swing, and JavaBeans technologies.

Java Desktop Application (ADF)
Creates a databound rich client application. The application consists of one project for the client (ADF Swing), and another project for the ADF Model (ADF Business Components).

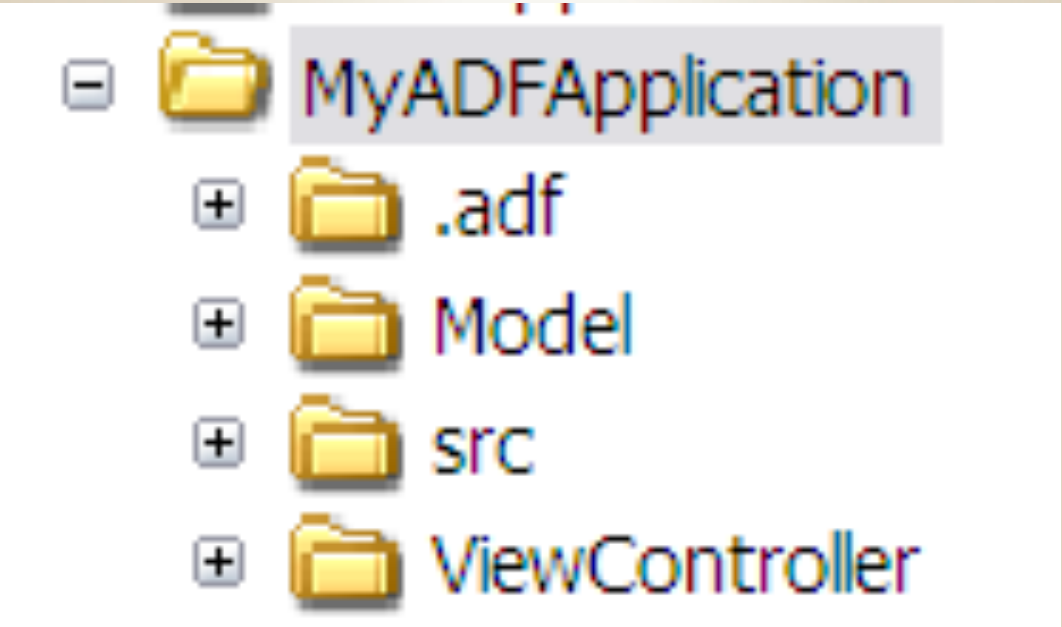
Java EE Web Application
Creates a databound web application. The application consists of one project for the view and

Application Structure

- When a JDeveloper ADF Web Application is created ADF uses the MVC (Model-View Controller) pattern
- JDeveloper creates two subordinate projects
  - Model   Data and Business Rules
  - ViewController   User Interface
  - ADF provides the “Controller”

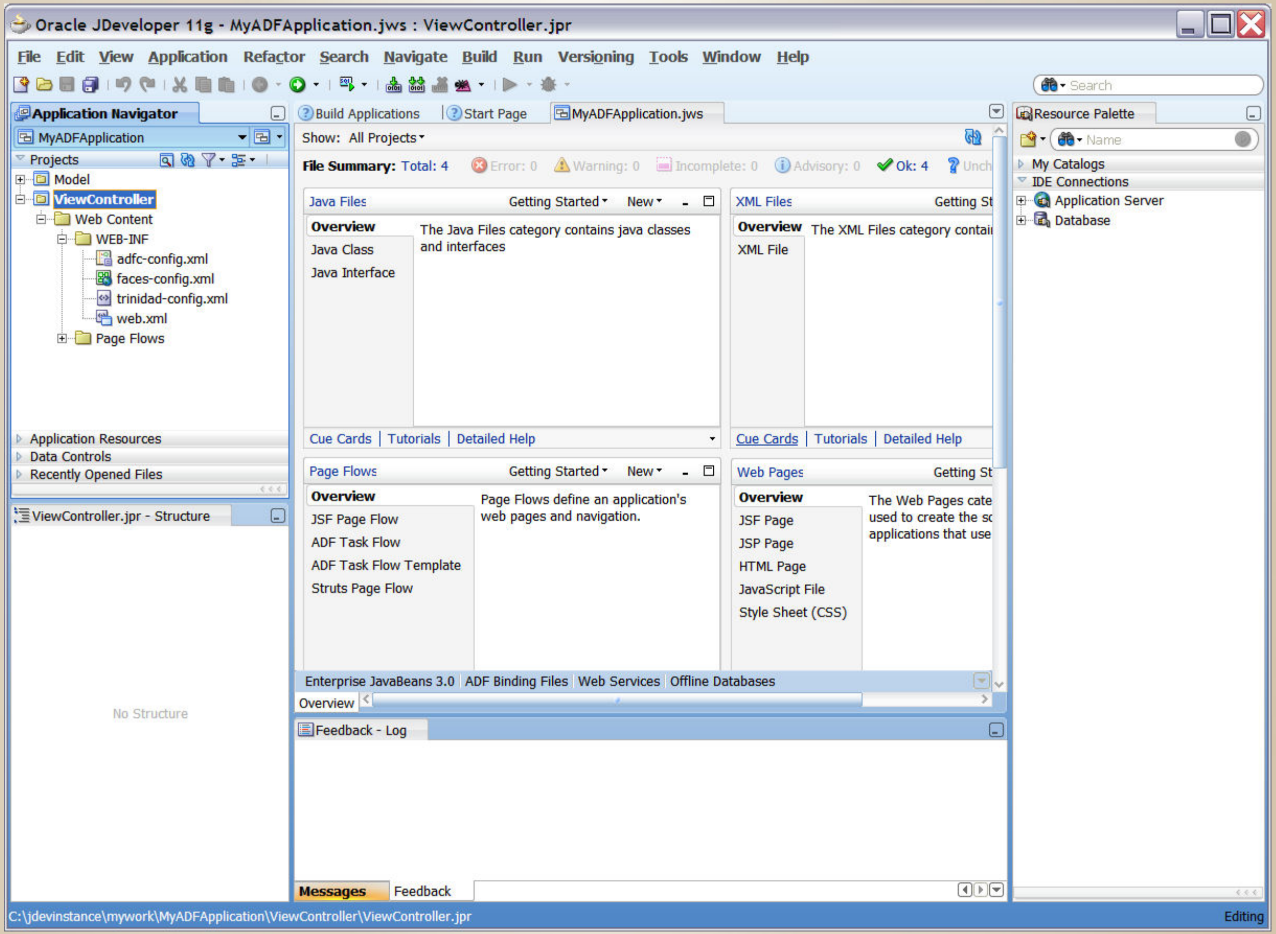
File Structure

- Review the directory structure created to support the application and the associated projects



⊟ MyADFApplication
- ⊞ .adf
- ⊞ Model
- ⊞ src
- ⊞ ViewController

How It Looks In JDeveloper



Oracle JDeveloper 11g - MyADFApplication.jws : ViewController.jpr

The Java Files category contains java classes and interfaces

The XML Files category contai

Page Flows define an application's web pages and navigation.

The Web Pages cate used to create the sc applications that use

C:\jdevinstance\mywork\MyADFApplication\ViewController\ViewController.jpr

Create ADF BC Objects

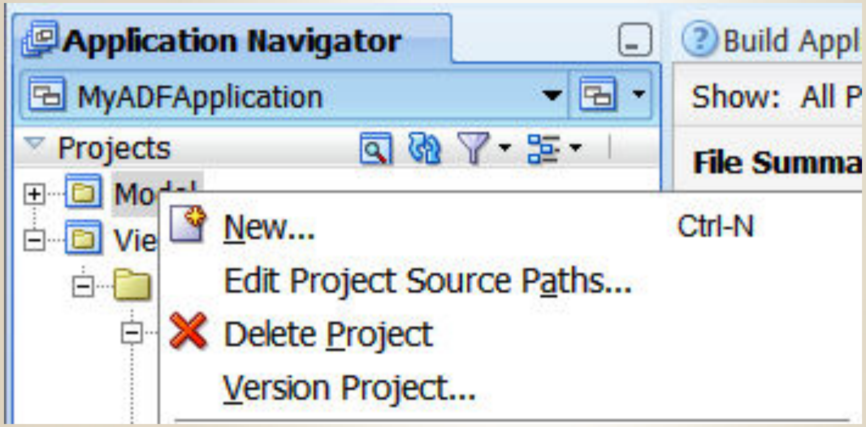
- The following pages show how to create ADF BC objects using the Wizards provided by JDeveloper
- Each object created may be created individually using JDeveloper's features or by coding them manually rather than using the Wizards
- JDeveloper's database modeling capabilities are shown to good effect by the use of Database Connections and Wizards

Wizard-Based Development

- The "Create Business Objects from Tables" Wizard follows a few simple steps:
  - Create Business Component, select type of Business Component to be built
  - Select Database Connection to be used (may create Database Connection via Wizard)
  - Build Entity Objects using database Tables/Views
  - Build Updateable View Objects (if desired)
  - Build Read-Only View Objects (if desired)
  - Save Application Module

New ADF BC Object: 1

- Start building new components as follows:
- Right-click on the application's “Model” project and choose “New”



Application Navigator

MyADFApplication

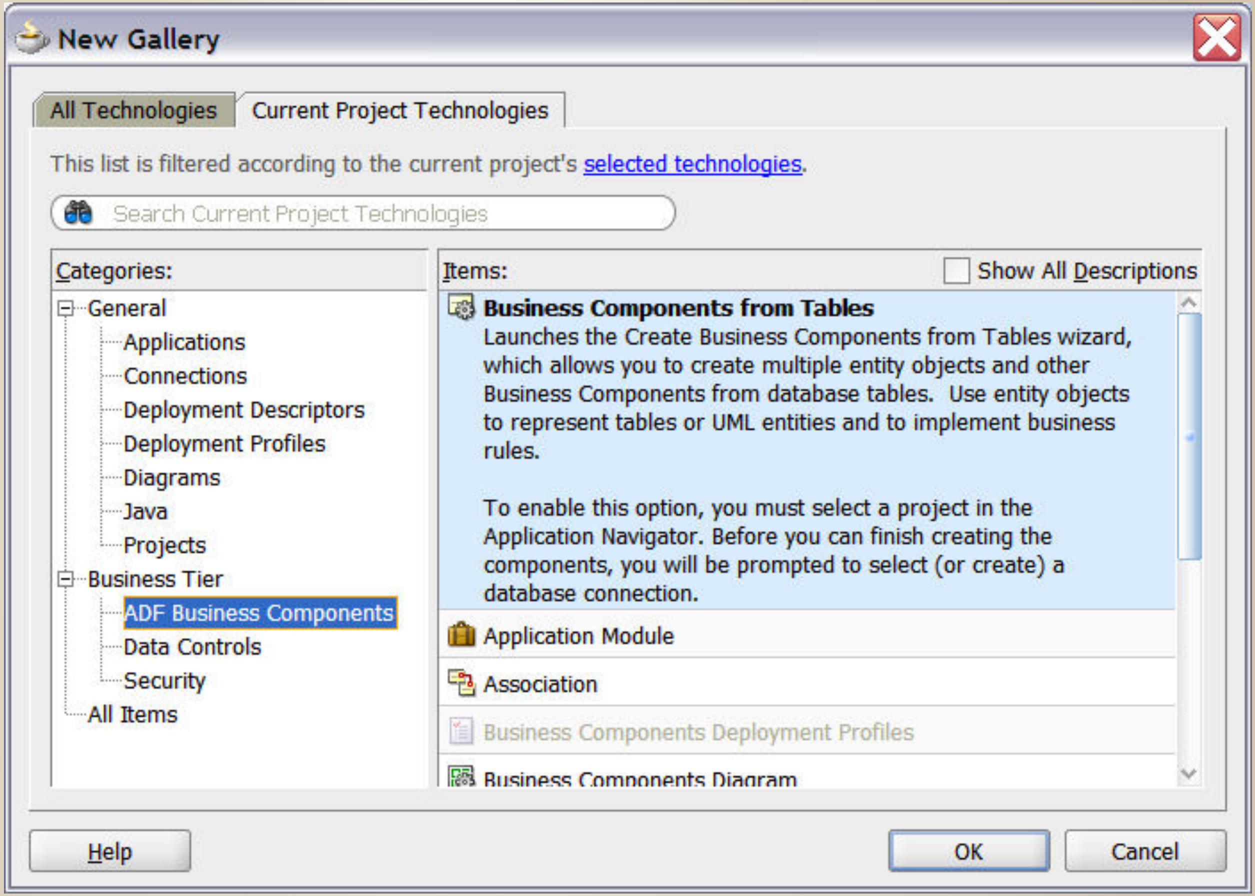
Projects

Model

View

New ADF BC Object: 2

- Choose **Business Tier -> ADF Business Components -> Business Components from Tables** from the “New Gallery



New Gallery

All Technologies | Current Project Technologies

This list is filtered according to the current project's selected technologies.

Search Current Project Technologies

Categories:

- General
  - Applications
  - Connections
  - Deployment Descriptors
  - Deployment Profiles
  - Diagrams
  - Java
  - Projects
- Business Tier
  - ADF Business Components
  - Data Controls
  - Security
- All Items

Items: □ Show All Descriptions

Business Components from Tables
Launches the Create Business Components from Tables wizard, which allows you to create multiple entity objects and other Business Components from database tables. Use entity objects to represent tables or UML entities and to implement business rules.

To enable this option, you must select a project in the Application Navigator. Before you can finish creating the components, you will be prompted to select (or create) a database connection.

Application Module

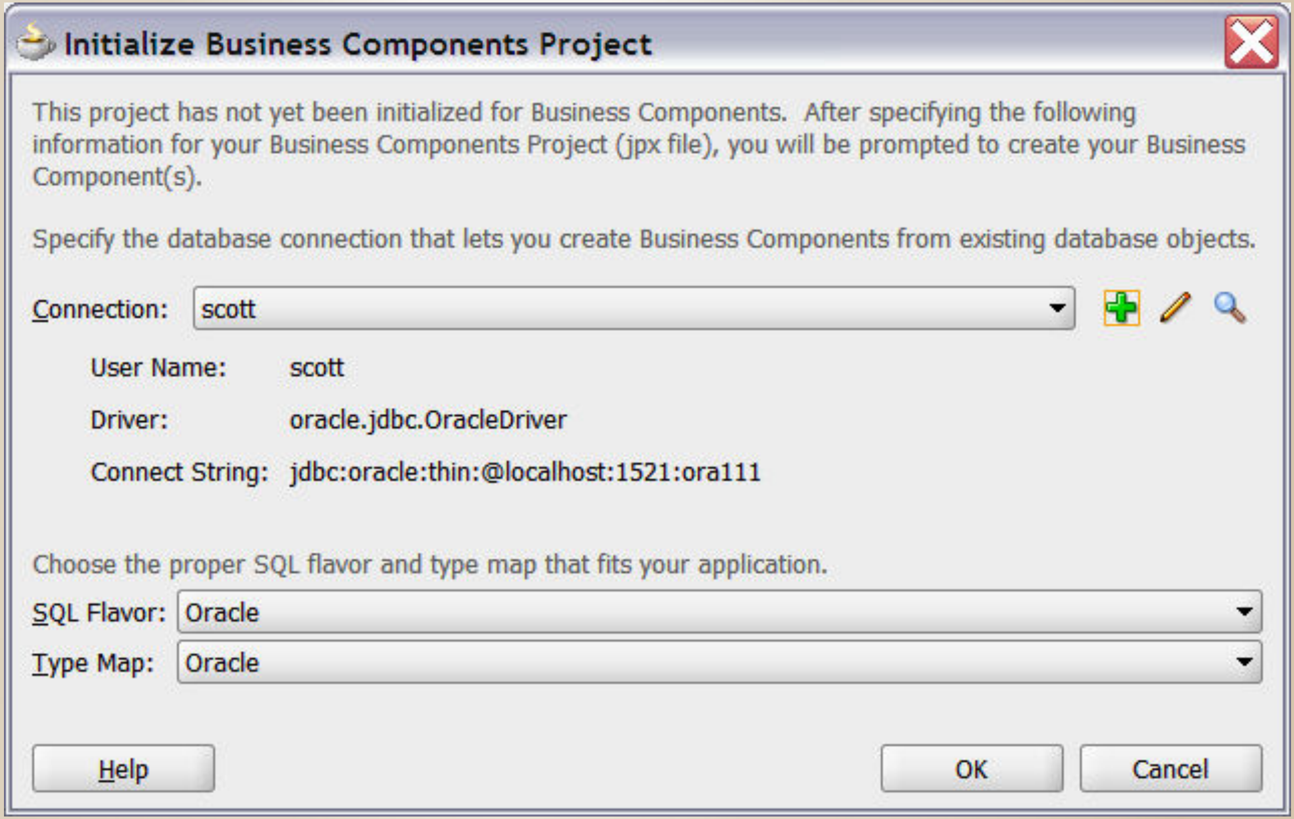
Association

Business Components Deployment Profiles

Business Components Diagram

Choosing Database Connection

- Choose an existing Database Connection from the drop-down list or build a new one by clicking the green plus sign (Oracle client and tnsname.or not required!)



Initialize Business Components Project

This project has not yet been initialized for Business Components. After specifying the following information for your Business Components Project (jpx file), you will be prompted to create your Business Component(s).

Specify the database connection that lets you create Business Components from existing database objects.

Connection: scott

User Name: scott

Driver: oracle.jdbc.OracleDriver

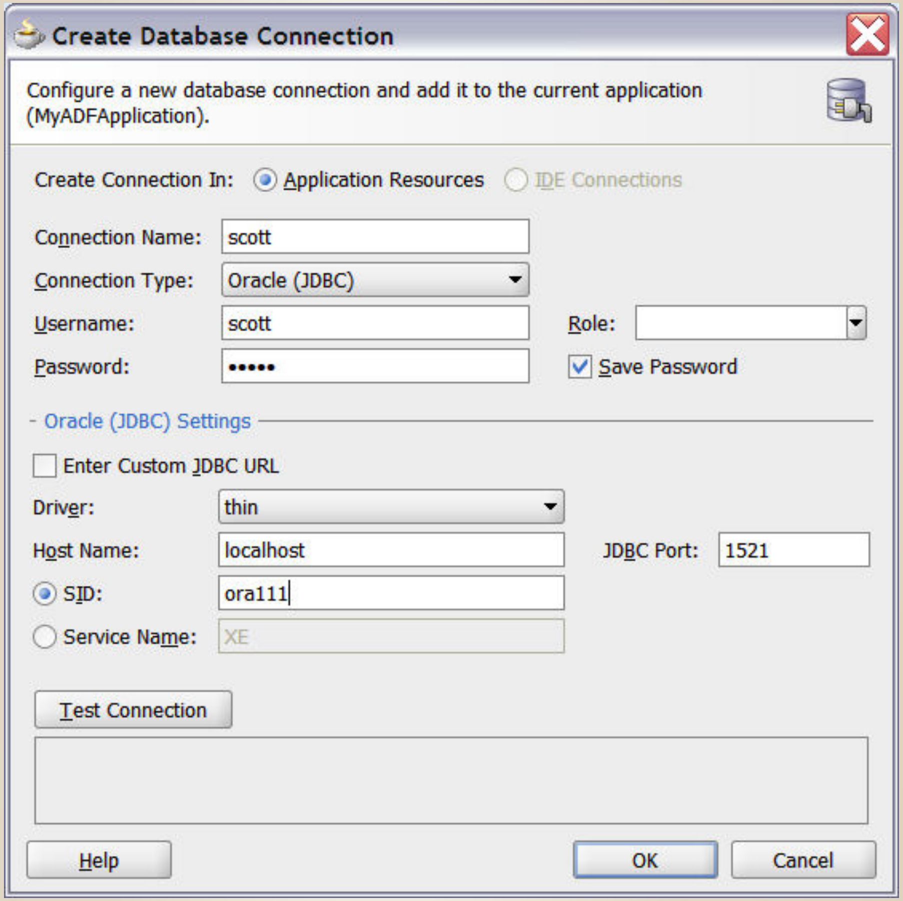
Connect String: jdbc:oracle:thin:@localhost:1521:ora111

Choose the proper SQL flavor and type map that fits your application.

SQL Flavor: Oracle

Type Map: Oracle

Create Database Connection



Create Database Connection

Configure a new database connection and add it to the current application (MyADFApplication).

Create Connection In: ● Application Resources ○ IDE Connections

Connection Name: scott

Connection Type: Oracle (JDBC)

Username: scott

Role:

Password: •••••

☑ Save Password

Oracle (JDBC) Settings

□ Enter Custom JDBC URL

Driver: thin

Host Name: localhost

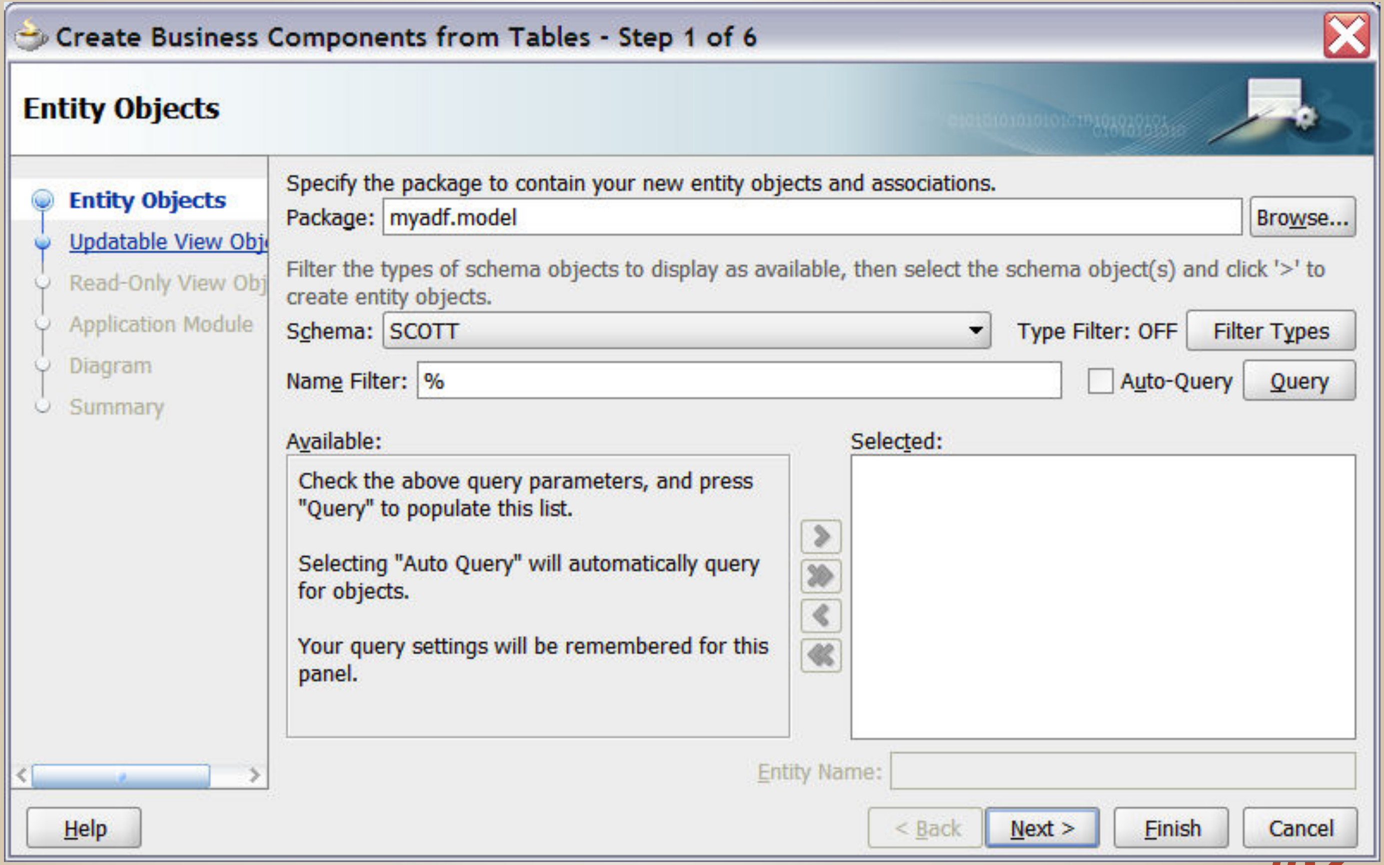
JDBC Port: 1521

● SID: ora111

○ Service Name: XE

Create BC from Tables, 1

- Add, verify, or alter package name as desired; verify Schema; modify filter (if desired) using SQL "LIKE" wild cards; click "Query" to view accessible database objects



Create Business Components from Tables - Step 1 of 6

Entity Objects

Specify the package to contain your new entity objects and associations.

Package: myadf.model

Filter the types of schema objects to display as available, then select the schema object(s) and click '>' to create entity objects.

Schema: SCOTT

Type Filter: OFF

Name Filter: %

□ Auto-Query

Available:

Check the above query parameters, and press "Query" to populate this list.

Selecting "Auto Query" will automatically query for objects.

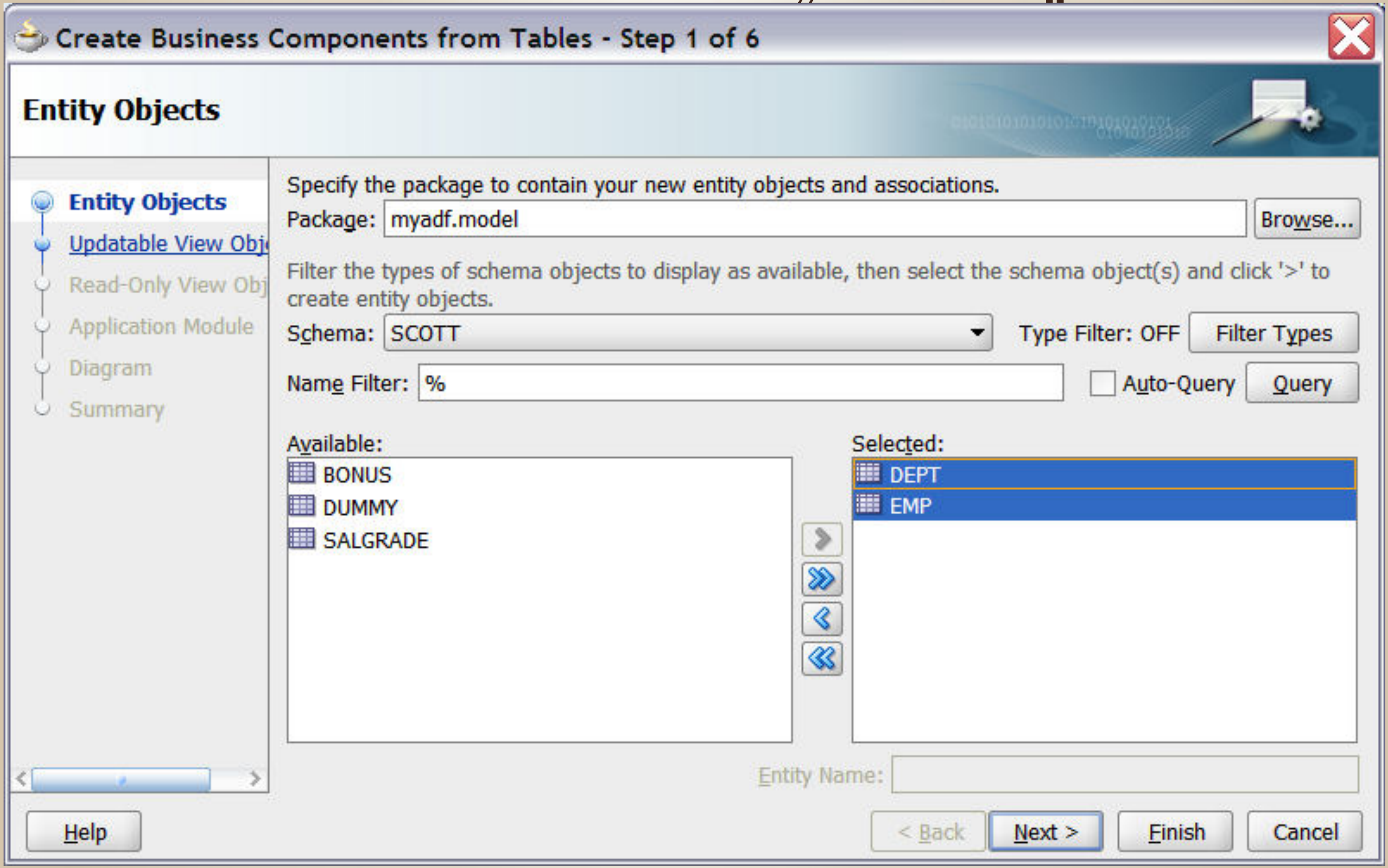
Your query settings will be remembered for this panel.

Selected:

Entity Name:

Create BC from Tables, 2

- Choose the tables and/or views to be part of the Entity



Create Business Components from Tables - Step 1 of 6

Entity Objects

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Package: myadf.model

Filter the types of schema objects to display as available, then select the schema object(s) and click '>' to create entity objects.

Schema: SCOTT

Type Filter: OFF

Name Filter: %

□ Auto-Query

Available:

- BONUS
- DUMMY
- SALGRADE

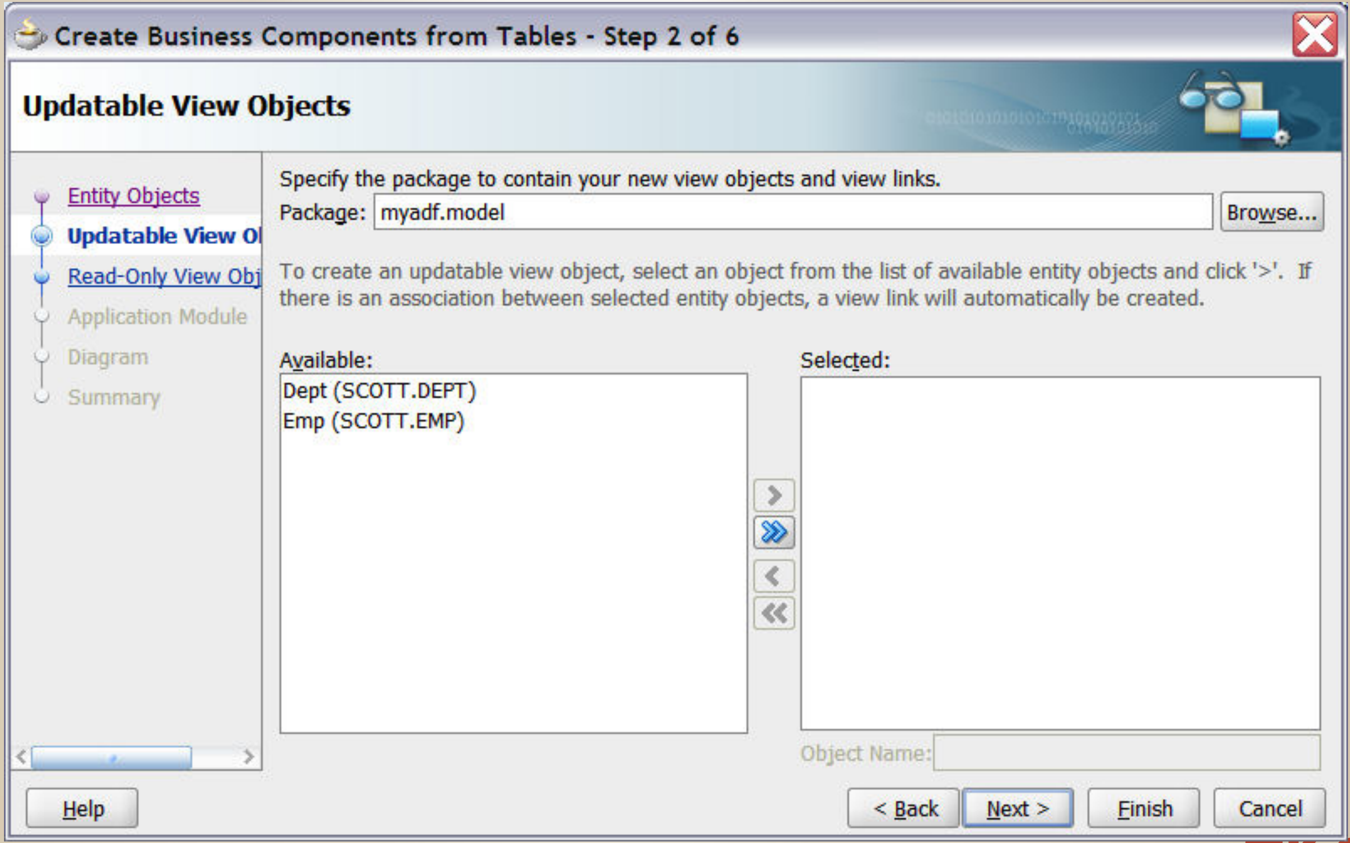
Selected:

- DEPT
- EMP

Entity Name:

Create BC from Tables, 3

- After creating Entity Objects; the wizard creates Updateable View Objects -- View Objects represent the output of SQL (query, filter, join, modify, or sequence)



Create Business Components from Tables - Step 2 of 6

Updatable View Objects

Specify the package to contain your new view objects and view links.

Package: myadf.model

To create an updatable view object, select an object from the list of available entity objects and click '>'. If there is an association between selected entity objects, a view link will automatically be created.

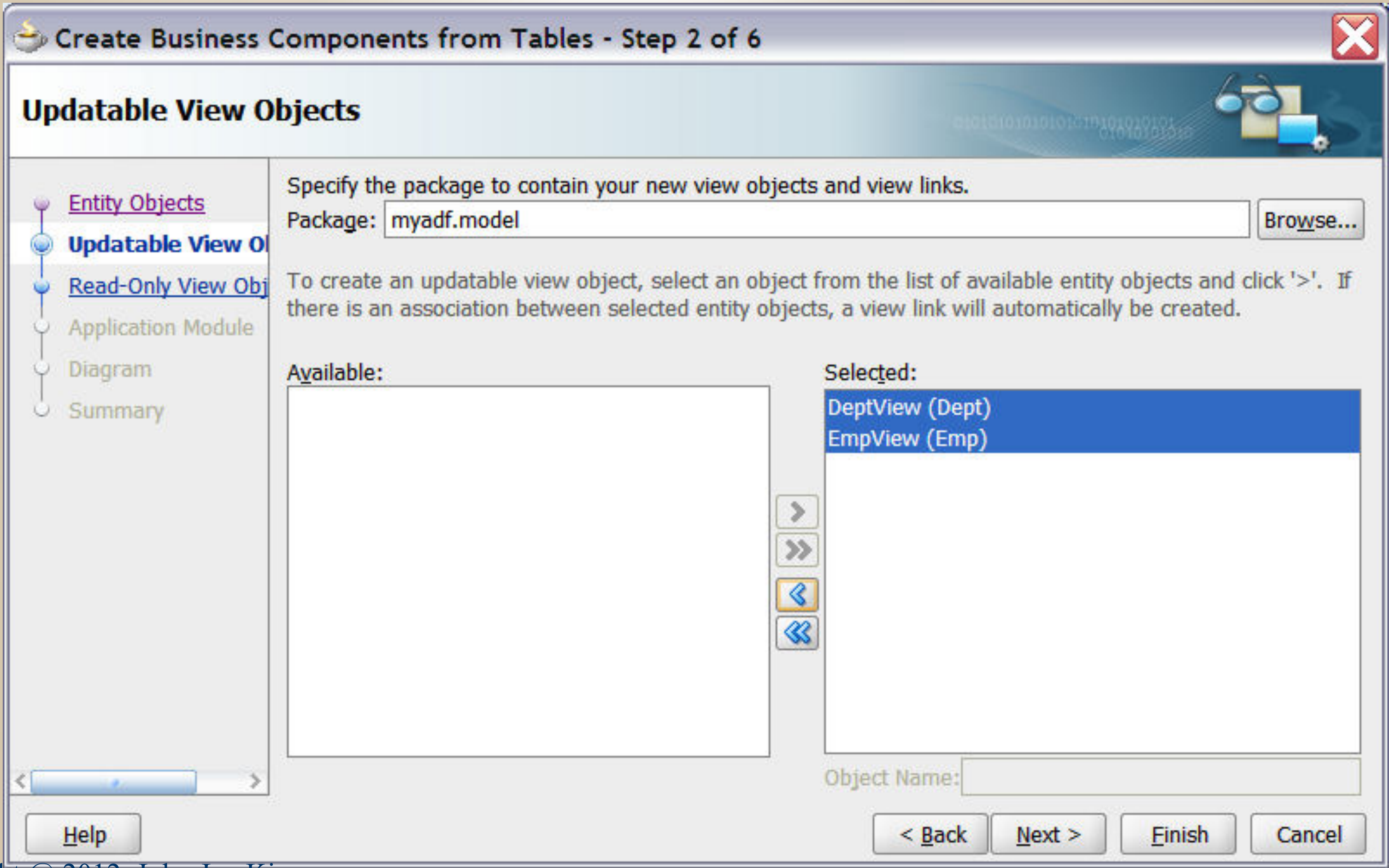
Available:
Dept (SCOTT.DEPT)
Emp (SCOTT.EMP)

Selected:

Object Name:

Create BC from Tables, 4

- Select Entity Objects to be used by the view being created; move them to the “Selected” side



Create Business Components from Tables - Step 2 of 6

Updatable View Objects

Specify the package to contain your new view objects and view links.

Package: myadf.model

To create an updatable view object, select an object from the list of available entity objects and click '>'. If there is an association between selected entity objects, a view link will automatically be created.

Available:

Selected:

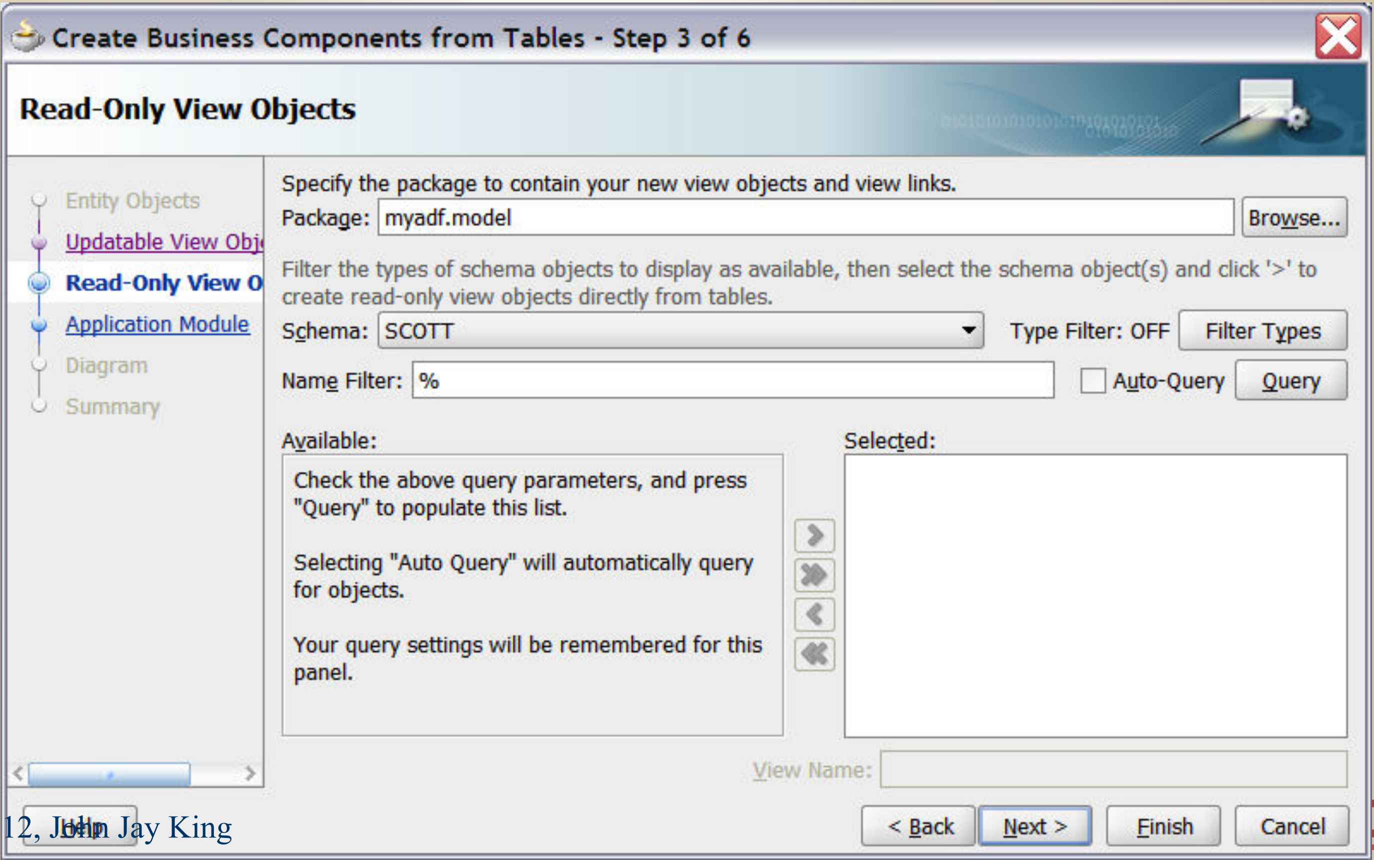
DeptView (Dept)

EmpView (Emp)

Object Name:

Create BC from Tables, 5

- After creating Updateable View Objects; the wizard goes on to create Read-Only View Objects (might be useful as LOV (List-of-Values))



Create Business Components from Tables - Step 3 of 6

Read-Only View Objects

Specify the package to contain your new view objects and view links.

Package: myadf.model

Filter the types of schema objects to display as available, then select the schema object(s) and click '>' to create read-only view objects directly from tables.

Schema: SCOTT

Type Filter: OFF

Name Filter: %

☐ Auto-Query

Available:

Check the above query parameters, and press "Query" to populate this list.

Selecting "Auto Query" will automatically query for objects.

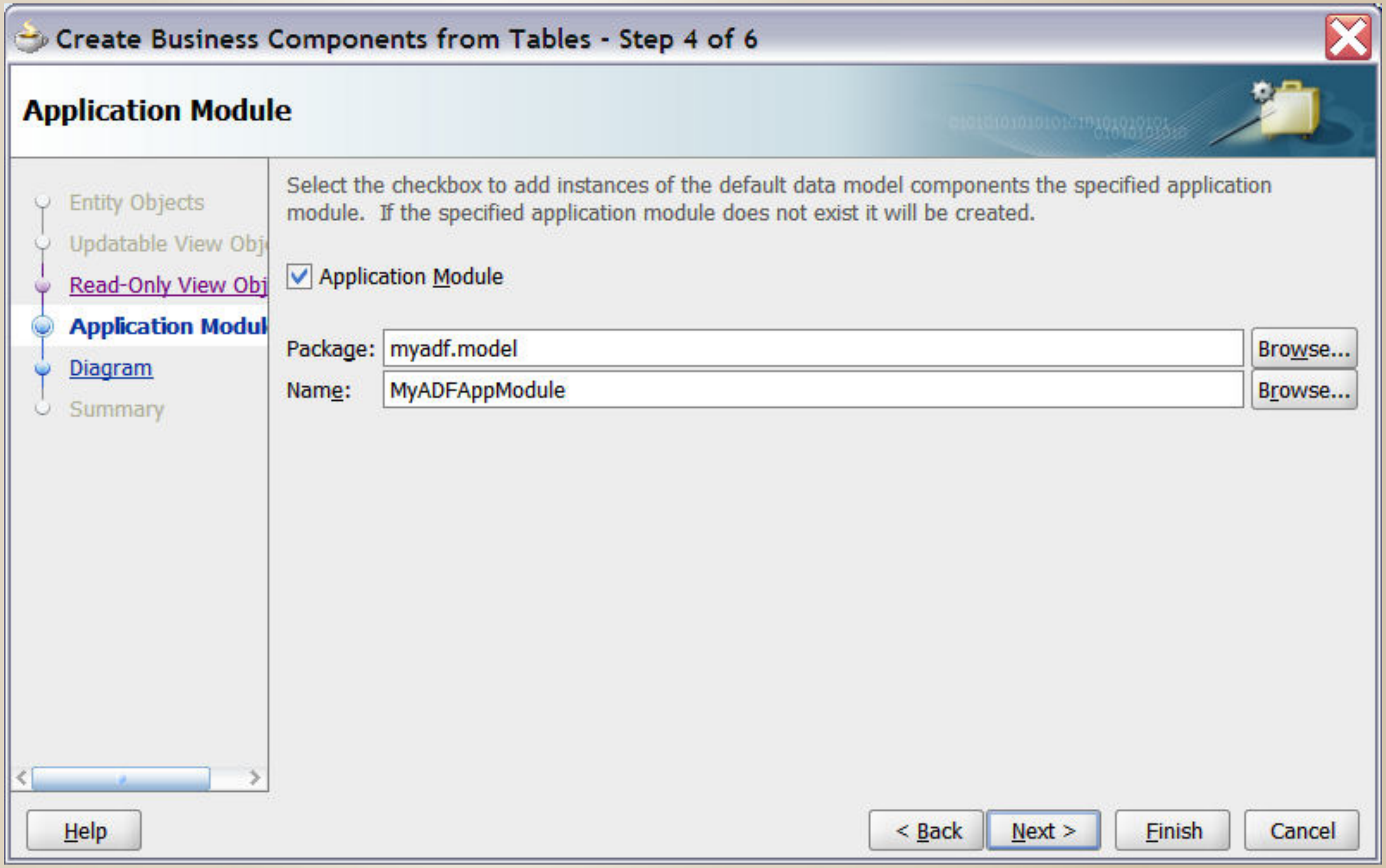
Your query settings will be remembered for this panel.

Selected:

View Name:

Create BC from Tables, 6

- Name the Application Module and save it; click Finish



Create Business Components from Tables - Step 4 of 6

Application Module

Select the checkbox to add instances of the default data model components the specified application module. If the specified application module does not exist it will be created.

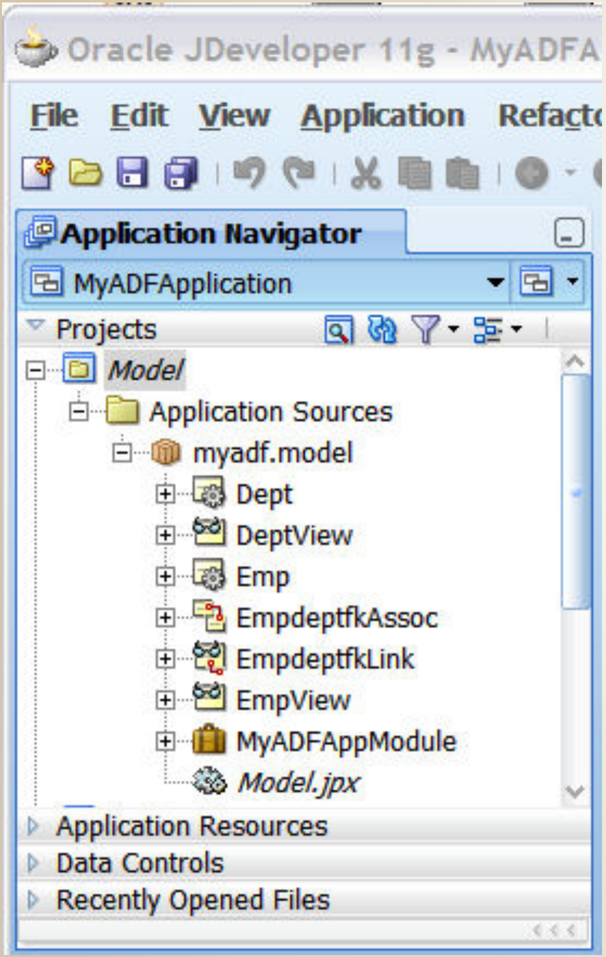
☑ Application Module

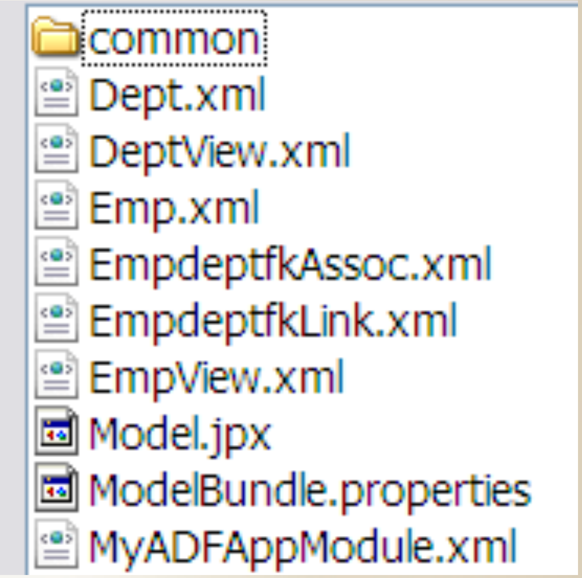
Package: myadf.model

Name: MyADFAppModule

Business Component Files

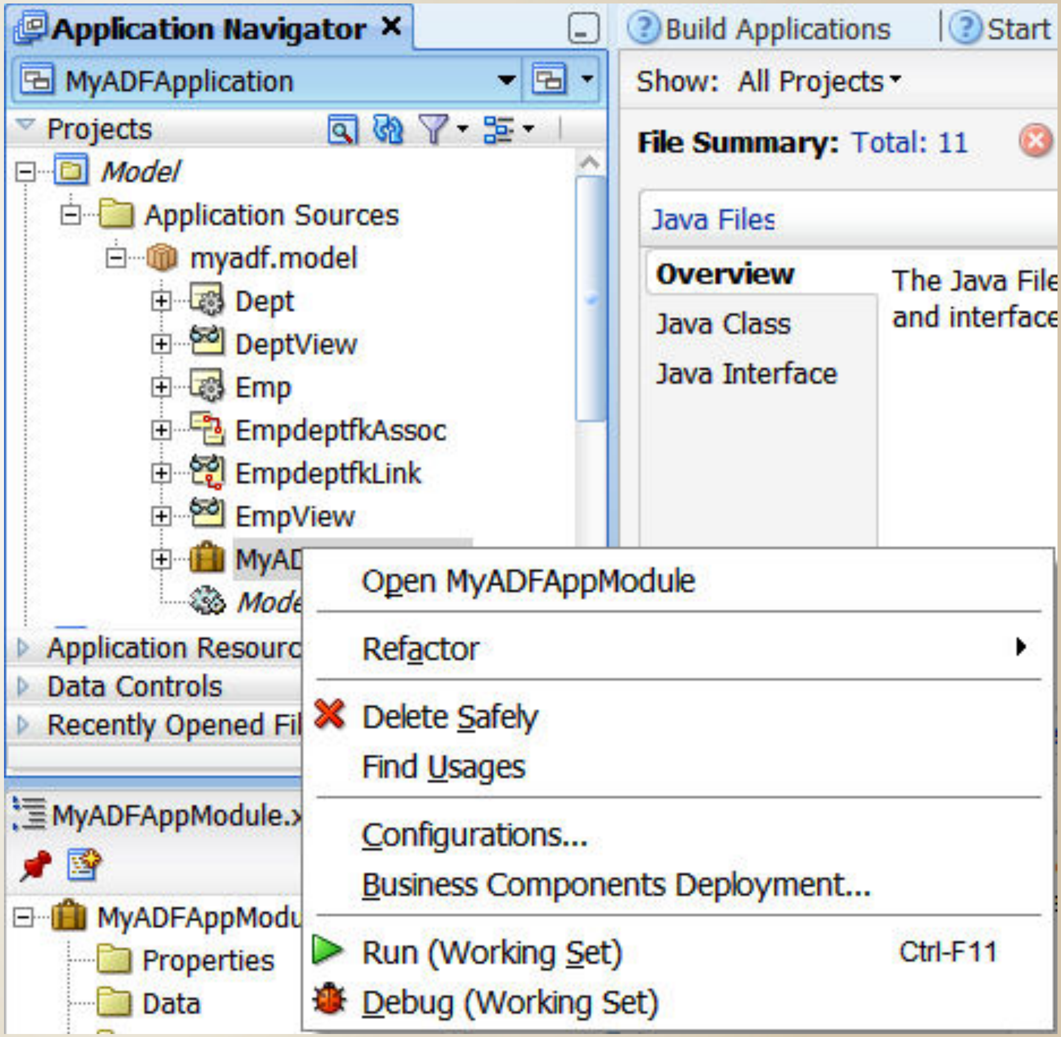
- Note the use of XML to declaratively support ADF




common
Dept.xml
DeptView.xml
Emp.xml
EmpdeptfkAssoc.xml
EmpdeptfkLink.xml
EmpView.xml
Model.jpx
ModelBundle.properties
MyADFAppModule.xml

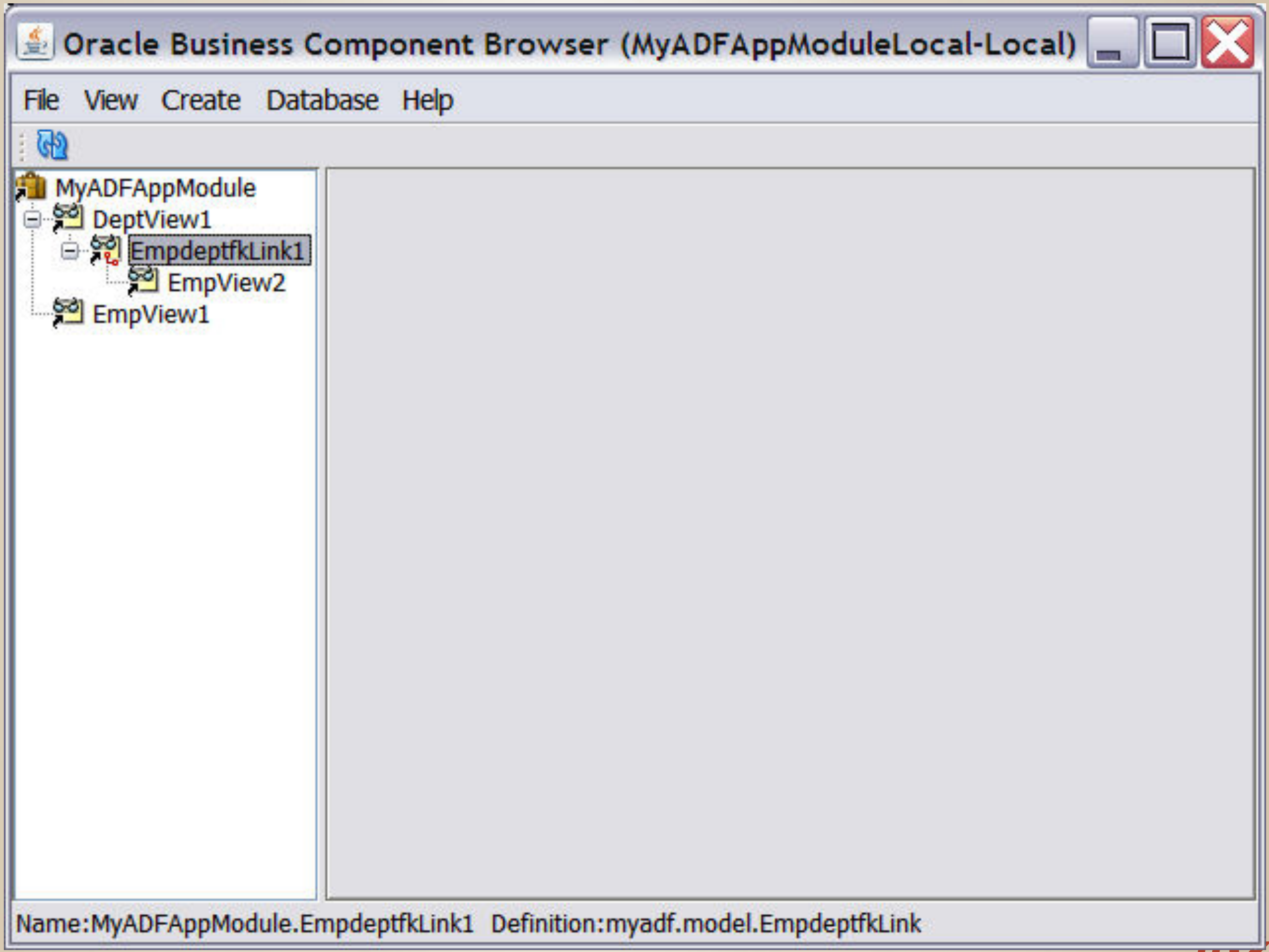
Business Component Browser

- JDeveloper provides a tool to "browse" ADF BC Application Module objects graphically; using the Application Navigator, find the Application Module to be viewed; right-click and choose "Run" to start



Component Browser Choices

- Choose the Business Component to be tested

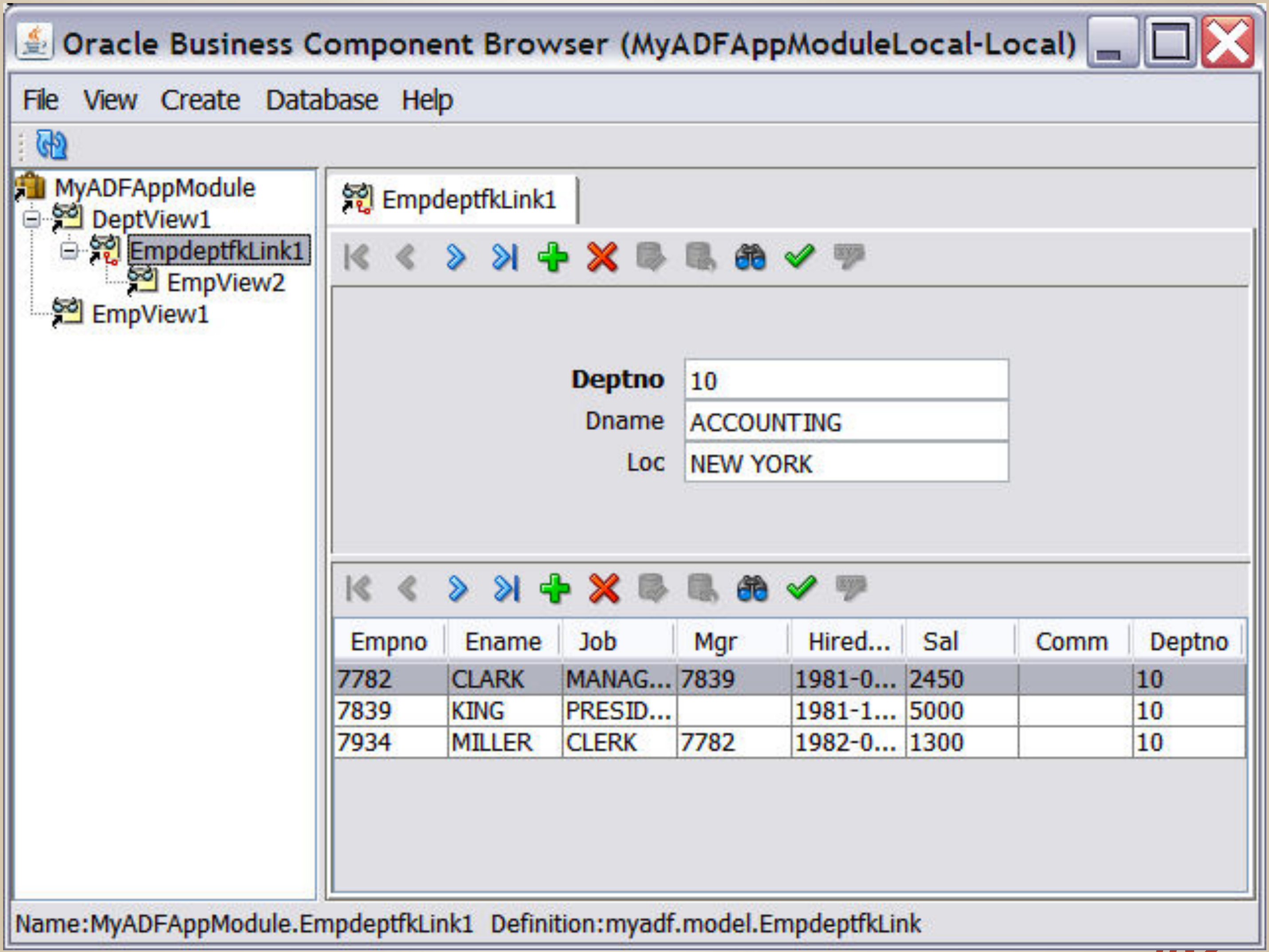


Name:MyADFAppModule.EmpdeptfkLink1 Definition:myadf.model.EmpdeptfkLink

Component Browser – Display, 1

- Oracle’s Business Component Browser displays data from the underlying database objects
(screen should look familiar to Oracle Forms users)
- If referential keys are defined in the database (Primary Keys and Foreign Keys) the ADF BC Wizard automatically arranges the tables into a Master-Detail relationship

Component Browser – Display, 2



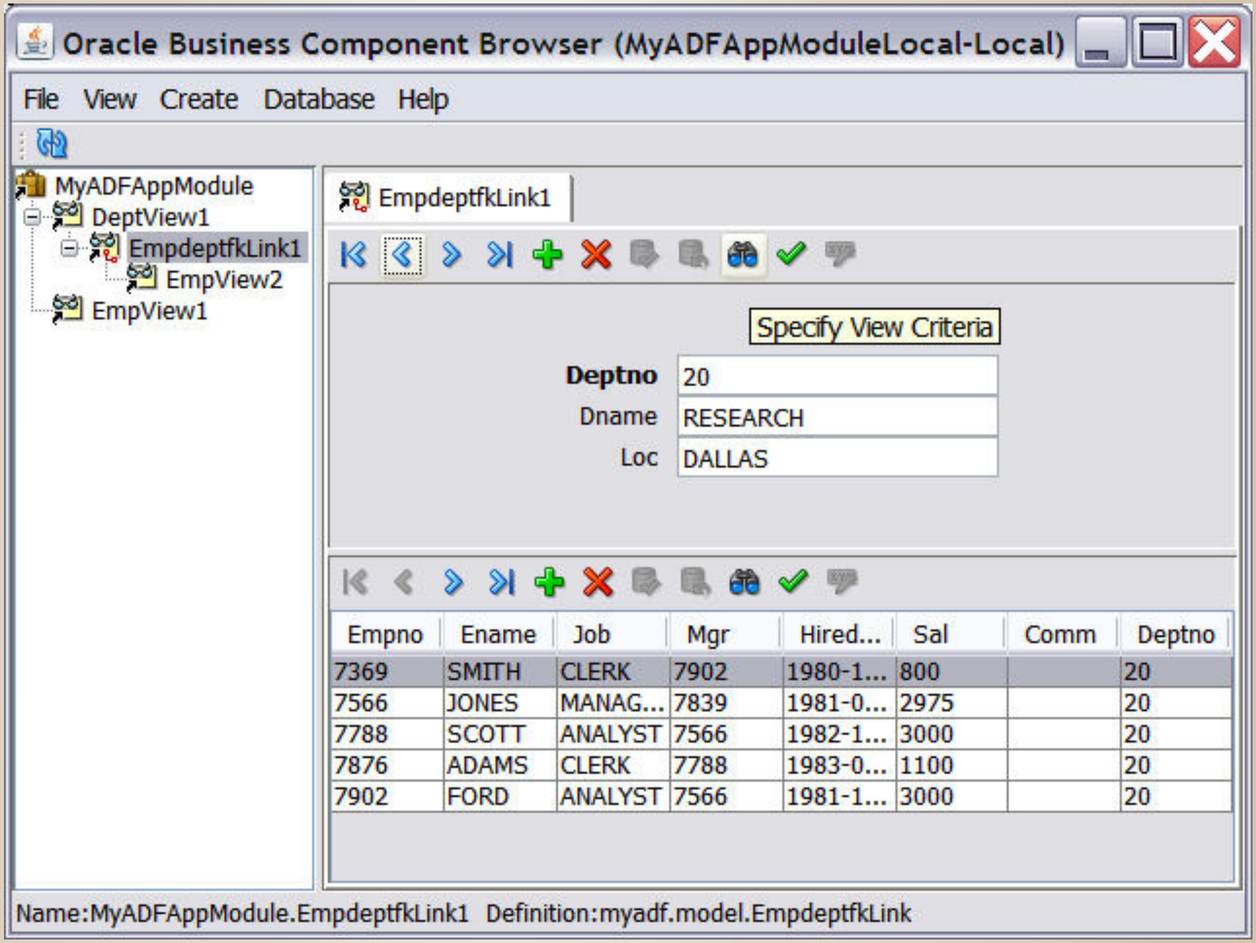
Deptno	10
Dname	ACCOUNTING
Loc	NEW YORK

Empno	Ename	Job	Mgr	Hired...	Sal	Comm	Deptno
7782	CLARK	MANAG...	7839	1981-0...	2450		10
7839	KING	PRESID...		1981-1...	5000		10
7934	MILLER	CLERK	7782	1982-0...	1300		10

Name:MyADFAppModule.EmpdeptfkLink1 Definition:myadf.model.EmpdeptfkLink

Searching Data

- Use the “Specify View Criteria” (Binocular) icon to Search



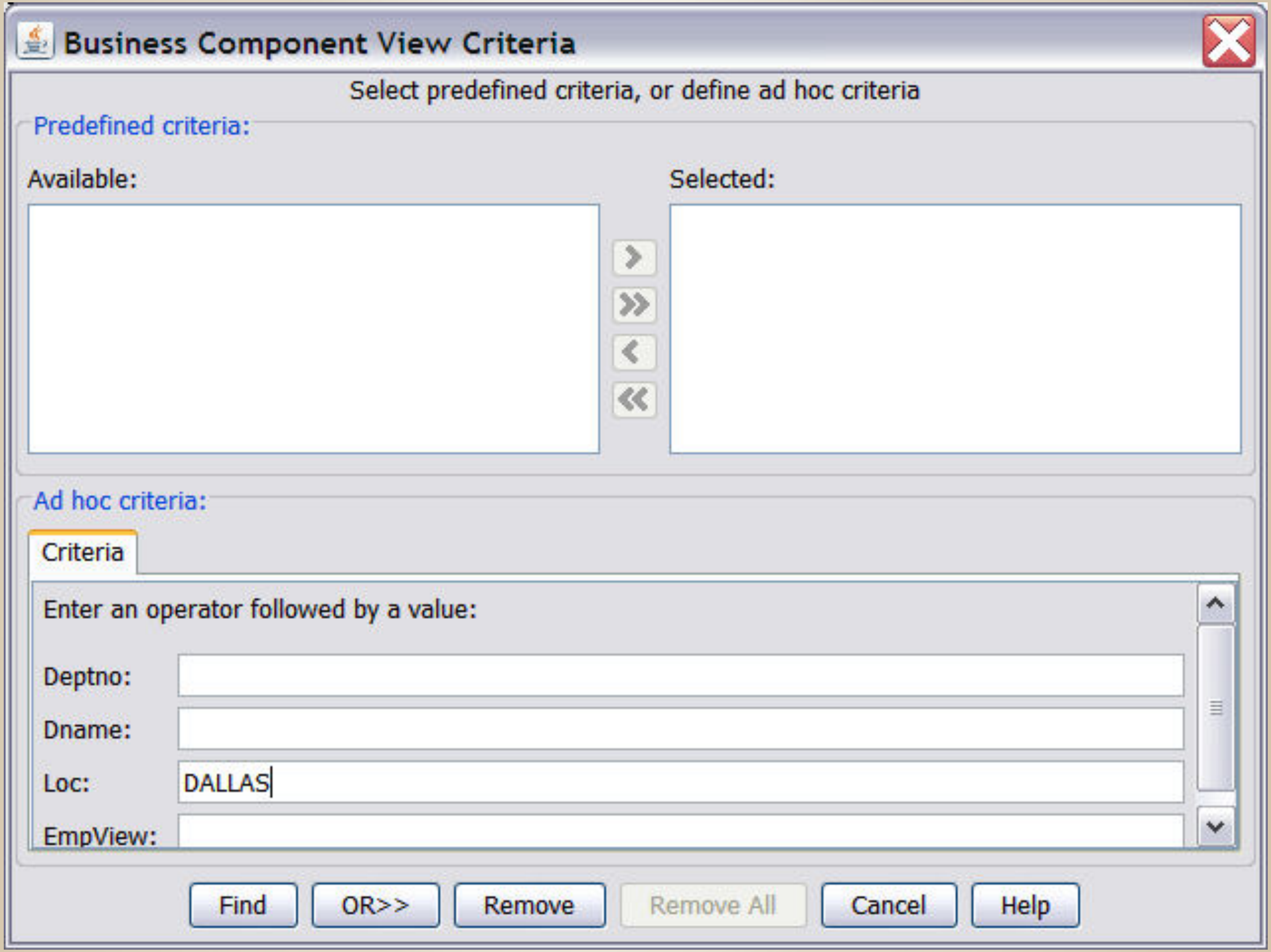
Deptno	20
Dname	RESEARCH
Loc	DALLAS

Empno	Ename	Job	Mgr	Hired...	Sal	Comm	Deptno
7369	SMITH	CLERK	7902	1980-1...	800		20
7566	JONES	MANAG...	7839	1981-0...	2975		20
7788	SCOTT	ANALYST	7566	1982-1...	3000		20
7876	ADAMS	CLERK	7788	1983-0...	1100		20
7902	FORD	ANALYST	7566	1981-1...	3000		20

Name:MyADFAppModule.EmpdeptfkLink1 Definition:myadf.model.EmpdeptfkLink

Search View Criteria

- Enter Search criteria and click “Find”



Business Component View Criteria

Select predefined criteria, or define ad hoc criteria

Predefined criteria:

Available:

Selected:

Ad hoc criteria:

Criteria

Enter an operator followed by a value:

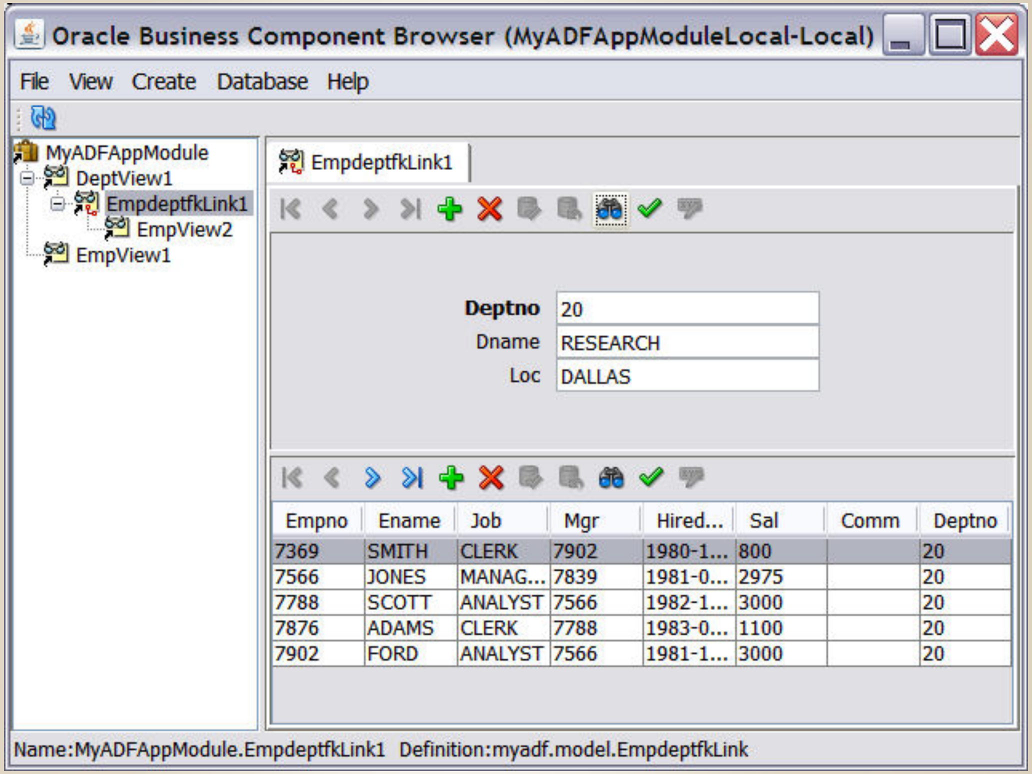
Deptno:

Dname:

Loc: DALLAS

EmpView:

Search Results


Oracle Business Component Browser (MyADFAppModuleLocal-Local)
File View Create Database Help
MyADFAppModule
DeptView1
EmpdeptfkLink1
EmpView2
EmpView1
EmpdeptfkLink1

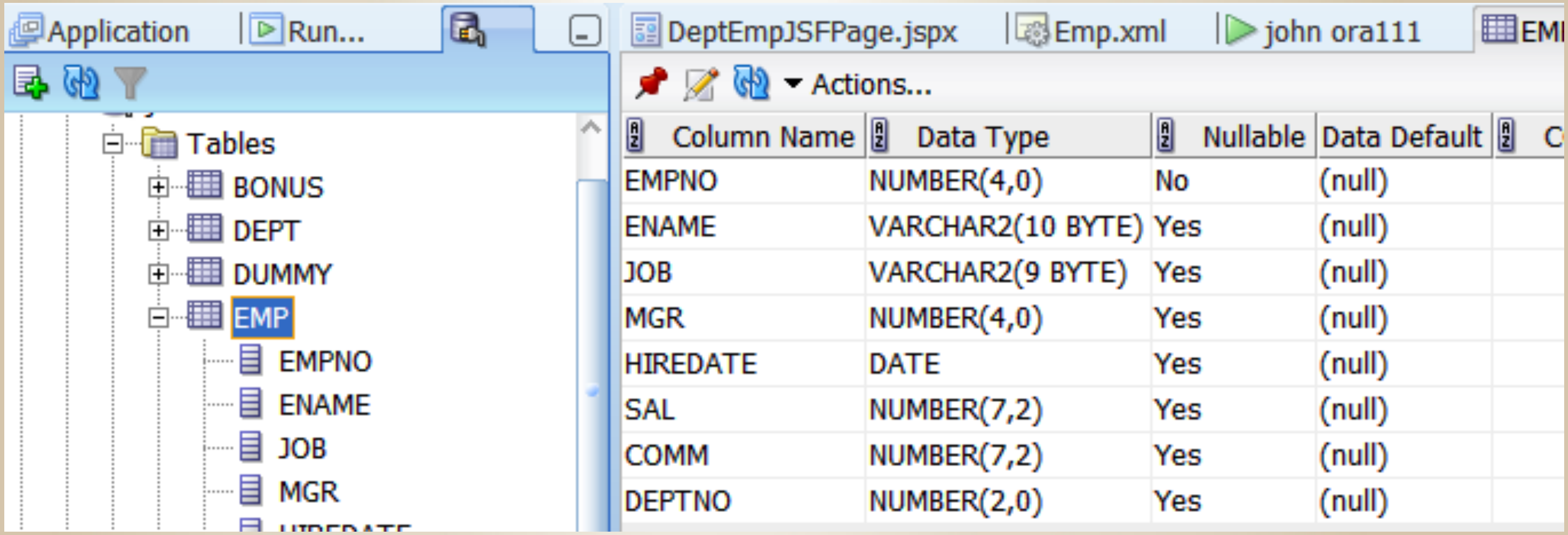
Deptno 20
Dname RESEARCH
Loc DALLAS

Empno	Ename	Job	Mgr	Hired...	Sal	Comm	Deptno
7369	SMITH	CLERK	7902	1980-1...	800		20
7566	JONES	MANAG...	7839	1981-0...	2975		20
7788	SCOTT	ANALYST	7566	1982-1...	3000		20
7876	ADAMS	CLERK	7788	1983-0...	1100		20
7902	FORD	ANALYST	7566	1981-1...	3000		20

Name:MyADFAppModule.EmpdeptfkLink1 Definition:myadf.model.EmpdeptfkLink

Browsing Database Objects

- JDeveloper’ s Database Navigator allows browsing of database objects (parts of Oracle's SQL Developer tool have been incorporated into JDeveloper)



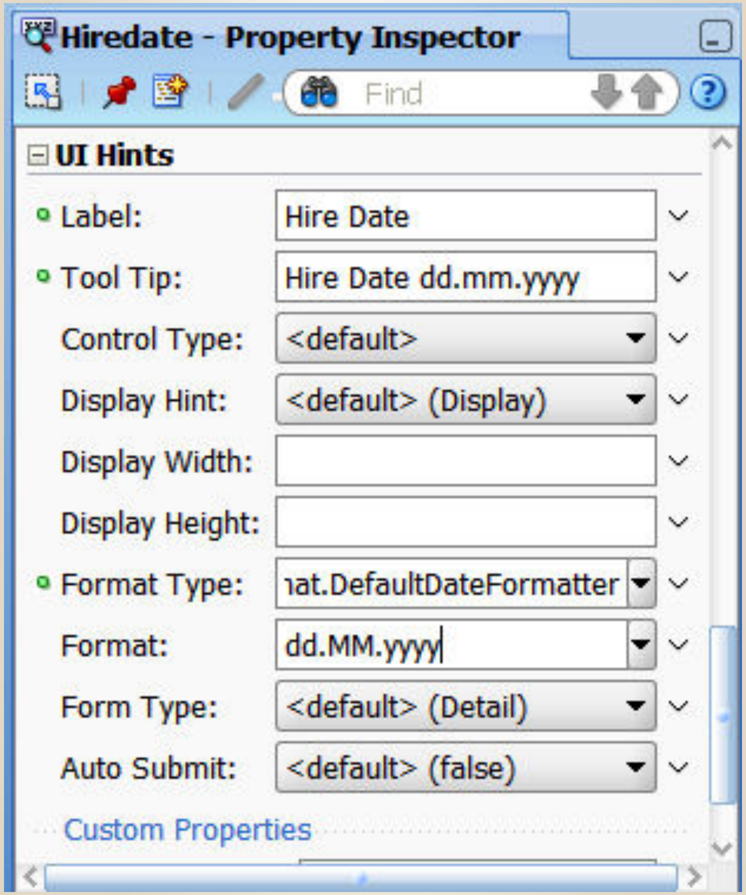
Column Name	Data Type	Nullable	Data Default	C
EMPNO	NUMBER(4,0)	No	(null)	
ENAME	VARCHAR2(10 BYTE)	Yes	(null)	
JOB	VARCHAR2(9 BYTE)	Yes	(null)	
MGR	NUMBER(4,0)	Yes	(null)	
HIREDATE	DATE	Yes	(null)	
SAL	NUMBER(7,2)	Yes	(null)	
COMM	NUMBER(7,2)	Yes	(null)	
DEPTNO	NUMBER(2,0)	Yes	(null)	

Modification of Application

- Once the initial Business Components are created in the application, it might be useful to:
  - set default values
  - define formatting
  - validate data

Object Properties

- Like other 4GLs, properties are listed



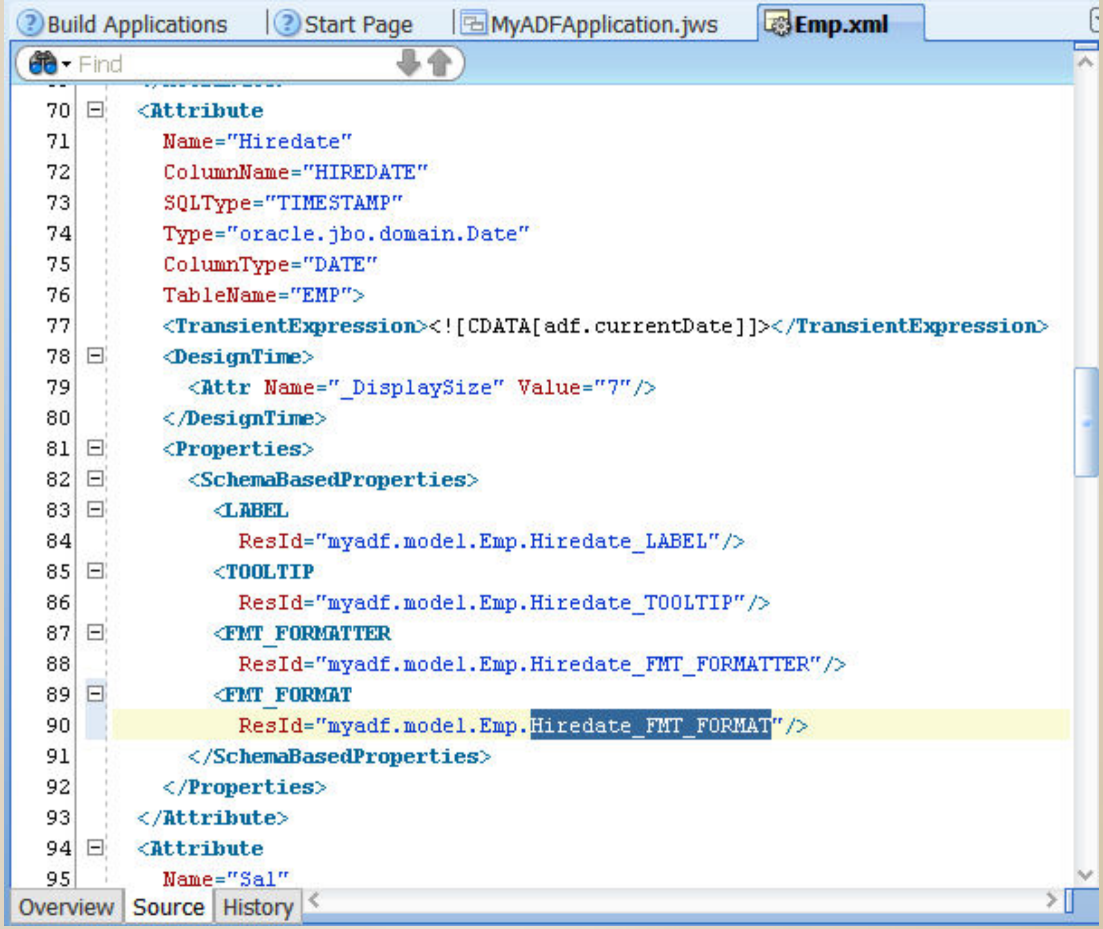
Hiredate - Property Inspector

⊟ UI Hints

Label:	Hire Date
Tool Tip:	Hire Date dd.mm.yyyy
Control Type:	<default>
Display Hint:	<default> (Display)
Display Width:	
Display Height:	
Format Type:	ıat.DefaultDateFormatter
Format:	dd.MM.yyyy
Form Type:	<default> (Detail)
Auto Submit:	<default> (false)

Properties in XML Files

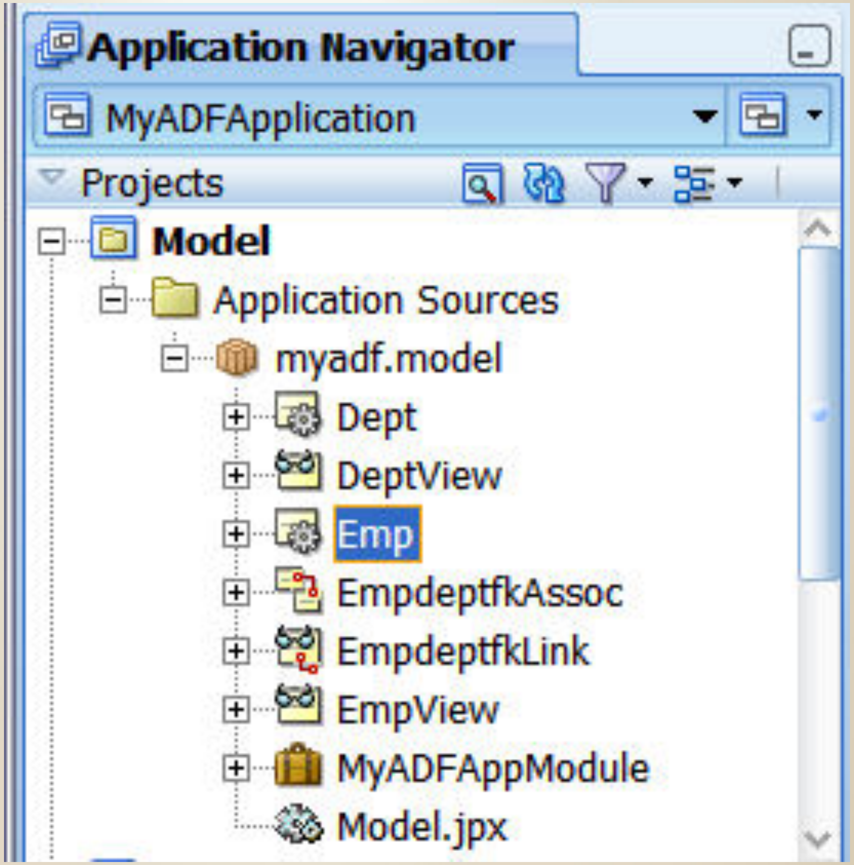
- ADF uses XML files to store declared definitions



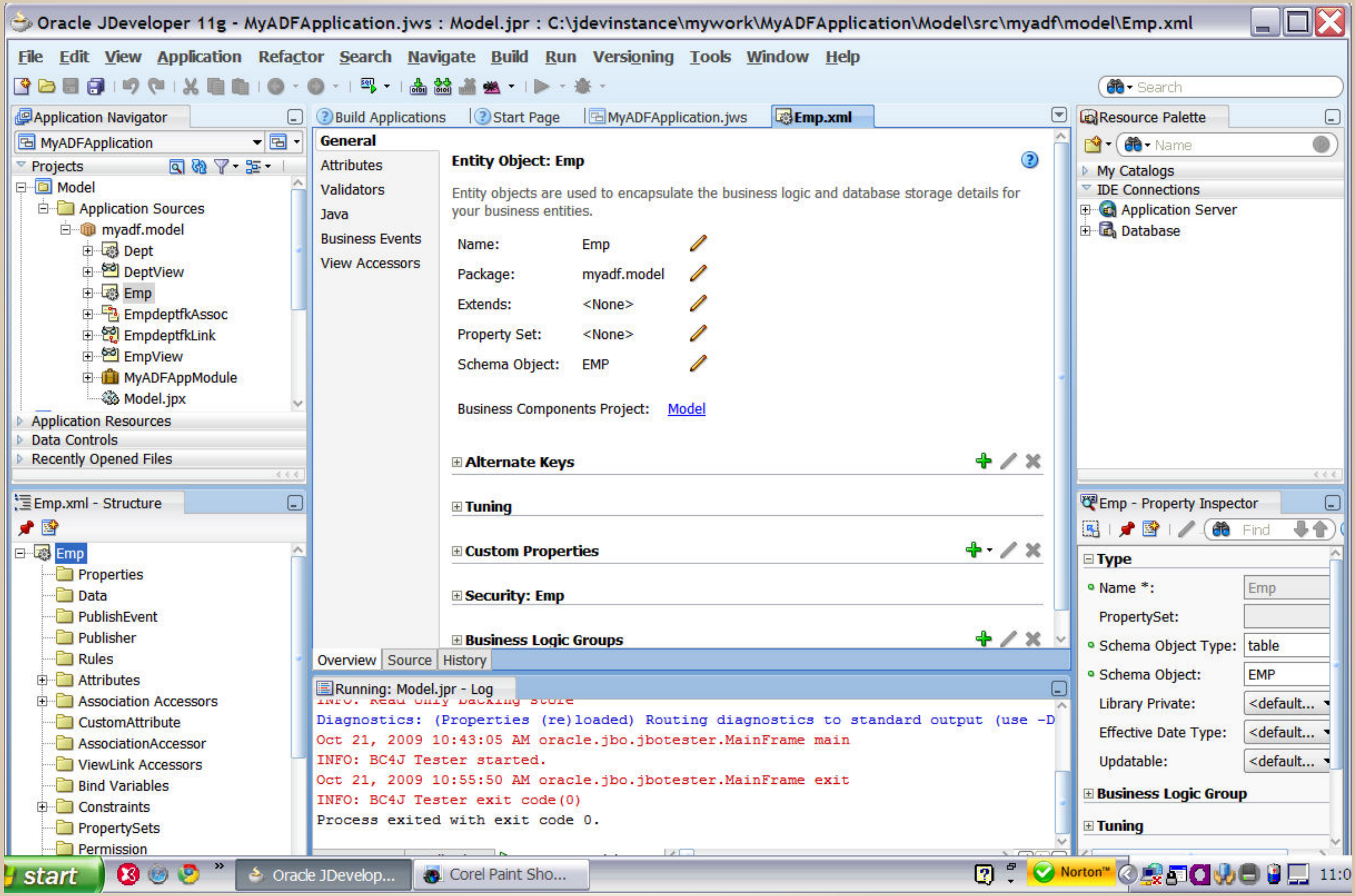
```
<Attribute
  Name="Hiredate"
  ColumnName="HIREDATE"
  SQLType="TIMESTAMP"
  Type="oracle.jbo.domain.Date"
  ColumnType="DATE"
  TableName="EMP">
  <TransientExpression><![CDATA[adf.currentDate]]></TransientExpression>
  <DesignTime>
    <Attr Name="_DisplaySize" Value="7"/>
  </DesignTime>
  <Properties>
    <SchemaBasedProperties>
      <LABEL
        ResId="myadf.model.Emp.Hiredate_LABEL"/>
      <TOOLTIP
        ResId="myadf.model.Emp.Hiredate_TOOLTIP"/>
      <FMT_FORMATTER
        ResId="myadf.model.Emp.Hiredate_FMT_FORMATTER"/>
      <FMT_FORMAT
        ResId="myadf.model.Emp.Hiredate_FMT_FORMAT"/>
    </SchemaBasedProperties>
  </Properties>
</Attribute>
<Attribute
  Name="Sal"
```

Modify Appearance & Formatting

- Use JDeveloper to modify appearance of database column values by double-clicking an Entity Object



Entity Object Edit Panel


Oracle JDeveloper 11g - MyADFApplication.jws : Model.jpr : C:\jdevinstance\mywork\MyADFApplication\Model\src\myadf\model\Emp.xml

Entity Object: Emp

Entity objects are used to encapsulate the business logic and database storage details for your business entities.

Name:	Emp
Package:	myadf.model
Extends:	<None>
Property Set:	<None>
Schema Object:	EMP

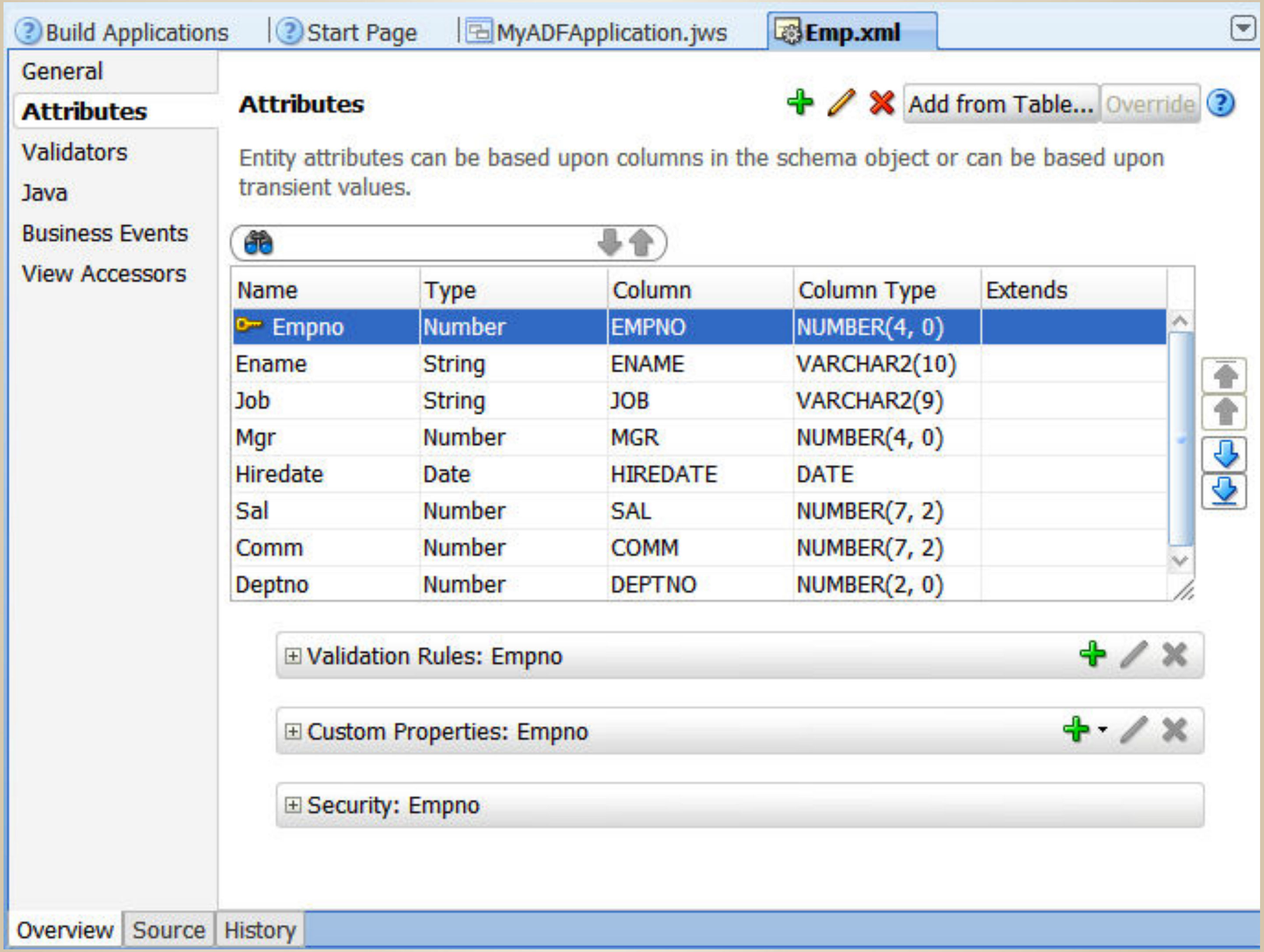
Business Components Project: Model

Running: Model.jpr - Log

```
INFO: Read only backing store
Diagnostics: (Properties (re)loaded) Routing diagnostics to standard output (use -D
Oct 21, 2009 10:43:05 AM oracle.jbo.jbotester.MainFrame main
INFO: BC4J Tester started.
Oct 21, 2009 10:55:50 AM oracle.jbo.jbotester.MainFrame exit
INFO: BC4J Tester exit code(0)
Process exited with exit code 0.
```

Name *:	Emp
PropertySet:	
Schema Object Type:	table
Schema Object:	EMP
Library Private:	<default...
Effective Date Type:	<default...
Updatable:	<default...

Entity Object Attributes



Attributes

Entity attributes can be based upon columns in the schema object or can be based upon transient values.

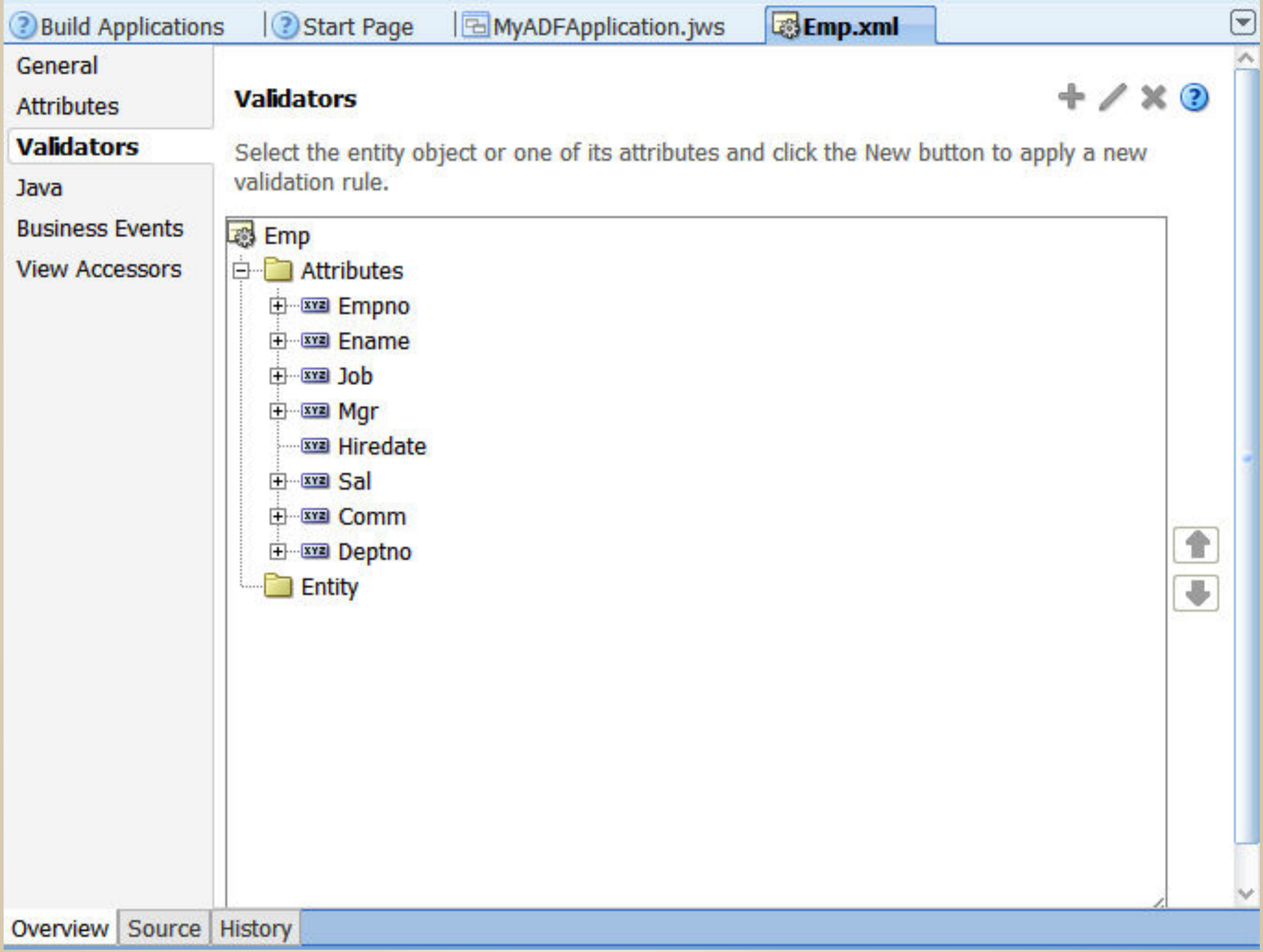
Name	Type	Column	Column Type	Extends
Empno	Number	EMPNO	NUMBER(4, 0)	
Ename	String	ENAME	VARCHAR2(10)	
Job	String	JOB	VARCHAR2(9)	
Mgr	Number	MGR	NUMBER(4, 0)	
Hiredate	Date	HIREDATE	DATE	
Sal	Number	SAL	NUMBER(7, 2)	
Comm	Number	COMM	NUMBER(7, 2)	
Deptno	Number	DEPTNO	NUMBER(2, 0)	

⊞ Validation Rules: Empno

⊞ Custom Properties: Empno

⊞ Security: Empno

Entity Object Validators



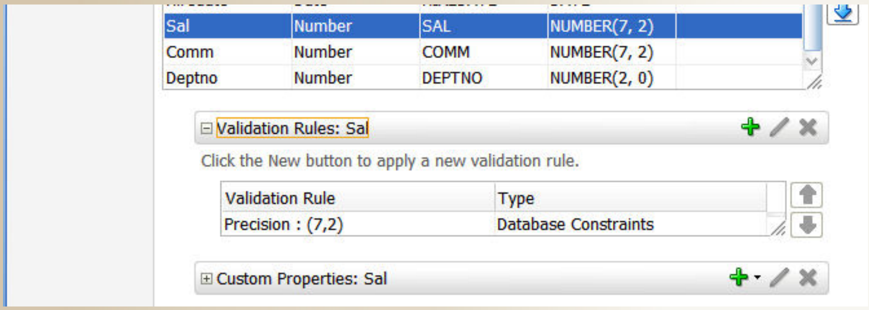
Validators

Select the entity object or one of its attributes and click the New button to apply a new validation rule.

Validations and Business Logic

- Validations and Business Logic may be added including:
  - Client-side validation
  - Format masks
  - Default Values
  - Declarative Range (and other) Validation
  - CSS (Visual Attributes)
  - List of Values
  - Calculated field
  - Code Validation
  - Extensible for complex application validation
  - Transactional Triggers

Validation Rules



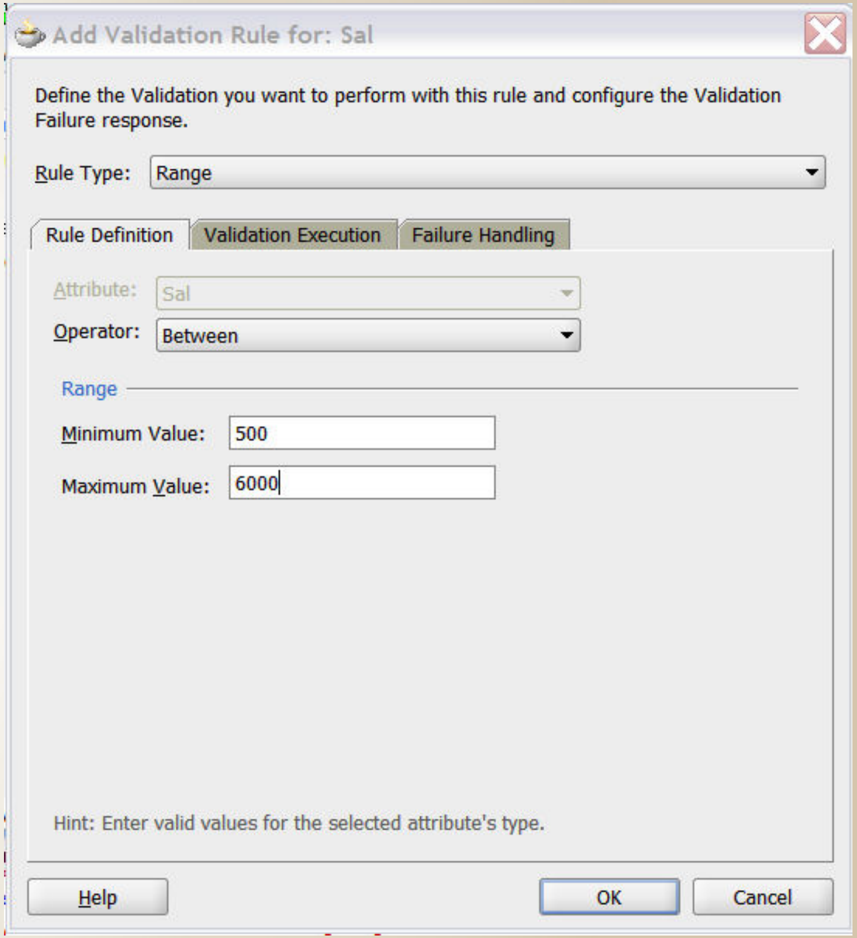
Sal	Number	SAL	NUMBER(7, 2)
Comm	Number	COMM	NUMBER(7, 2)
Deptno	Number	DEPTNO	NUMBER(2, 0)

⊟ Validation Rules: Sal

Click the New button to apply a new validation rule.

Validation Rule	Type
Precision : (7,2)	Database Constraints

⊞ Custom Properties: Sal



Add Validation Rule for: Sal

Define the Validation you want to perform with this rule and configure the Validation Failure response.

Rule Type: Range

Attribute: Sal

Operator: Between

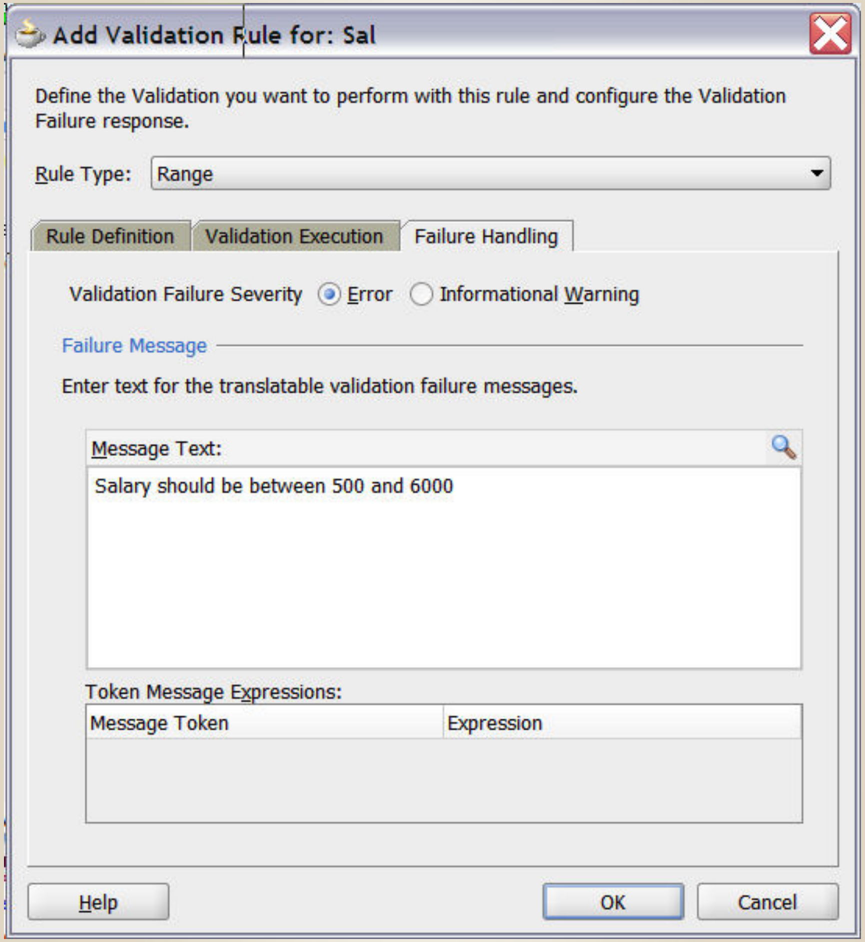
Range

Minimum Value: 500

Maximum Value: 6000

Hint: Enter valid values for the selected attribute's type.

Validation Error Messages



Define the Validation you want to perform with this rule and configure the Validation Failure response.

Rule Type: Range

Validation Failure Severity ● Error ○ Informational Warning

Failure Message

Enter text for the translatable validation failure messages.

Message Text:

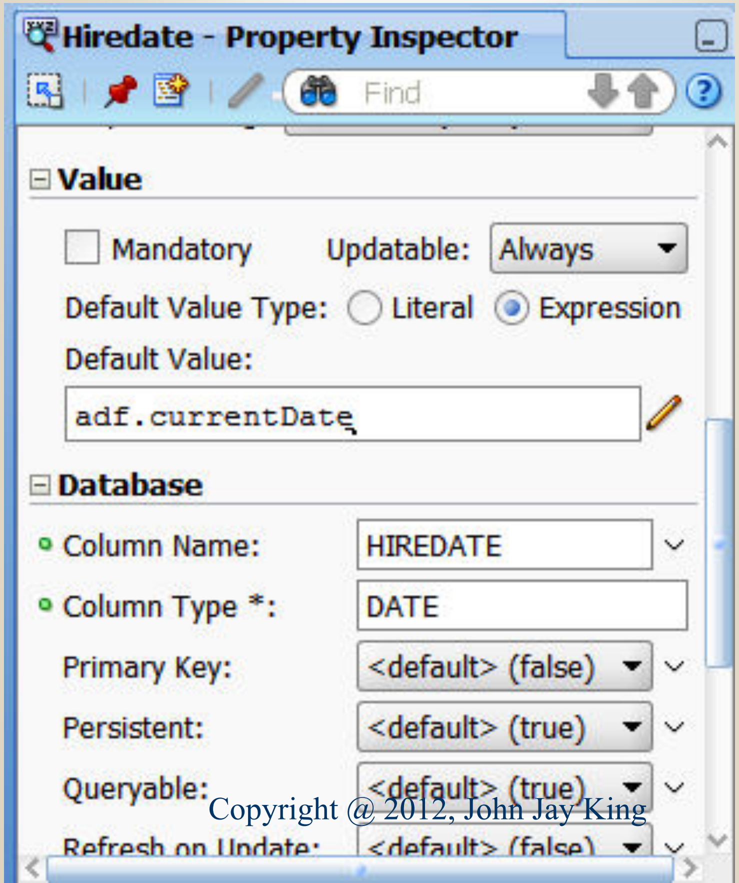
Salary should be between 500 and 6000

Token Message Expressions:

Message Token	Expression

Attribute Defaults

- Using the Property Palette, open the “Value” properties and set the default value (in this case “adf.currentDate” using ADF’s “Groovy” support)



Value

□ Mandatory Updatable: Always

Default Value Type: ○ Literal ● Expression

Default Value:

```
adf.currentDate
```

Database

Column Name: HIREDATE

Column Type *: DATE

Primary Key: <default> (false)

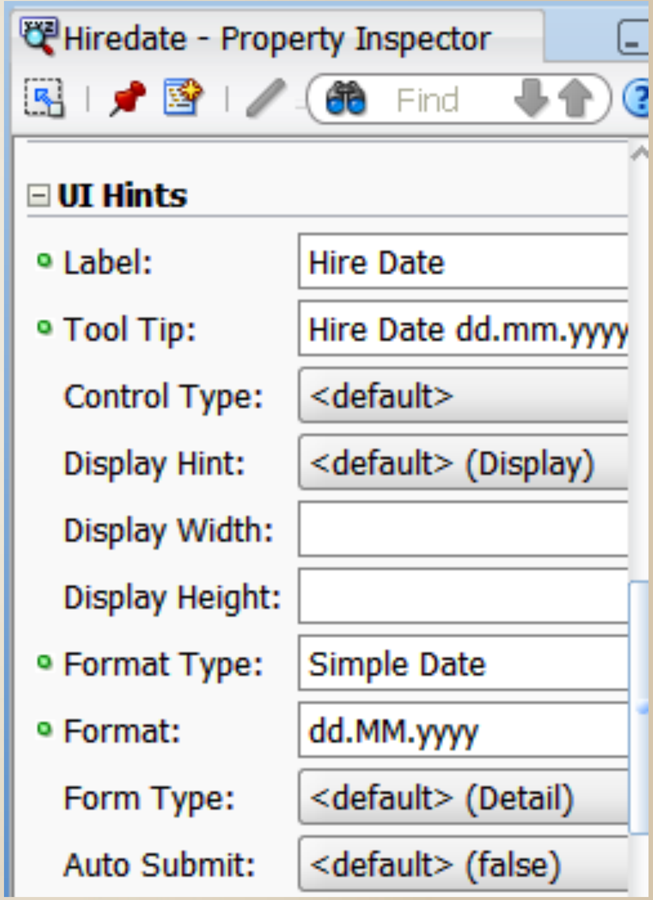
Persistent: <default> (true)

Queryable: <default> (true)

Refresh on Update: <default> (false)

Attribute Formatting

- Use an Attribute's Property Palette "UI Hints" section to control formatting, label, tool tip, etc… (note this formatting uses Java SimpleDateFormat options)

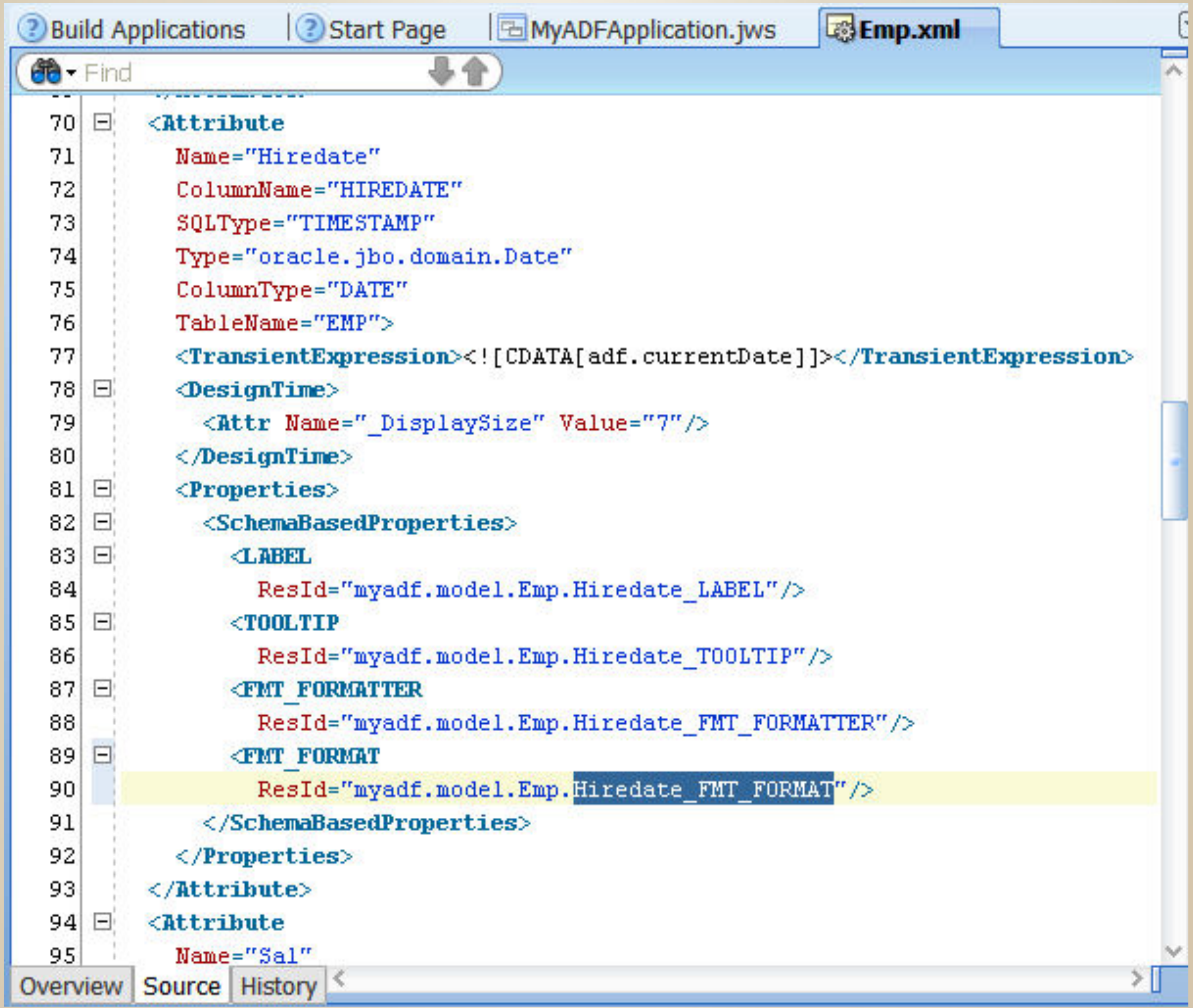


Hiredate - Property Inspector

UI Hints

Label:	Hire Date
Tool Tip:	Hire Date dd.mm.yyyy
Control Type:	<default>
Display Hint:	<default> (Display)
Display Width:	
Display Height:	
Format Type:	Simple Date
Format:	dd.MM.yyyy
Form Type:	<default> (Detail)
Auto Submit:	<default> (false)

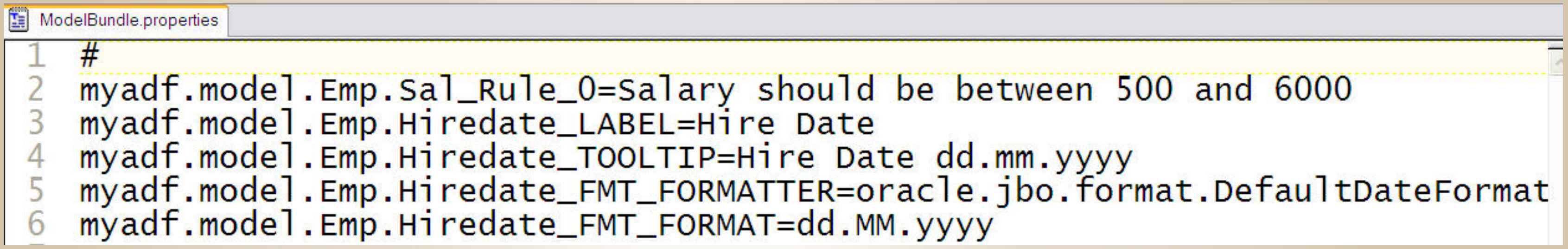
What Does the XML Look Like?



```
<Attribute
  Name="Hiredate"
  ColumnName="HIREDATE"
  SQLType="TIMESTAMP"
  Type="oracle.jbo.domain.Date"
  ColumnType="DATE"
  TableName="EMP">
  <TransientExpression><![CDATA[adf.currentDate]]></TransientExpression>
  <DesignTime>
    <Attr Name="_DisplaySize" Value="7"/>
  </DesignTime>
  <Properties>
    <SchemaBasedProperties>
      <LABEL
        ResId="myadf.model.Emp.Hiredate_LABEL"/>
      <TOOLTIP
        ResId="myadf.model.Emp.Hiredate_TOOLTIP"/>
      <FMT_FORMATTER
        ResId="myadf.model.Emp.Hiredate_FMT_FORMATTER"/>
      <FMT_FORMAT
        ResId="myadf.model.Emp.Hiredate_FMT_FORMAT"/>
    </SchemaBasedProperties>
  </Properties>
</Attribute>
<Attribute
  Name="Sal"
```

ODTUG Kscope12

Date Mask Properties File



ModelBundle.properties

```
#
myadf.model.Emp.Sal_Rule_0=Salary should be between 500 and 6000
myadf.model.Emp.Hiredate_LABEL=Hire Date
myadf.model.Emp.Hiredate_TOOLTIP=Hire Date dd.mm.yyyy
myadf.model.Emp.Hiredate_FMT_FORMATTER=oracle.jbo.format.DefaultDateFormat
myadf.model.Emp.Hiredate_FMT_FORMAT=dd.MM.yyyy
```

Comparison to Oracle Forms

- In Oracle Forms we defined “data blocks” that represented tables and views that would be used in our forms
- ADF BC components do that and more, plus they may be shared by many applications
- In Oracle Forms once the “data block” is created we use it to create the presentation
- With ADF we use ADF Faces to accomplish the same thing and more (again creating components that may be reused)

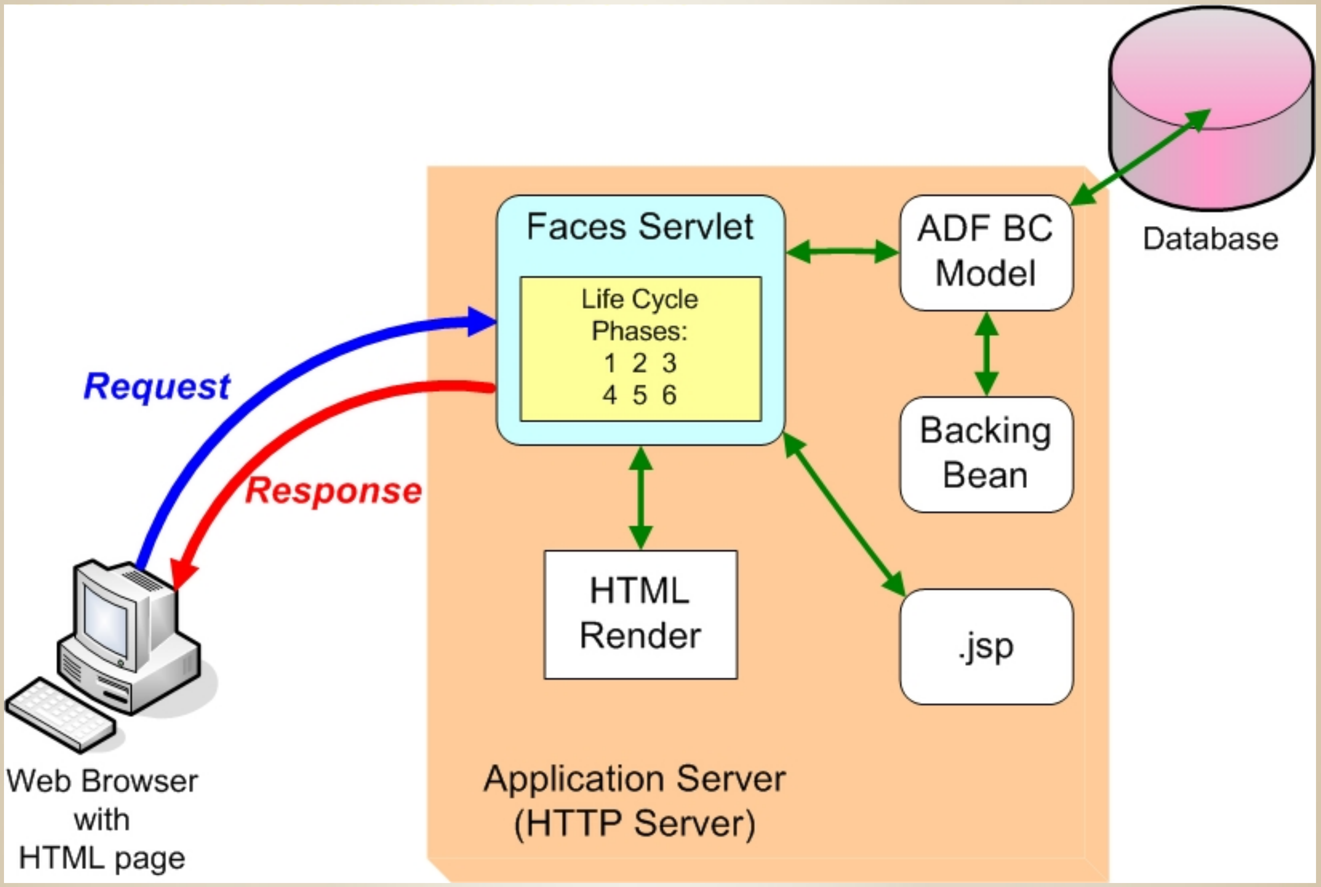
Comparison to Typical 4GLs

- Most 4GLs offer some type of “Data Object” or “Data Access Object” capability
  - Usually include wizard-based development
  - Usually work with relational database; do not usually support procedure-based data
  - Sometimes provide ability to find and link data objects using database dictionary
  - Sometimes provide stand-alone reusable data objects
  - Sometimes linked to GUI development via “drag-and-drop” capability

Creating Web Applications

- Oracle’s Business Component Browser is impressive, but not suitable as customer-facing
- ADF Faces extends the Java Server Faces (JSF) framework using XML tags to describe the user interface
- ADF Faces provides a Rich-Client Interface that uses JavaScript and AJAX components; therefore users must have a reasonably up-to-date browser (IE 7.0, Firefox, Safari, Chrome) to use all of its features
- ADF Faces is designed to make declarative creation of “rich-client” (RC) interfaces

Review of Web Processing



HTML, CSS, and Forms

- Even though the ultimate page delivered to the Client Browser is HTML; with JDeveloper's Visual Editor and the combination of ADF Faces and JSF Faces it uses to create .jspx pages there is little need for ADF Developers to code HTML or CSS
- Yield to JDeveloper's declarative mechanism and refrain from coding

ADF Controller

- The ADF Controller extends the standard JSF controller and controls the MVC in ADF
- ADF Controller features include:
  - Sequence of page displays (may be conditional)
  - Allows partial-page processing in the same way as full page processing; only the necessary part of a page is rendered, the rest is unchanged (makes page processing faster)
  - Allows reuse of page parts
  - Provides conditional control of page flow

JSF Life Cycle

- JSF & ADF Faces follow a predictable cycle:

  1. Restore Components
  2. Apply Request Values
  3. Process Validations
  4. Update Model Values
  5. Invoke Application
  6. Render Response

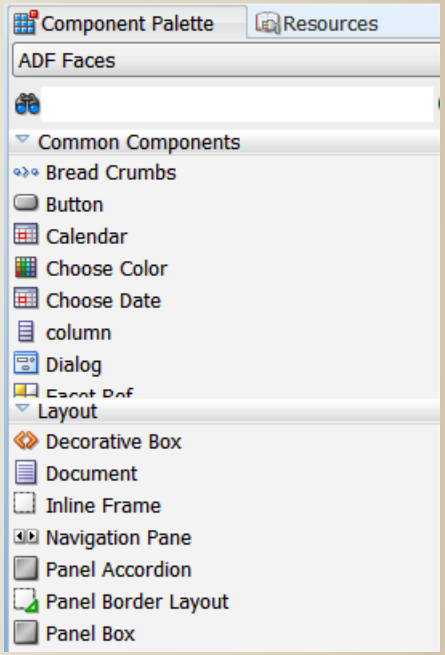
- This Life Cycle is normally transparent; however, it is useful to understand it when debugging

JDeveloper Visual Designer

- JDeveloper's Visual Designer may be used to "paint" a User Interface using the Component Palette
- The JDeveloper Visual Designer is intended to be WYSIWYG (What You See Is What You Get); however the nature of the web and HTML is that it's really WYSIKOWYG (What You See Is Kind-Of What You Get)

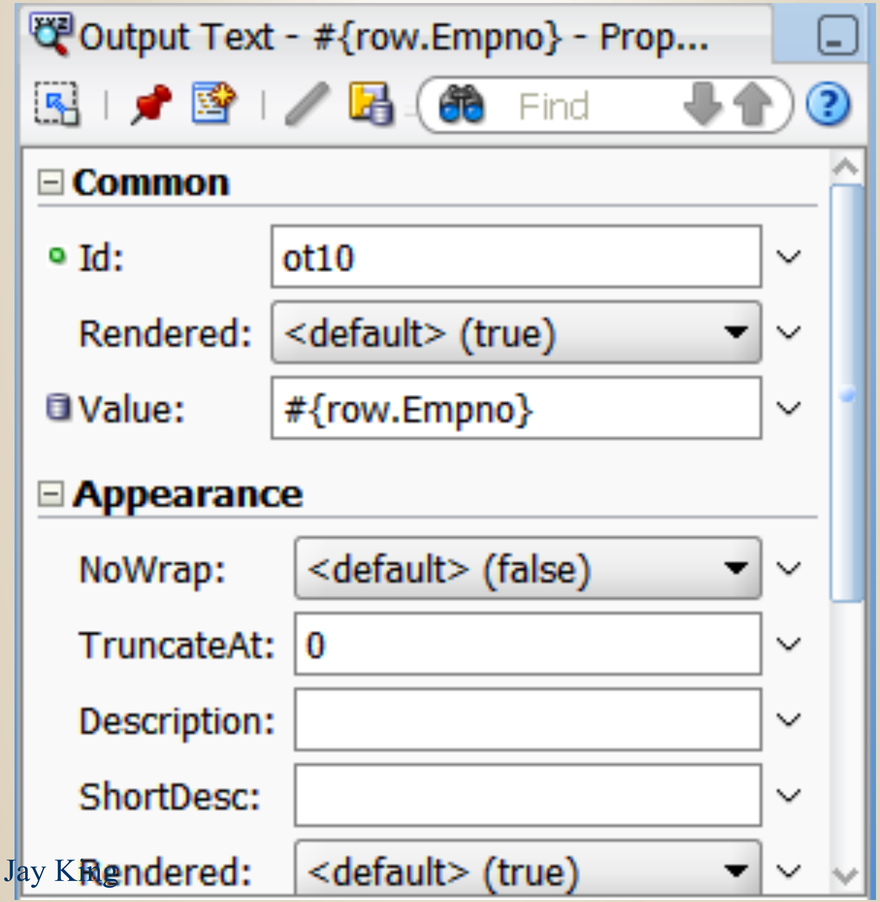
ADF Faces Component Palette

- The ADF Faces Component Palette includes icons representing various User Interface objects
- Drag-and-drop desired components into the position desired


Component Palette
Resources
ADF Faces
Common Components
Bread Crumbs
Button
Calendar
Choose Color
Choose Date
column
Dialog
Facet Ref
Layout
Decorative Box
Document
Inline Frame
Navigation Pane
Panel Accordion
Panel Border Layout
Panel Box

Property Inspector

- When editing Web Pages, the Property Inspector shows properties for the various "facets" and components displayed upon the page



Output Text - #{row.Empno} - Prop...

Common

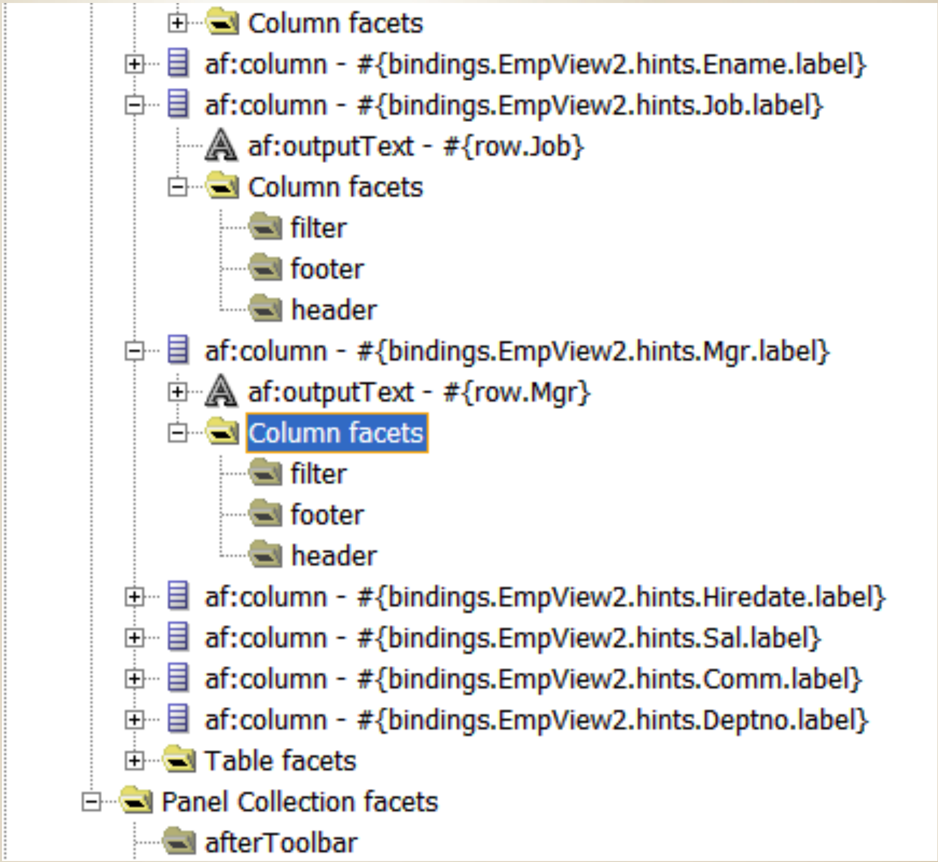
Id:	ot10
Rendered:	<default> (true)
Value:	#{row.Empno}

Appearance

NoWrap:	<default> (false)
TruncateAt:	0
Description:	
ShortDesc:	
Rendered:	<default> (true)

Facets in Structure Window

- The "facets" are components that are used to contain groups of other components
- JDeveloper's "Structure" Window" lists facets in the current page



```
        Column facets
    af:column - #{bindings.EmpView2.hints.Ename.label}
    af:column - #{bindings.EmpView2.hints.Job.label}
        af:outputText - #{row.Job}
        Column facets
            filter
            footer
            header
    af:column - #{bindings.EmpView2.hints.Mgr.label}
        af:outputText - #{row.Mgr}
        Column facets
            filter
            footer
            header
    af:column - #{bindings.EmpView2.hints.Hiredate.label}
    af:column - #{bindings.EmpView2.hints.Sal.label}
    af:column - #{bindings.EmpView2.hints.Comm.label}
    af:column - #{bindings.EmpView2.hints.Deptno.label}
    Table facets
Panel Collection facets
    afterToolbar
```

Panel and Panel Splitter

- Pages in ADF are sometimes divided by Panels; pre-existing templates exist to help create the number of desired Panels
- Each Panel in turn may be divided into smaller areas using a Panel Splitter
  - By default Panel Splitters split an area horizontally
  - Panel Splitters have an "Orientation" property that allow the split to be vertical

Collections, Accordions, Tabbed Panels

- Panel Collections are facets that contain other objects
- Panel Accordions are facets that contain other objects but shrink-and-grow depending upon mouse movement
- Tabbed Panels are facets that allow components to be placed into a tabbed structure

User Interface (UI) Components

- UI Components provided by ADF Faces include:
  - Buttons
  - Calendars
  - Choose Color
  - Forms
  - Input Text
  - Output Text
  - Panel Collection
  - Submit
  - Tables
  - more…

Binding Data

- JDeveloper's interface will allow not only the creation of web components using drag-and-drop processing
- Drag-and-drop may also be used to associate View Objects with UI Components
- This has the effect of “binding” the data to the data control object

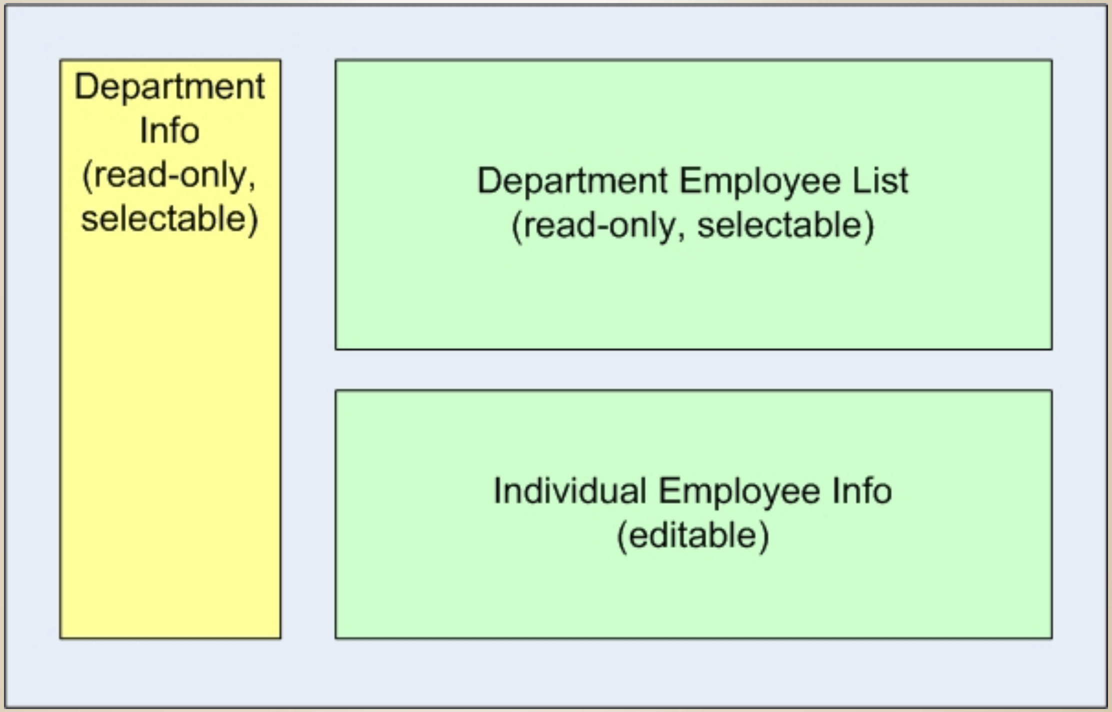
Creating ADF Faces / JSF Pages

- The following pages walk through the creation of a simple Web Application using ADF Faces and ADF BC objects as follows:

1. Design Web Page
2. Create new JSF Page using JDeveloper
3. Add Visual Components to JSF Page
4. Bind Visual Components to ADF BC Objects

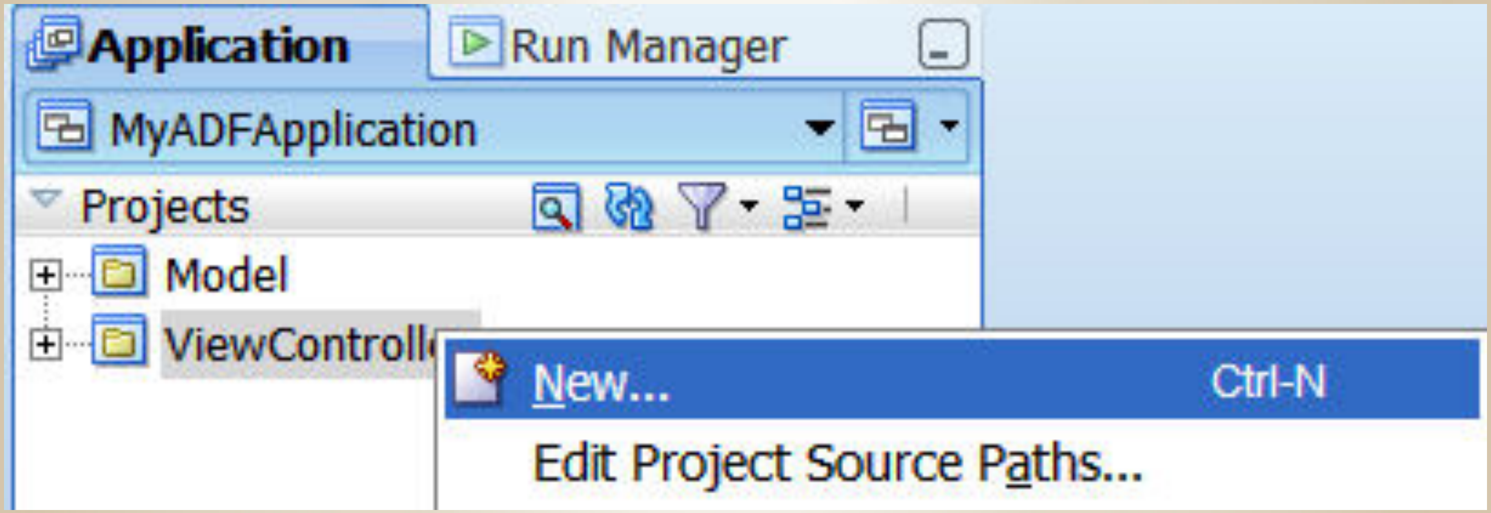
Target Screen Layout

- Rough design: Department info on the left, list of Department Employees (selected dept) in the upper-right, and the information for a single employee on the lower-right (selected from list)

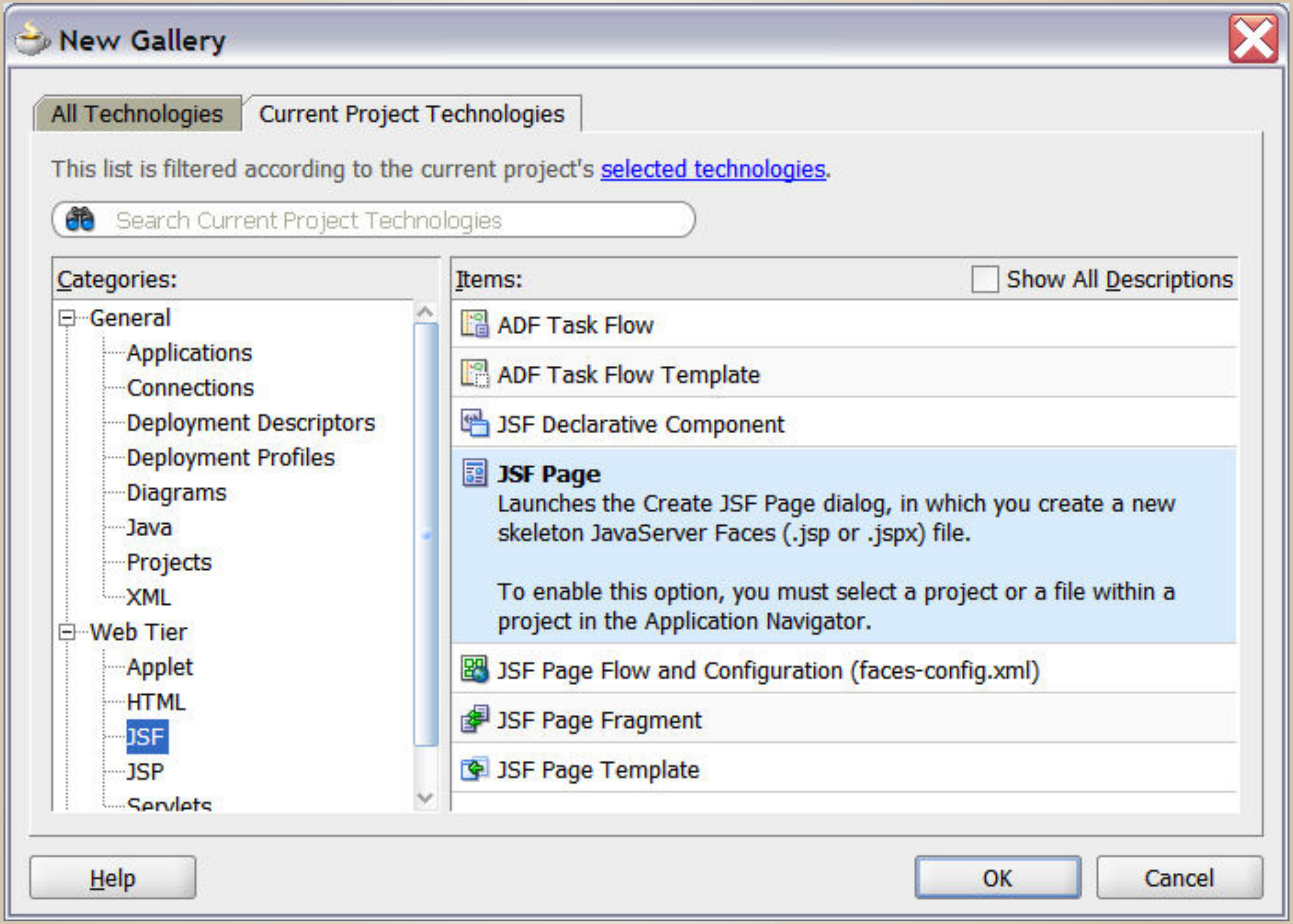

Department Info (read-only, selectable)
Department Employee List (read-only, selectable)
Individual Employee Info (editable)

Create ADF Faces Page

- To create an ADF Faces page, right-click on an Application's ViewController Project and choose "New" to display the "New Gallery" dialog



New Gallery



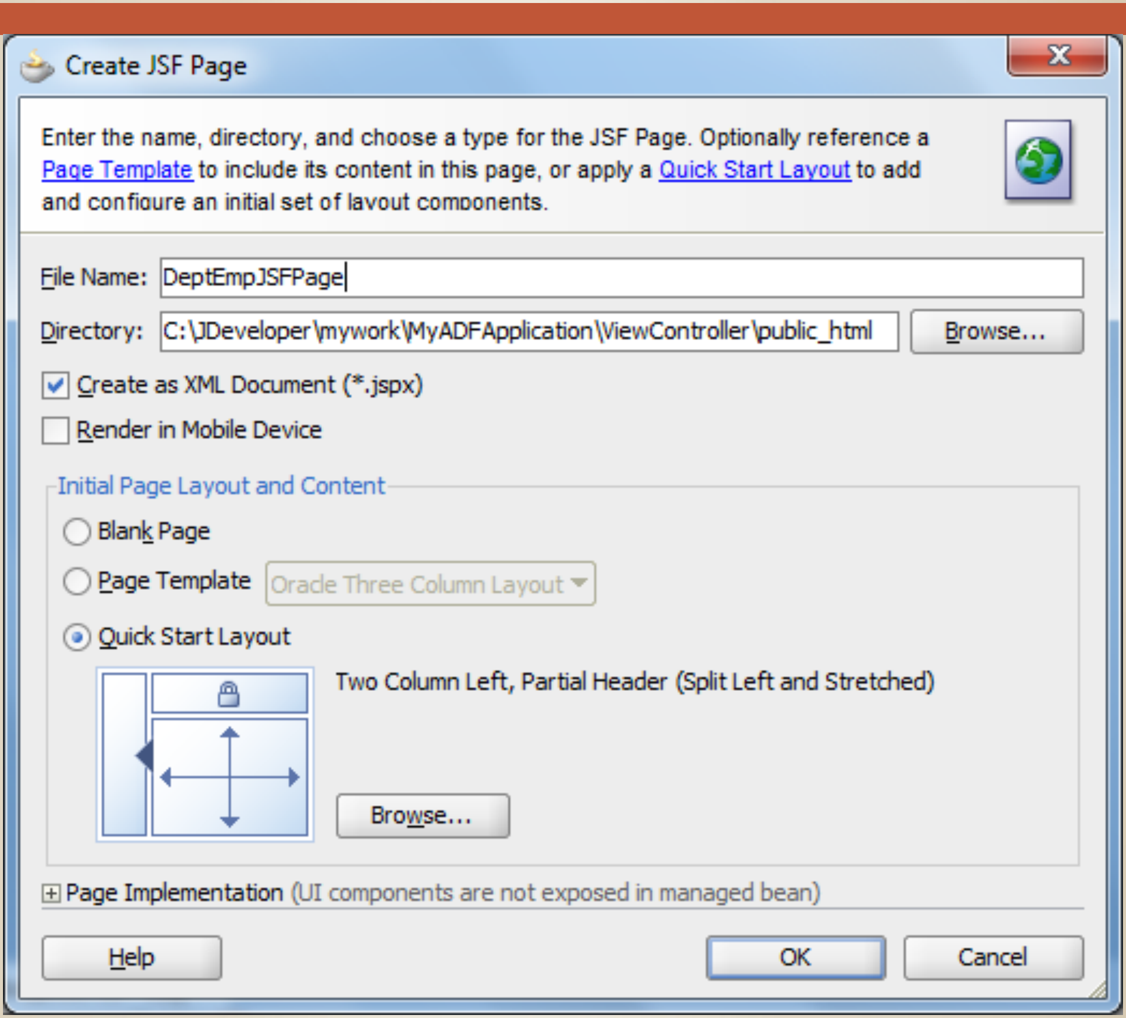
New Gallery

This list is filtered according to the current project's selected technologies.

Launches the Create JSF Page dialog, in which you create a new skeleton JavaServer Faces (.jsp or .jspx) file.

To enable this option, you must select a project or a file within a project in the Application Navigator.

Naming Web Page



Create JSF Page

Enter the name, directory, and choose a type for the JSF Page. Optionally reference a Page Template to include its content in this page, or apply a Quick Start Layout to add and configure an initial set of layout components.

File Name: DeptEmpJSFPage

Directory: C:\JDeveloper\mywork\MyADFApplication\ViewController\public_html

☑ Create as XML Document (*.jspx)

□ Render in Mobile Device

Initial Page Layout and Content

○ Blank Page

○ Page Template Oracle Three Column Layout

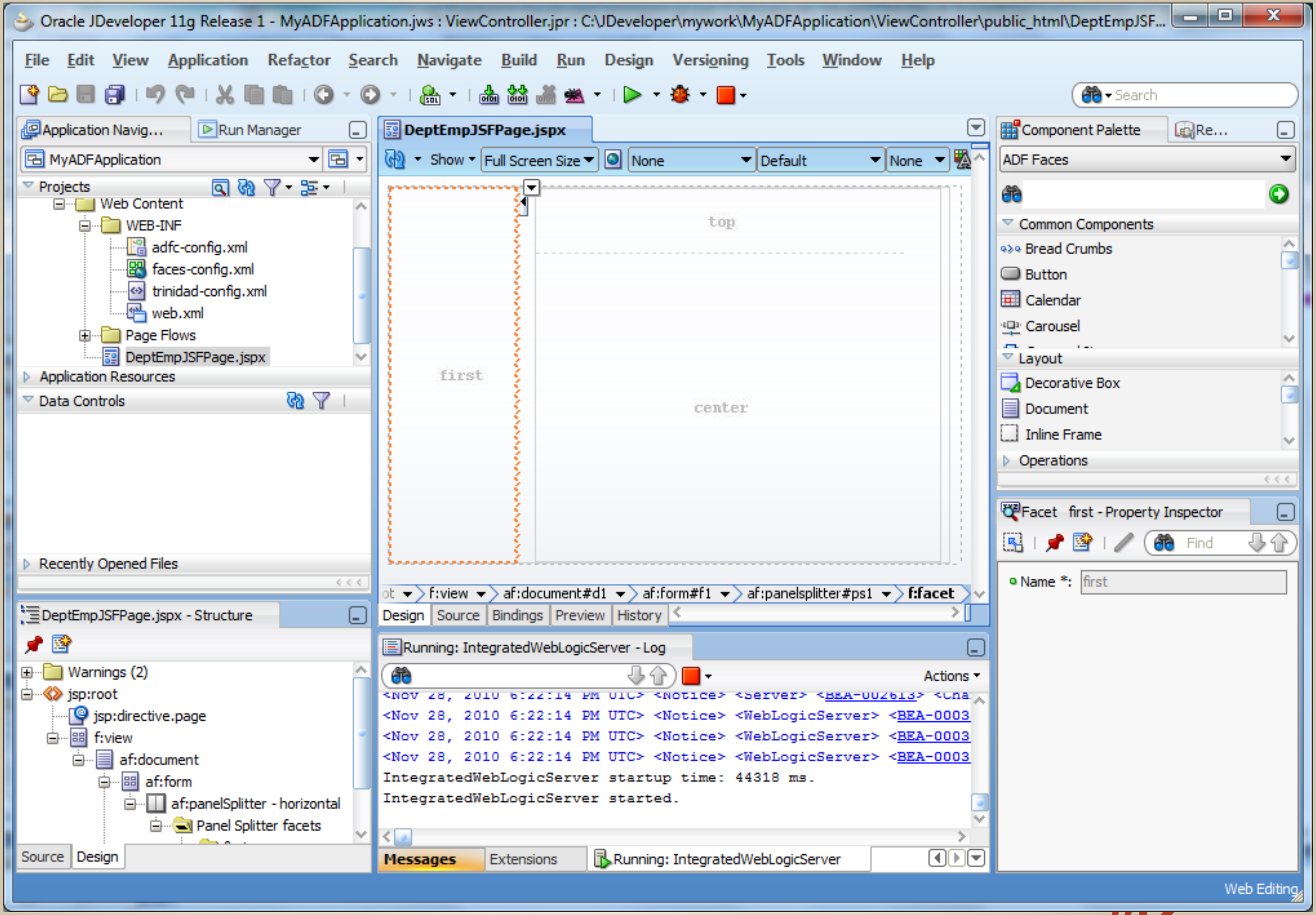
● Quick Start Layout

Two Column Left, Partial Header (Split Left and Stretched)

⊞ Page Implementation (UI components are not exposed in managed bean)

– Note the "Create as XML Document (*.jspx)" box

Visual Display with Initial Screen

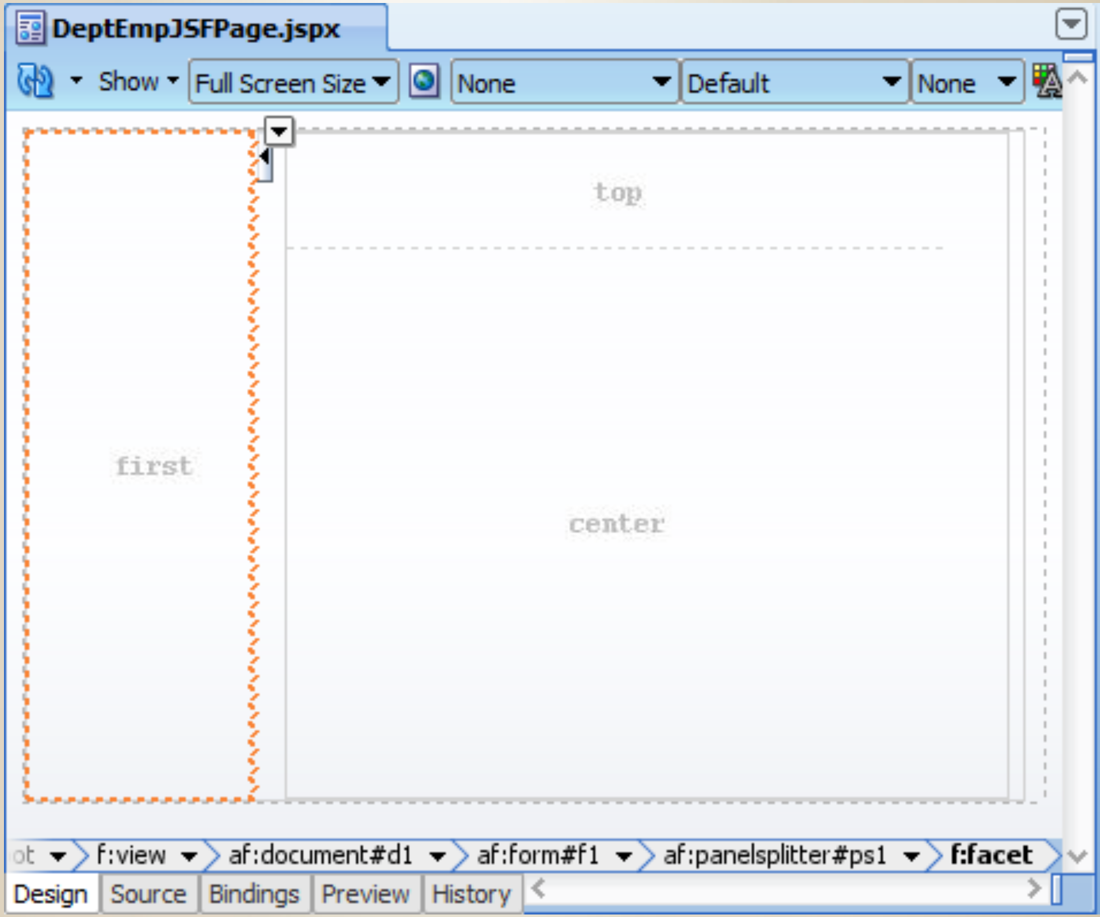


Name *: first

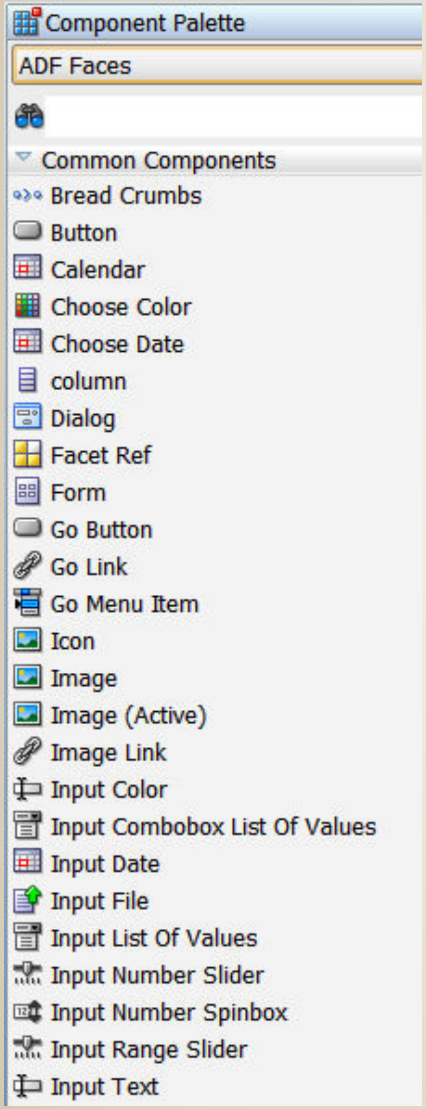
```
<Nov 28, 2010 6:22:14 PM UTC> <Notice> <Server> <BEA-002613> <Cha
<Nov 28, 2010 6:22:14 PM UTC> <Notice> <WebLogicServer> <BEA-0003
<Nov 28, 2010 6:22:14 PM UTC> <Notice> <WebLogicServer> <BEA-0003
<Nov 28, 2010 6:22:14 PM UTC> <Notice> <WebLogicServer> <BEA-0003
IntegratedWebLogicServer startup time: 44318 ms.
IntegratedWebLogicServer started.
```

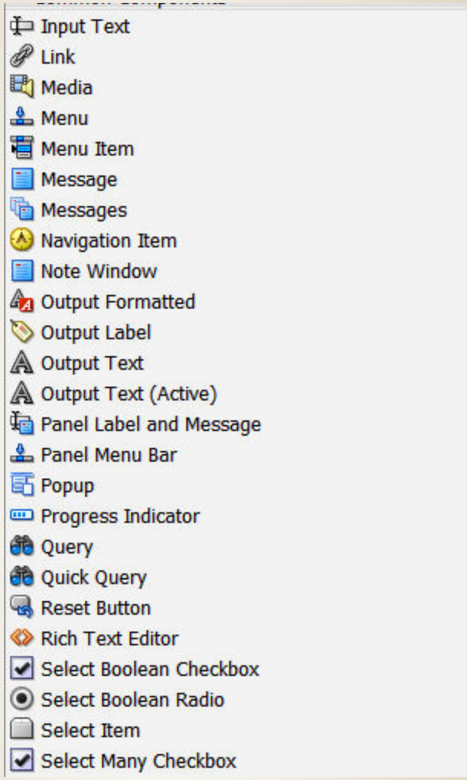
Quick Start Layout

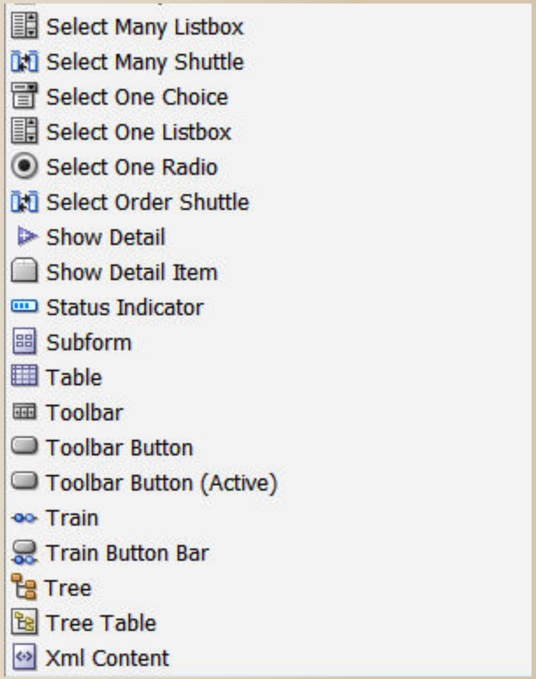
- The supplied quick-start layout is ready to have objects dropped into it



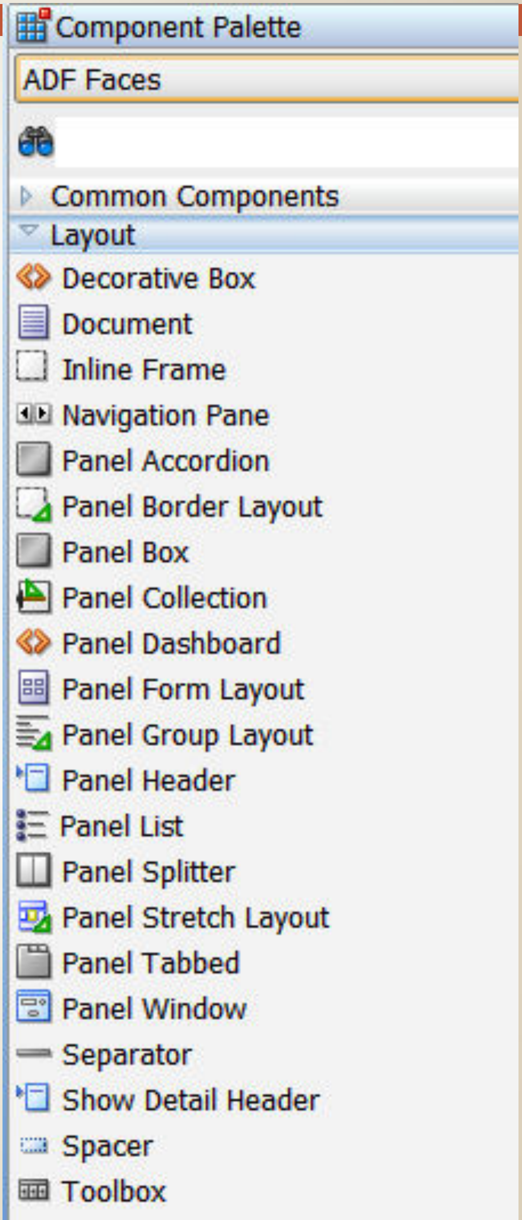
Common Components







Layout Components



Component Palette

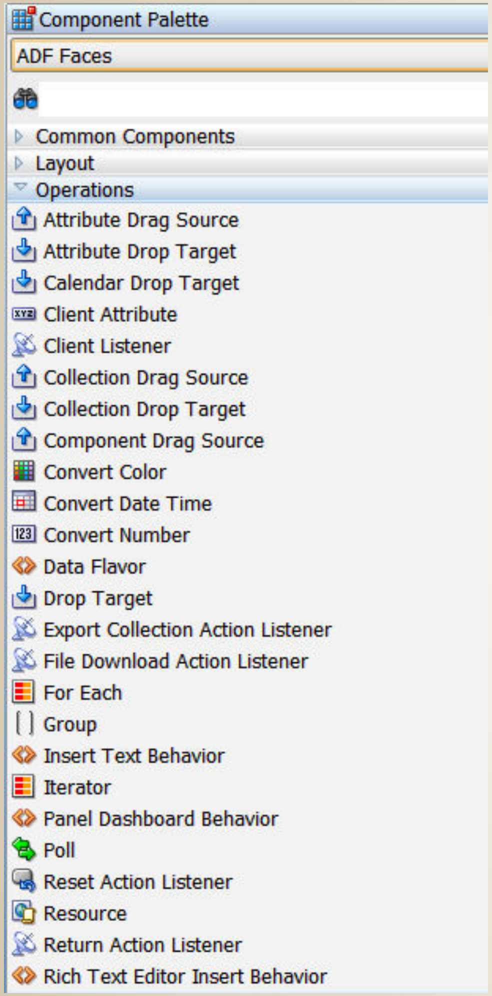
ADF Faces

Common Components

Layout

- Decorative Box
- Document
- Inline Frame
- Navigation Pane
- Panel Accordion
- Panel Border Layout
- Panel Box
- Panel Collection
- Panel Dashboard
- Panel Form Layout
- Panel Group Layout
- Panel Header
- Panel List
- Panel Splitter
- Panel Stretch Layout
- Panel Tabbed
- Panel Window
- Separator
- Show Detail Header
- Spacer
- Toolbox

Operations Components



Component Palette

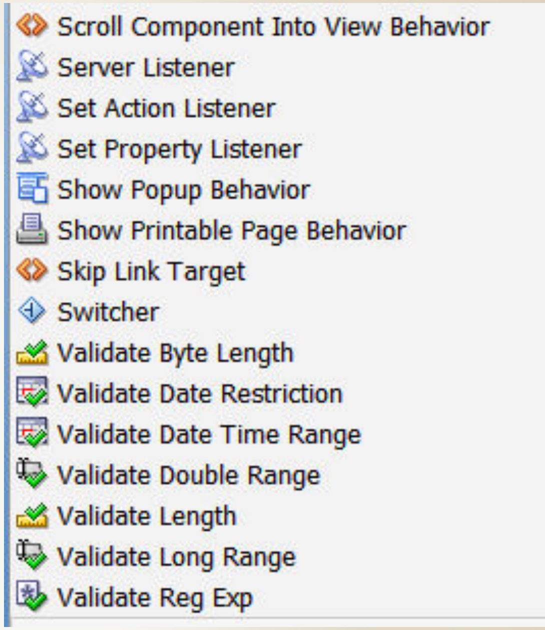
ADF Faces

Common Components

Layout

Operations

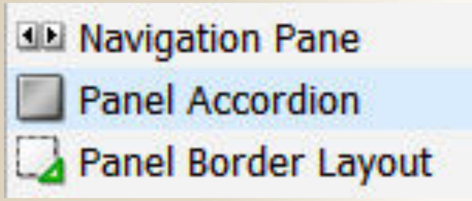
- Attribute Drag Source
- Attribute Drop Target
- Calendar Drop Target
- Client Attribute
- Client Listener
- Collection Drag Source
- Collection Drop Target
- Component Drag Source
- Convert Color
- Convert Date Time
- Convert Number
- Data Flavor
- Drop Target
- Export Collection Action Listener
- File Download Action Listener
- For Each
- Group
- Insert Text Behavior
- Iterator
- Panel Dashboard Behavior
- Poll
- Reset Action Listener
- Resource
- Return Action Listener
- Rich Text Editor Insert Behavior

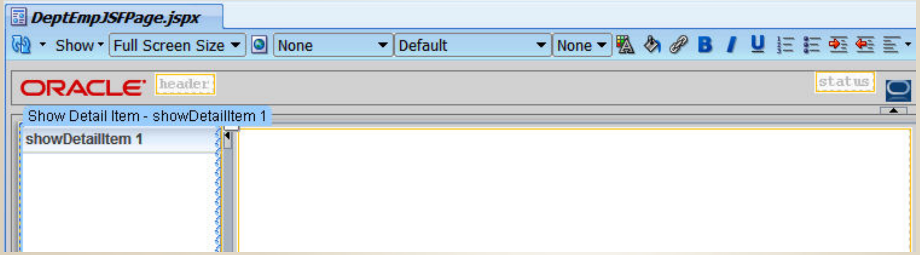


- Scroll Component Into View Behavior
- Server Listener
- Set Action Listener
- Set Property Listener
- Show Popup Behavior
- Show Printable Page Behavior
- Skip Link Target
- Switcher
- Validate Byte Length
- Validate Date Restriction
- Validate Date Time Range
- Validate Double Range
- Validate Length
- Validate Long Range
- Validate Reg Exp

Adding Accordion Component

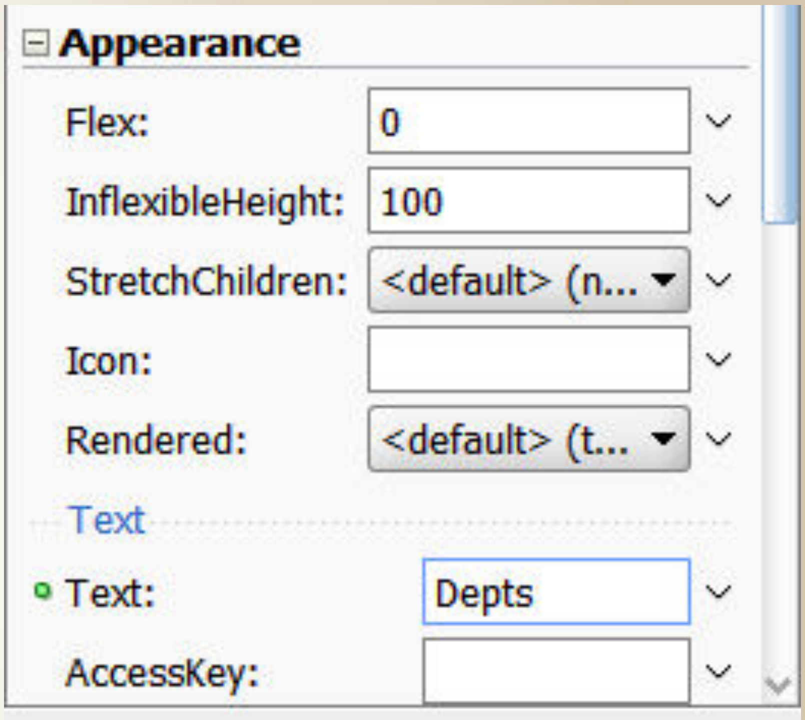
- To add an Accordion Component to the web page; Panel Accordion component from the pallet to the desired column (“start”)





Change Accordion Title Property

- To alter the Accordion's title, click on the Accordion and modify its Property Inspector Text item (changed to “Depts”)



⊟ Appearance

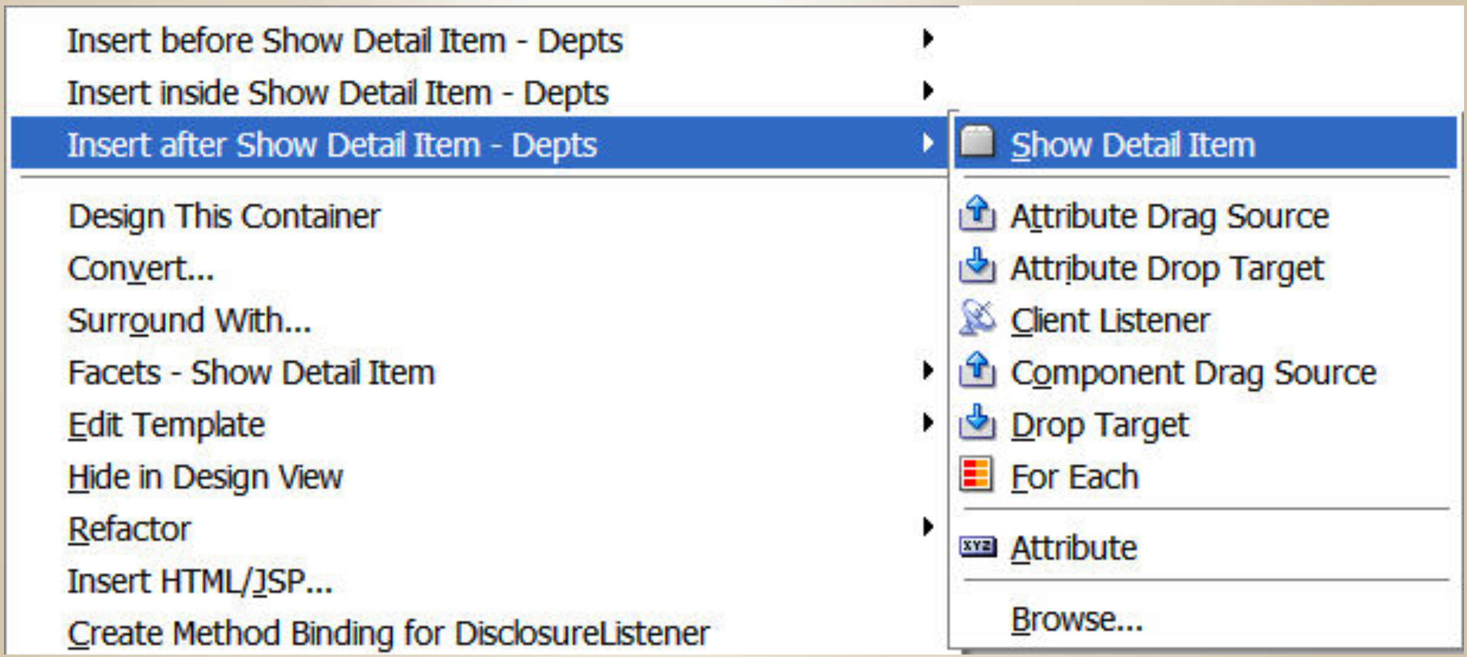
Flex:	0
InflexibleHeight:	100
StretchChildren:	<default> (n...
Icon:	
Rendered:	<default> (t...

Text

Text:	Depts
AccessKey:	

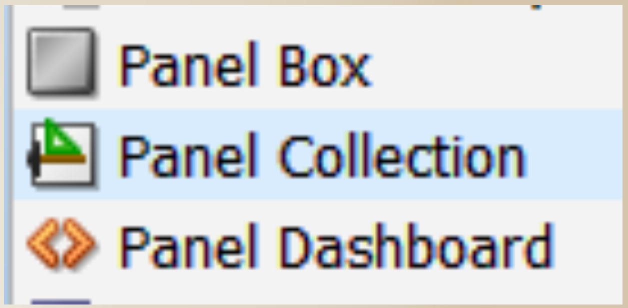
Add Data Component

- Right-click in the “Depts” Accordion; when prompted choose “Insert After Show Details Item - Depts -> Show Detail Item” to add another Accordion to the page (not used again in demo…)

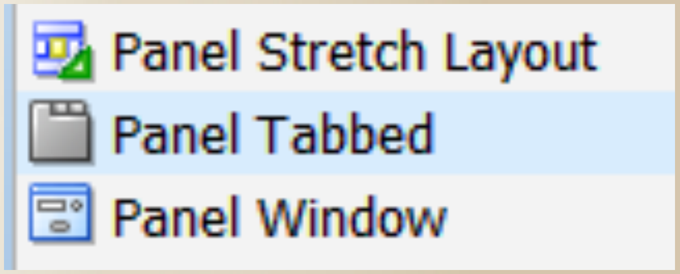


Adding Collection & Tabbed Area

- Find the "Panel Collection" component in the Layout components and drag it to the "first" (top) part of the Splitter area
- Find the "Panel Tabbed" component in the Layout components and drag it to the "second" (bottom) part of the Splitter area



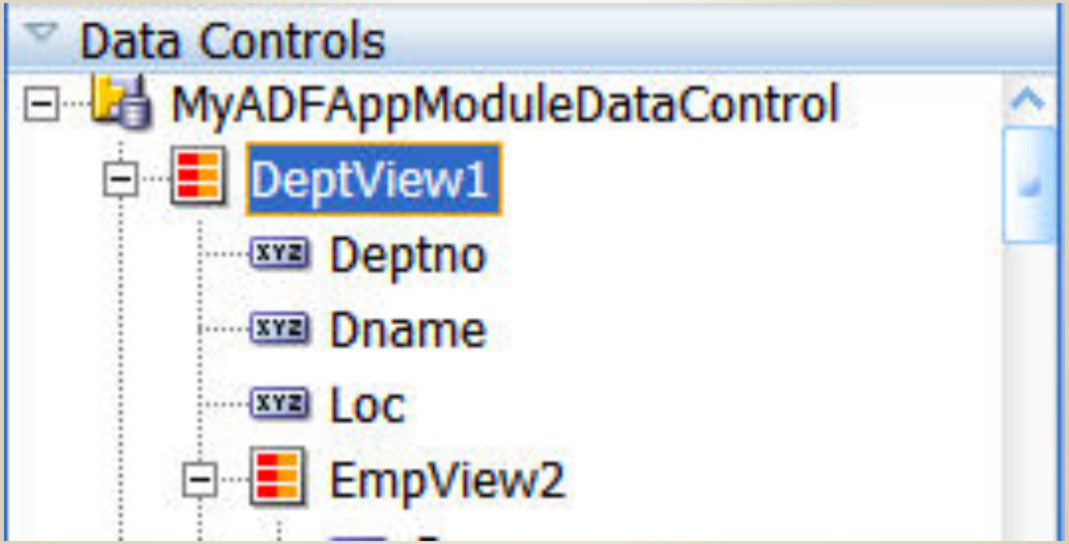
Panel Box
Panel Collection
Panel Dashboard



Panel Stretch Layout
Panel Tabbed
Panel Window

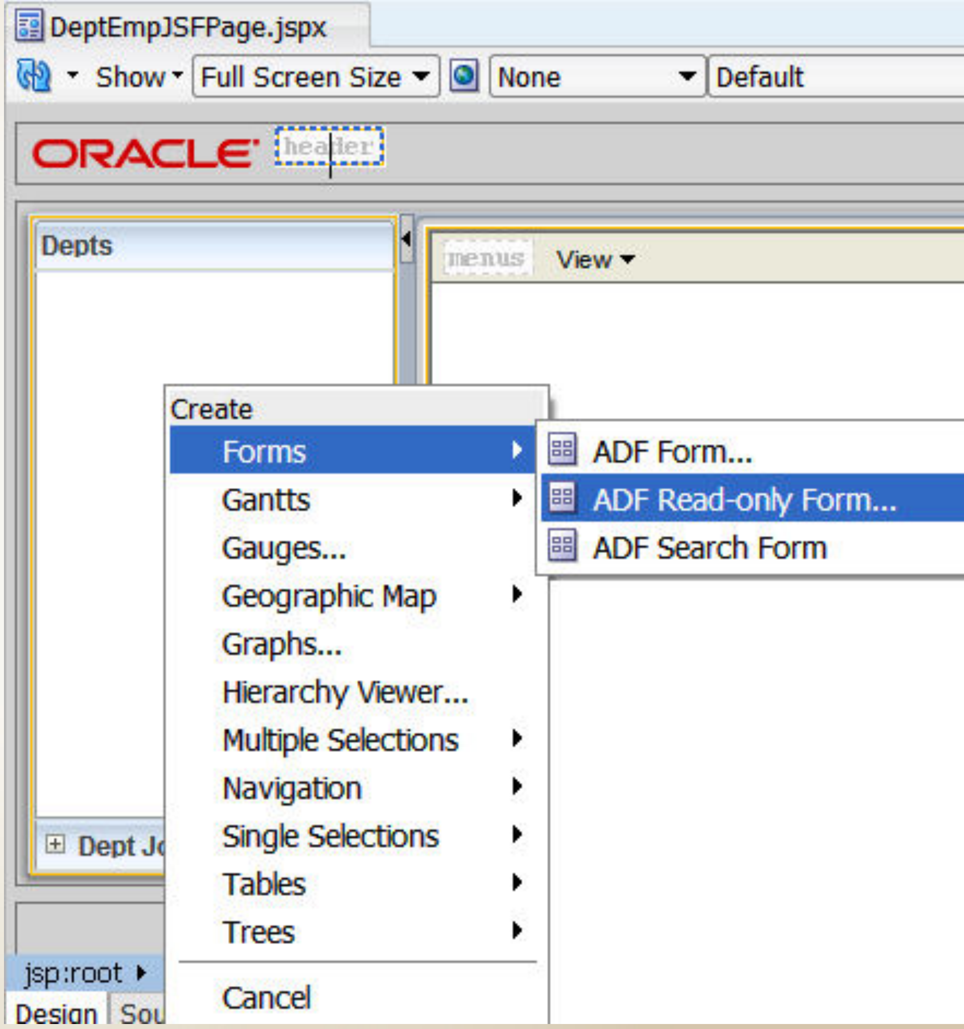
Data Binding: Adding Data, 1

- To “bind” data to web page components, simply drag ADF BC data objects to the Visual Editor
- Open the “Application Navigator” and expand the “Data Controls” accordion to see the ADF BC components created earlier then drag “DeptView1” to the “Depts” accordion



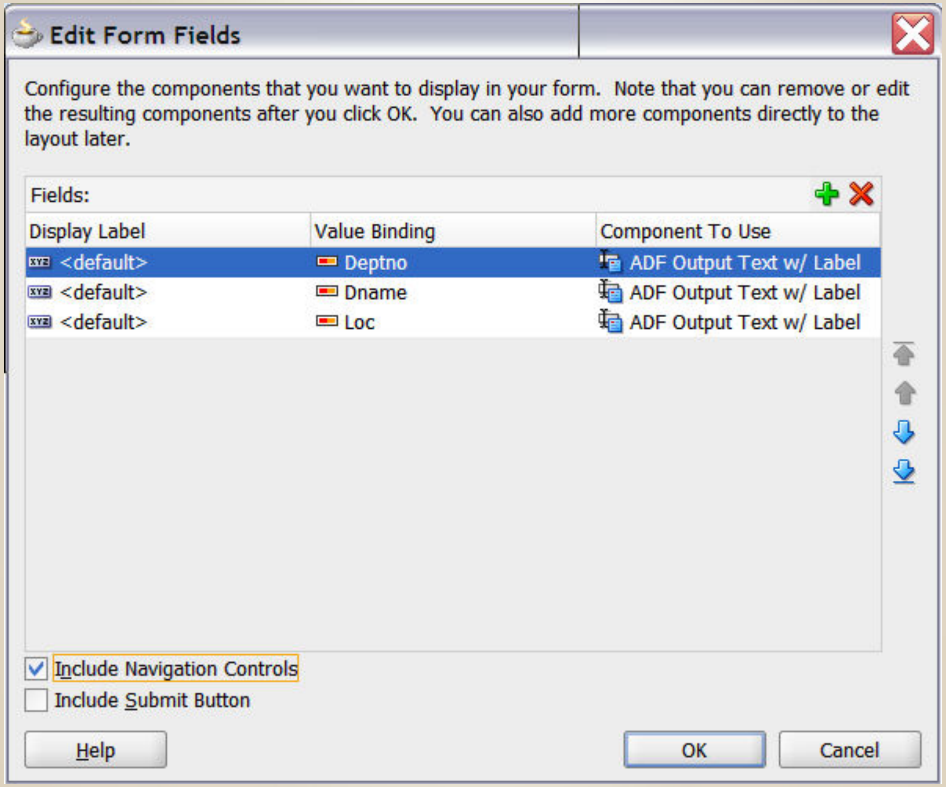
Data Binding: Adding Data, 2

- When prompted; choose “Create Forms -> ADF Read-Only Form” to populate the Department data display



Adding Navigation Controls

- Check the "Include Navigation Controls" box
- You may also modify display labels and add, delete, or reorganize the values displayed



Edit Form Fields

Configure the components that you want to display in your form. Note that you can remove or edit the resulting components after you click OK. You can also add more components directly to the layout later.

Fields:

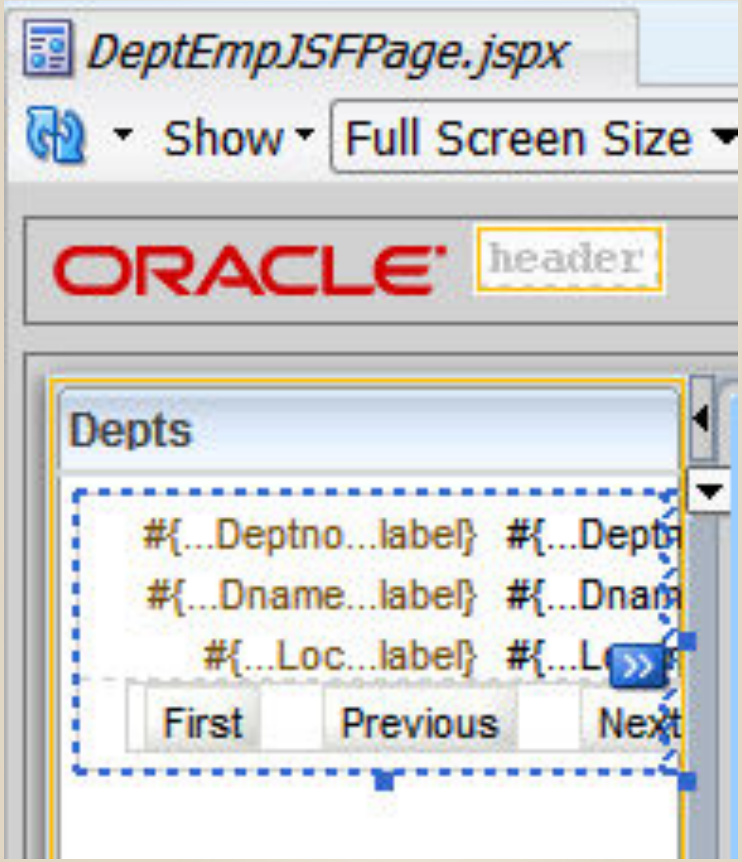
Display Label	Value Binding	Component To Use
<default>	Deptno	ADF Output Text w/ Label
<default>	Dname	ADF Output Text w/ Label
<default>	Loc	ADF Output Text w/ Label

☑ Include Navigation Controls

□ Include Submit Button

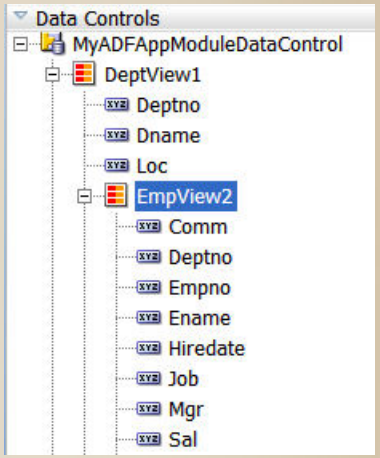
Department Display Area

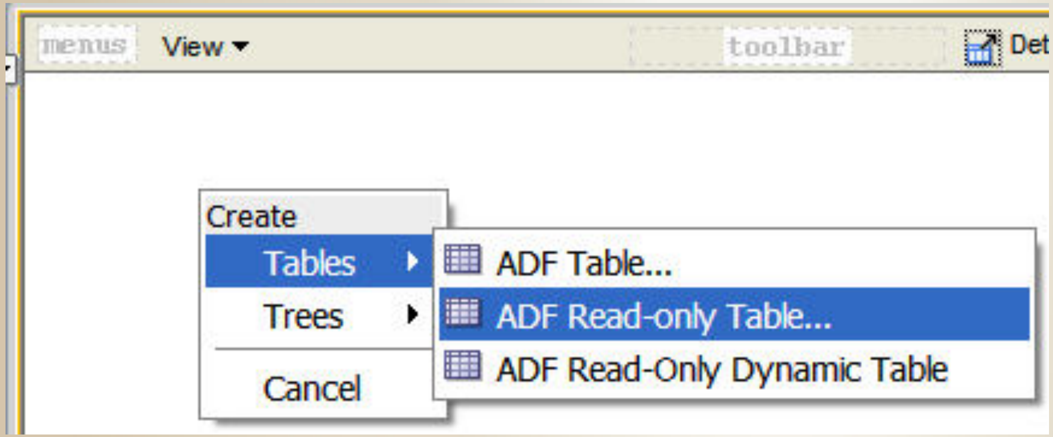
- After adding the Department information; the “Depts” accordion should look like the following



Adding Department Employees

- Next, to add Department Employees to the page, drag the EmpView2 data control

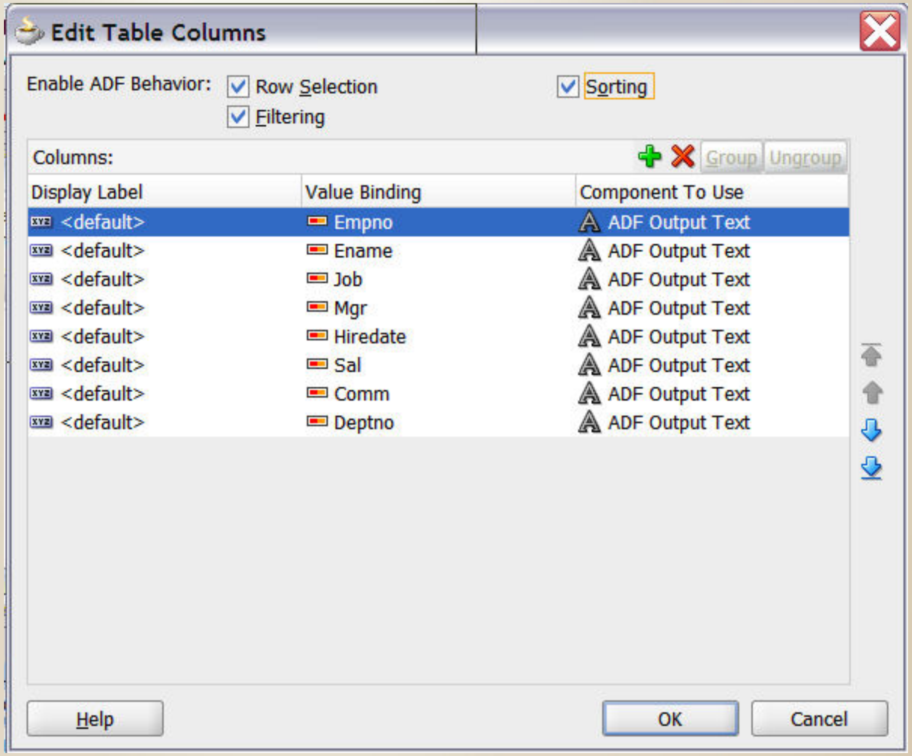




- When prompted, choose “Create Tables -> ADF Read-Only Table” again

Add Navigation Controls

- Check all three navigation controls:
- Row Selection (user may select), filtering (user may search), and sort; as before columns may be relabeled, added, deleted, reorganized



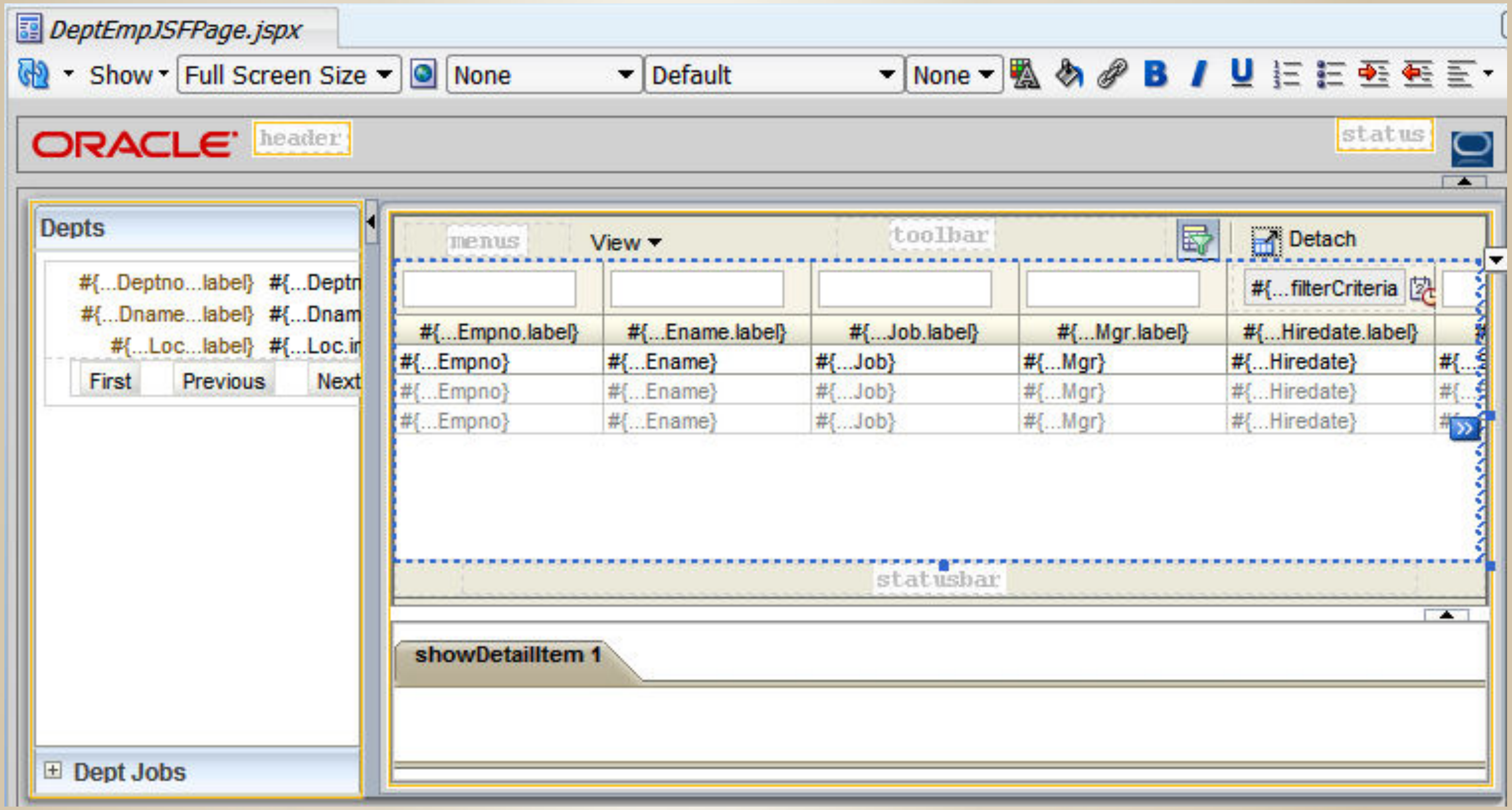
Edit Table Columns

Enable ADF Behavior: ☑ Row Selection ☑ Sorting ☑ Filtering

Columns:

Display Label	Value Binding	Component To Use
<default>	Empno	ADF Output Text
<default>	Ename	ADF Output Text
<default>	Job	ADF Output Text
<default>	Mgr	ADF Output Text
<default>	Hiredate	ADF Output Text
<default>	Sal	ADF Output Text
<default>	Comm	ADF Output Text
<default>	Deptno	ADF Output Text

Department Employee Area



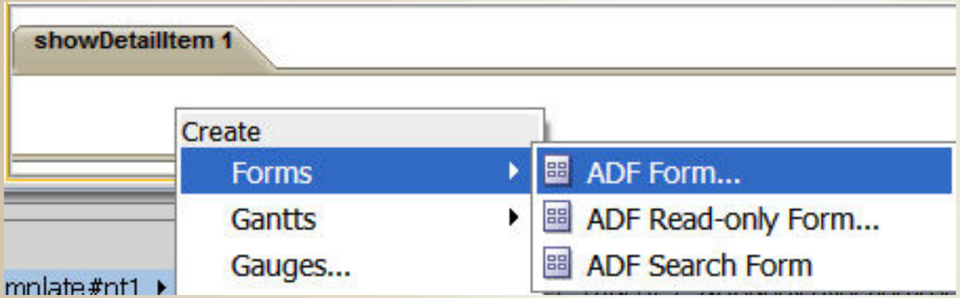
#{...Deptno...label} #{...Deptn
#{...Dname...label} #{...Dnam
#{...Loc...label} #{...Loc.i

First Previous Next

#{...Empno.label}	#{...Ename.label}	#{...Job.label}	#{...Mgr.label}	#{...Hiredate.label}	#
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#{...
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#{...
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#

Adding Individual Employee

- Finally, add the individual Employee display to the Tabbed area at the bottom of the page

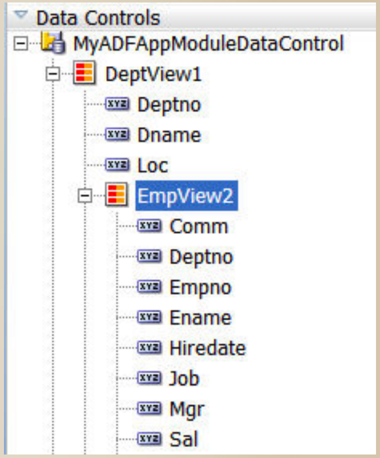


showDetailItem 1

Create

- Forms ▸
  - ADF Form...
  - ADF Read-only Form...
  - ADF Search Form
- Gantts ▸
- Gauges...

mplate#pt1 ▸



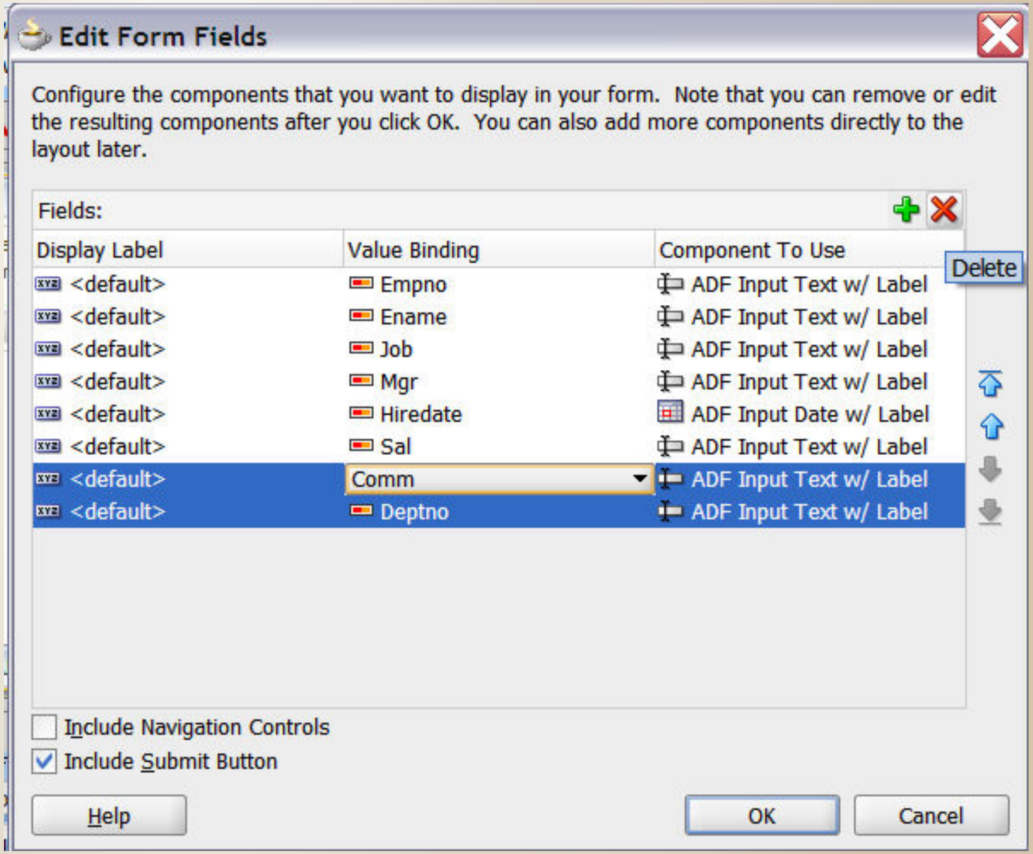
Data Controls

- MyADFAppModuleDataControl
  - DeptView1
    - Deptno
    - Dname
    - Loc
    - EmpView2
      - Comm
      - Deptno
      - Empno
      - Ename
      - Hiredate
      - Job
      - Mgr
      - Sal

- When prompted, choose “Create Forms -> ADF Form” to select the display format (this part of the form will be editable)

Add Employee Navigation

- Delete the COMM and DEPTNO data from the display (highlight & click X); check "Include Submit Button"



Edit Form Fields

Configure the components that you want to display in your form. Note that you can remove or edit the resulting components after you click OK. You can also add more components directly to the layout later.

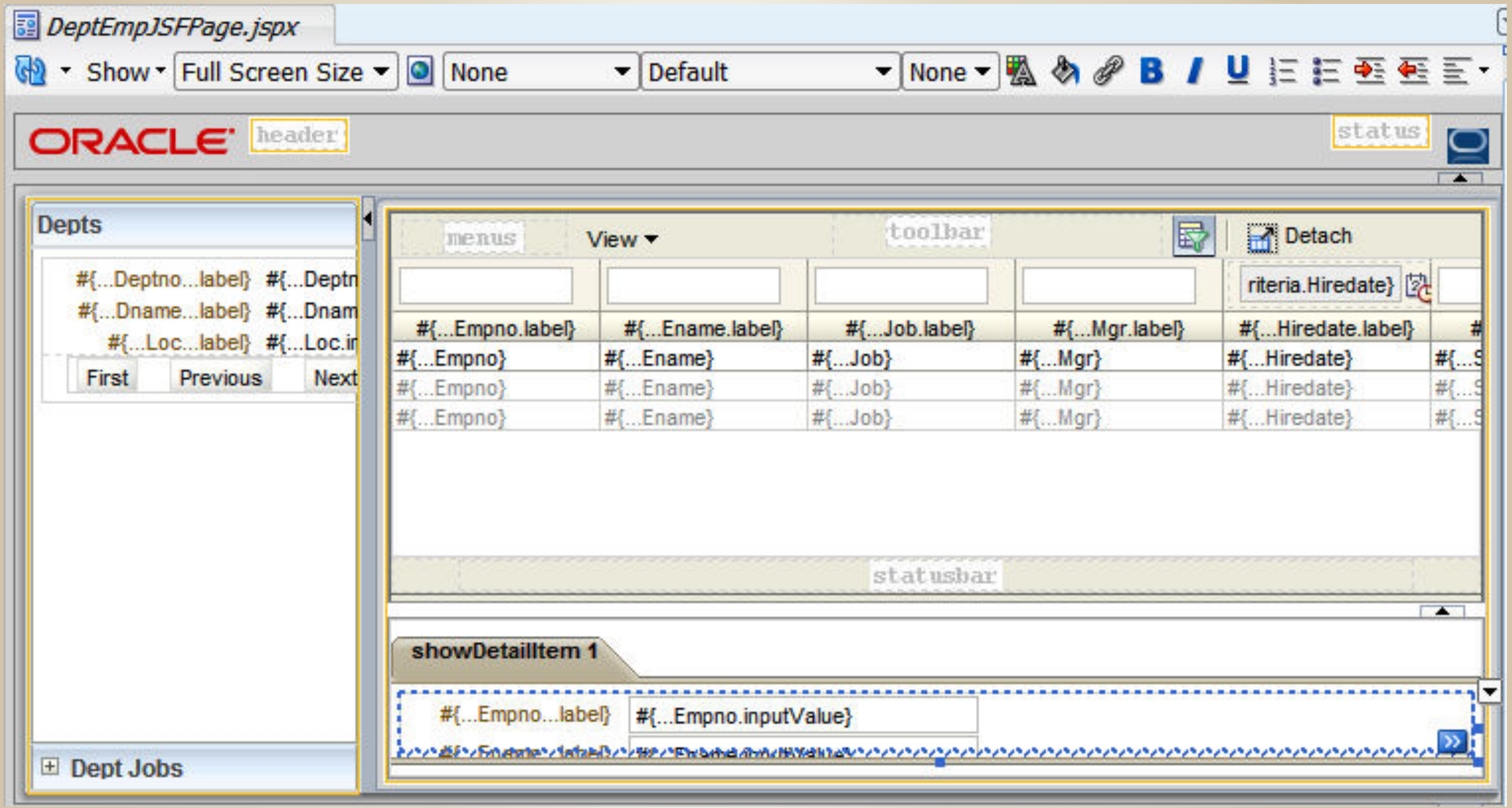
Fields:

Display Label	Value Binding	Component To Use
<default>	Empno	ADF Input Text w/ Label
<default>	Ename	ADF Input Text w/ Label
<default>	Job	ADF Input Text w/ Label
<default>	Mgr	ADF Input Text w/ Label
<default>	Hiredate	ADF Input Date w/ Label
<default>	Sal	ADF Input Text w/ Label
<default>	Comm	ADF Input Text w/ Label
<default>	Deptno	ADF Input Text w/ Label

□ Include Navigation Controls

☑ Include Submit Button

Completed Web Application Page



Full Screen Size | None | Default | None

Depts

#{...Deptno...label} #{...Deptn
#{...Dname...label} #{...Dnam
#{...Loc...label} #{...Loc.ir

				riteria.Hiredate}	
#{...Empno.label}	#{...Ename.label}	#{...Job.label}	#{...Mgr.label}	#{...Hiredate.label}	#
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#{...S
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#{...S
#{...Empno}	#{...Ename}	#{...Job}	#{...Mgr}	#{...Hiredate}	#{...S

showDetailItem 1

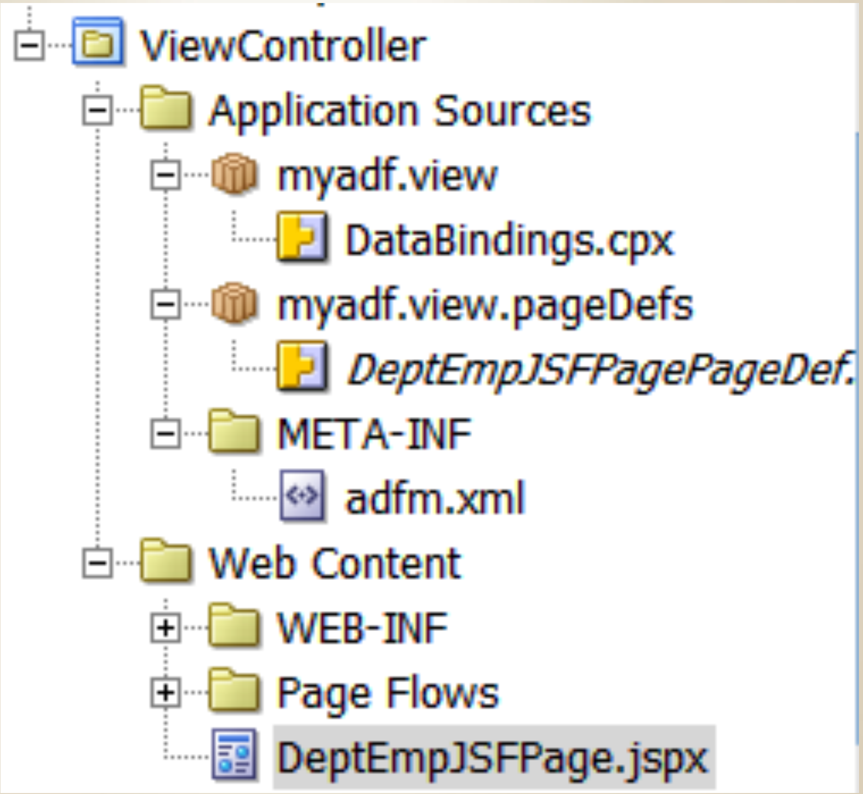
#{...Empno...label} #{...Empno.inputValue}

#{...Ename...label} #{...Ename.inputValue}

⊞ Dept Jobs

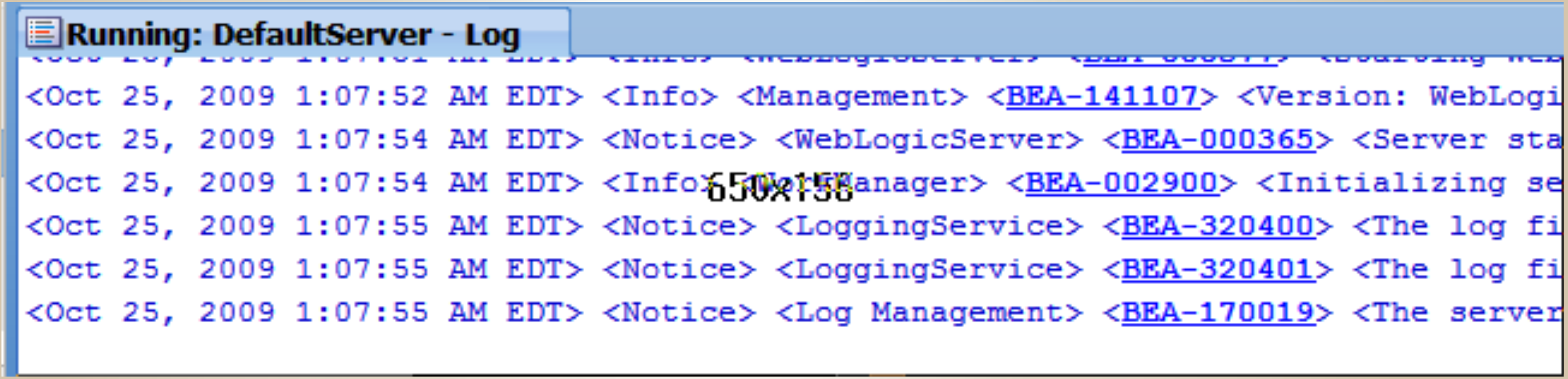
Testing the Web Application

- To begin testing the Web Application; right-click the ".jspx" file created in the ViewController project and choose "Run"



Be Patient!

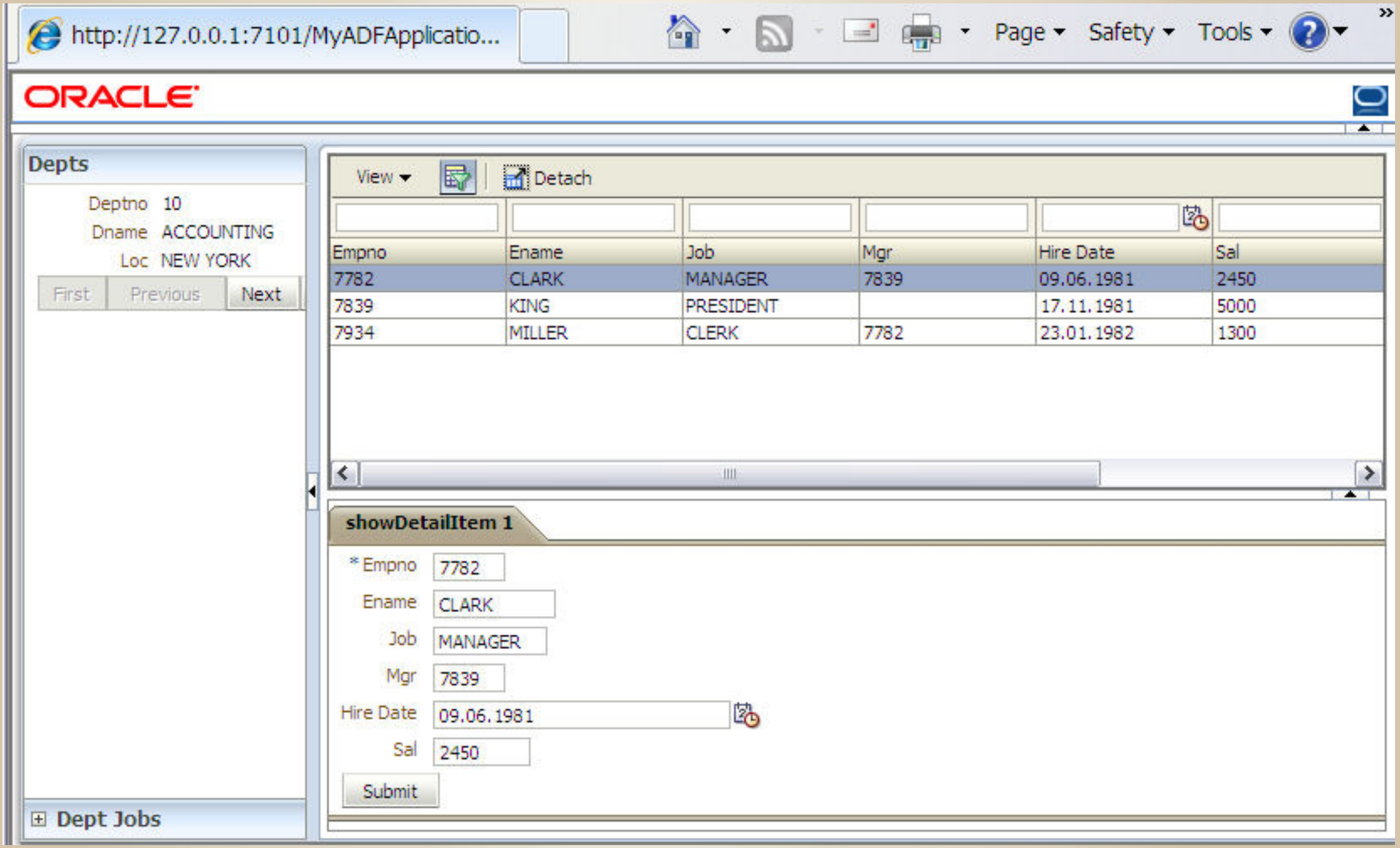
- The first time you execute a Web application JDeveloper will start its built-in WebLogic Application Server; this takes a while
- You can track the progress of the Server's startup in JDeveloper's DefaultServer Log



```
<Oct 25, 2009 1:07:52 AM EDT> <Info> <Management> <BEA-141107> <Version: WebLogi
<Oct 25, 2009 1:07:54 AM EDT> <Notice> <WebLogicServer> <BEA-000365> <Server sta
<Oct 25, 2009 1:07:54 AM EDT> <Info> <WorkManager> <BEA-002900> <Initializing se
<Oct 25, 2009 1:07:55 AM EDT> <Notice> <LoggingService> <BEA-320400> <The log fi
<Oct 25, 2009 1:07:55 AM EDT> <Notice> <LoggingService> <BEA-320401> <The log fi
<Oct 25, 2009 1:07:55 AM EDT> <Notice> <Log Management> <BEA-170019> <The server
```

- Once the Server is "up" your web page should be displayed in a browser (again, please be patient!)

Web Page in Browser



Depts

Deptno	10
Dname	ACCOUNTING
Loc	NEW YORK

Empno	Ename	Job	Mgr	Hire Date	Sal
7782	CLARK	MANAGER	7839	09.06.1981	2450
7839	KING	PRESIDENT		17.11.1981	5000
7934	MILLER	CLERK	7782	23.01.1982	1300

showDetailItem 1

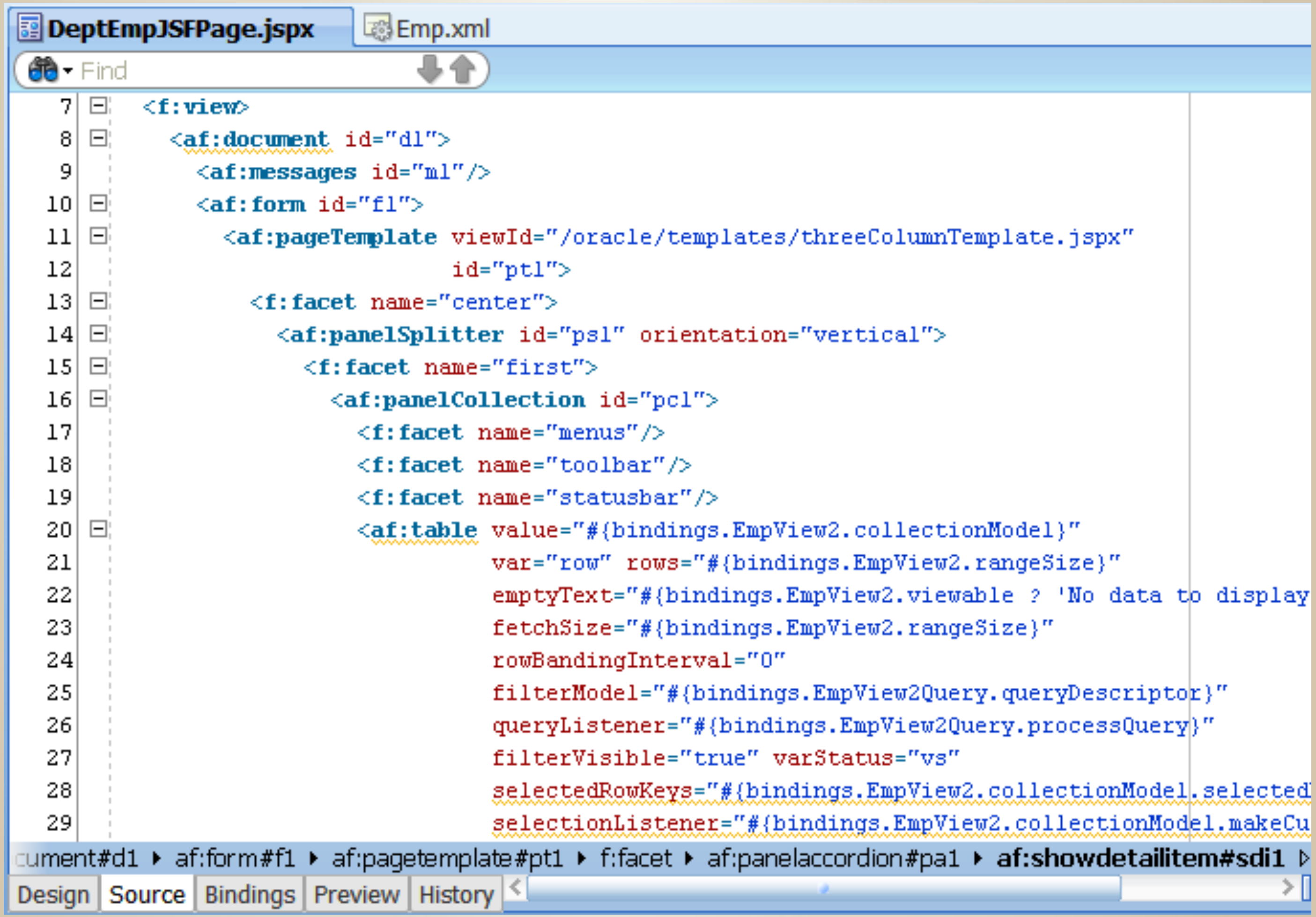
* Empno	7782
Ename	CLARK
Job	MANAGER
Mgr	7839
Hire Date	09.06.1981
Sal	2450

Files Supporting Web Application

- Several files make up the typical ADF Web Application
  - A .jspx file is used to define each web page
  - Web pages reference a page definition XML file (.xml)
  - Bindings are described in another XML file (.cpx)

JSF .jspx File

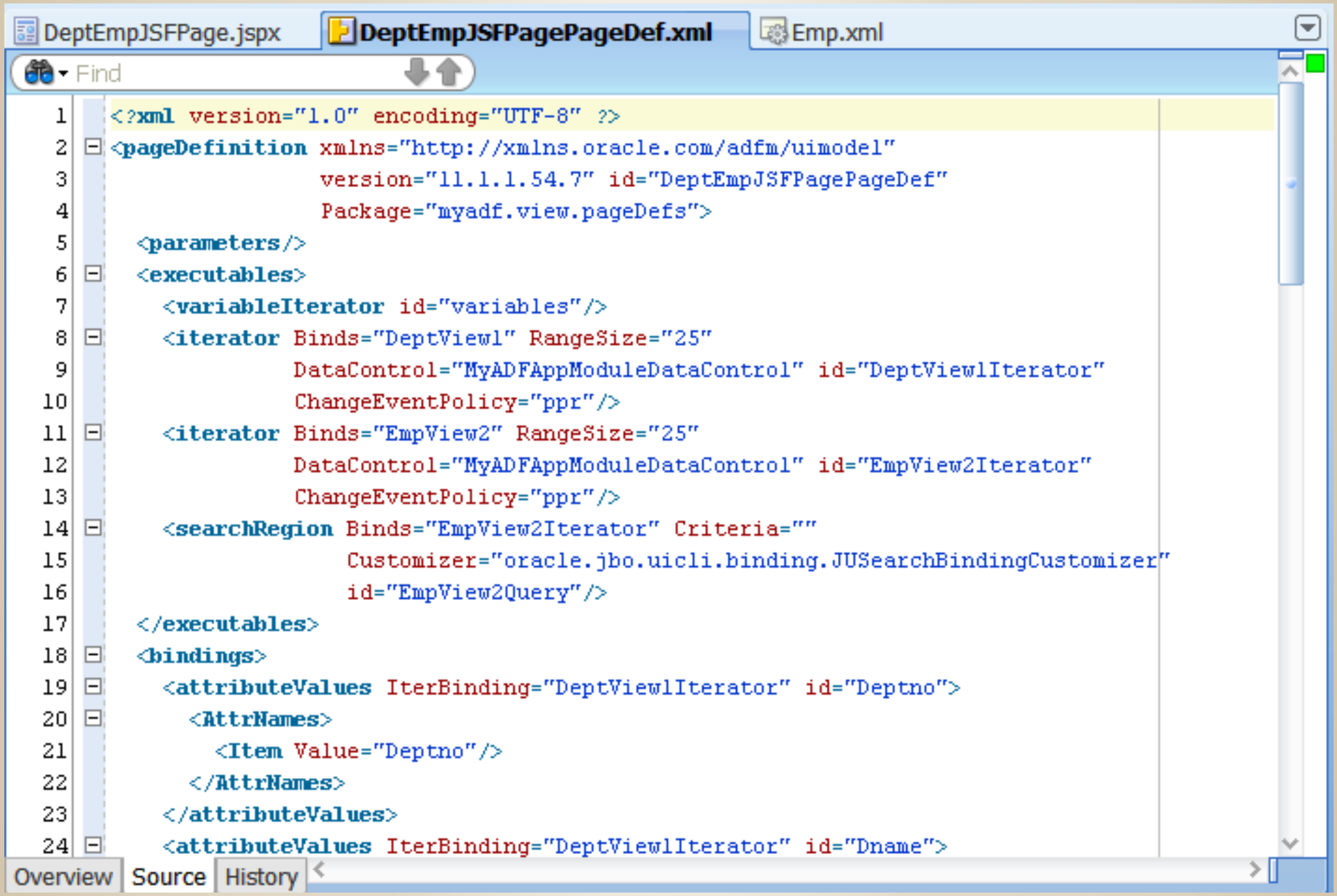
- ADF defines a web page using an XML .jspx file



```
<f:view>
  <af:document id="d1">
    <af:messages id="m1"/>
    <af:form id="f1">
      <af:pageTemplate viewId="/oracle/templates/threeColumnTemplate.jspx"
                       id="pt1">
        <f:facet name="center">
          <af:panelSplitter id="ps1" orientation="vertical">
            <f:facet name="first">
              <af:panelCollection id="pc1">
                <f:facet name="menus"/>
                <f:facet name="toolbar"/>
                <f:facet name="statusbar"/>
                <af:table value="#{bindings.EmpView2.collectionModel}"
                          var="row" rows="#{bindings.EmpView2.rangeSize}"
                          emptyText="#{bindings.EmpView2.viewable ? 'No data to display
                          fetchSize="#{bindings.EmpView2.rangeSize}"
                          rowBandingInterval="0"
                          filterModel="#{bindings.EmpView2Query.queryDescriptor}"
                          queryListener="#{bindings.EmpView2Query.processQuery}"
                          filterVisible="true" varStatus="vs"
                          selectedRowKeys="#{bindings.EmpView2.collectionModel.selected
                          selectionListener="#{bindings.EmpView2.collectionModel.makeCu
```

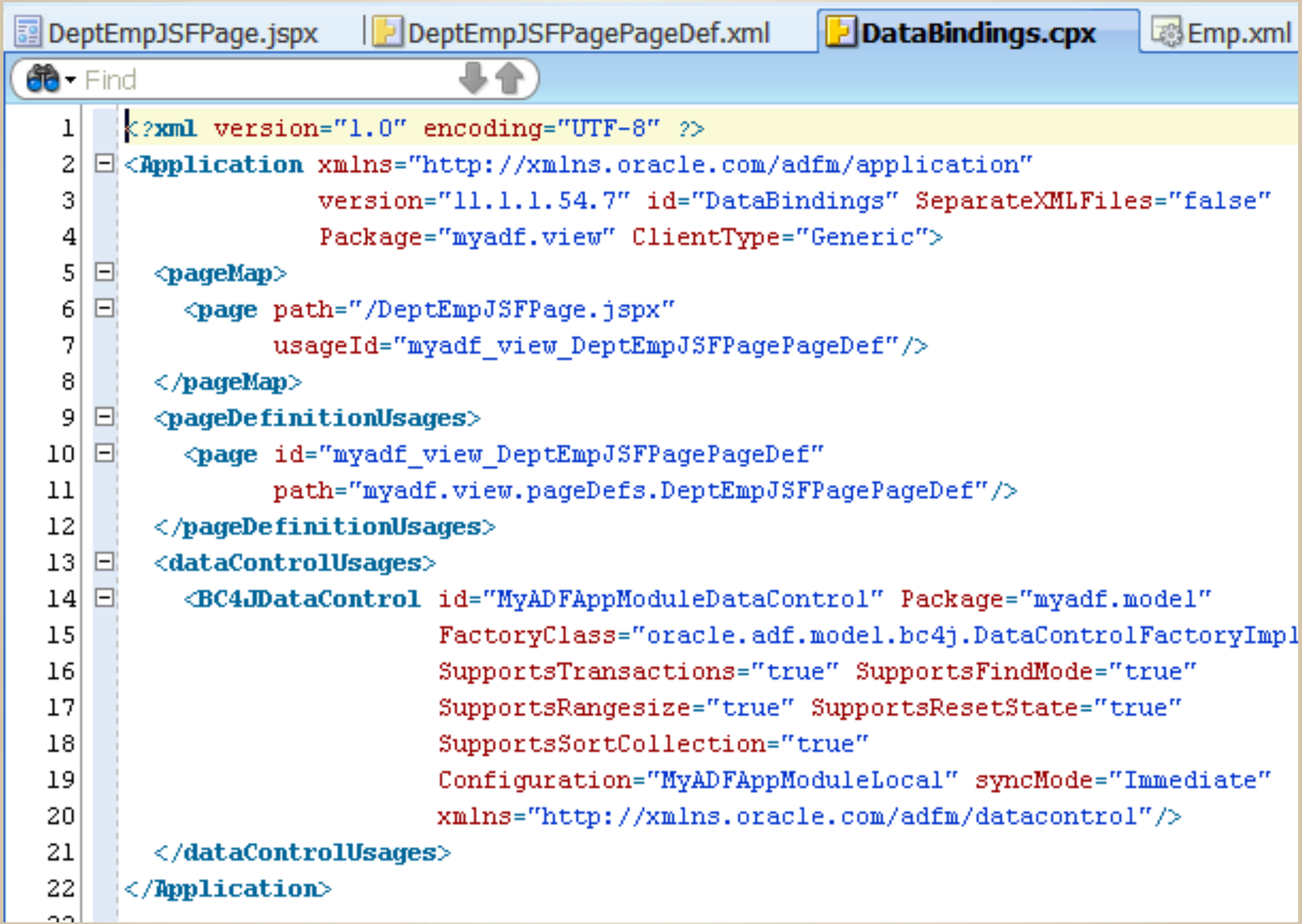
cument#d1 ▸ af:form#f1 ▸ af:pagetemplate#pt1 ▸ f:facet ▸ af:panelaccordion#pa1 ▸ af:showdetailitem#sdi1 ▸
Design
Source
Bindings
Preview
History

ADF Web Page Definition file (.xml)



```
<?xml version="1.0" encoding="UTF-8" ?>
<pageDefinition xmlns="http://xmlns.oracle.com/adfm/uimodel"
                version="11.1.1.54.7" id="DeptEmpJSFPagePageDef"
                Package="myadf.view.pageDefs">
  <parameters/>
  <executables>
    <variableIterator id="variables"/>
    <iterator Binds="DeptView1" RangeSize="25"
              DataControl="MyADFAppModuleDataControl" id="DeptView1Iterator"
              ChangeEventPolicy="ppr"/>
    <iterator Binds="EmpView2" RangeSize="25"
              DataControl="MyADFAppModuleDataControl" id="EmpView2Iterator"
              ChangeEventPolicy="ppr"/>
    <searchRegion Binds="EmpView2Iterator" Criteria=""
                  Customizer="oracle.jbo.uicli.binding.JUSearchBindingCustomizer"
                  id="EmpView2Query"/>
  </executables>
  <bindings>
    <attributeValues IterBinding="DeptView1Iterator" id="Deptno">
      <AttrNames>
        <Item Value="Deptno"/>
      </AttrNames>
    </attributeValues>
    <attributeValues IterBinding="DeptView1Iterator" id="Dname">
```

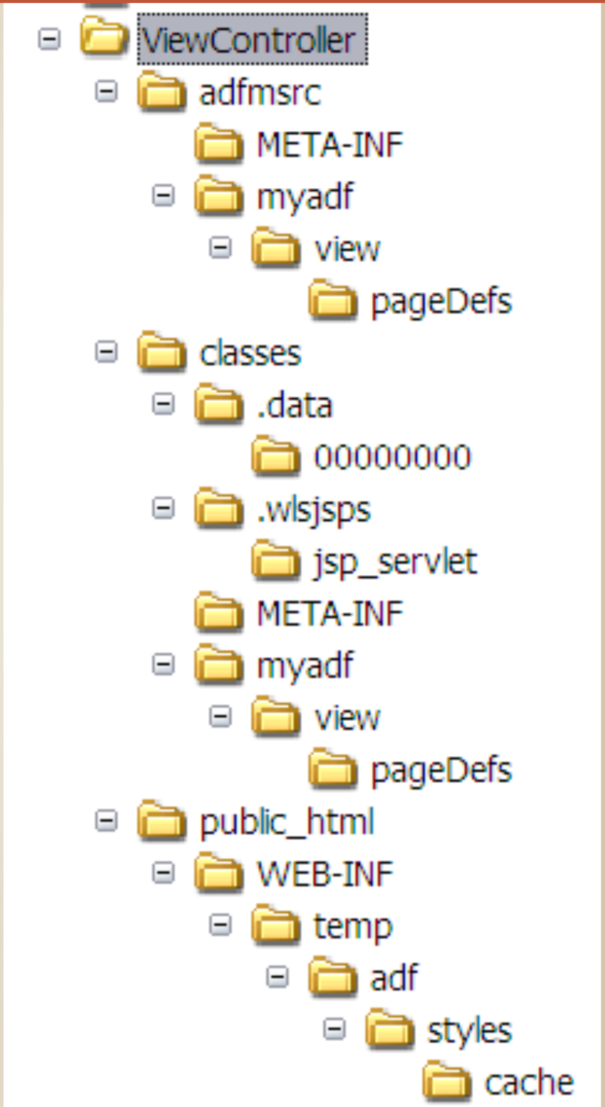
ADF Bindings XML file (.cpx)



```
<?xml version="1.0" encoding="UTF-8" ?>
<Application xmlns="http://xmlns.oracle.com/adfm/application"
             version="11.1.1.54.7" id="DataBindings" SeparateXMLFiles="false"
             Package="myadf.view" ClientType="Generic">
  <pageMap>
    <page path="/DeptEmpJSFPage.jspx"
          usageId="myadf_view_DeptEmpJSFPagePageDef"/>
  </pageMap>
  <pageDefinitionUsages>
    <page id="myadf_view_DeptEmpJSFPagePageDef"
          path="myadf.view.pageDefs.DeptEmpJSFPagePageDef"/>
  </pageDefinitionUsages>
  <dataControlUsages>
    <BC4JDataControl id="MyADFAppModuleDataControl" Package="myadf.model"
                     FactoryClass="oracle.adf.model.bc4j.DataControlFactoryImpl
                     SupportsTransactions="true" SupportsFindMode="true"
                     SupportsRangesize="true" SupportsResetState="true"
                     SupportsSortCollection="true"
                     Configuration="MyADFAppModuleLocal" syncMode="Immediate"
                     xmlns="http://xmlns.oracle.com/adfm/datacontrol"/>
  </dataControlUsages>
</Application>
```

ADF Faces ViewController Files

- The XML files representing the ViewController project are distributed using a directory structure



```
ViewController
  adfmsrc
    META-INF
    myadf
      view
        pageDefs
  classes
    .data
      00000000
    .wlsjsps
      jsp_servlet
    META-INF
    myadf
      view
        pageDefs
  public_html
    WEB-INF
      temp
        adf
          styles
            cache
```

Forms & ADF Comparison

Feature	Forms	ADF
Declarative database access	Yes	Yes
Reuse of database access	Some	Yes
Declarative user interface development	Yes	Yes
Automatic screen generation	Yes	Some
Reuse of user interface	Some	Yes
Web Deployment	Yes	Yes
Client-Server Deployment	No	Yes
Fusion Applications development tool	No	Yes
Customizable	Yes	Yes
Built with open standards	No	Yes

Available Books

- Quick Start Guide to Oracle Fusion Development
  - Grant Ronald
  - Oracle Press
- Oracle JDeveloper 11g Handbook
  - Duncan Mills, Peter Koletzke, Dr. Avrom Roy-Federman
  - Oracle Press
- Oracle Fusion Developer's Guide
  - Frank Nimphius, Lynn Munsinger
  - Oracle Press

Wrapping It Up

- Oracle’s design emphasis and new features will support the Java-based ADF mechanism and enhance it for the foreseeable future
- JDeveloper and ADF allow me to create simple web applications easily:
  - ADF BC creates reusable data components
  - ADF Faces creates reusable view components
- Oracle Forms is not going anywhere; it is not necessary to “convert” things to ADF
- I did not write a single line of Java in this demo!

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Thanks for your attention!

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