

ORACLE®




Oracle Forms Modernization with Oracle Application Express

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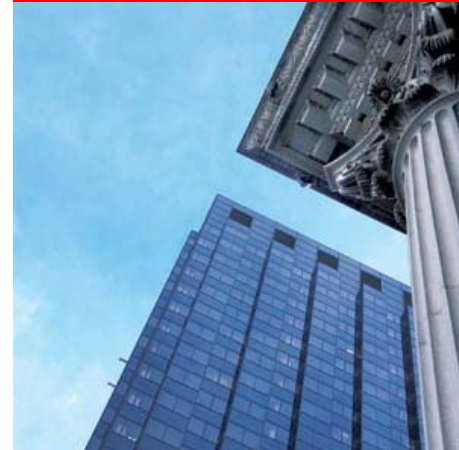
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Agenda

- Oracle Application Express Overview
- Similarities and differences between Oracle Forms and Oracle APEX
- Oracle APEX Forms Converter
- Demonstration Forms to APEX Conversion
- Post-Generation Conversion Tasks

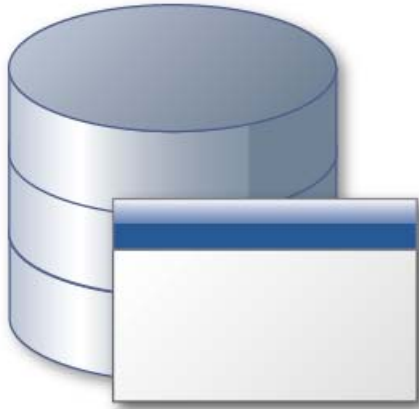


Oracle Application Express

Overview



Oracle Application Express Overview



- Unique Rapid Application Development (RAD) tool for the Oracle Database
- Browser based for Development, Deployment and Use
- Allows to declaratively build professional Web 2.0 applications that are fast and secure
- Leverages full Oracle database capabilities and existing SQL & PL/SQL skills
- Standard component of the database
- Fully supported, “no-cost” option with all editions of the Oracle Database

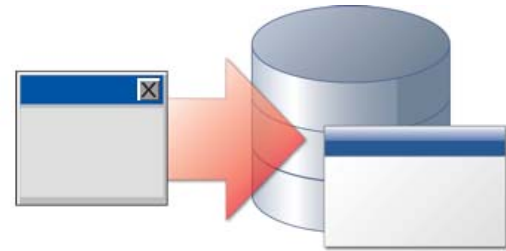
Easy to develop • Easy to deploy • Easy to manage

Oracle Application Express Overview



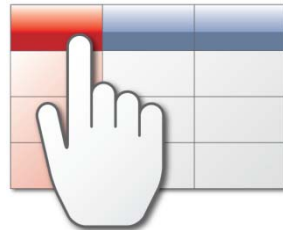
Data-driven Applications

Develop opportunistic and departmental productivity applications



Oracle Forms Modernization

Leverage SQL & PL/SQL declarative programming skills to move Forms applications to HTML / Web 2.0



Online Reporting

Build SQL-based reporting applications on existing database schemas



Spreadsheet Web-ification

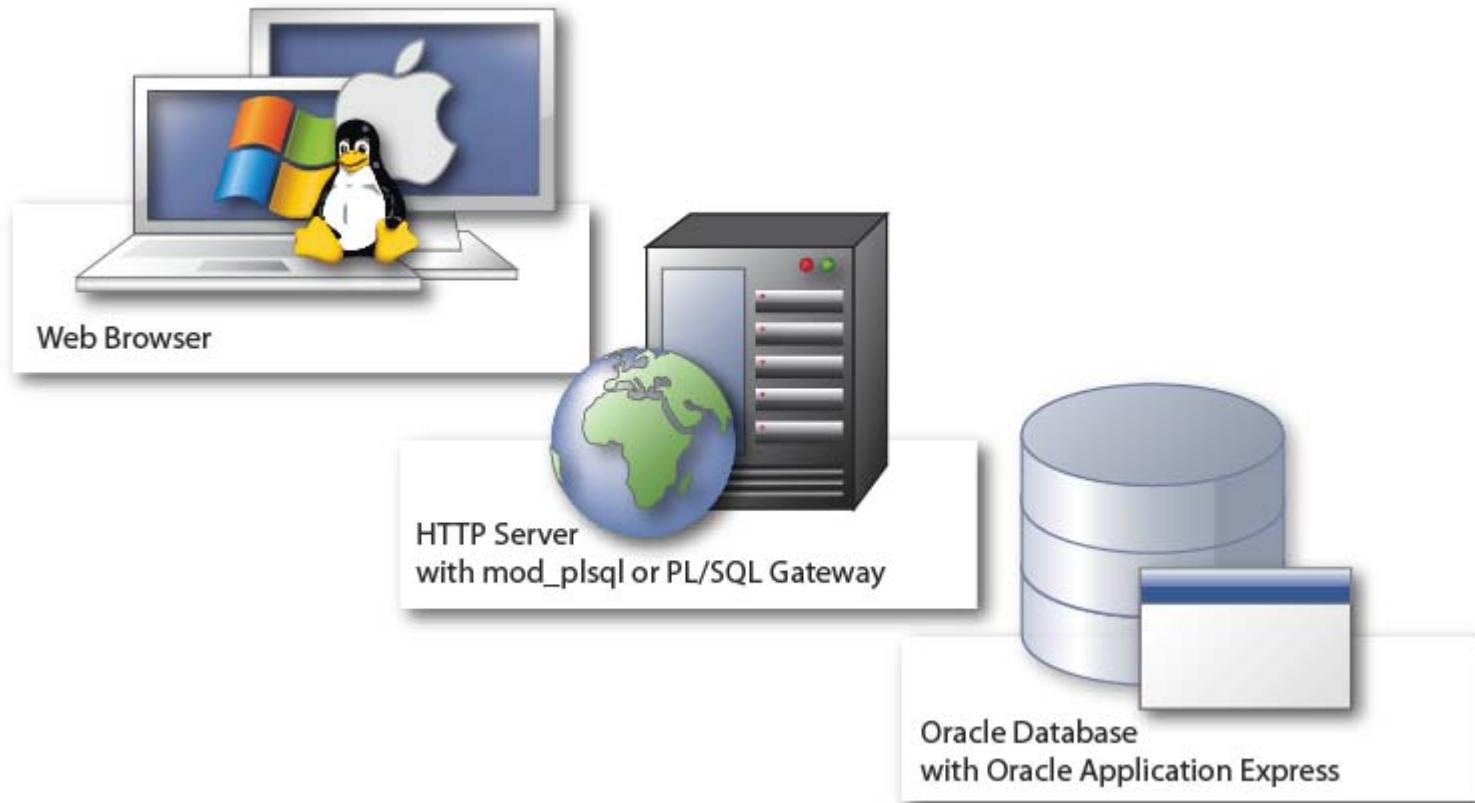
Convert spreadsheets to Web applications where they can be concurrently viewed and edited



Access Replacement

Consolidate outgrown Access applications to the Oracle database with an APEX Web front end

Oracle Application Express Overview



Oracle Forms vs. Oracle APEX



Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
4GL Declarative	Yes	Yes	Oracle Forms renders applications using metadata stored in an .fmx file. Oracle APEX renders applications using metadata stored in an Oracle database.
4GL Languages	SQL and PL/SQL	SQL and PL/SQL	Oracle Forms runs server-side and client-side PL/SQL. Oracle APEX uses server-side PL/SQL.
User Interface	Java	HTML	Oracle Forms can be accessed using a web browser and its user interface is rendered using a JVM. Oracle APEX is also invoked from a Web browser but its user interface is HTML and JavaScript.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Page Layout	Windows / Canvases	Page / Regions	Oracle Forms uses exact positioning and Oracle APEX uses relative positioning.
Web Service Support	Yes	Yes	Both Oracle Forms and Application Express support the calling of Web Services, for example BPEL.
Client-side Field Control	Form triggers	JavaScript and AJAX	Oracle Forms provides field-level validation and event processing. Oracle APEX supports declarative page-level validation and event processing. Programmatic field-level validation and event processing requires JavaScript and AJAX.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Charting	BI Beans	Flash Charts	Oracle Forms uses BI Beans. Oracle APEX uses Flash Charts as its integrated charting engine.
Database Connections	Synchronous	Asynchronous	Oracle Forms uses synchronous connections to allow transactions to span multiple screen interactions. Oracle APEX does not transparently allow this but programmatically supports transactions spanning page views using collections.
Locking	Pessimistic, Optimistic, Custom	Optimistic, Custom	Oracle Forms supports a range of locking models with pessimistic as the default. Due to its asynchronous architecture, Oracle APEX uses an optimistic locking model.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Concurrent User Support	DB connectivity maintained by user session	DB connectivity only maintained for processing of requests	Each connected user in Oracle Forms maintains a synchronous connection to the Oracle database. Oracle APEX users are asynchronously connected to the Oracle database.
Architecture	3 Tier	2 Tier	With Oracle Forms, Application logic is processed in the Oracle database, a mid-tier Forms Server, or in the rich client. With Oracle APEX, PL/SQL application logic is processed within the Oracle database. Client-side logic is implemented using JavaScript. HTTP communications are facilitated using Apache and Mod/PLSQL.

Oracle APEX Forms Converter



Oracle APEX Forms Converter

- Manage conversion throughout life-cycle of project
- Automatically translate main components
- Generate forms, reports, master-detail, tabular forms
- But no automatic reproduction with a new technology
- 100% generation not possible due to:
 - The complexity and variety of logic incorporated into Oracle Forms applications specifically within triggers, program units, libraries, etc.
 - The difference in inherent user interactivity between Oracle Forms and APEX.

Forms to APEX Conversion Project

- Define scope of project
 - Identify the Forms application(s) and modules
 - Specify which Oracle Forms are to be migrated
 - Analyze data model used by Forms application(s)
 - Collect any related documentation on the Form modules and database design

“Summit” Demo Application

The image shows two overlapping windows from the Summit Application. The background window is the 'Summit Application - Control Panel' and the foreground window is 'Orders and Items'.

Summit Application - Control Panel

View: By Customer

Customer List By Country

- Brazil
 - Unisports
- Czechoslovakia
 - Kuhn's Sports
- Dominican Republic
 - Beisbol Sil
- Egypt
 - Hamada Sport
- France
 - Sportique
- Germany

Exit

Cust. Name	Cust. Phone	Sales Rep Name
Unisports	55-2066101	Giljum

Customer Info

Id: 201

Name: Unisports

Phone: 55-2066101

Address

Orders and Items

☒ Immediate ☐ Auto Query

Stock Image Off Help Exit


Order Id: 100

Order Information

Date Ordered: 31-AUG-1992 Customer Id: 204 Customer Name: Womansport

Sales Rep Id: 11 Sales Rep Name: Magee

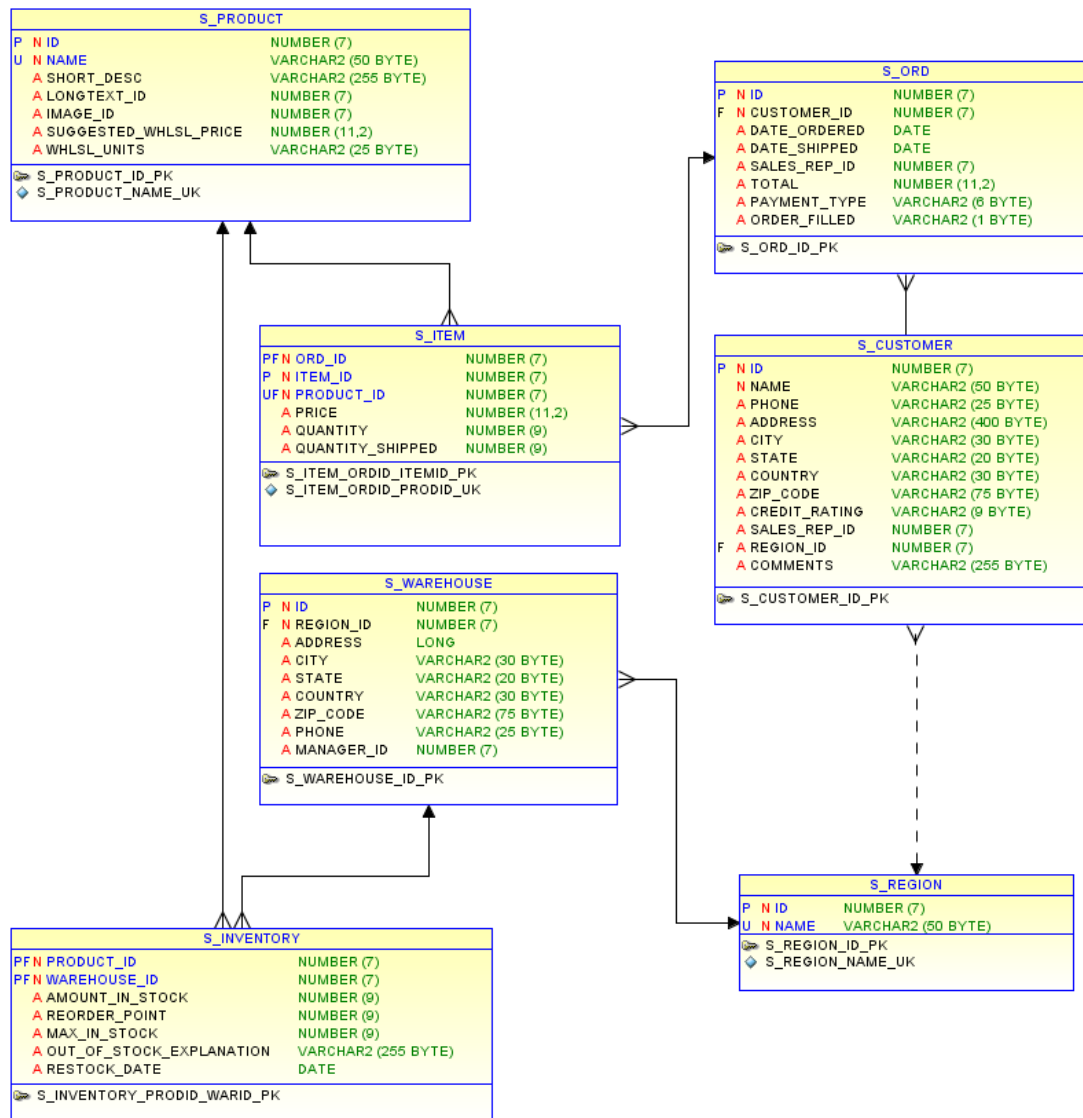
Date Shipped: 10-SEP-1992 Payment Type: ☐ Cash ☒ Credit ☒ Order Filled


Bunny Boot

Item Id	Product Id	Description	Price	Gty	Shipped	Item Total
1	10011	Bunny Boot	135	500	500	67,500.00
2	10013	Pro Ski Boot	380	400	400	152,000.00
3	10021	Bunny Ski Pole	14	500	500	7,000.00
4	10023	Pro Ski Pole	36	400	400	14,400.00

Order Total: 590,100.00

“Summit” Data Model



Converting Forms Modules to XML

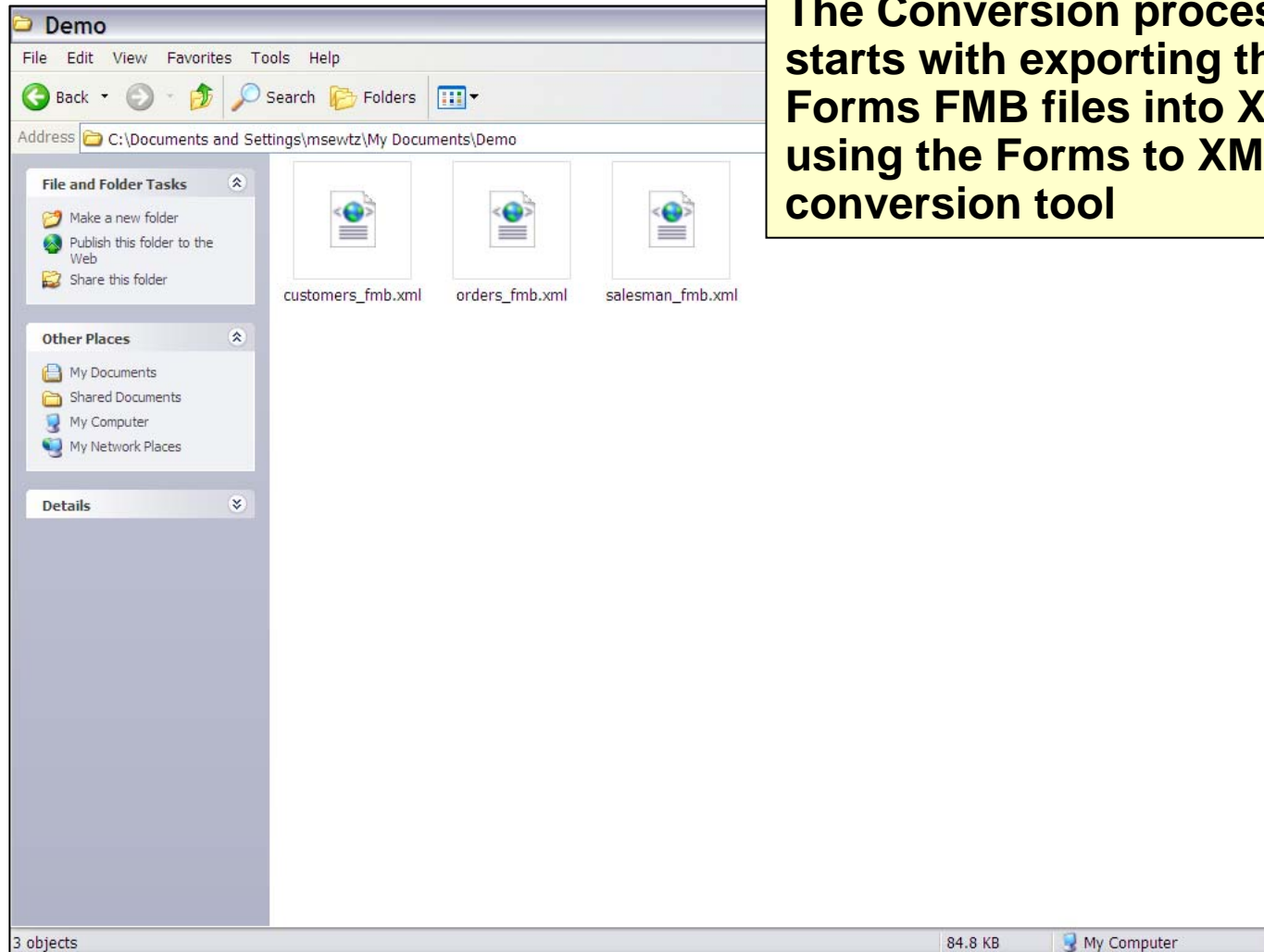
- Forms to XML conversion tool: Forms2XML
- Invoked from the command line or Java program
- Can be used with:
 - FormsModule (.fmb)
 - ObjectLibrary (.olb)
 - MenuModule (.mmb) files
- Convenience Scripts
 - frmf2xml.bat/sh - Converts Forms Modules to XML format
 - frmxml2f.bat/sh - Converts XML to Forms Modules
 - frmxmlsg.bat/sh - Generates the Forms XML Schema (forms.xsd)
 - frmxmlv.bat/sh - Validates the structure of a Forms XML file

Demonstration

Forms to APEX Conversion



Forms to APEX Conversion Process



The Conversion process starts with exporting the Forms FMB files into XML using the Forms to XML conversion tool

Forms to APEX Conversion Process

The XML files contain the Forms meta data based on the original FMB files



```
<?xml version="1.0" encoding="UTF-8" ?>
- <Module version="90040019" xmlns="http://xmlns.oracle.com/Forms">
- <FormModule Name="CUSTOMERS" Title="MODULE4" ConsoleWindow="MAIN" DirtyInfo="true">
  <Coordinate CharacterCellWidth="5" RealUnit="Point" CharacterCellHeight="14" CoordinateSystem="Real"
    DefaultFontScaling="true" />
  <Alert Name="DELETE_ALERT" AlertMessage="Are you sure you want to remove this customer?&#10;(Note: changes do not
    become final until you Save them.)" Button2Label="No" DirtyInfo="true" AlertStyle="Caution" Button1Label="Yes" />
  <Alert Name="CONFIRM_REVERT" AlertMessage="Are you sure you want to cancel the changes you have made?"
    Title="Payment Type" Button2Label="No" DirtyInfo="true" AlertStyle="Caution" Button1Label="Yes" />
- <Block Name="CONTROL" ScrollbarLength="135" DirtyInfo="true" ScrollbarWidth="9">
  <Item Name="CURSOR" FontName="MS Sans Serif" ItemType="User Area" Justification="Start" Bevel="None"
    FontSpacing="Normal" Height="10" XPosition="151" FontWeight="Demilight" Width="33" BackColor="NewCanvas"
    YPosition="2" FontStyle="Plain" FontSize="800" DirtyInfo="true" CanvasName="MAIN" ForegroundColor="black" />
  <Item Name="PROMPT_CUSTNAME" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Cust. Name"
    FontSpacing="Normal" Height="17" XPosition="20" FontWeight="Demilight" Width="89" BackColor="gray" YPosition="19"
    FontStyle="Plain" FontSize="800" MouseNavigate="false" ImplementationClass="oracle.forms.demos.RoundedButton"
    DirtyInfo="true" CanvasName="CUST_SUMMARY" ForegroundColor="black">
    <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
      'name');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
  </Item>
  <Item Name="PROMPT_PHONE" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Cust. Phone"
    FontSpacing="Normal" Height="17" XPosition="109" FontWeight="Demilight" Width="64" BackColor="gray" YPosition="19"
    FontStyle="Plain" FontSize="800" MouseNavigate="false" ImplementationClass="oracle.forms.demos.RoundedButton"
    DirtyInfo="true" CanvasName="CUST_SUMMARY" ForegroundColor="black">
    <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
      'phone');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
  </Item>
  <Item Name="PROMPT_SALES_NAME" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Sales Rep
    Name" FontSpacing="Normal" Height="17" XPosition="173" FontWeight="Demilight" Width="89" BackColor="gray"
    YPosition="19" FontStyle="Plain" FontSize="800" MouseNavigate="false"
    ImplementationClass="oracle.forms.demos.RoundedButton" DirtyInfo="true" CanvasName="CUST_SUMMARY"
    ForegroundColor="black">
    <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
      'sales_rep_id');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
  </Item>
  <Item Name="SALES_LOV_BUTTON" Iconic="true" TabPageName="SALES" ItemType="Push Button" Height="17">
```

Forms to APEX Conversion Process

**List of current Forms
conversion projects already
created in the APEX Forms
Converter Tool**

Application Migrations - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:1:3663

ORACLE Application Express

Home > Application Migrations

Rows 15 Go Create Project >

Edit	Project Name	Type	Schema	Updated	Imported Forms	Included Forms	Application
	Orders	Forms	FLAWS_030100	116 minutes ago	9	2	
	Customers	Forms	FLAWS_030100	3 months ago	3	1	
	Summit	Forms	SUMMIT	116 minutes ago	4	2	2079_Summit2

1 - 3

Getting Started

Click the Create Projects button to start. Click a project name to view and track forms conversion progress.

Tasks

- Download Exporter for Microsoft Access
- How to Migrate Microsoft Access Applications
- How to Migrate Oracle Forms Applications

Language: en-us Application Express 3.1.2.00.01

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Home Application 4400 Edit Page 1 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:22 New York: Wed 10:22 London: Wed 15:22 Paris: Wed 16:22 India: Wed 19:52 Done

Forms to APEX Conversion Process

Creating a new conversion project and uploading the Forms XML files

Create Migration Project - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:3:3663

ORACLE Application Express

Home Application Builder SQL Workshop Utilities

Home > Application Migrations > Create Migration Project

Project Details

Confirm

Migration Project Details Cancel Next >

* Project Name Summit Demo

* Type Forms

* Description Summit Forms Conversion Project

* Schema FLOWS_030100

Locate the Forms XML file generated by the Forms2XML conversion tool. Click here for information on how to generate a Forms XML file.

* Forms XML File Description

Browse

Tasks

- Download Exporter for Microsoft Access
- How to Migrate Microsoft Access Applications
- How to Migrate Oracle Forms Applications

Language: en-us Application Express 3.1.2.00.01

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US Pacific: Wed 07:23 New York: Wed 10:23 London: Wed 15:23 Paris: Wed 16:23 India: Wed 19:53 Done

Forms to APEX Conversion Process

List of XML files loaded into the current conversion project

Migration Project: Summit Demo - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:51:152

ORACLE Application Express

Home Application Builder SQL Workshop Utilities

Home > Application Migrations > Project: Summit Demo

Rows 15 Go

Upload File > Generate Application >

Edit	File Name	Include	Assignee	Blocks	Items	All Triggers	Record Groups	Lists of Values	Alerts	Windows	Program Units	Canvases	Component Count
	customers_fmb.xml	Y	-	5	30	23	1	1	2	2	7	5	
	orders_fmb.xml	Y	-	4	35	5	1	1	0	1	3	1	
	salesman_fmb.xml	N	-	1	7	3	0	0	0	1	0	1	

Applications

Language: en-us Application Express 3.1.2.00.01

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Home Application 4400 Edit Page 51 Create Session Activity Debug Show Edit Links

Find: Hanna Next Previous Highlight all Match case

US Pacific: Thu 11:43 New York: Thu 14:43 London: Thu 19:43 Paris: Thu 20:43 India: Fri 00:13 Done

Forms to APEX Conversion Process

Drilling down into each imported XML file shows Forms components

Forms Objects: - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:53:152

ORACLE® Application Express

Home Application Builder SQL Workshop Utilities

Home > Application Migrations > Project: Summit Demo > Forms Objects

Rows 15 Go

Component	Count	APEX Equivalent	APEX Implementation Details	Included	File Name
Alerts	2	-		-	customers_fmb.xml
Blocks	5	Region	A single Block can be mapped to a region in Oracle APEX. Based upon the Block type and datasource type (table/view) identified in the Forms XML file, some default mappings are defined. For example, a Report Block which is based upon an Oracle View, will be mapped to an Interactive Report in Oracle APEX. A Form Block based upon a table, will be mapped to an Interactive Report and Form in Oracle APEX.	2	customers_fmb.xml
Canvas	5	-		-	customers_fmb.xml
Coordinates	1	-		-	customers_fmb.xml
Editor	1	-	In Oracle Forms, Editors provide standard editing features, including search/replace and cut, copy, and paste, for text items. For a selected text item, an Editor can be mapped to a HTML Editor in Oracle APEX.	-	customers_fmb.xml
Lists of Values	1	Lists of Values	A List of Values can be mapped to an equivalent List of Values in Oracle APEX. Where LOVs are selected for inclusion in the migration to Oracle APEX, their associated Record Group will also be included in the migration.	1	customers_fmb.xml
Program Units	7	-		-	customers_fmb.xml
Property Class	1	-		-	customers_fmb.xml
Record Groups	1	-	In Oracle Forms, LOV values are derived from a record group. When an LOV is defined, it is associated with a named record group. When an LOV is included in the migration, its associated Record Group will also be included in the migration to Oracle APEX.	-	customers_fmb.xml
Triggers	6	-		-	customers_fmb.xml
Visual Attributes	5	-		-	customers_fmb.xml
Windows	2	-		-	customers_fmb.xml

1 - 12

Find: Hanna Next Previous Highlight all Match case

US Pacific: Thu 11:47 New York: Thu 14:47 London: Thu 19:47 Paris: Thu 20:47 India: Fri 00:17 Done

Forms to APEX Conversion Process

Blocks in Forms map to regions in APEX, this page allows for selecting the blocks to convert

Blocks - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:54:366

ORACLE Application Express

Home > Application Migrations > Project: Summit Demo > Forms Objects: customers_fmb.xml > Blocks

Use this page to view information on Blocks retrieved from your Oracle Forms application. A single Block can be mapped to a region in Oracle APEX. Based upon the Block type and datasource type (table/view) identified in the Forms XML file, some default mappings are defined.

1. Use the far left column to select the Blocks you want to include in the migration. To include a block, it must be selected. By default, all Blocks are included. If you do not select a block for inclusion, it will be excluded from the migration.

2. In the Title column, enter a value to be associated with the block. Blocks are migrated to Oracle Application Express Regions. The title will be used as the name of the migrated region.

Rows 15 Go

Include All Apply Changes

Include	Name	Title	Triggers	Datasource	% Complete
	<input type="checkbox"/>	CONTROL	<input type="text" value="CONTROL"/>		0%
	<input type="checkbox"/>	NAV_CONTROL	<input type="text" value="NAV_CONTROL"/>		0%
	<input type="checkbox"/>	NAVIGATOR	<input type="text" value="NAVIGATOR"/>	1	0%
	<input checked="" type="checkbox"/>	S_CUSTOMER1	<input type="text" value="Contact Info"/>	3 S_CUSTOMER	0%
	<input checked="" type="checkbox"/>	S_CUSTOMER	<input type="text" value="Customer"/>	1 S_CUSTOMER	0%

1 - 5

Language: en-us Application Express 3.1.2.00.01

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Forms to APEX Conversion Process

Blocks mapped to APEX form pages contain form items, this page allows for selecting which ones to include and for overwriting item labels

Block Items - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:55:366

ORACLE Application Express

Home > Application Migrations > Project: Summit Demo > Forms Objects: customers_fmb.xml > Blocks > B...

Use this page to view information on Block Items retrieved from your Oracle Forms application. A single Block Based upon the Block item type and datasource type (column/LOV) identified in the Forms XML file, some de

1. Use the **Generate** column to select the Block Items you want to include in the migration.
To include a block item, it must be selected. By default, all Block Items are included. If you do not select a block item for inclusion, it will be excluded from the migration.
To select all block items for inclusion, click **Generate All**.

2. In the **Item Prompt** column, enter a value to be associated with the block item. Block Items are migrated to equivalent items on an Oracle Application Express Regions.
The title will be used as the name of the migrated region item.

Block Name: S_CUSTOMER1

Rows 15 Go

Include All Apply Changes

	Include	Name	Item Prompt	Triggers	Item Type	Initialize Value	Column Name	Applicability	Assignee
	<input checked="" type="checkbox"/>	ID	ID		User Area		ID	A	
	<input checked="" type="checkbox"/>	NAME	Name		User Area		NAME	A	
	<input checked="" type="checkbox"/>	PHONE	Phone		User Area		PHONE	A	
	<input checked="" type="checkbox"/>	SALES_REP_ID	Sales Rep ID		User Area		SALES_REP_ID	A	
	<input checked="" type="checkbox"/>	SALES_REP_NAME	Sales Rep Name		User Area			A	

1 - 5

Language: en-us Application Express 3.1.2.00.01

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US Pacific: Wed 07:31 New York: Wed 10:31 London: Wed 15:31 Paris: Wed 16:31 India: Wed 20:01 Done

Forms to APEX Conversion Process

Some components, like block triggers, are not automatically converted to APEX, but can be reviewed and manually translated into appropriate APEX objects

Block Triggers - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:68:366

ORACLE® Application Express

Home > Application Migrations > Project: Summit Demo > Forms Objects: customers_fmb.xml > Blocks > Blo

Use this page to view information on Block-level triggers retrieved from your Oracle Forms application.

Block Name: S_CUSTOMER Trigger Display 15

Trigger Name	Trigger Text
POST-QUERY	SELECT last_name INTO :s_customer.sales_rep_name FROM S_EMP WHERE id = :s_customer.sales_rep_id;

1 - 1

Language: en-us Application Express 3.1.2.00.01

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[Home](#) [Application 4400](#) [Edit Page 68](#) [Create](#) [Session](#) [Activity](#) [Debug](#) [Show Edit Links](#)

US Pacific: Wed 07:32 New York: Wed 10:32 London: Wed 15:32 Paris: Wed 16:32 India: Wed 20:02 Done

Forms to APEX Conversion Process

Several XML module definition files can be combined into a single APEX application

Blocks - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:54:366

ORACLE® Application Express

Home > Application Migrations > Project: Summit Demo > Forms Objects: orders_fmb.xml > Blocks

Use this page to view information on Blocks retrieved from your Oracle Forms application. A single Block can be mapped to a region in Oracle APEX. Based upon the Block type and datasource type (table/view) identified in the Forms XML file, some default mappings are defined.

1. Use the far left column to select the Blocks you want to include in the migration. To include a block, it must be selected. By default, all Blocks are included. If you do not select a block for inclusion, it will be excluded from the migration.
2. In the Title column, enter a value to be associated with the block. Blocks are migrated to Oracle Application Express Regions. The title will be used as the name of the migrated region.

Rows 15 Go Include All Apply Changes

	Include	Name	Title	Triggers	Datasource	% Complete
	<input type="checkbox"/>	GENERA BLOCK				0%
	<input checked="" type="checkbox"/>	S_INVENTORY	Inventory		S_INVENTORY	0%
	<input checked="" type="checkbox"/>	S_ITEM	Order Item Details		S_ITEM	0%
	<input checked="" type="checkbox"/>	S_ORD	Order Details	2	S_ORD	0%

1 - 4

Language: en-us Application Express 3.1.2.00.01

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Home Application 4400 Edit Page 54 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:33 New York: Wed 10:33 London: Wed 15:33 Paris: Wed 16:33 India: Wed 20:03 Done

Forms to APEX Conversion Process

Depending on the block type, the APEX convert creates pages in APEX as report-, form-, tabular form- or master-detail pages

Block Items - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:55:366

ORACLE Application Express

Home > Application Migrations > Project: Summit Demo > Forms Objects: orders_fmb.xml > Blocks > Block I

Use this page to view information on Block Items retrieved from your Oracle Forms application. A single Block Item can be mapped to an equivalent item type in Oracle APEX. Based upon the Block item type and datasource type (column/LOV) identified in the Forms XML file, some default mappings are defined.

1. Use the **Generate** column to select the Block Items you want to include in the migration. To include a block item, it must be selected. By default, all Block Items are included. If you do not select a block item for inclusion, it will be excluded from the migration. To select all block items for inclusion, click **Generate All**.

2. In the **Item Prompt** column, enter a value to be associated with the block item. Block Items are migrated to equivalent items on an Oracle Application Express Regions. The title will be used as the name of the migrated region item.

Block Name: S_ORD

Rows 15 Go

Include All Apply Changes

Include	Name	Item Prompt	Triggers	Item Type	Initialize Value	Column Name	Applicability	Assignee
	<input checked="" type="checkbox"/>	ORDER_FILLED	<input type="text" value="Order Filled"/>	Check Box		ORDER_FILLED	A	
	<input checked="" type="checkbox"/>	CUSTOMER_ID	<input type="text" value="Customer ID"/>	Text item		CUSTOMER_ID	A	
	<input checked="" type="checkbox"/>	CUSTOMER_NAME	<input type="text" value="Customer Name"/>	Text item			A	
	<input checked="" type="checkbox"/>	DATE_ORDERED	<input type="text" value="Date Ordered"/>	Text item		DATE_ORDERED	A	
	<input checked="" type="checkbox"/>	DATE_SHIPPED	<input type="text" value="Date Shipped"/>	Text item		DATE_SHIPPED	A	
	<input checked="" type="checkbox"/>	ID	<input type="text" value="ID"/>	Text item		ID	A	
	<input checked="" type="checkbox"/>	PAYMENT_TYPE	<input type="text" value="Payment Type"/>	Text item		PAYMENT_TYPE	A	
	<input checked="" type="checkbox"/>	SALES_REP_ID	<input type="text" value="Sales Rep ID"/>	Text item		SALES_REP_ID	A	
	<input checked="" type="checkbox"/>	SALES_REP_NAME	<input type="text" value="Sales Rep Name"/>	Text item			A	
	<input checked="" type="checkbox"/>	TOTAL	<input type="text" value="Total"/>	Text item		TOTAL	A	

1 - 10

US Pacific: Wed 07:35 New York: Wed 10:35 London: Wed 15:35 Paris: Wed 16:35 India: Wed 20:05 Done

Forms to APEX Conversion Process

The screenshot shows the Oracle Application Express Migration Project interface. The browser title is "Migration Project: Summit Demo - Mozilla Firefox". The URL is "http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:51:366". The page title is "ORACLE Application Express". The breadcrumb navigation is "Home > Application Migrations > Project: Summit Demo".

Below the breadcrumb, there is a search bar and a "Rows" dropdown set to "15". To the right is an "Upload File" button. Below this is a table with the following columns: Edit, File Name, Description, Include in Application, Priority, Assignee, File Size, Notes, and Tags.

Edit	File Name	Description	Include in Application	Priority	Assignee	File Size	Notes	Tags
	customers_fmb.xml	-	Y	3	-	48KB	-	-
	orders_fmb.xml	-	Y	3	-	30KB	-	-
	salesman_fmb.xml	-	Y	3	-	7KB	-	-

Below the table, there is a "1 - 3" indicator. To the right of the table, there is a "Tasks" section with the following tasks:

- Delete Project
- About Forms Conversion
- Set Application Defaults

At the bottom of the page, there is a footer with the following information:

Language: en-us
Workspace: INTERNAL User: MARC
Application Express 3.1.2.00.01
Copyright © 1999, 2008, Oracle. All rights reserved.

Navigation links: Home, Application 4400, Edit Page 51, Create, Session, Activity, Debug, Show Edit Links

Global status: US Pacific: Wed 07:37 | New York: Wed 10:37 | London: Wed 15:37 | Paris: Wed 16:37 | India: Wed 20:07 | Done

After selecting which components to carry forward, the APEX application can be created using the Generate Application wizard

Forms to APEX Conversion Process

Generate Application - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:29:366

ORACLE Application Express

Home > Application Migrations > Project: Summit Demo > **Generate Application**

Create Application

Enter an application name. Then, select an application creation method and a schema.

* Name:

* Application:

Create Application: ☒ Based on Migration Project
☐ Based on existing application design model

Schema: **SUMMIT**

Language: en-us Application Express 3.1.2.00.01

Workspace: INTERNAL User: MARC Copyright © 1999, 2008, Oracle. All rights reserved.

Home Application 4400 Edit Page 29 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:38 New York: Wed 10:38 London: Wed 15:38 Paris: Wed 16:38 India: Wed 20:08 Done

Applications can be generated based on the imported Forms meta data or based on previous design models. The new application will be tied to the database schema selected for the project

Forms to APEX Conversion Process

Generate Application - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:62:366

ORACLE Application Express

Home > Application Migrations > Project: Summit Demo > Generate Application

Name
Pages
User Interface
Confirm

Selected Application Objects [Cancel]

Page	Page Name	Page Type	Page Source	Source	Delete Page
1	Home Page	Blank	-	-	X
2	Customers	Report	Table	S_CUSTOMER	X
3	Edit Customer	Form	Table	S_CUSTOMER	X
4	Customer	Report	Table	S_CUSTOMER	X
5	Inventory	Report	Table	S_INVENTORY	X
6	Order Items	Tabular Form	Table	S_ITEM	X
7	Orders	Report	Table	S_ORD	X
8	Master Detail	MASTERDETAIL	Table	S_ITEM	X

Add Page [Add Page]

Select Page Type:

☒ Blank ☐ Report ☐ Form

☐ Tabular Form ☐ Master Detail ☐ Report and Form

Action: Add blank page to application

Subordinate to Page: Top Level Page

Page Name: Page 9

US Pacific: Wed 07:40 New York: Wed 10:40 London: Wed 15:40 Paris: Wed 16:40 India: Wed 20:10 Done

Each selected component from the Forms meta data gets converted to the corresponding APEX object, additional pages can be added at this stage

to create:

- Blank creates a page with no built-in functionality.
- Report creates a page that contains the formatted result of a SQL query. You can choose to build a report based on a table you select, or based on a custom SQL SELECT statement or a PL/SQL function returning a SQL SELECT statement that you provide.
- Form creates a form to update a single row in a database table.
- Tabular Form creates a form to perform update, insert, and delete operations on multiple rows in a database table.
- Report and Form builds a two page report and form combination. On the first page, users select a row to update. On the second page, users can update the selected table or view.
- Master Detail builds a two page report and form combination. On the first page, users select a row to update. On the second page, users can update the selected table or view and its associated detail.

Forms to APEX Conversion Process

An application is generated using one of the built-in or custom defined UI themes.

Generate Application - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:50:366

ORACLE Application Express

Home Application Builder SQL Workshop Utilities

Home > Application Migrations > Summit Demo > Generate Application

Generate Application

Cancel < Previous Next >

Select a theme:

Theme 1 Theme 2 Theme 3

Theme 4 Theme 5 Theme 6

Theme 7 Theme 8 Theme 9

Theme 10 Theme 11 Theme 12

Theme 13 Theme 14 Theme 15

US Pacific: Wed 07:41 New York: Wed 10:41 London: Wed 15:41 Paris: Wed 16:41 India: Wed 20:11 Done

Forms to APEX Conversion Process

Summary of the selections made for the application the Forms converter is about to generate

Generate Application - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=4400:39:366

ORACLE Application Express

Home > Application Migrations > Summit Demo > Generate Application

Generate Application

Cancel < Previous Create

✓ You have requested to create an application with the following attributes. Please confirm your selections.

Application	987
Name	Summit Demo
Parsing Schema	SUMMIT
Default Language	en-us
Tabs	One Level of Tabs
Default Authentication Scheme	No Authentication
Theme Type	Standard
UI Theme	20

Language: en-us

Workspace: INTERNAL User: MARC

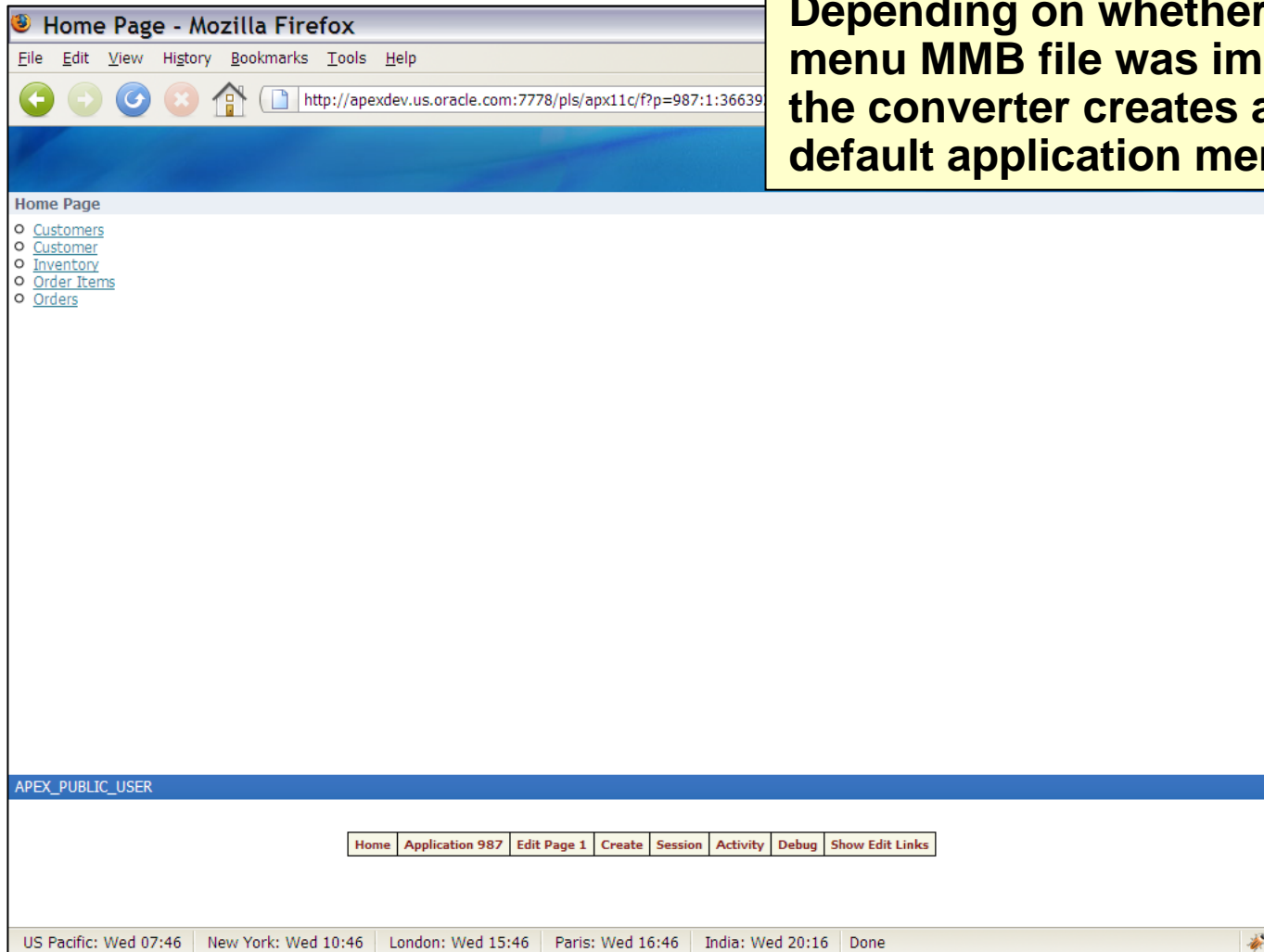
Application Express 3.1.2.00.01

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Home Application 4400 Edit Page 39 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:41 New York: Wed 10:41 London: Wed 15:41 Paris: Wed 16:41 India: Wed 20:11 Done

Forms to APEX Conversion Process



Depending on whether or a menu MMB file was imported, the converter creates a default application menu

Forms to APEX Conversion Process

Report based on the imported customer module

Customers - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:2:3663926329602419::NO::: Google

Logout Home Page

Home Page > Customers

Rows 15 Go Create

ID	Name	Phone	Address	City	State	Country	Zip Code	Credit Rating	Sales Rep Id	Region Id
201	Unisport	55-2066101	72 Via Bahia	Sao Paulo	-	Brazil	-	EXCELLENT	12	2
202	Simms Athletics	81-20101	6741 Takashi Blvd.	Osaka	-	Japan	-	POOR	15	4
203	Delhi Sports	91-10351	11368 Chanakya	New Delhi	-	India	-	GOOD	14	4
204	Womansport	1-206-104-0103	281 King Street	Seattle	Washington	USA	98101	POOR	11	1
205	Kam's Sporting Goods	852-3692888	15 Henessey Road	Hong Kong	-	-	-	EXCELLENT	15	4
206	Sportique	33-2257201	172 Rue de Rivoli	Cannes	-	France	-	EXCELLENT	15	5
207	Sweet Rock Sports	234-6036201	6 Saint Antoine	Lagos	-	Nigeria	-	GOOD	-	5

US Pacific: Wed 07:47 New York: Wed 10:47 London: Wed 15:47 Paris: Wed 16:47 India: Wed 20:17 http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=...

Forms to APEX Conversion Process

Customer data can be edited in the generated customer form page

The screenshot shows a web browser window titled "Edit Customer - Mozilla Firefox". The address bar displays the URL: <http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:3:36639>. The browser window shows the "Edit Customer" form page. The form is titled "Customer" and includes buttons for "Cancel", "Delete", and "Apply Changes". The form fields are as follows:

Field	Value
*Name	Unisport
Phone	55-2066101
Address	72 Via Bahia
City	Sao Paolo
State	
Country	Brazil
Zip Code	
Credit Rating	EXCELLENT
Sales Rep ID	12
Region ID	2
Comments	Customer usually orders large amounts and has a high order

The form is displayed in a Mozilla Firefox browser window. The browser's address bar shows the URL: <http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:3:36639>. The browser window title is "Edit Customer - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The browser's status bar shows the time "10:47 AM". The form is titled "Customer" and includes buttons for "Cancel", "Delete", and "Apply Changes". The form fields are as follows:

Field	Value
*Name	Unisport
Phone	55-2066101
Address	72 Via Bahia
City	Sao Paolo
State	
Country	Brazil
Zip Code	
Credit Rating	EXCELLENT
Sales Rep ID	12
Region ID	2
Comments	Customer usually orders large amounts and has a high order

The form is displayed in a Mozilla Firefox browser window. The browser's address bar shows the URL: <http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:3:36639>. The browser window title is "Edit Customer - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The browser's status bar shows the time "10:47 AM". The form is titled "Customer" and includes buttons for "Cancel", "Delete", and "Apply Changes". The form fields are as follows:

Field	Value
*Name	Unisport
Phone	55-2066101
Address	72 Via Bahia
City	Sao Paolo
State	
Country	Brazil
Zip Code	
Credit Rating	EXCELLENT
Sales Rep ID	12
Region ID	2
Comments	Customer usually orders large amounts and has a high order

Forms to APEX Conversion Process

Order information shown in the master report of a two page master-detail form

Orders - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:7:36639

Home Page > Orders

S Ord

Reset Create

Search Display 15 Go

	Customer ID ▲	Date Ordered	Date Shipped	Sales Rep ID	Total	Payment Type	Order Filled
	201	02-MAY-96	01-JUN-96	12	981.2	CASH	Y
	201	03-MAY-96	02-JUN-96	12	3991.05	CASH	Y
	201	04-MAY-96	03-JUN-96	12	3775.1	CASH	Y
	201	05-MAY-96	04-JUN-96	12	1446.5	CASH	Y
	201	14-APR-97	14-MAY-97	12	11792	CASH	Y
	201	15-APR-97	15-MAY-97	12	784	CASH	Y
	201	16-APR-97	16-MAY-97	12	963.95	CASH	Y
	201	17-APR-97	17-MAY-97	12	1186.25	CASH	Y
	201	18-APR-97	18-MAY-97	12	9932.57	CASH	Y
	201	19-APR-97	19-MAY-97	12	7523.1	CASH	Y
	201	20-APR-97	20-MAY-97	12	4394	CASH	Y
	201	21-APR-97	21-MAY-97	12	3451.4	CASH	Y
	201	22-APR-97	22-MAY-97	12	1909	CASH	Y
	201	23-APR-97	23-MAY-97	12	5012	CASH	Y
	201	28-FEB-96	29-MAR-96	12	296	CASH	Y

[Spread Sheet](#)

row(s) 1 - 15 of more than 500 Next >

APEX_PUBLIC_USER

Home Application 987 Edit Page 7 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:48 New York: Wed 10:48 London: Wed 15:48 Paris: Wed 16:48 India: Wed 20:18 Done

Forms to APEX Conversion Process

Order and order items shown on a master-detail form page

Master Detail - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:8:3663926329602419::::P8_ID:11: Google

Logout | Home Page

Home Page > Orders > Master Detail

Edit S_ORD

Cancel Delete < > Apply Changes

Customer ID 201

Date Ordered 05/04/1996

Date Shipped 06/03/1996

Sales Rep ID 12

Total 3775.1

Payment Type CASH

Order Filled Y

140 of 3725

S Item

Delete Checked Add Row

<input type="checkbox"/>	Product ID	Price	Quantity	Quantity Shipped
<input type="checkbox"/>	20106	11	18	18
<input type="checkbox"/>	10023	40.95	18	18
<input type="checkbox"/>	41080	35	56	56
<input type="checkbox"/>	50419	80	11	11

1 - 4

APEX_PUBLIC_USER

Home Application 987 Edit Page 8 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:48 New York: Wed 10:48 London: Wed 15:48 Paris: Wed 16:48 India: Wed 20:18 Done

Forms to APEX Conversion Process

Most reports are generated using APEX' Interactive Report Regions, providing modern Web 2.0-style searching, filtering and analysis capabilities

Customer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:4:36639

Home Page > Customer

Rows 15 Go

ID	Name	Phone	Address	Zip Code	Credit Rating	Sales Rep ID	Region ID
201	Unisport	55-2066101	72 Via Bahia	-	EXCELLENT	12	
202	Simms Athletics	81-20101	6741 Takashi Blvd.	-	POOR	15	
203	Delhi Sports	91-10351	11368 Chanakya	-	GOOD	14	
204	Womansport	1-206-104-0103	281 King Street	98101	POOR	11	
205	Kam's Sporting Goods	852-3692888	15 Henessey Road	-	EXCELLENT	15	
206	Sportique	33-2257201	172 Rue de Rivoli	Cannes	EXCELLENT	15	France
207	Sweet Rock Sports	234-6036201	6 Saint Antoine	Lagos	GOOD	-	Nigeria

US Pacific: Wed 07:50 New York: Wed 10:50 London: Wed 15:50 Paris: Wed 16:50 India: Wed 20:20 Done

Forms to APEX Conversion Process

Components generated as tabular forms allow for bulk updating several rows at a time

Order Items - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://apexdev.us.oracle.com:7778/pls/apx11c/f?p=987:6:36639

Home Page > Order Items

S_ITEM

Cancel Delete Submit

<input type="checkbox"/>	Order #	Product ID	Price	ITEM_ID_DISPLAY	Quantity	Quantity Shipped
<input type="checkbox"/>	2600	30433	20	7	13	13
<input type="checkbox"/>	2600	10021	16.25	8	46	46
<input type="checkbox"/>	2600	30326	582	9	48	48
<input type="checkbox"/>	2601	10022	21.95	1	92	92
<input type="checkbox"/>	2601	20106	11	2	13	13
<input type="checkbox"/>	2602	20106	11	1	19	19
<input type="checkbox"/>	2602	32779	7	2	12	12
<input type="checkbox"/>	2603	10023	40.95	1	17	17
<input type="checkbox"/>	2603	10022	21.95	2	18	18
<input type="checkbox"/>	2603	20106	11	3	18	18

row(s) 1 - 10 of more than 500 Next >

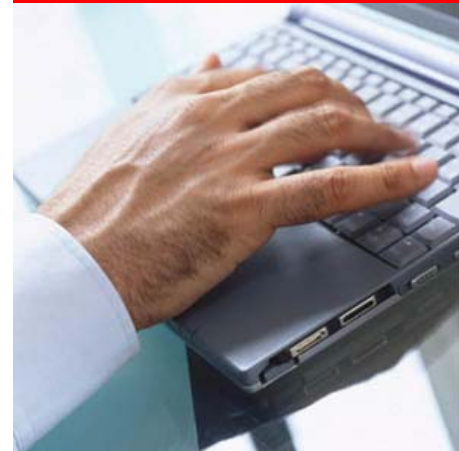
Add Row

APEX_PUBLIC_USER

Home Application 987 Edit Page 6 Create Session Activity Debug Show Edit Links

US Pacific: Wed 07:50 New York: Wed 10:50 London: Wed 15:50 Paris: Wed 16:50 India: Wed 20:20 Done

Post-Generation Conversion Tasks



Post-Generation Conversion Tasks

- Examine triggers and program units within the conversion project
 - Record tracking details against these components
 - Manually enter equivalent code as Oracle APEX validations, computations and / or processes

Post-Generation Conversion Tasks

- Enhance the generated Oracle APEX application
 - Review generated application pages, regions and items
 - Add conditional processing logic to regions and items based on UI behavior implemented within Forms triggers and program units
 - Review validations, computations and processes you specified within the Oracle APEX project – post-generation and update as necessary.
 - Review buttons and update URL redirection details, etc.
 - Update tracking details as appropriate

Post-Generation Conversion Tasks

- Develop Oracle Database components
 - Identify code, which should be processed directly in the database rather than in the application.
 - Code, test, and implement Oracle Database packages, procedures and functions to replace Oracle Forms logic.
 - Update tracking details as appropriate

Post-Generation Conversion Tasks

- Add additional Oracle APEX components
 - Add additional pages, regions, buttons, items, etc as required
 - Review and update navigational components
 - Implement specific client-side functionality using JavaScript, AJAX, DHTML, etc.
 - Update tracking details as appropriate

Post-Generation Conversion Tasks

- System Test Oracle APEX application(s)
- Train users on Oracle APEX application(s)
- Implement Oracle APEX application(s)



Q & A



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