



START YOUR ENGINES! TIPS FOR MORE EFFICIENT DEVELOPMENT IN ORACLE APEX

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DIMITRI GIELIS

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- 22+ years of Oracle Experience (OCP & APEX Certified)
- Oracle ACE Director
- “APEX Developer of the year 2009” by Oracle Magazine
- “Oracle Developer Choice award (ORDS)” in 2015
- Author Expert Oracle APEX
- Presenter at Conferences



@DGIELIS



WWW.UNITED-CODES.COM



-  APEX Office Print
-  APEX Media Extension
-  APEX Project Eye
-  Plug-ins Pro



Open document

Upload document

Document details

REST logs

Settings



Microsoft
Word



Microsoft
Excel



Microsoft
PowerPoint



Open
Document
Text

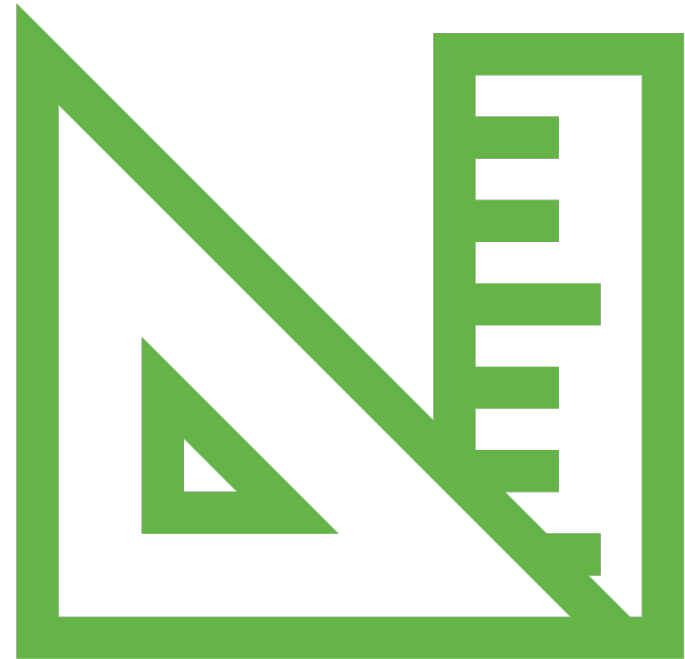


Open
Document
Spreadsheet

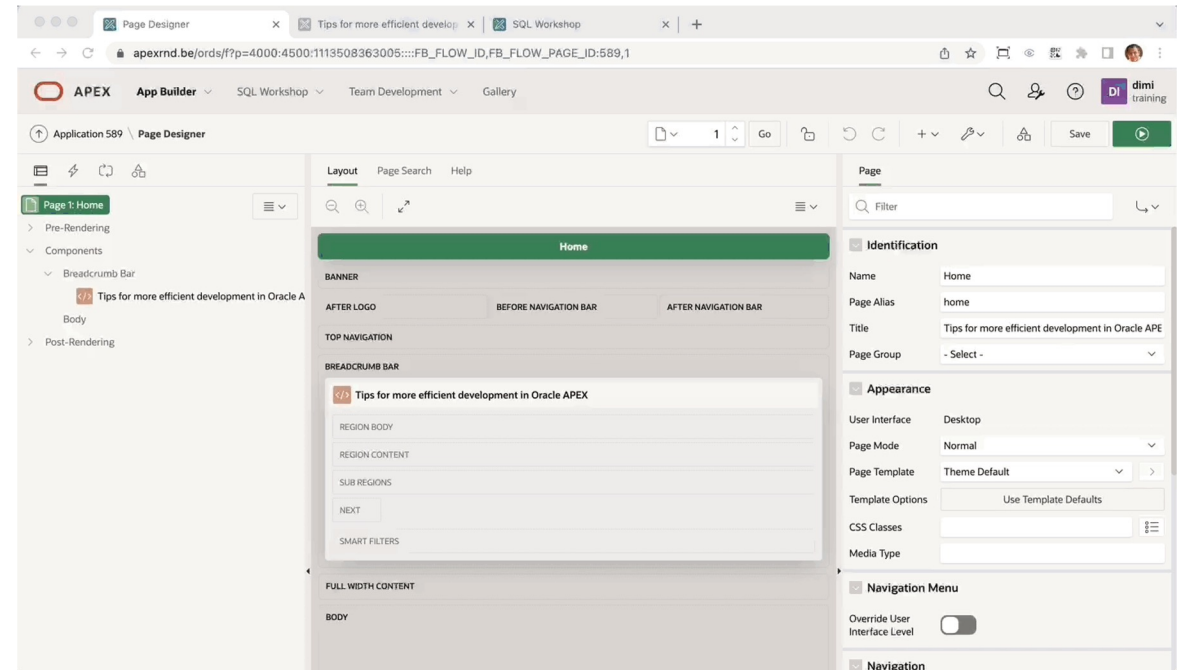


Open
Document
Presentation

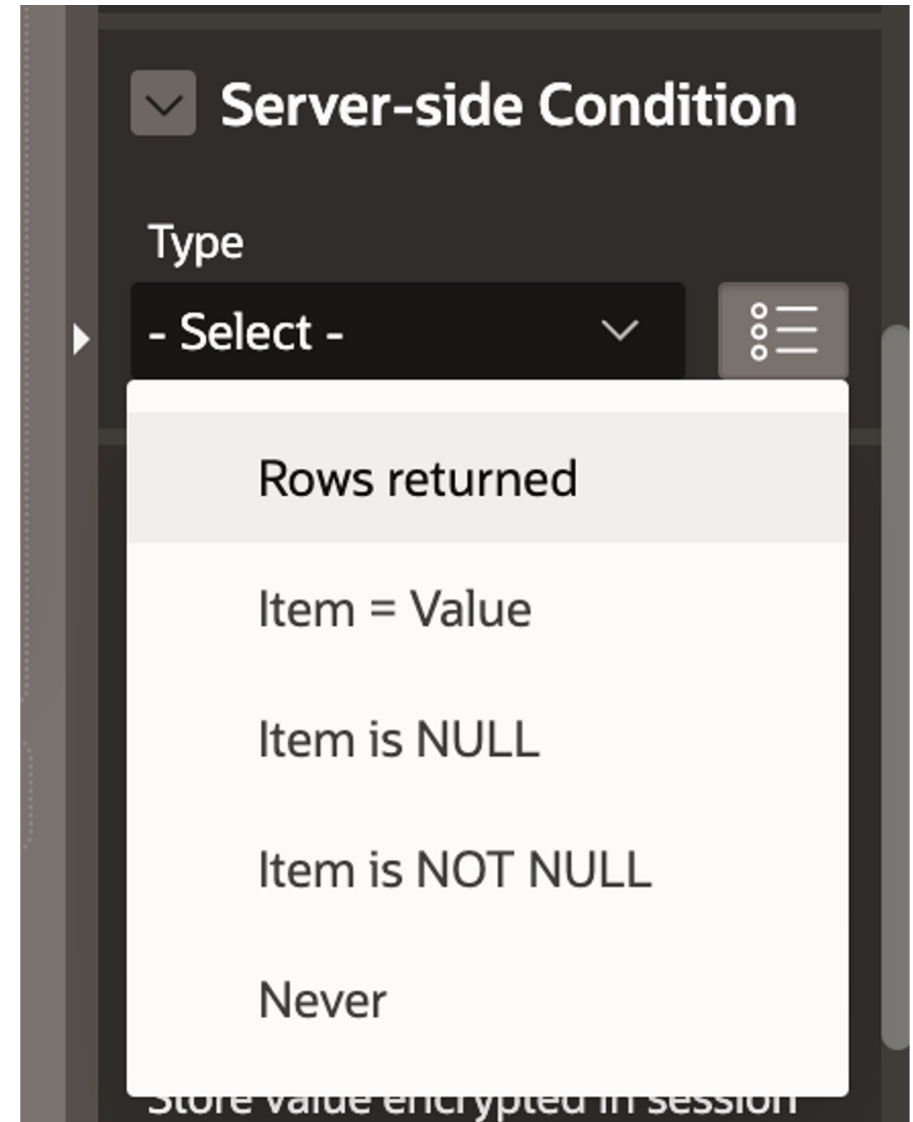
APPLICATION BUILDER



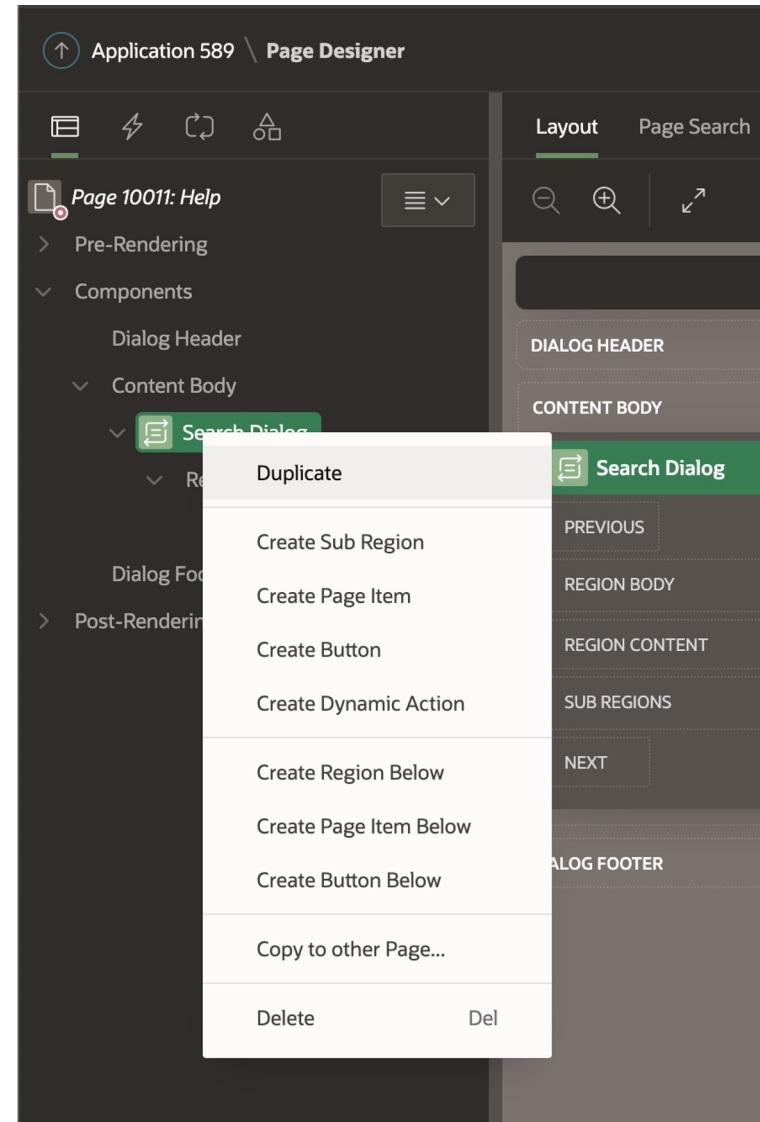
USE AT LEAST 3 TABS/WINDOWS WHILE DEVELOPING IN APEX



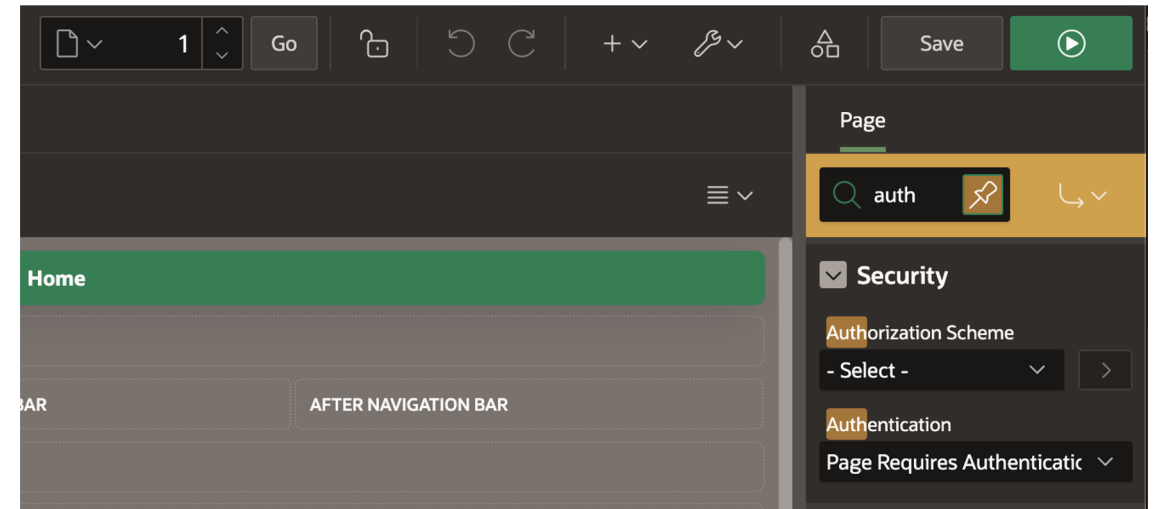
CONDITION QUICK PICK



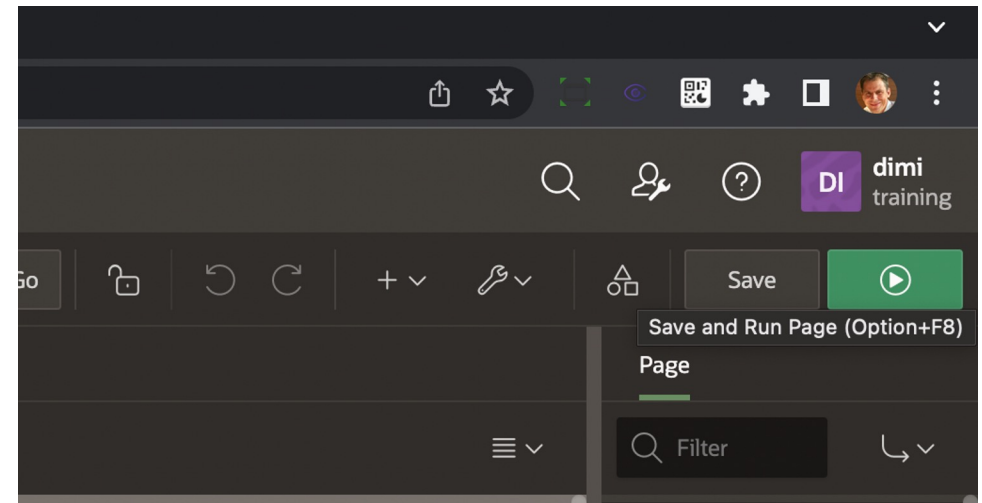
RIGHT CLICK IN TREE OF APP BUILDER



SEARCH PROPERTY AND PIN



USE
"SAVE AND RUN"
INSTEAD OF
SAVE, THEN RUN



Layout

Page Search

Help

22

Go

Save

Column CSS Classes

For CSS classes you want to apply to the layout column that contains this region. You may add multiple classes by separating them with spaces.

The `responsive` property can be used to provide fine grained control over the responsiveness and layout of the region's layout column as the viewport size is changed. For Universal Theme applications, there are a number of CSS modifiers you may use to extend your page components. Review the Reference section of the Universal Theme Sample Application to learn more.

Additional Information

Type: Text (Separate multiple values with a space)

Supported Substitutions: Application, Page Items and System Variables

USE HELP

Page Item

Filter

Sequence

30

Region

Details

Position

Region Body

Start New Row

Column

Automatic

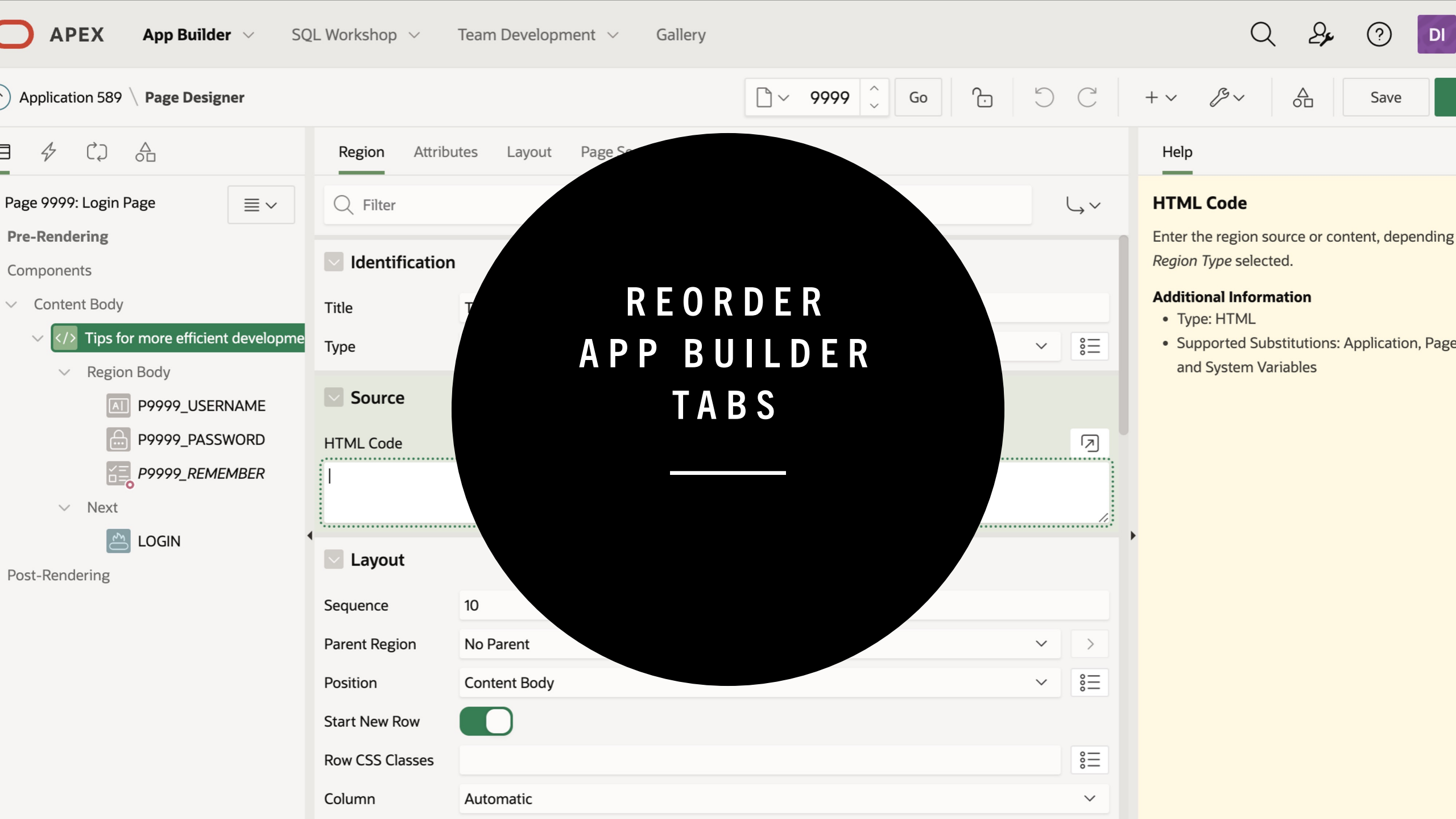
New Column

Column Span

Automatic

Column CSS Classes

Column Attributes



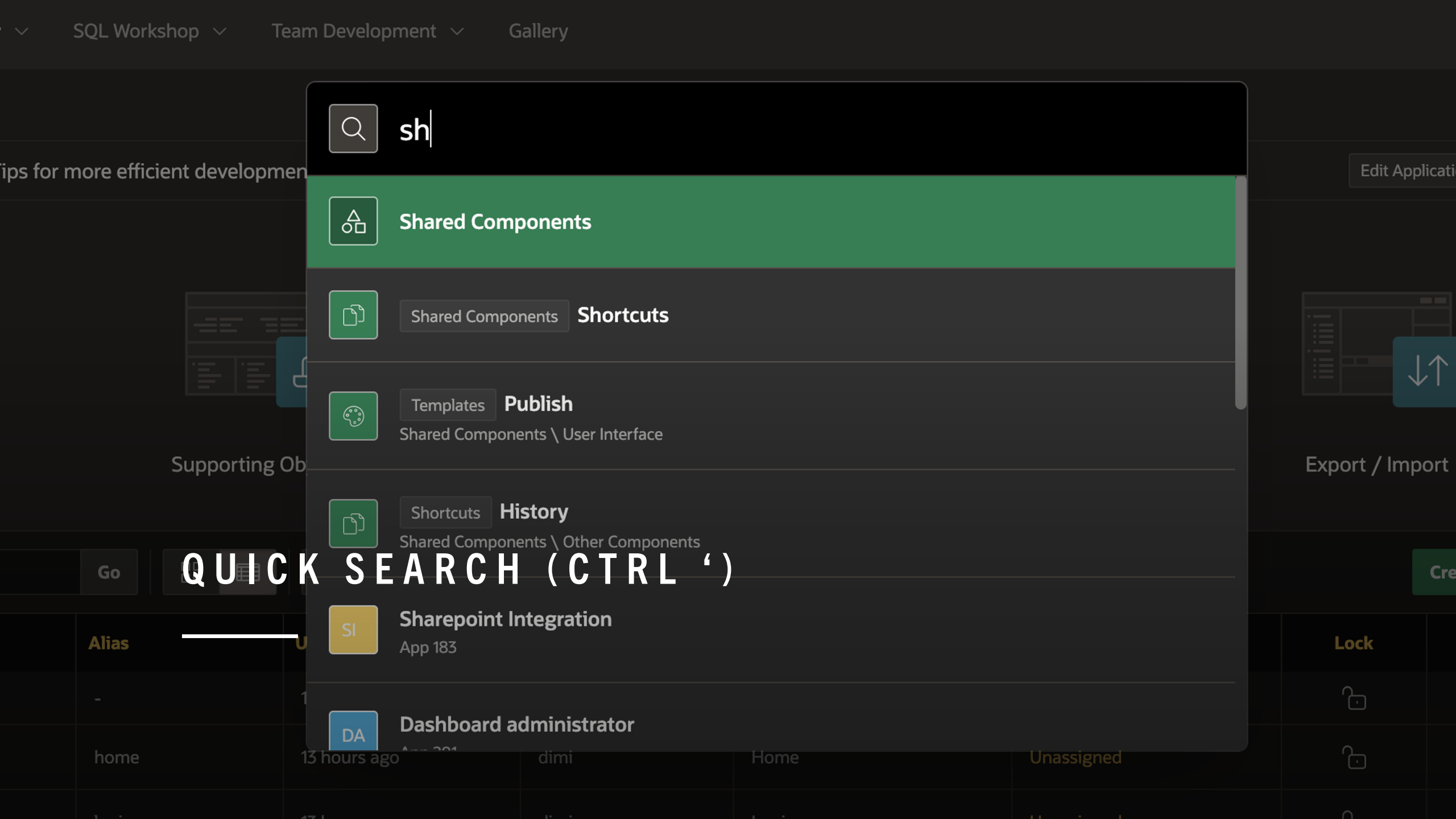
REORDER APP BUILDER TABS

DEMO





KEYBOARD SHORTCUTS



sh



Shared Components



Shared Components Shortcuts



Templates Publish

Shared Components \ User Interface



Shortcuts History

Shared Components \ Other Components



Sharepoint Integration

App 183



Dashboard administrator

QUICK SEARCH (CTRL ')

Edit Application



Export / Import

Go

Alias

home

13 hours ago

dimi

Home

Unassigned

Lock



SHORTCUTS IN THE BUILDER

<https://docs.oracle.com/en/database/oracle/application-express/21.2/aeacc/accessing-oracle-application-express-using-a-keyboard.html>

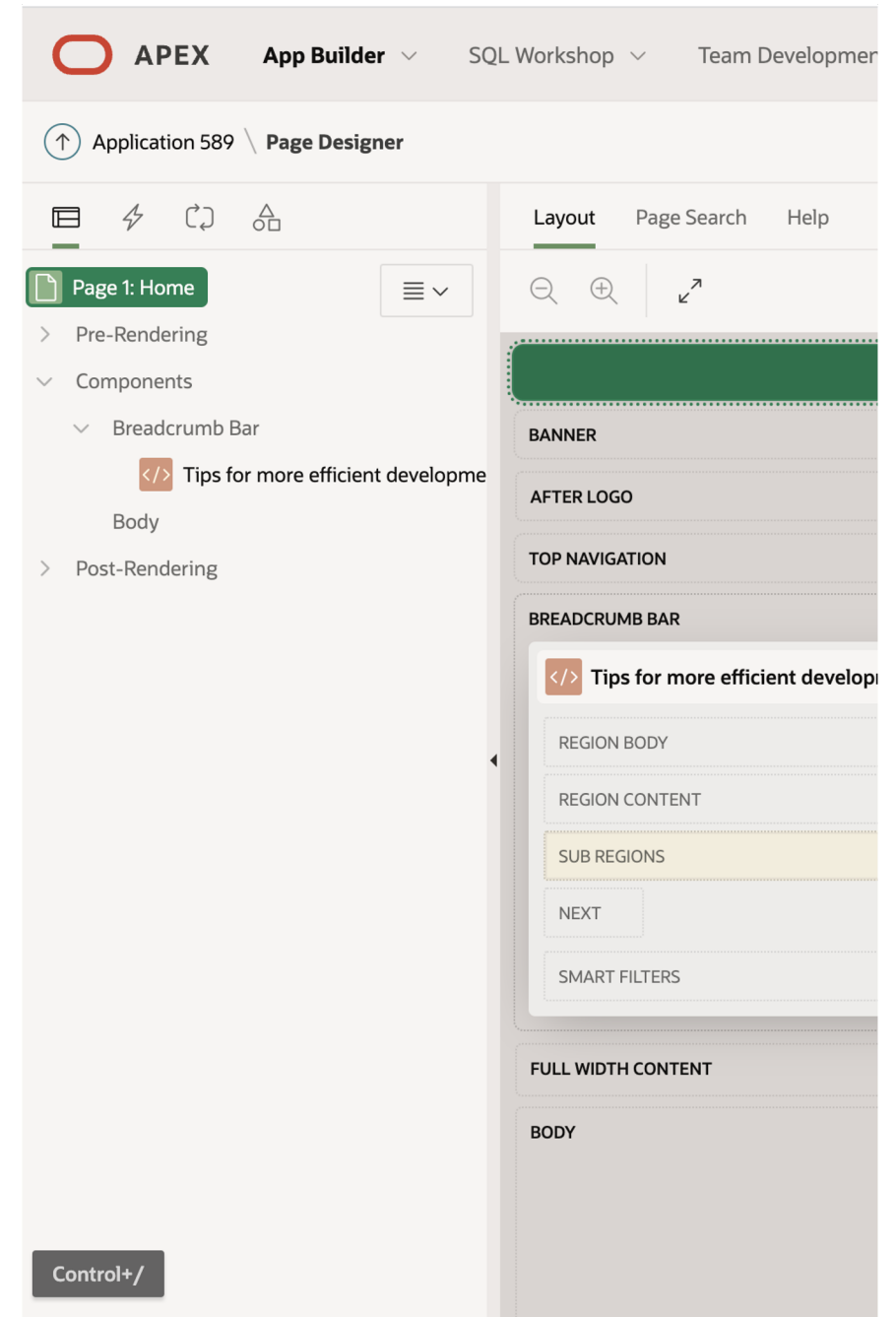
  	Table of Contents				Table 3-1 Oracle APEX Keyboard Shortcuts		
	Title and Copyright Information				Where	Keys	Action
	▸ Preface				Any page	Ctrl+Quote	Display Global Search
	1 Changes in Release 21.2 for Oracle APEX Accessibility Guide				Any page with special keyboard shortcuts	Alt+Shift+F1	Display the list of valid Keyboard Shortcuts for the page
	▼ 2 About This Accessibility Guide				Page Designer, Layout	Ctrl+Alt+D	Display from here
	2.1 What is Web Accessibility?				Page Designer, Layout	Ctrl+Alt+T	Display from page
	2.2 Why Accessibility is Important				Page Designer	Alt+2	Go to Dynamic Actions
	2.3 About Building for Accessibility				Page Designer	Alt+9	Go to Gallery, Buttons
	▼ 3 Using Oracle APEX with Assistive Technologies and Keyboard				Page Designer	Alt+8	Go to Gallery, Items
	3.1 Recommended Configuration				Page Designer	Alt+7	Go to Gallery, Regions
	▸ 3.2 Accessing Form Pages Using JAWS				Page Designer	Alt+5	Go to Layout
	▼ 3.3 Accessing Oracle APEX Using a Keyboard				Page Designer	Alt+F1	Go to Help
	3.3.1 General Keyboard Shortcuts				Page Designer	Ctrl+F1	Go to Messages
	3.3.2 Date Picker Keyboard Shortcuts				Page Designer	Alt+4	Go to Page Shared Components
	3.3.3 CSS Calendar Keyboard Shortcuts				Page Designer	Alt+3	Go to Processing
	3.3.4 Map Region Keyboard Shortcuts						

CREATE WITH KEYBOARD

CTRL + /

C P

C S



GET TO THE RIGHT COMPONENT FASTER WITH QUICK EDIT

 Tips for more efficient development in Oracle APEX   dimi

Report \ **Form** Cancel Delete Apply Changes

Cust First Name
John

Cust Last Name
Dulles

Cust Street Address1
45020 Aviation Drive

Cust Street Address2

Cust City
SterlingDIRK

Cust State
VA

Cust Postal Code
456

Cust Email
john.dulles1@

 Home  App 589  Page 3  Session  View Debug  Debug  Info  Quick Edit  Customize 

LIVE TEMPLATE OPTION

 Tips for more efficient development in Oracle APEX   dimi 

Report \

Form

Cancel Delete **Apply Changes**

Cust First Name
John

Cust Last Name
Dulles

Cust Street Address1
45020 Aviation Drive

Cust Street Address2

Cust City
SterlingDIRK

Cust State
VA

Cust Postal Code
456

Cust Email
john.dulles1@

 Home  App 589  Page 3  Session  View Debug  Debug  Info  Quick Edit  Customize 

WHEN USING APEX PROJECT EYE USE LIVE INSIGHT

The screenshot displays the Oracle APEX Project Eye interface, which is used for managing and developing APEX applications. The interface is split into two main sections: the Page Designer on the left and the live application view on the right.

Page Designer (Left):

- Layout:** Shows the page structure with regions like BANNER, AFTER LOGO, BEFORE NAVIGATION BAR, AFTER NAVIGATION BAR, TOP NAVIGATION, BREADCRUMB BAR, REGION BODY, REGION CONTENT, SUB REGIONS, NEXT, SMART FILTERS, FULL WIDTH CONTENT, and BODY.
- Page Search:** Includes a search bar and a filter icon.
- Page:** Contains a search bar and a filter icon.
- Identification:** Lists page details such as Name (Home), Page Alias (home), Title (Tips for more efficient development in Oracle APEX), and Page Group (- Select -).
- Appearance:** Includes settings for User Interface (Desktop), Page Mode (Normal), Page Template (Theme Default), and Template Options (Use Template Defaults).

Live Application View (Right):

- Header:** Displays the application name "APEX Project Eye" and the user "diml".
- Page Title:** "Presentation: Tips for more efficient development in Oracle APEX \ 1 - Home - Home".
- Help:** A section for user assistance.
- Info:** A table showing page details.
- Page Links:** A table showing page links.
- Security:** A table showing security settings.

Info	
Page Com...	-
Last Upda...	DIMI
Last Upda...	20.04.2022
Created On	20.04.2022
Page Mode	Normal

Page Links		
Page From	Page To	Links
9999	1	After login

Security	
Authorizati...	-
Page Acc...	Arguments Must Have Checksum
Deep Link...	Application Default
Rejoin Exi...	Disabled
Page Req...	Yes

USE TO ADVISOR TO CHECK YOUR APP

Application 589 \ Utilities

Utilities

**Application Dashboard**
Review a summary of this application.

**Advisor**
Perform various checks on this application, including programming errors and best practices.

**Upgrade Application**
After upgrading to a new version, review the new features.

**Attribute Dictionary**
Manage item / column utilities.

**Debug Messages**
Review debug messages.

**Export Repository**
View a history of application changes.

**Embedded Code**
Review code such as SQL and PL/SQL.

**Font APEX Icons**
Manage the application's font icons.

Advisor

apexrnd.be/ords/f?p=4000:8101:18422205141971::NO:8101

▼ Check Page(s)

The Advisor performs various checks on your application, including programming errors, security issues, quality assurance, and other best practices. For the list of checks, see [Checks to Perform](#). Once executed, your previous settings will be recalled for the next use.

Specify a comma separated list of pages to check, or leave blank to check all pages.

Page(s)

▶ Pages last edited within the last 7 days

▶ Checks to Perform

Perform Check

About

The Utilities page features links to summaries and reports that enable developers to view an application from various perspectives.

[Learn More ...](#)

Page Specific Utilities

Cross Page Utilities

Page Groups

Region Utilities

Button Utilities

Item Utilities

Computation Utilities

Validation Utilities

Process Utilities

Dynamic Action Utilities

Branch Utilities

WHEN USING APEX PROJECT EYE USE QUALITY ASSURANCE

united codes
APEX Project Eye

Quality Assurance

Rules repository

Quality Standards

Assessments

Quality Assurance

Manage the compliance of your applications with your organizational policies by following the three steps below



Rules repository

1. Manage your Rule repository



Quality Standards

2. Group your rules into different Quality Standards based on your Organizational Policies



Assessments

3. Run Quality Assessments on your Applications based on your Quality Standards

or



Dive in by importing our United Codes Quality Standard. Use it as is, or tailor the rules to fit your needs!



Import

Issues (66)

Q

Go

Actions

Severity

Highlight excluded

Severity : Low

Details	Component Type	Component Name	Rule	Additional Comment	Add to exceptions	Fix
	Page Items	P5501_CLASS_FK	Page items should be named P##.<item name>	-		
	Page Items	P5501_CLASS_FK	Page items should be named P##.<item name>	-		
	Page Items	P5501_COMPLAINT_EVENT_FK	Page items should be named P##.<item name>	-		
	Page Items	P5501_COMPLAINT_EVENT_FK	Page items should be named P##.<item name>	-		
	Page Items	P5501_COMPLAINT_FK	Page items should be named P##.<item name>	-		

DEMO



USE BUILT-IN CSS
INSTEAD OF
CREATING YOUR
OWN

- E.g. width 600: w600
- SEE UNIVERSAL THEME APP FOR DIFFERENT CLASS MODIFIERS at <https://apex.oracle.com/ut/>

Also check APEX Office Hours

USE BUILT OPTIONS TO COMMENT OUT

Advantage is that all can be
seen in one screen and
removed all at once

Application 589 \ Shared Components \ Build Options									
Build Options Utilization History									
Q Go Actions Reset Create									
Name	Application	Status	Default on Export	On Upgrade Keep Status	Comment	Updated By	Created	Updated	Page Dynamic Action - Actions
Commented Out	589	Exclude	Exclude	No	-	DIMI	2 days ago	2 days ago	0

APEX App Builder SQL Workshop Team Development Gallery

Application 589 \ Shared Components \ Build Options \ Create / Edit

Build Option

Cancel Delete Apply Changes

Show All Attributes Associated Components

Attributes

* Application589 Presentation: Tips for more efficient development in Oracle APEX

* Build OptionCommented Out

StatusExclude

Default on ExportSame as Current Status

On Upgrade Keep Status

Comments

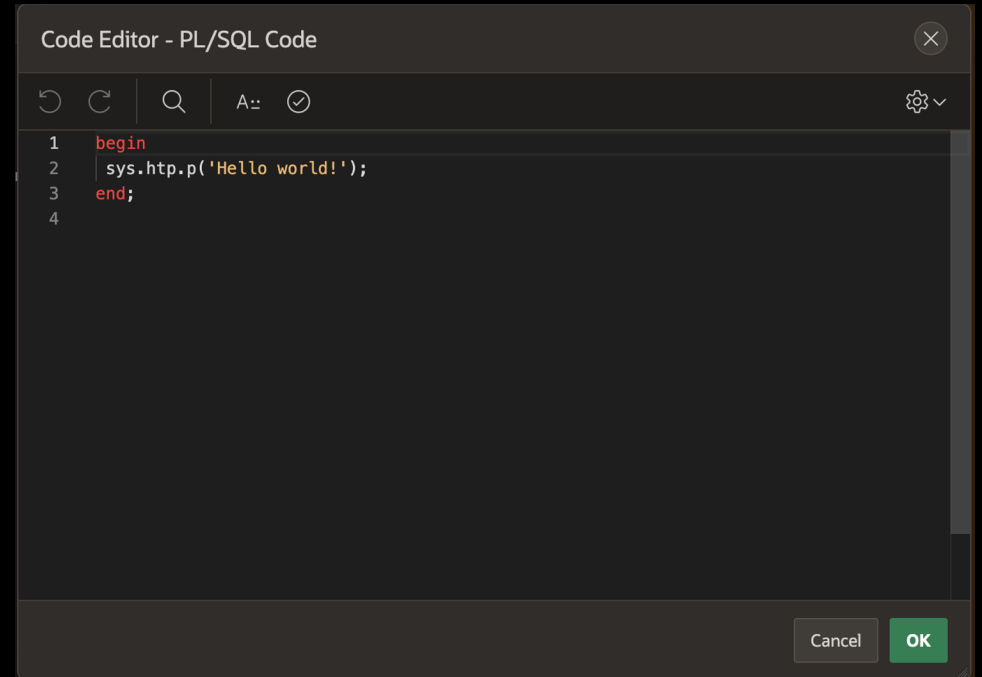
Associated Components

Remove Components

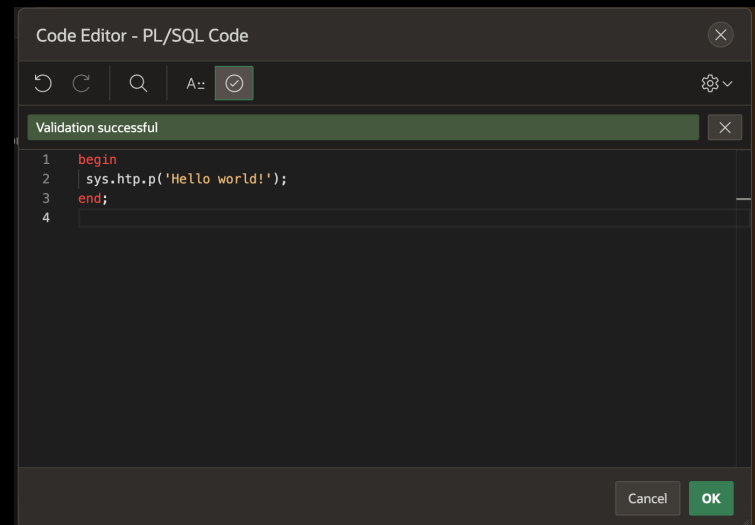
Component	Component Name	Build Option	Page Number
Page Region	This is not relevant anymore	Commented Out	3

1 - 1

MONACO EDITOR



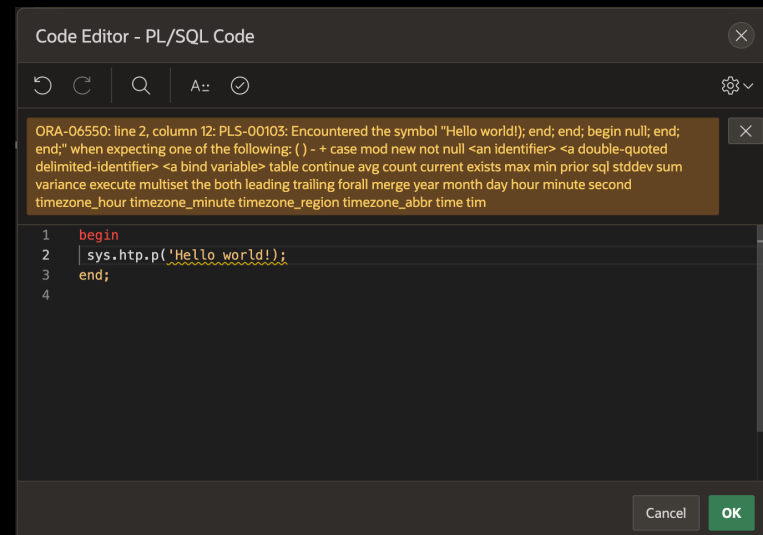
QUICK VALIDATE PL/SQL



The screenshot shows a 'Code Editor - PL/SQL Code' window. At the top, there is a toolbar with icons for undo, redo, search, and a dropdown menu. Below the toolbar, a green status bar displays 'Validation successful'. The main text area contains the following PL/SQL code:

```
1 begin
2   sys.http.p('Hello world!');
3 end;
```

At the bottom right, there are 'Cancel' and 'OK' buttons.

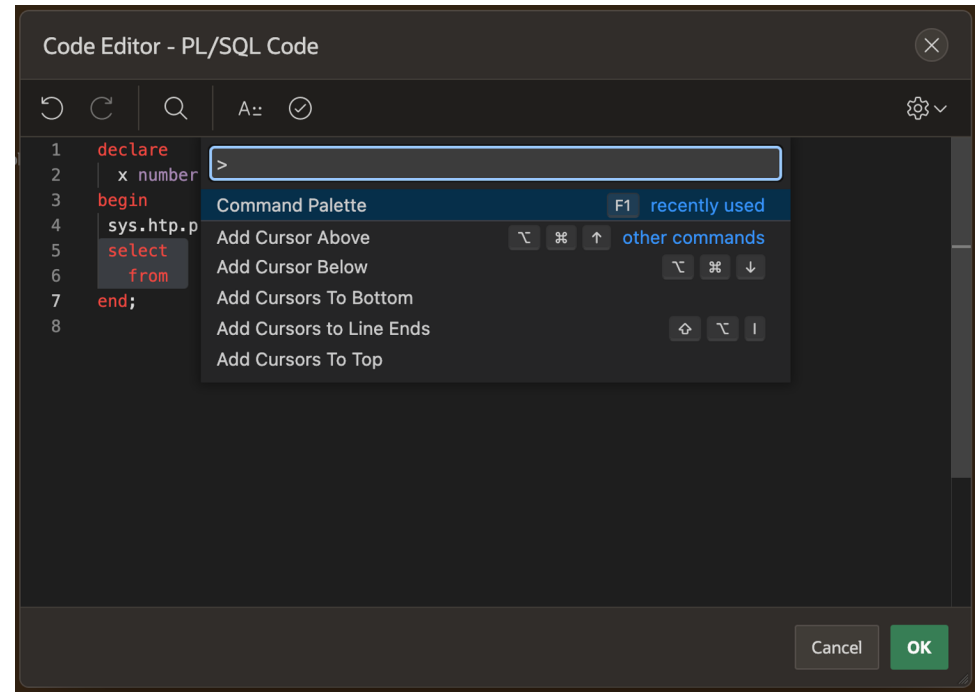


The screenshot shows a 'Code Editor - PL/SQL Code' window. At the top, there is a toolbar with icons for undo, redo, search, and a dropdown menu. Below the toolbar, an orange status bar displays an error message: 'ORA-06550: line 2, column 12: PLS-00103: Encountered the symbol "Hello world!"; end; end; begin null; end; end;" when expecting one of the following: () - + case mod new not null <an identifier> <a double-quoted delimited-identifier> <a bind variable> table continue avg count current exists max min prior sql stddev sum variance execute multiset the both leading trailing forall merge year month day hour minute second timezone_hour timezone_minute timezone_region timezone_abbr time tim'. The main text area contains the following PL/SQL code:

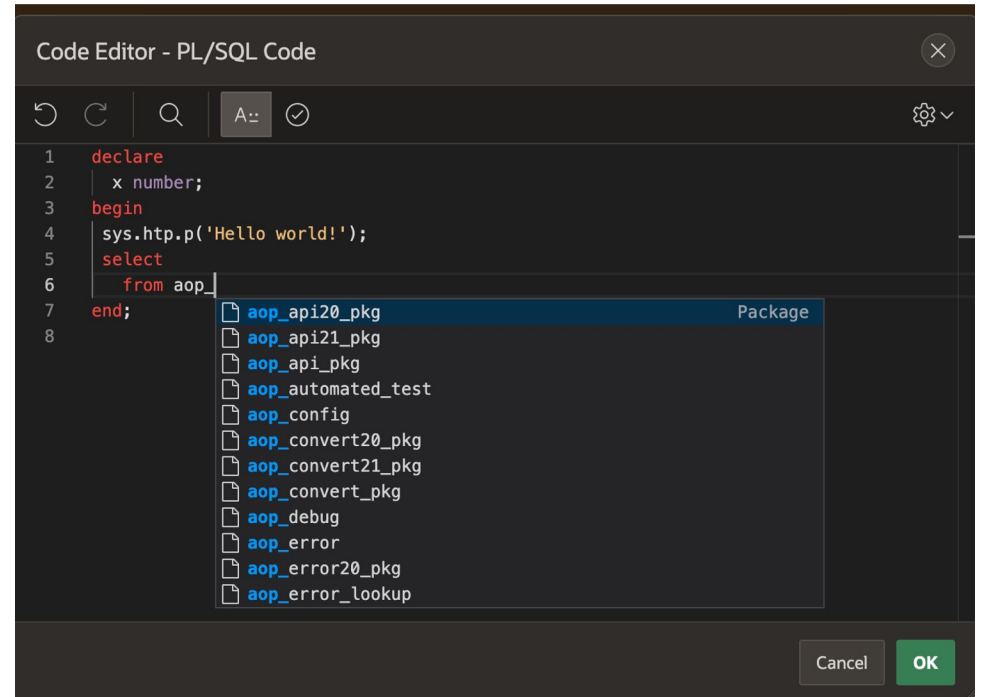
```
1 begin
2   sys.http.p('Hello world!');
3 end;
```

At the bottom right, there are 'Cancel' and 'OK' buttons.

COMMAND PALETTE



AUTO COMPLETE



MONACO EDITOR SHORTCUTS

Copy line
SHIFT OPTION UP

Command Palette
SHIFT CMD P

Column Mode
SHIFT OPTION Mouse

Lower / Upper case
SHIFT CMD P + text

Comment
individual/multiple
selected lines
CMD /

Move
individual/multiple
selected lines
OPTION UP/DOWN

Save page
OPTION + (Fn) F7

Run page:
OPTION + (Fn) F8

DEMO



APEX UTILITIES

APEX

App Builder

SQL Workshop

Team Development

Gallery

dimil

training

Application 597

Edit Page 3

Application 597 - APEX Project Eye (APE) 22.2

Edit Application Properties

Run Application

Supporting Objects

Shared Components

Utilities

Export / Import

Q

Go

Grid

Calendar

Actions

Create Page

Page	Name	Alias	Updated	Updated By	Type	Group	Lock	Run
0	Global Page - Desktop	-	8 days ago	andraz	Global Page	General		
1	Workspace Dashboard	home	3 months ago	zlatko	Home	General		
2	Instance Dashboard	-	4 months ago	jure	Report	General		
3	Verify License	-	11 months ago	lucas	Dynamic Form	General		
4	Workspaces	-	12 years ago	lucas	Interactive Report	Applications		
5	Applications	-	12 years ago	lucas	Interactive Report	Applications		
6	APEX Users	-	12 years ago	lucas	Interactive Report	Applications		

About

Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click **Create Page** to add a page to the application. [Learn More ...](#)

Tasks

Delete this Application

Copy this Application

Manage Backups

Browse by Facets

Recently Edited Pages

500. Application - Quality Ass...

699. Quality Assurance - Home

600. QA - Rule repository

630. QA Module - Standards

640. QA Module - Standard

0. Global Page - Desktop

670. Quality Assurance - Asse...

16. Import / Export QA Standard

Utilities



Application Dashboard
Review a summary of this application.



Upgrade Application
After upgrading to a new release, review components for upgrading to include the latest features.



Attribute Dictionary
Manage item / column user interface defaults for a selected page.



Debug Messages
Review debug messages generated by this application.



Export Repository
View a history of application exports.



Embedded Code
Review code such as SQL, PL/SQL, JavaScript etc.



Font APEX Icons
Find Font APEX icons and HTML Markup



Advisor
Perform various checks on this application, including programming errors and best practices.



Recently Updated Pages
View a history of the page updates made on this application.



Change History
View a detailed report of component updates made on this application.



Oracle APEX Views
Query the various views against Oracle APEX metadata.



Manage Backups
Review backup history, perform a manual backup or restore from a backup



Application Checksum
The application checksum provides an easy way to determine whether the same application is deployed across workspaces.



Page Checksums
The page checksum report provides an easy way to compare two application deployments and see which pages are the same and which are different

About

The Utilities page features links to summaries and reports that enable developers to view an application from various perspectives.

[Learn More ...](#)

Page Specific Utilities

[Cross Page Utilities](#) >

[Page Groups](#) >

[Region Utilities](#) >

[Button Utilities](#) >

[Item Utilities](#) >

[Computation Utilities](#) >

[Validation Utilities](#) >

[Process Utilities](#) >

[Dynamic Action Utilities](#) >

[Branch Utilities](#) >

Interactive Report Utilities

[Saved Reports](#) >

[Subscriptions](#) >

Search

Total Row Count 5

 Search...

▼ **Language**

☐ PL/SQL (5)

▼ **Scope**

- ☐ Shared Component (1)
- ☐ Page 9999 - Login Page (3)
- ☐ Page 10011 - Help (1)

▼ **Component Type**

- ☐ Process (3)
- ☐ Authorization (1)
- ☐ Region (1)

Search Results

Shared Component
Authorization: ADMINISTRATION RIGHTS

return true

Page 10011 - Help
Region: SEARCH DIALOG

```
for c1 in  
(  
    select page_title, help_text  
    from apex_application_pages  
    where page_id = :P10011_PAGE_ID  
    and application_id = :APP_ID  
)  
loop  
    if c1.help_text is null then  
        sys.http.p('No help is available for this page.');
```

Page 9999 - Login Page
Process: Login

```
apex_authentication.login(  
    p_username => :P9999_USERNAME,  
    p_password => :P9999_PASSWORD );
```

Page 9999 - Login Page
Process: SET USERNAME COOKIE

```
apex_authentication.send_login_username_cookie (  
    p_username => lower(:P9999_USERNAME),
```

CODE REVIEWS, SECURITY
EVALUATIONS OR APPLICATION
TUNING
EASIER WITH
EMBEDDED CODE

Search

☒ **Small** ☐ Large



delete

Go

☒ Category

☐ Web Application (17)

☐ Form Control (2)

Font APEX

You can use this page to search for Font APEX icons.

Icons



fa-ban



fa-cloud-x



f



fa-folder-x



fa-lock-x



f



fa-minus-square



fa-minus-square-o



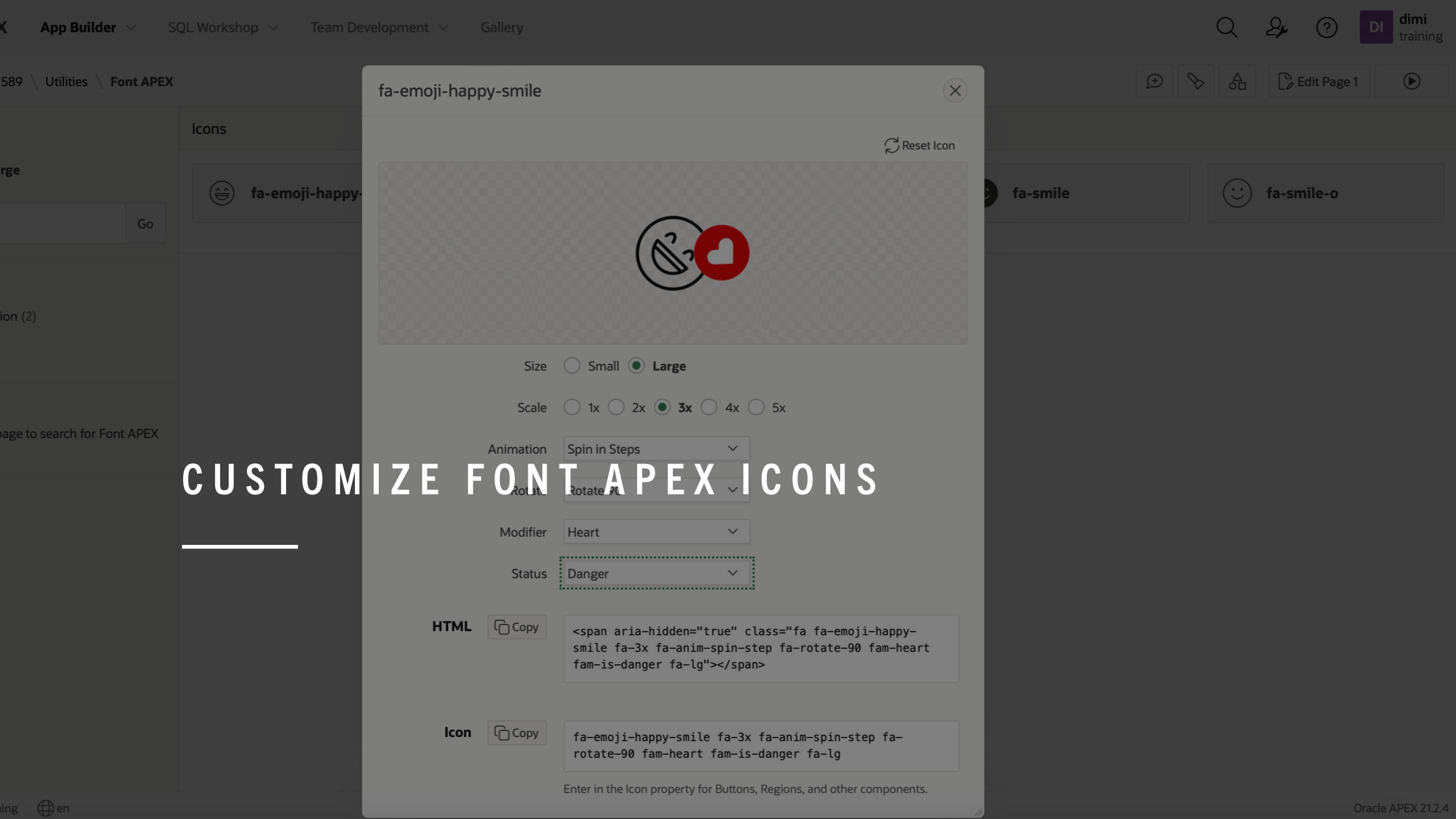
f



fa-trash-o



fa-window-x



CUSTOMIZE FONT APEX ICONS

PAGE SPECIFIC UTILITIES

Page Specific Utilities

Cross Page Utilities >

Page Groups >

Region Utilities >

Button Utilities >

Item Utilities >

Computation Utilities >

Validation Utilities >

Process Utilities >

Dynamic Action Utilities >

Branch Utilities >

APEX

App Builder

SQL Workshop

Team Development

Gallery

Utilities

Data Workshop

Load and unload data using CSV, XLSX, XML or JSON files.

Quick SQL

Generate SQL using shorthand syntax

Generate DDL

Generate scripts for all or selected database objects within a schema.

Schema Comparison

Show differences between database objects in two different schemas.

Recycle Bin

Restore database objects that have been dropped.

About Database

Review database details. Note: A Database account granted the DBA role is required.

Query Builder

Build queries graphically by adding tables into a panel, and selecting columns to return.

Sample Datasets

Install, refresh, or remove sample datasets.

User Interface Defaults

Specify layout properties to consistently generate items / columns across pages and applications.

Methods on Tables

Generate API scripts for DML operations on specified tables.

Object Reports

Access numerous reports on tables, exceptions, security, objects and PL/SQL code.

Database Monitor

Run database activity reports. Note: A Database account granted the DBA role is required.

SQL WORKSHOP
UTILITIES

TOOLS TO COMPLETE APEX DEVELOPMENT

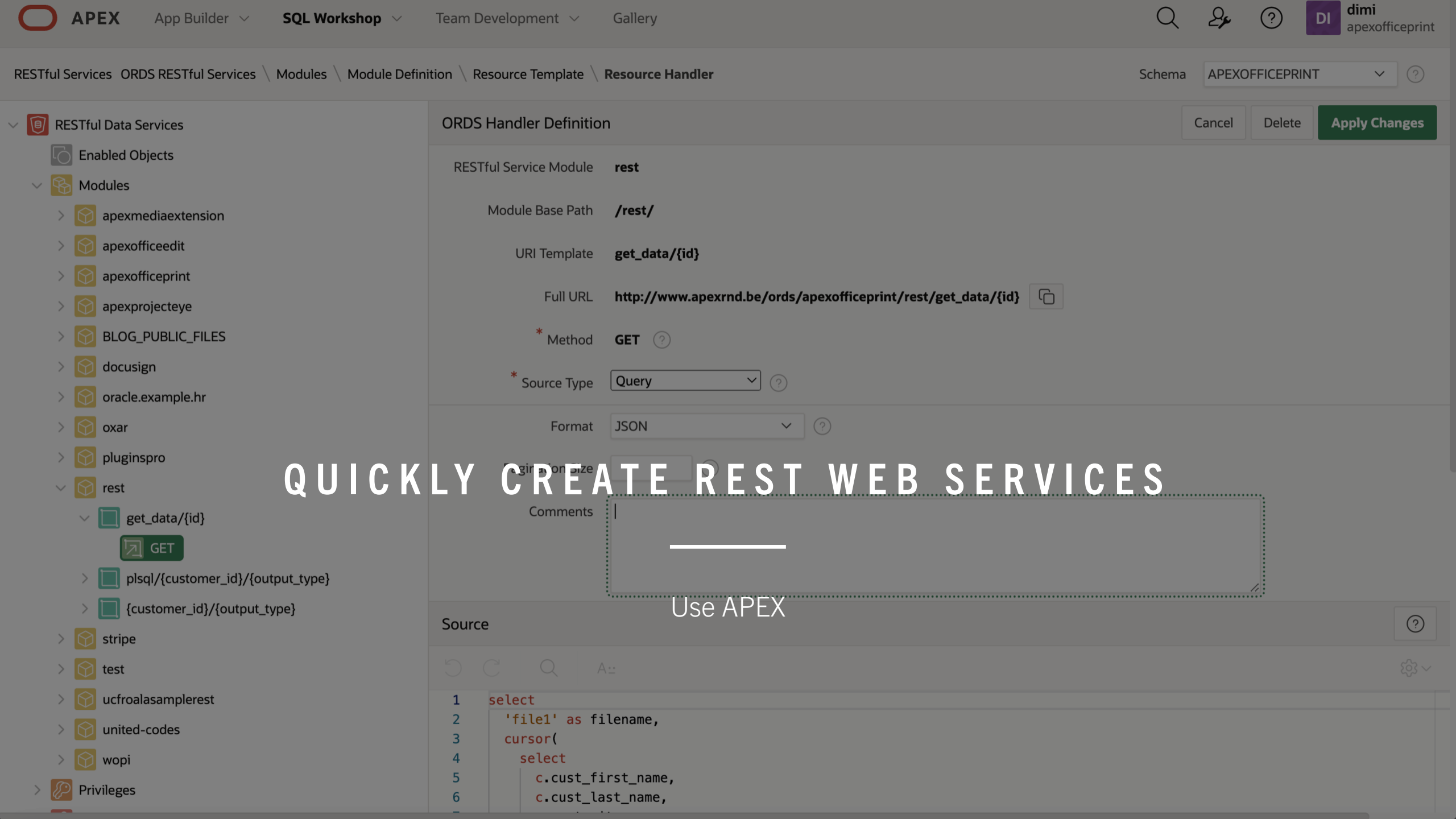
SQL Developer (Desktop)

SQL Developer Web (Oracle Cloud / ORDS)

SQLcl

Visual Studio Code

Browser Developer Tools

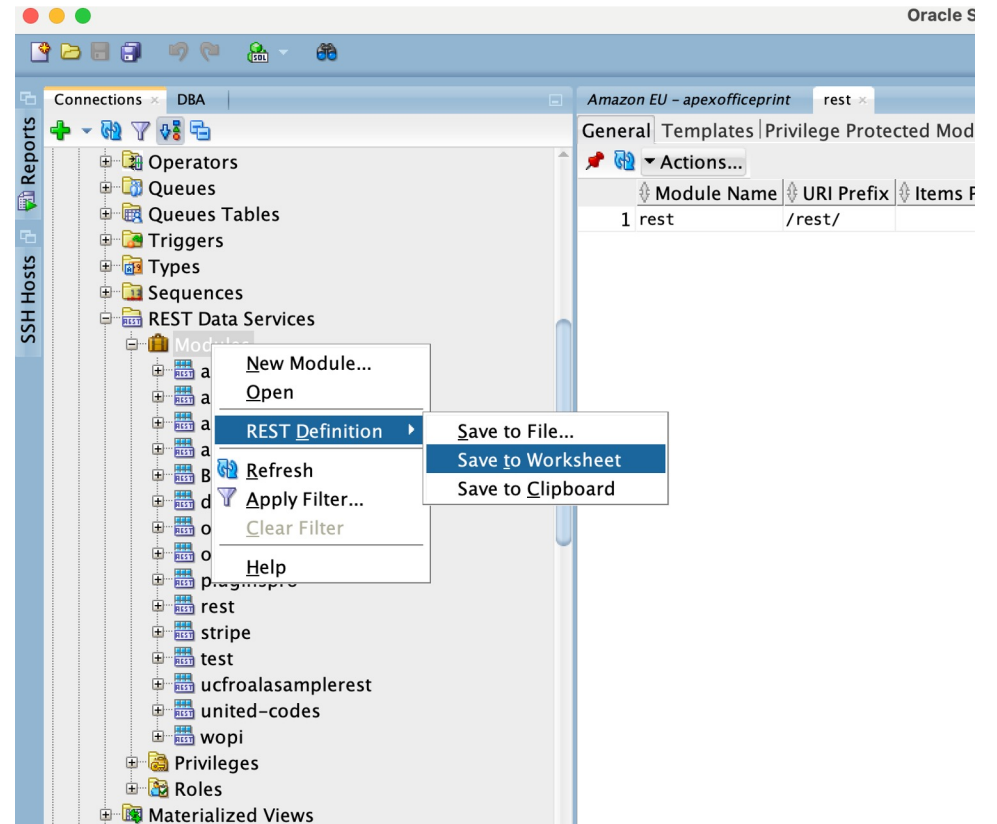


QUICKLY CREATE REST WEB SERVICES

Use APEX

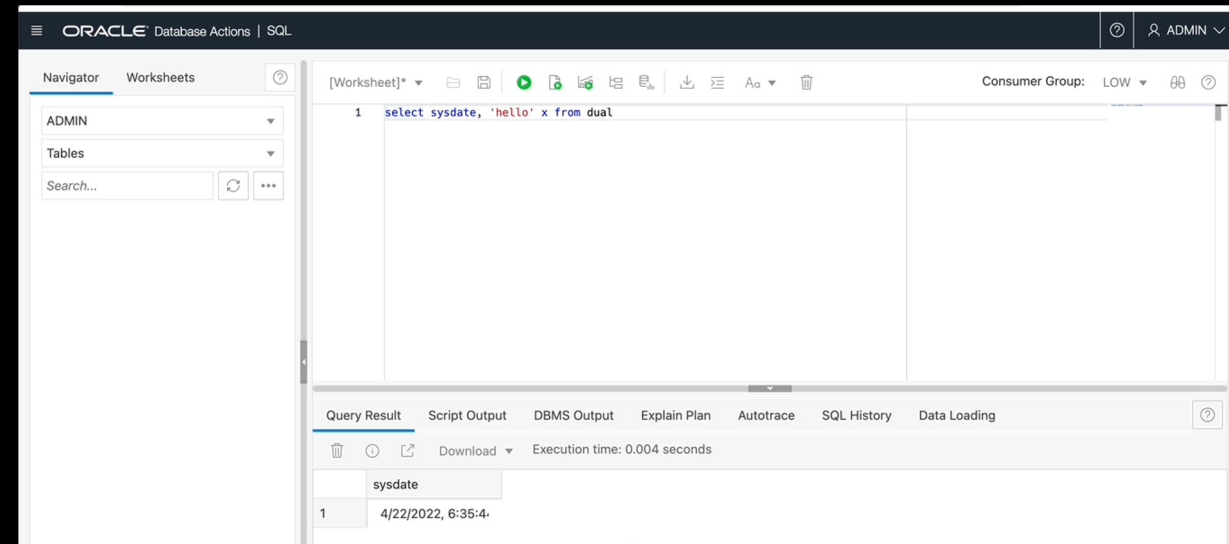
```
1 select
2   'file1' as filename,
3   cursor(
4     select
5       c.cust_first_name,
6       c.cust_last_name,
```

GET THE REST WEB SERVICE DEFINITION



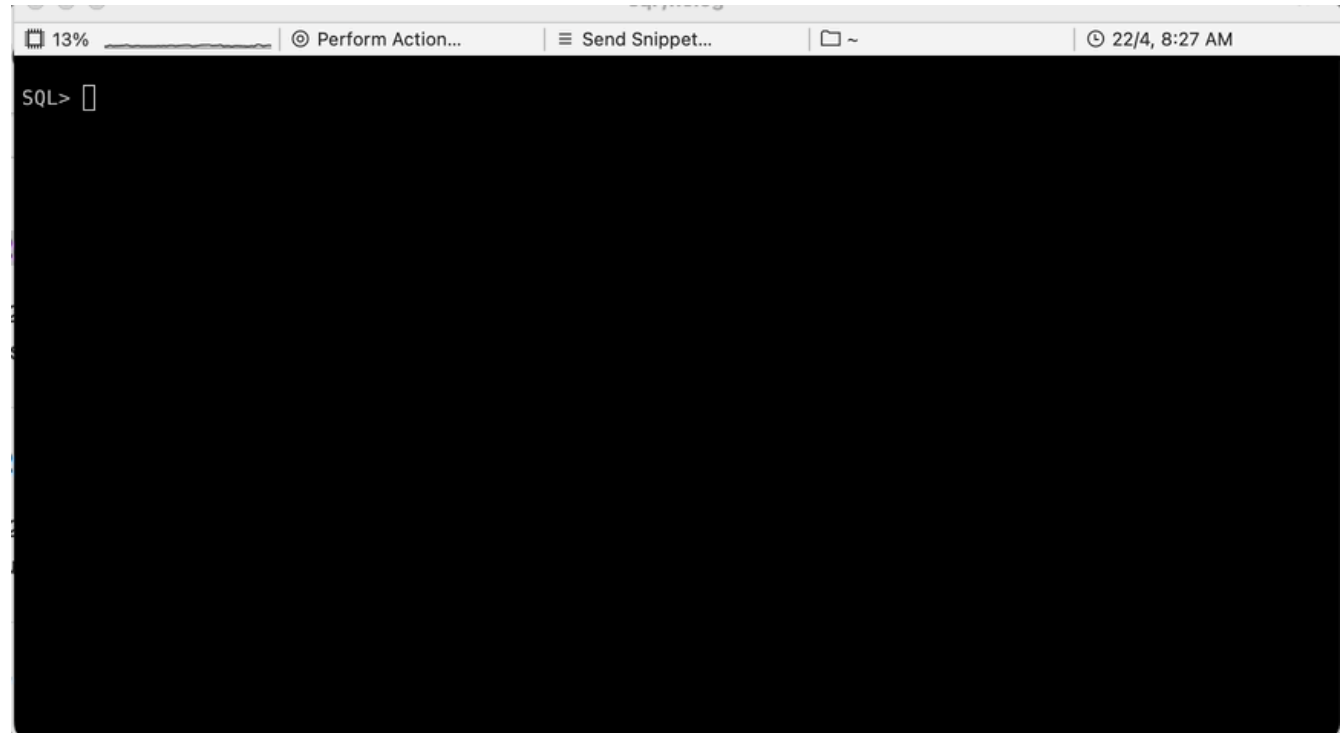
SQL WORKSHOP WHEN NO SQL DEV WEB IS THERE

CTRL + ENTER to launch the
selected statement

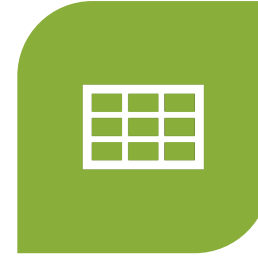


QUICKLY LOOKUP ORACLE ERRORS

- SQLcl > oerr



USE SQL THAT IS
CREATED BY THE
WIZARD



CREATE
LOOKUP TABLE



ALSO USEFUL
SQL HISTORY

APEX App Builder SQL Workshop Team Development Gallery

Create Table

Create Table

Please confirm your request.

Schema: APEXOFFICEPRINT

Table name: X

SQL

```
CREATE table "X" (  
  "X" NUMBER  
)
```

USE VISUAL STUDIO CODE

Syntax highlighting

Greater accessibility

Time-saving shortcuts

Very fast

One editor for all

PL/SQL





**USE LOCALHOST
AND COMBINE
WITH APEX**

Useful for JS and CSS
development

A top-down view of a collaborative workspace. Several people are gathered around a large, light-colored table. They are engaged in a creative process, with various hand-drawn diagrams and icons scattered across the surface. The diagrams include a central yellow circle with a lightbulb and three lightning bolts, surrounded by dashed lines and arrows. Other icons include a magnifying glass, a book, a gear, a puzzle piece, a lightbulb, a star, a coffee cup, a laptop, and a network diagram. The people are wearing colorful clothing, and their hands are visible as they work on the diagrams. The overall atmosphere is one of teamwork and innovation.

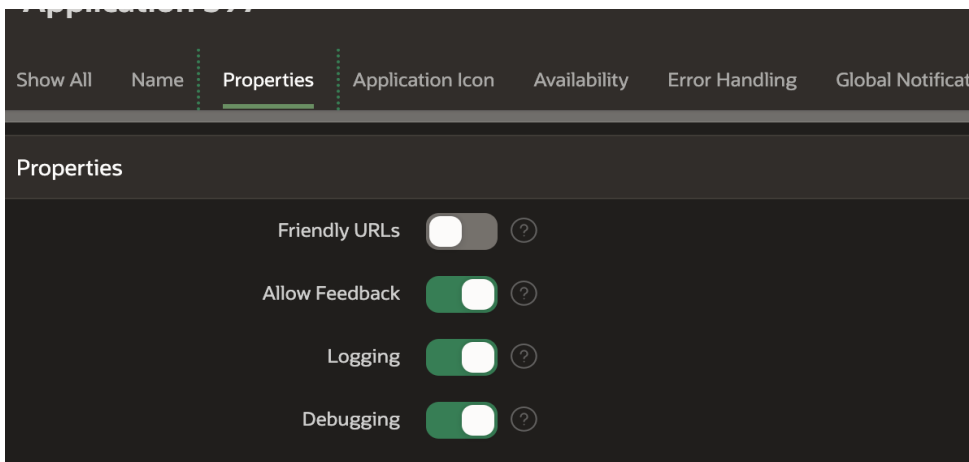
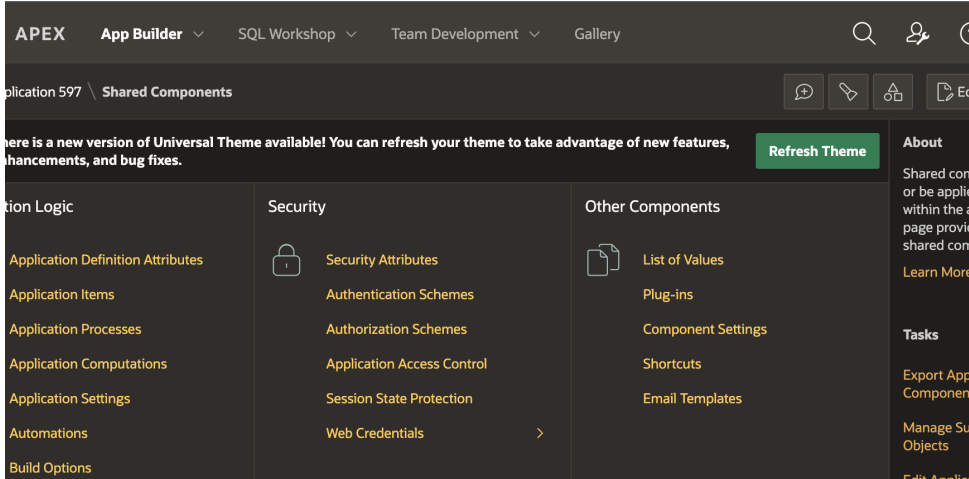
USE BROWSER DEVELOPMENT TOOLS

DESIGN

RESEARCH

GET A NEW THEME AND FEATURES IN A FEW CLICKS

- Refresh Theme
- Application Attributes
- Utilities > Upgrade application

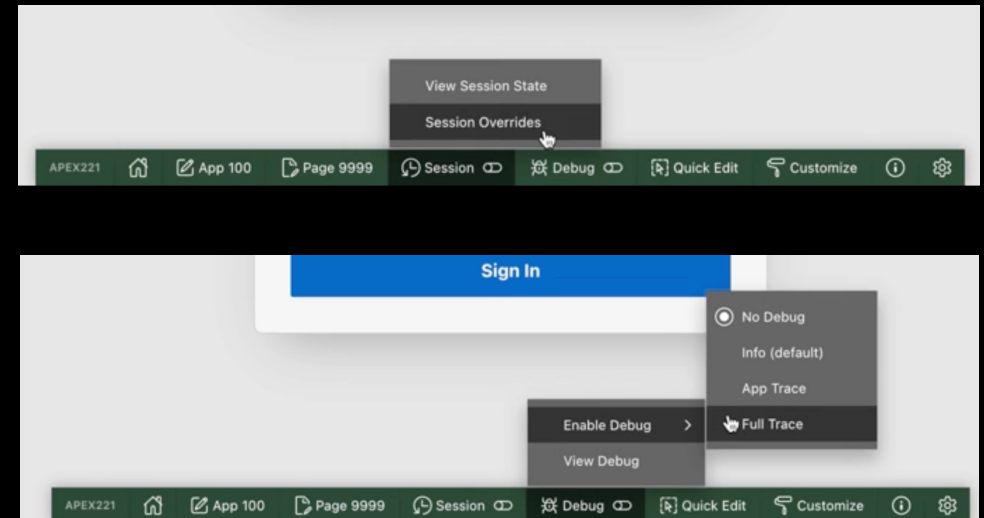


The screenshot shows the 'Upgrade Application' utility. The top navigation bar includes 'Application 597 \ Utilities \ Upgrade Application'. Below the navigation bar is a search bar with a 'Go' button and an 'Actions' dropdown. The main area is a table with two columns: 'Object Type' and 'Candidate Objects'. The table lists various objects and their counts. A right sidebar contains 'Upgrade Application' and 'The available display number upgrade count to and upgrade'.

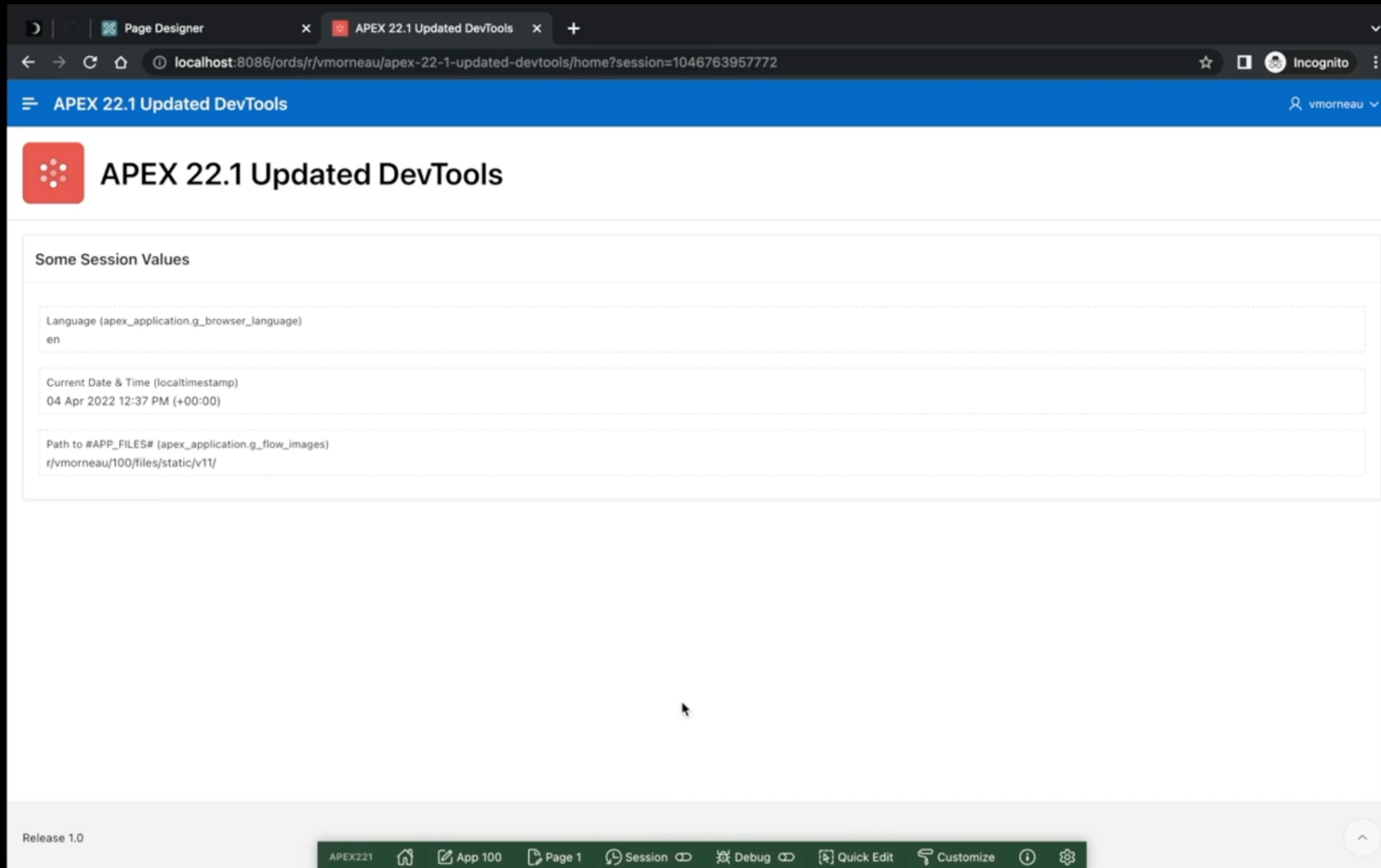
Object Type	Candidate Objects
Value Required Item attribute to Yes, where appropriate	1
Group By for Interactive Reports	1
Save Public Report for Interactive Reports	35
Subscription for Interactive Reports	23
Rows Per Page Selector for Interactive Reports	35
Pivot for Interactive Reports	1
Legacy Form page to page containing Form Region, where appropriate	8
Date Picker (jQuery) to new Date Picker	2
Buttons to use Declarative Confirmation Dialogs instead of JavaScript in URLs	7

APEX 22.1

NEW FEATURES



APEX 22.1: SESSION OVERRIDES



APEX 22.1: SESSION OVERRIDES DEVELOP CSS / JS LOCALLY



Vincent Morneau video



Q & A

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