

ORACLE®

# Oracle APEX Hands-On Lab

## *Creating an App from a Spreadsheet* for Oracle Autonomous Cloud Service



July, 2019 (v19.1.3)

## Step Up to Modern Cloud Development

# Overview

This lab walks you through uploading a spreadsheet into an Oracle database table, and then creating an application based on this new table. You will then play with the Interactive Report and improve the attached form. Lastly, you will add a Calendar page and then link it to the existing form page.

*Rather than trying to email a spreadsheet to gather information from different people, simply create an app in minutes, and email the URL. This single source-of-truth, multi-user, secured, scalable app is so much better than having 20 (incomplete) spreadsheets!*

Please note this lab assumes that you already have the Autonomous Data Warehouse (ADW) or Autonomous Transaction Processing – Serverless (ATP-S) service provisioned.

If you do not currently have a cloud service, sign up for a free trial account at <https://cloud.oracle.com/try-autonomous-database>

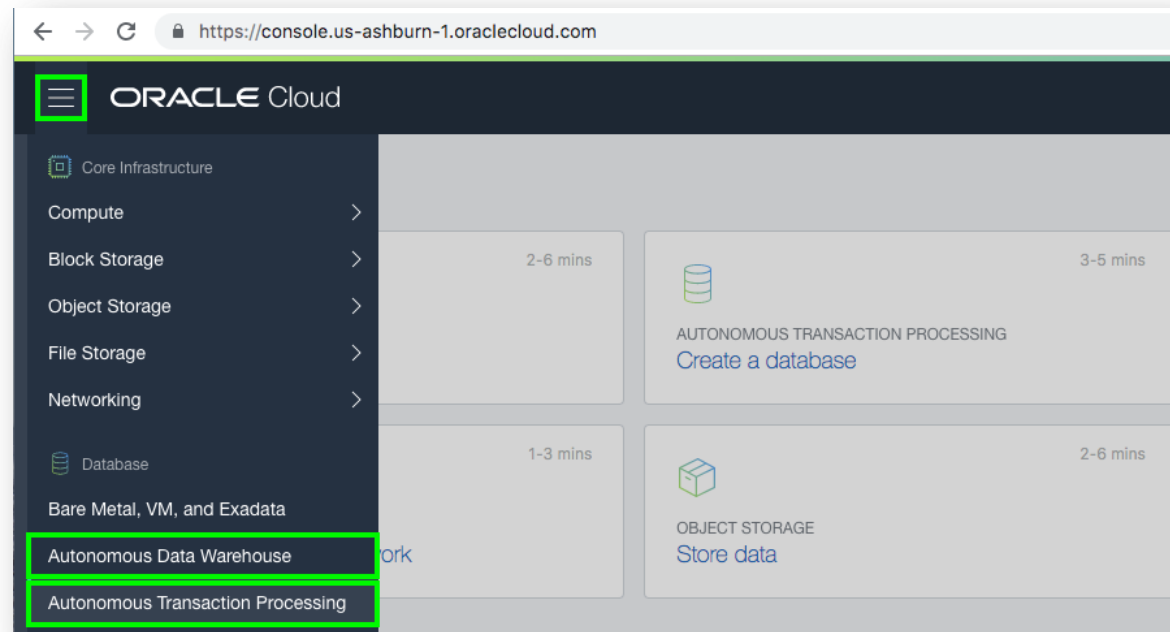
Getting Started

## Obtaining a Workspace

*{Note: If you have a workspace on the Autonomous Database Cloud Service then you can skip this section and move to Section 2}*

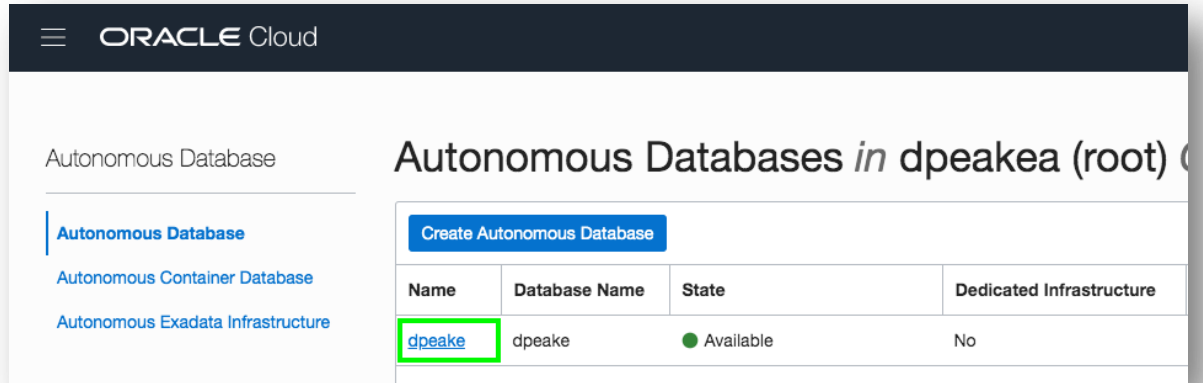
# Step 1.1 – Accessing APEX

- Sign into your Oracle Cloud service
- Click the hamburger (top left), select Autonomous Data Warehouse or Autonomous Transaction Processing, based on which service(s) you have defined.



# Step 1.1b – Accessing APEX

- Click **<Your Database>** from the list
  
- Click **Service Console**

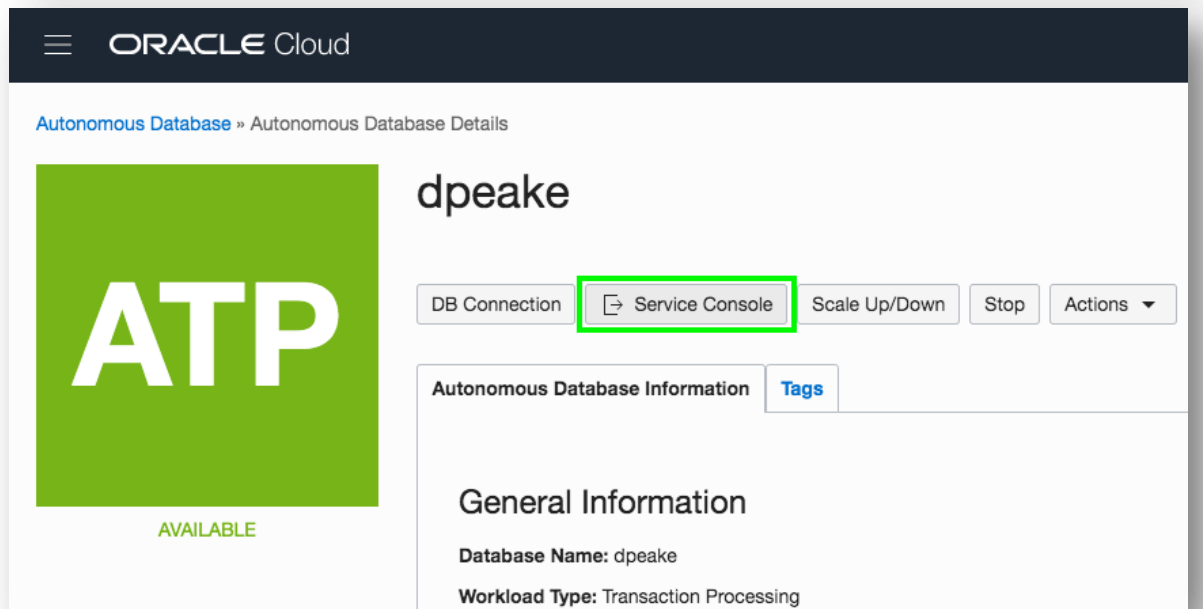


Autonomous Database

Autonomous Databases *in dpeakea (root)*

Create Autonomous Database

Name	Database Name	State	Dedicated Infrastructure
<a href="#">dpeake</a>	dpeake	● Available	No



Autonomous Database » Autonomous Database Details

## dpeake

ATP

AVAILABLE

DB Connection [Service Console](#) Scale Up/Down Stop Actions

Autonomous Database Information [Tags](#)

### General Information

**Database Name:** dpeake

**Workload Type:** Transaction Processing

# Step 1.1c – Accessing APEX

- Click **Development**
- Click **APEX**

The screenshot shows the Oracle Cloud Infrastructure console interface. At the top, there is a blue header with the Oracle logo and 'Cloud Infrastructure' text. On the right side of the header, there are icons for help and user profile. The main content area is divided into a left sidebar and a main grid of service cards. The sidebar contains the following items: 'Autonomous Transaction Processing', 'Overview', 'Activity', 'Administration', and 'Development' (which is highlighted with a green border). Below the sidebar, it shows 'DATABASE DPEAKE'. The main grid contains four service cards: 'APEX' (highlighted with a green border), 'SQL Developer Web', 'OML Notebooks', and 'Download Oracle Instant Client'. Each card has a title, a brief description, and an information icon (i) in the top right corner.

**ORACLE**  
Cloud Infrastructure

Autonomous Transaction Processing

Overview

Activity

Administration

**Development**

DATABASE  
DPEAKE

**APEX**

APEX provides a low-code development environment that enables you to build apps in a single, extensible platform, which is fully supported by Autonomous Database.

**SQL Developer Web**

Oracle SQL Developer Web provides a browser-based integrated development environment and administration interface for Oracle Autonomous Database. It provides a subset of the features available in the desktop product.

**OML Notebooks**

OML SQL notebooks provide easy access to Oracle's parallelized, scalable in-database implementations of a library of Oracle Advanced Analytics' machine learning algorithms (classification, regression, anomaly detection, clustering, associations, attribute importance, feature extraction, times series, etc.), SQL, PL/SQL and Oracle's statistical and analytical SQL functions.

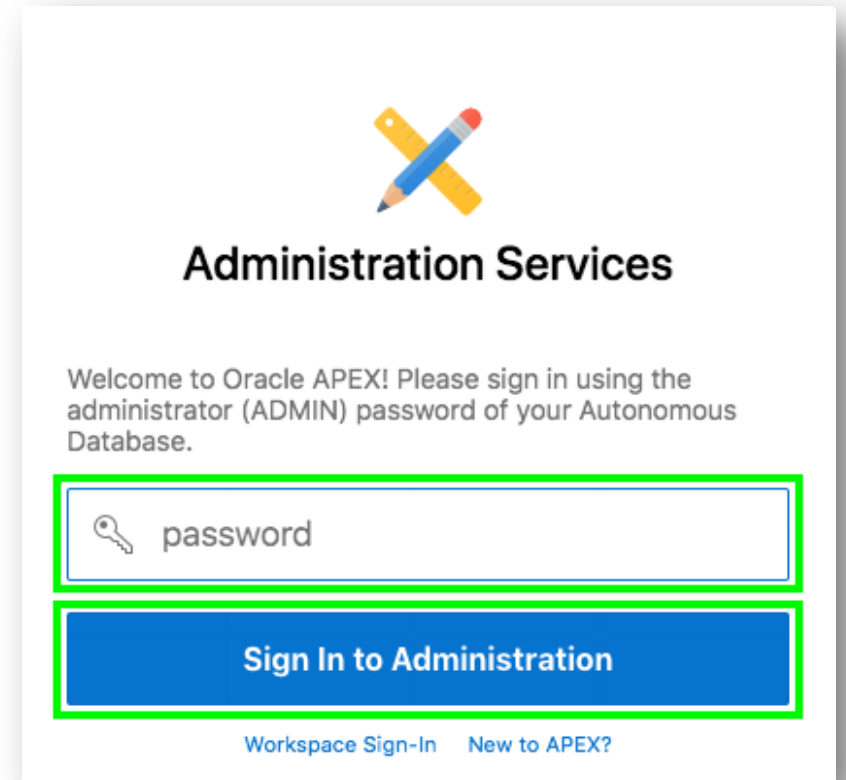
**Download Oracle Instant Client**

This is a free, light-weight set of tools, libraries and SDKs for building and connecting applications. These libraries underly the Oracle APIs of languages including Node.js, Python and PHP and provide access for OCI, OCCl, JDBC, ODBC and Pro\*C applications. Tools such as SQL\*Plus and Oracle Data Pump are also included - Oracle recommends using this version of Data Pump for moving existing Oracle Database schemas to Autonomous Transaction Processing.



## Step 1.2 – Creating a Workspace

- To sign into APEX Administrative Services for Password enter your OCI Password
- Click **Sign In to Administration**



The image shows a screenshot of the Oracle APEX Administration Services login page. At the top center is a logo consisting of two crossed pencils, one yellow and one blue. Below the logo is the text "Administration Services". Underneath that is a welcome message: "Welcome to Oracle APEX! Please sign in using the administrator (ADMIN) password of your Autonomous Database." Below the message is a text input field with a key icon on the left and the placeholder text "password". Below the input field is a blue button with the text "Sign In to Administration". At the bottom of the page are two links: "Workspace Sign-In" and "New to APEX?". The input field and the "Sign In to Administration" button are highlighted with a green border.

## Step 1.2b – Creating a Workspace

- Given this is your first time entering APEX, click **Create Workspace**



### Welcome to Oracle Application Express!

Before you get started, please take a moment to create a workspace. A workspace is a shared work area where multiple developers can build applications.

Once created, sign in to your workspace to begin building applications. Return to Administration Services to create additional workspaces or to manage this Application Express instance.

Create Workspace

## Step 1.2c – Creating a Workspace

- For Database User enter an appropriate name
- Enter a Password {Click the ? Icon to see password complexity rules}
- Click **Create Workspace**

**Create Workspace** ×

Identify a new or existing database user to use with your new workspace.

\* Database User  ?

\* Password  ?

\* Workspace Name  ?

▶ Advanced

Cancel **Create Workspace**

*{Note: The Database User will be used for the Workspace Name. If you want you can update the Workspace Name}*

# Step 1.3 – Log into your New Workspace

- Click on the link within the success message *{easiest technique}*  
OR  
Click on the Admin user (top right), click **Sign Out**,  
and then click **Return to Sign In Page**

ORACLE APEX Manage Instance Manage Workspaces Monitor Activity ? ADMIN

✓ Workspace created. Sign out of Administration Services and sign in to **DPEAKE** to begin building applications.

Instance Administration

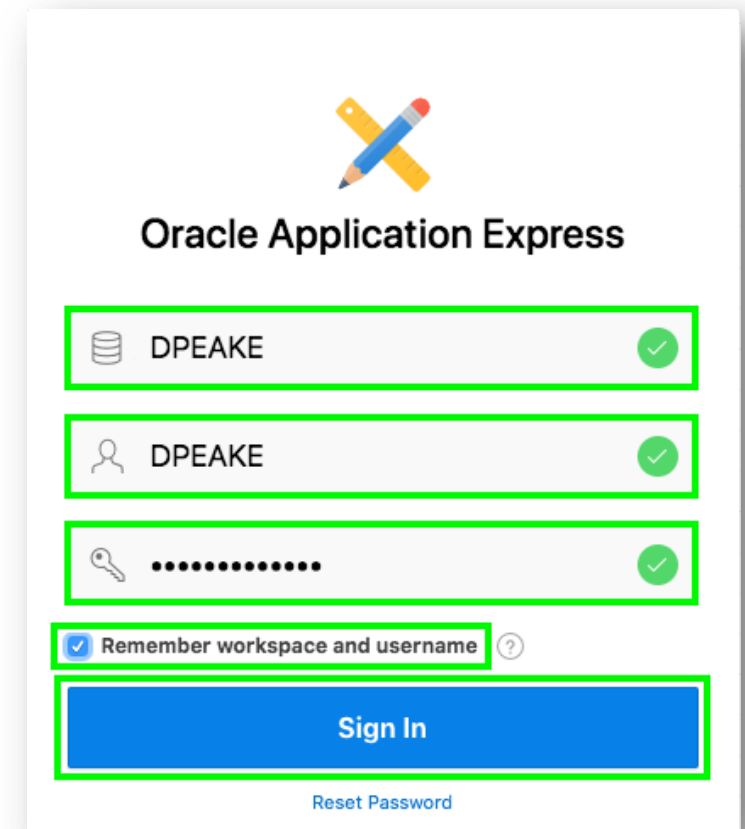
Manage Instance Manage Workspaces Monitor Activity

ADMIN  
WORKSPACE INTERNAL  
ROLE Administrator  
Dark Mode  
Sign out

workspace tasks  
Create Workspace

## Step 1.3b – Log into your New Workspace

- Sign into your new Workspace  
Workspace – enter **<Your Workspace Name>**  
Username – enter **<Your Database User>**  
Password – enter your OCI Password  
Remember workspace and username - Check
- Click **Sign In**
- *{Note: Enter the Workspace Name and Database User entered in Step 2c above}*



Oracle Application Express

DPEAKE ✓

DPEAKE ✓

..... ✓

Remember workspace and username ?

Sign In

[Reset Password](#)

# Step 1.3c – Log into your New Workspace

- Given this is your first time entering your new Workspace, click **Set APEX Account Password**



## Welcome to Oracle Application Express!

Before you get started, please take a moment to set your Application Express (APEX) account password.

Your access to this service is controlled by Single Sign-On (SSO). When your workspace was created, an APEX account was also created with your SSO username and a randomly generated password. Resetting this password is required to run apps you create.

Note: This will not reset your SSO password.

[Set APEX Account Password](#)

# Step 1.3d – Log into your New Workspace

- For your user profile enter the following:  
Email Address – enter your email address  
Enter New Password – enter your OCI Password  
Confirm Password – enter your OCI Password
- Click **Apply Changes**

**Edit Profile**

**Profile Details**

Workspace **DPEAKE** ?

Username **DPEAKE** ?

\* Email Address **david.peake@oracle.com** ?

First Name **David** ?

Last Name **Peake** ?

**Profile Photo**

Your profile photo personalizes your activity by showing up in the Top Users list. Add, change, or remove your photo.

Photo  No file chosen ?

**Password (For authentication against workspace user account repository only)**

If you wish to change your password, enter a new password. Otherwise, leave the password columns null and the current password will not be changed.

Enter New Password  ?

Confirm Password  ?

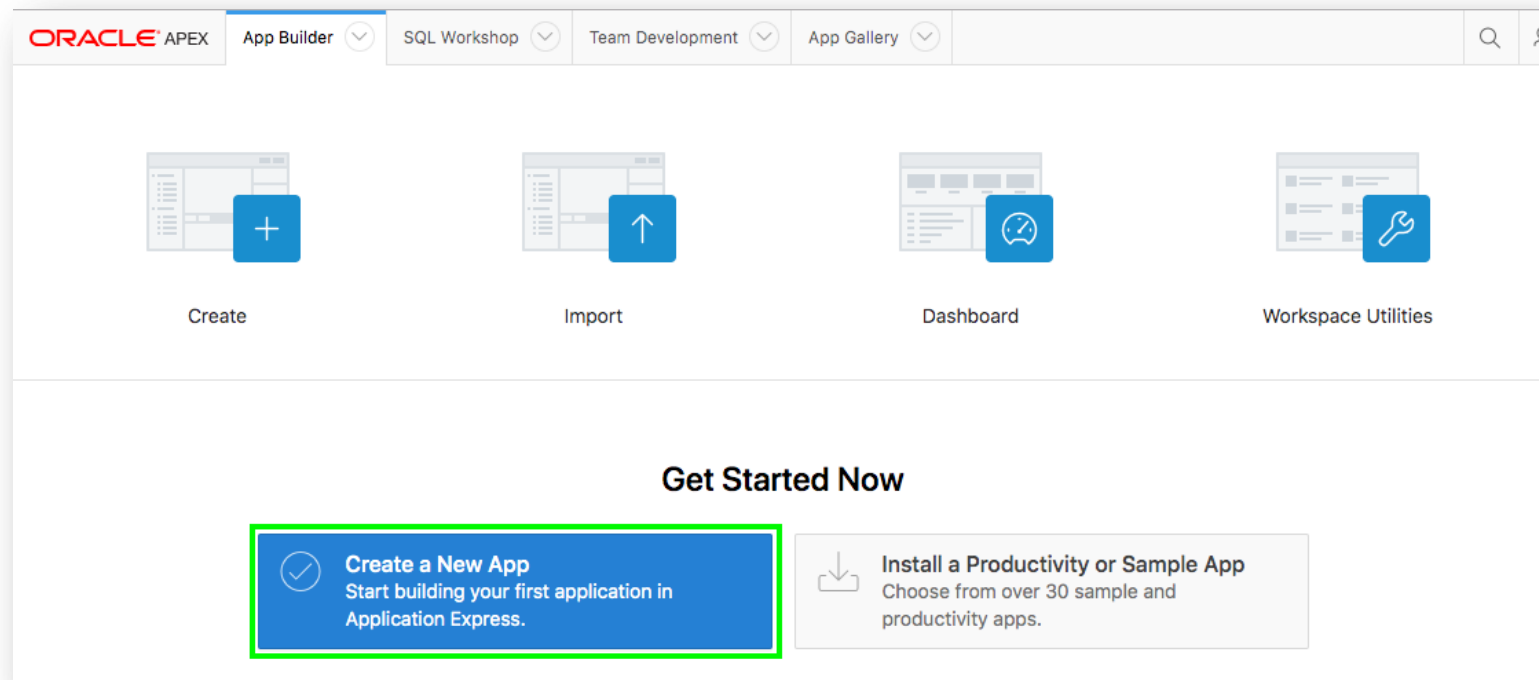
Building your first app

# Creating an App from a Spreadsheet



# Step 2.1 – Logging In


- Log into your workspace
- Click **App Builder**
- Click **Create a New App**




# Step 2.2 – Selecting App Type

- Click From a File


### Create an Application



**New Application**  
Add pages on existing data, select application features, set your theme, and configure other options.



**From a File**  
Upload a CSV, XLSX, XML or JSON file, or copy and paste data, then create your application.

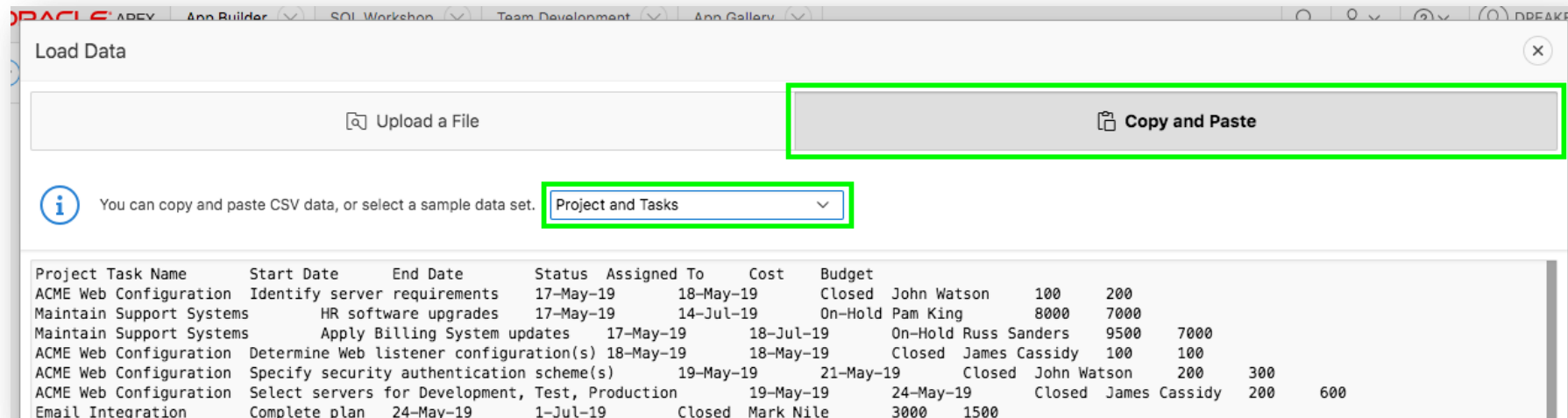


**Productivity App**  
Install one of many included Sample and Productivity Apps from the App Gallery.

[Websheet](#) · [Quick SQL](#) · [Copy Application](#) · [Help](#)

## Step 2.3 – Loading Sample Data

- Click **Copy and Paste**
- For Sample Data Set select **Project and Tasks**



Load Data

Upload a File

Copy and Paste

*i* You can copy and paste CSV data, or select a sample data set. Project and Tasks

Project Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget
ACME Web Configuration	Identify server requirements	17-May-19	18-May-19	Closed	John Watson	100 200
Maintain Support Systems	HR software upgrades	17-May-19	14-Jul-19	On-Hold	Pam King	8000 7000
Maintain Support Systems	Apply Billing System updates	17-May-19	18-Jul-19	On-Hold	Russ Sanders	9500 7000
ACME Web Configuration	Determine Web listener configuration(s)	18-May-19	18-May-19	Closed	James Cassidy	100 100
ACME Web Configuration	Specify security authentication scheme(s)	19-May-19	21-May-19	Closed	John Watson	200 300
ACME Web Configuration	Select servers for Development, Test, Production	19-May-19	24-May-19	Closed	James Cassidy	200 600
Email Integration	Complete plan	24-May-19	1-Jul-19	Closed	Mark Nile	3000 1500

- Click **Next**

# Step 2.4 – Naming the Table

- Enter Table Name {SPREADSHEET}
- Click Load Data

Load Data

Pasted Data

Settings

Column Headers  First line contains headers

Column Delimiter

Enclosed By

File Encoding

Preview

*Info* Parsed first 74 rows to sample the column types. The preview below only displays the first 8 columns and 5 rows. To view the full preview, configure data load settings, and set which columns to load, please click **Configure** button.

1	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget
2	ACME Web Configuration	Identify server requirements	17-May-19	18-May-19	Closed	John Watson	100	200
3	Maintain Support Systems	HR software upgrades	17-May-19	14-Jul-19	On-Hold	Pam King	8000	7000
4	Maintain Support Systems	Apply Billing System updates	17-May-19	18-Jul-19	On-Hold	Russ Sanders	9500	7000
5	ACME Web Configuration	Determine Web listener configuration(s)	18-May-19	18-May-19	Closed	James Cassidy	100	100

Load to Table

\* Table Owner

\* Table Name

\* Error Table Name

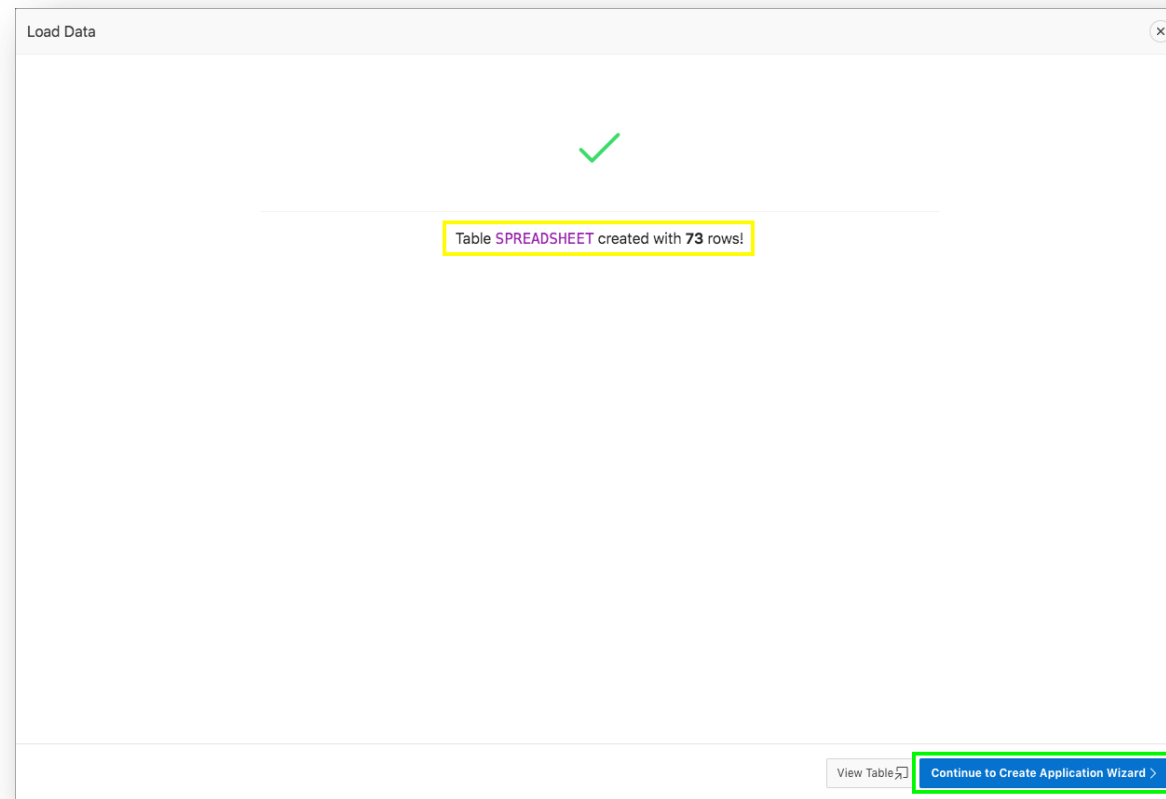
Primary Keys

Use Column Data Types

< Cancel Load Data

## Step 2.5 – Verifying Records Loaded

- Check that 73 rows are loaded
- Click **Continue to Create Application Wizard**



# Step 2.6 – Naming the App

- Enter Name  
**{App from a Spreadsheet}**
- Next to Features,  
click **Check All**

**Create an Application**

Name  
App from a Spreadsheet

Appearance  
Vita, Side Menu

Pages ?

+ Add Page

	Home	Blank	Edit
	Spreadsheet	Interactive Report with Form ( spreadsheet )	Edit
	Dashboard	Dashboard	Edit

Features ? **Check All**

<input checked="" type="checkbox"/>		<b>About Page</b> Add about this application page	<input checked="" type="checkbox"/>		<b>Access Control</b> Enable role-based user authorization	<input checked="" type="checkbox"/>		<b>Activity Reporting</b> Include user activity and error reports
<input checked="" type="checkbox"/>		<b>Configuration Options</b> Enable or disable application features	<input checked="" type="checkbox"/>		<b>Feedback</b> Allow users to provide feedback	<input checked="" type="checkbox"/>		<b>Theme Style Selection</b> Update default application look and feel

# Step 2.7 – Create Application

- Click Create Application

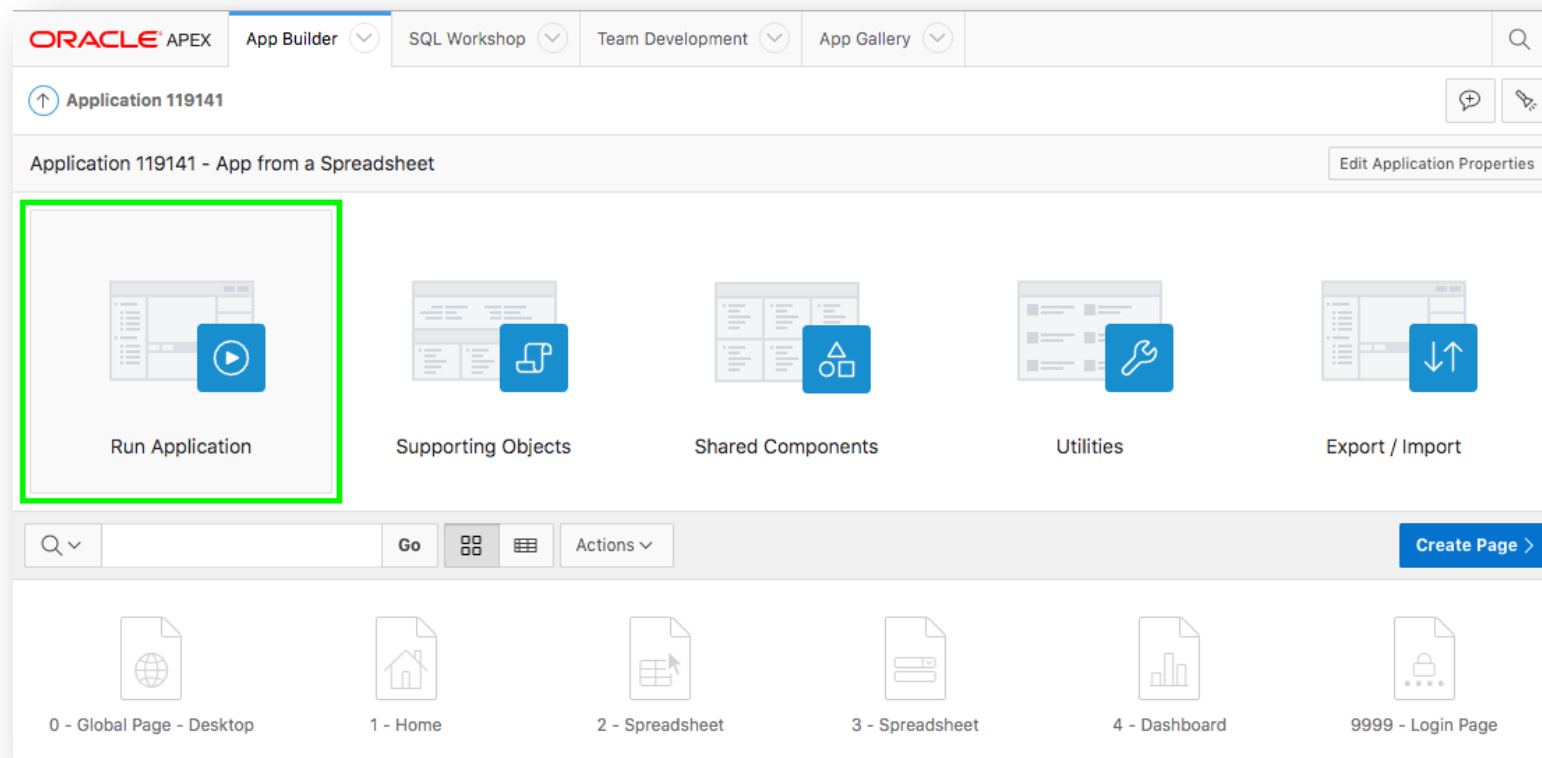
Settings ?

Application ID 62866	Schema DPEAKE	Authentication Application Express Accounts
Language English (en)	Advanced Settings	User Interface Defaults

Cancel **Create Application**

# Step 2.8 – App in Page Designer

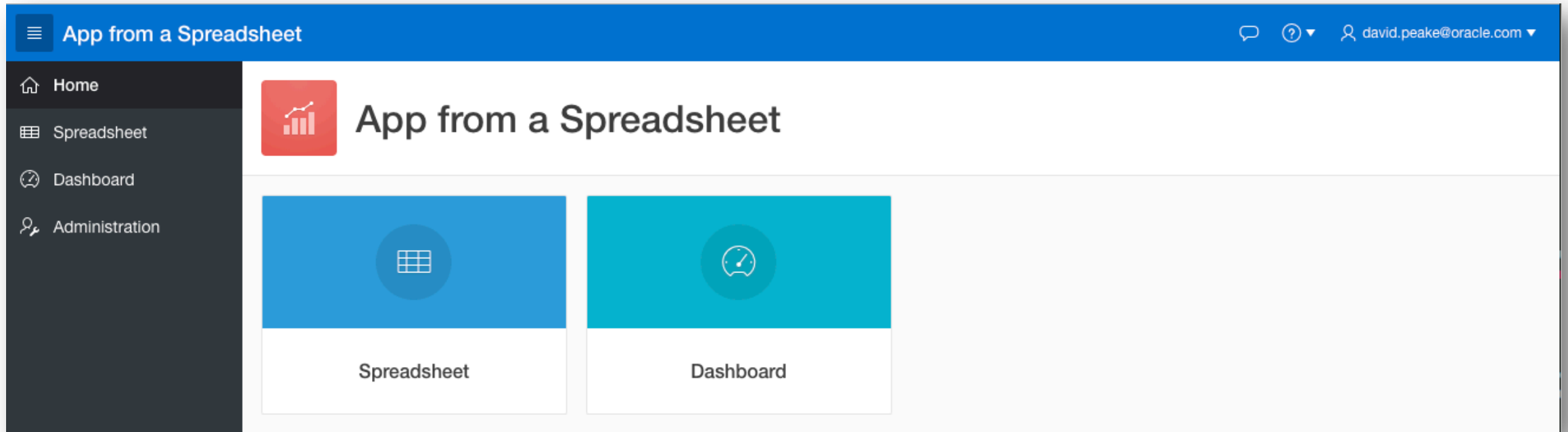
- Your new application will be displayed in Page Designer
- Click **Run Application**





# Step 2.9 – Runtime App

- Enter your user credentials
- Play around with your new application



Using the Runtime Environment

# Improving the Report and Form

# Step 3.1 – Sort the Interactive Report

- Click **Spreadsheet**
- Click **Actions**, select **Data**, select **Sort**
- For 1, select **Start Date**; For 2, select **End Date**; click **Apply**

App from a Spreadsheet

Home

**Spreadsheet**

Dashboard

Administration

Go Actions

Project	Task Name	Start Date	End Date
ACME Web Configuration	Identify server requ	7 weeks ago	7 weeks ago
ACME Web Configuration	Determine Web list		7 weeks ago

Columns

Filter

**Data**

**Sort**

Format

Sort

Column	Direction	Null Sorting
1 Start Date	Ascending	Default
2 End Date	Ascending	Default
3 - Select Column -	Ascending	Default
4 - Select Column -	Ascending	Default
5 - Select Column -	Ascending	Default
6 - Select Column -	Ascending	Default

Cancel **Apply**

## Step 3.2 – Add a Computation

- Click **Actions**, select **Data**, select **Compute**
- Column Label enter **Budget V Cost**
- Format Mask select **\$5,234.10**
- Computation Expression enter **I – H**
- Click **Apply**

The screenshot shows the 'Compute' dialog box with the following fields and options:

- Computation:** - New Computation -
- Column Label:** Budget V Cost
- Format Mask:** FML999G999G999G999G99
- Computation Expression:** I - H

The 'Columns' list includes:

Columns
C. Task Name
D. Start Date
E. End Date
F. Status
G. Assigned To
H. Cost
I. Budget

The 'Keypad' includes: ( ) ' ||, 7 8 9 -, 4 5 6 +, 1 2 3 \*, 0 . /, space ,.

The 'Functions / Operators' list includes: !=, <, <=, =, >, >=, ABS.

Examples of computation expressions:

- (B+C)\*100
- INITCAP(B)||', '||INITCAP(C)
- CASE WHEN A = 10 THEN B + C ELSE B END
- ROUND(C / 1000000)

Buttons: Cancel, Apply

## Step 3.3 – Add a Chart

- Click **Actions**, select **Chart**
- Label select **Project**
- Value select **\*\*Budget V Cost**
- Function select **Sum**
- Sort select **Label – Ascending**
- Orientation select **Horizontal**
- Click **Apply**

Chart

Chart Type

Label: Project

Value: \*\*Budget V Cost

Function: Sum

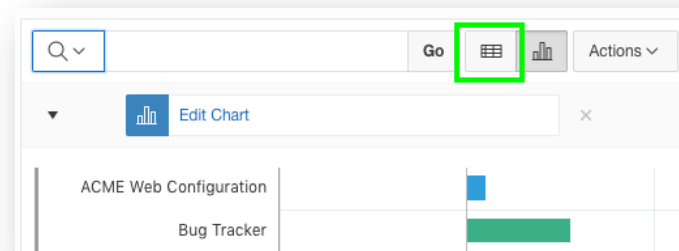
Sort: Label - Ascending

Axis Title for Label

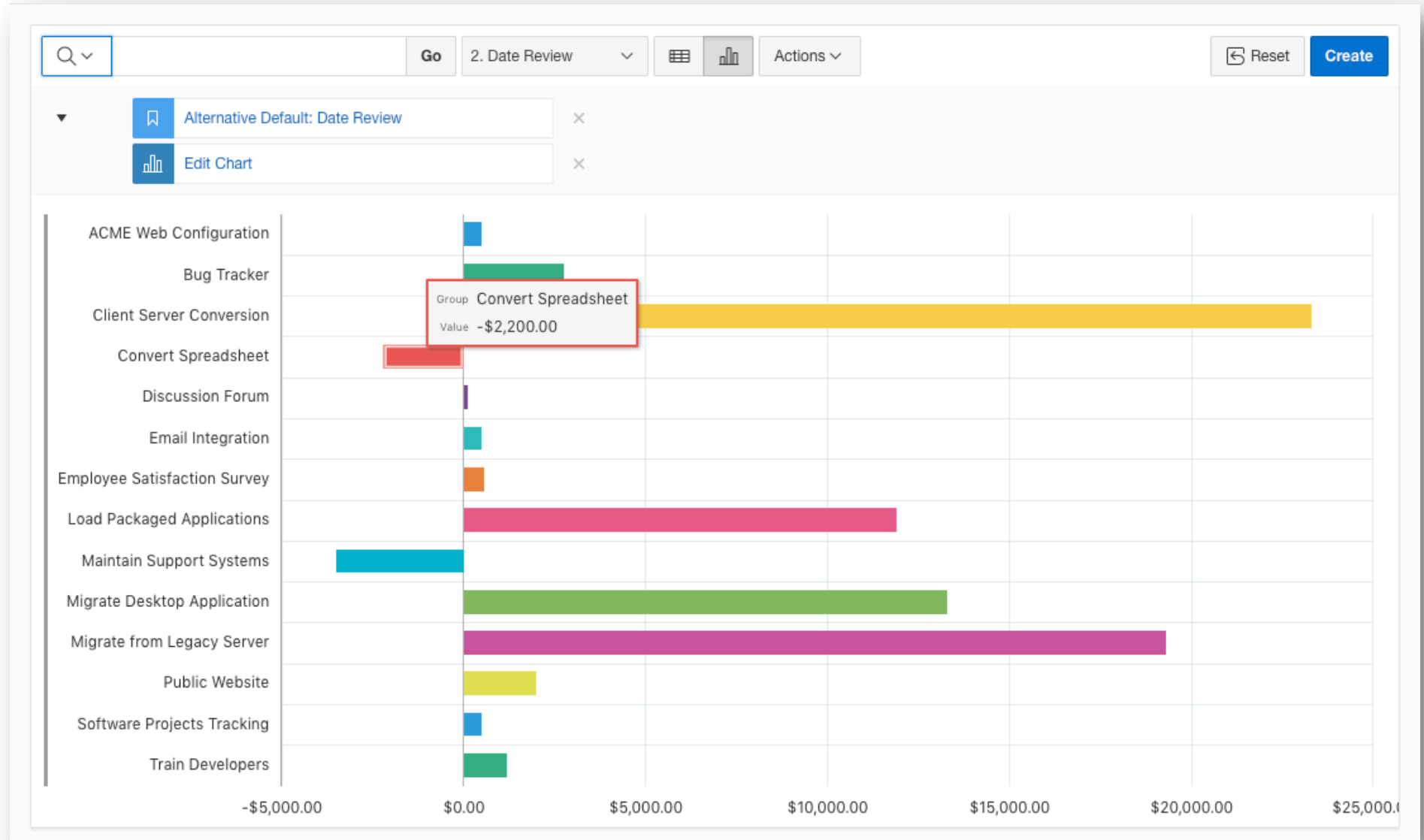
Axis Title for Value

Orientation: Horizontal

Cancel Apply

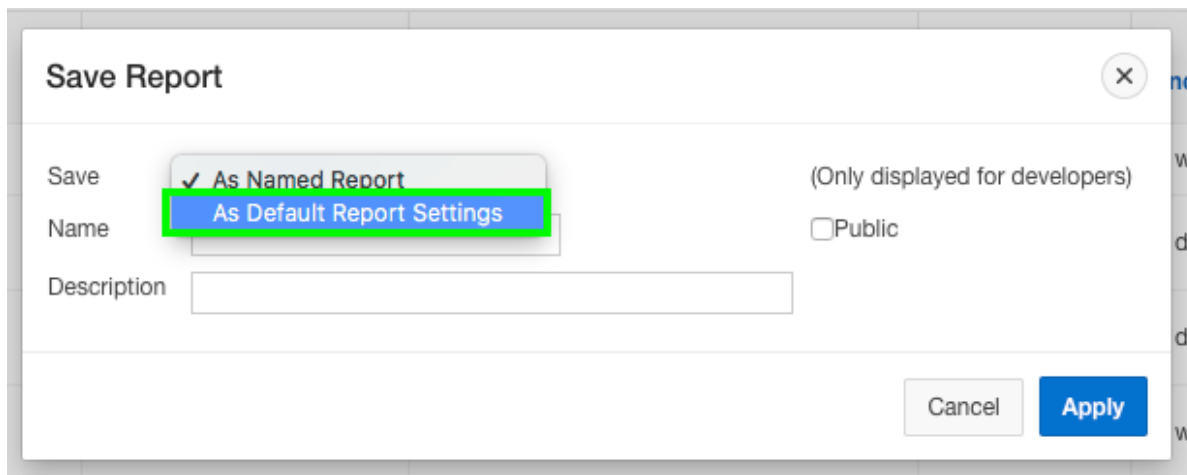


# Step 3.3b – Add a Chart



## Step 3.4 – Save Report

- Click **Actions**, select **Report**, select **Save Report**
- For Save, select **As Default Report Settings**
- Default Report Type, select **Alternative**
- Name, enter **Date Review**
- Click **Apply**



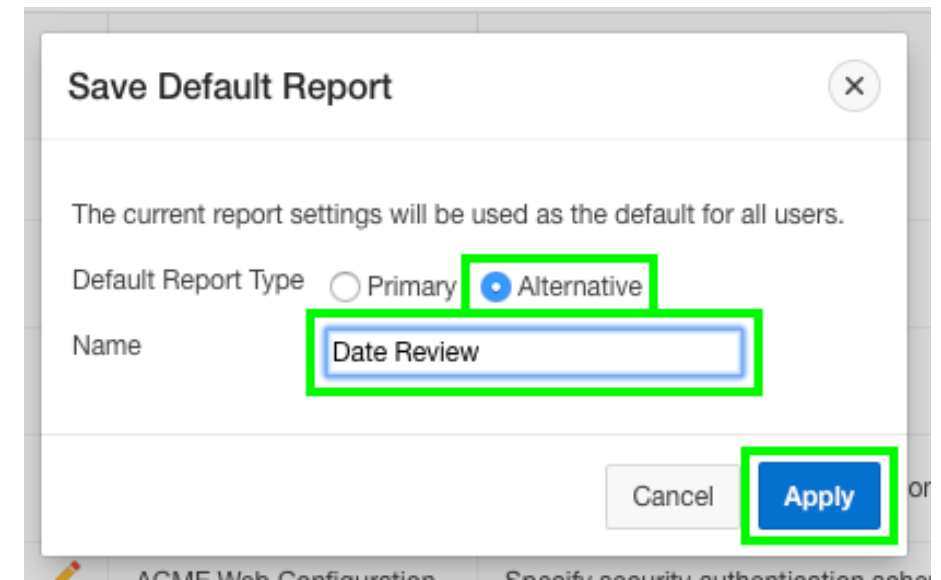
**Save Report**

Save  As Named Report  As Default Report Settings (Only displayed for developers)

Name   Public

Description

Cancel Apply



**Save Default Report**

The current report settings will be used as the default for all users.

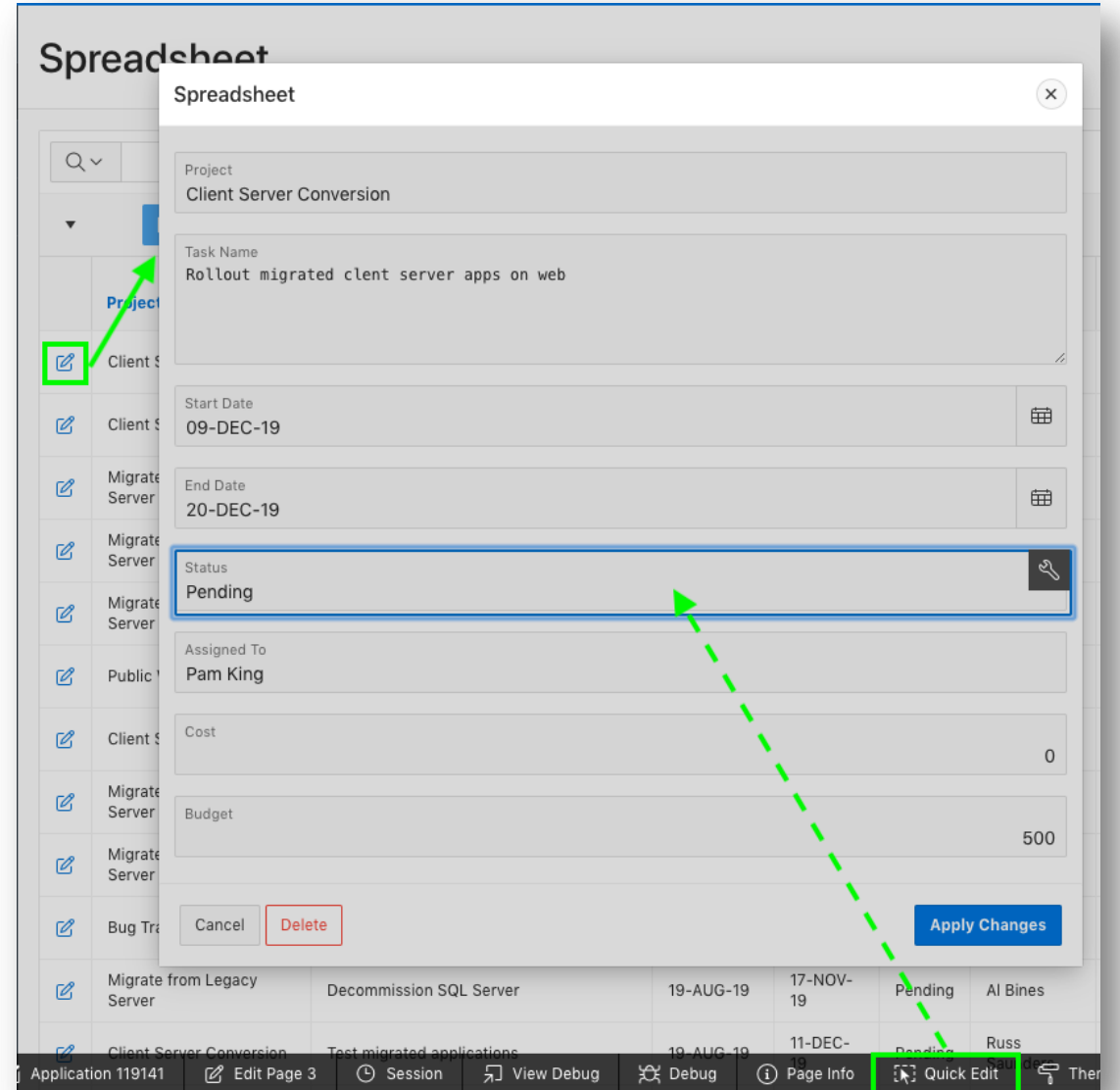
Default Report Type  Primary  Alternative

Name

Cancel Apply

## Step 3.5 – Restrict the Status

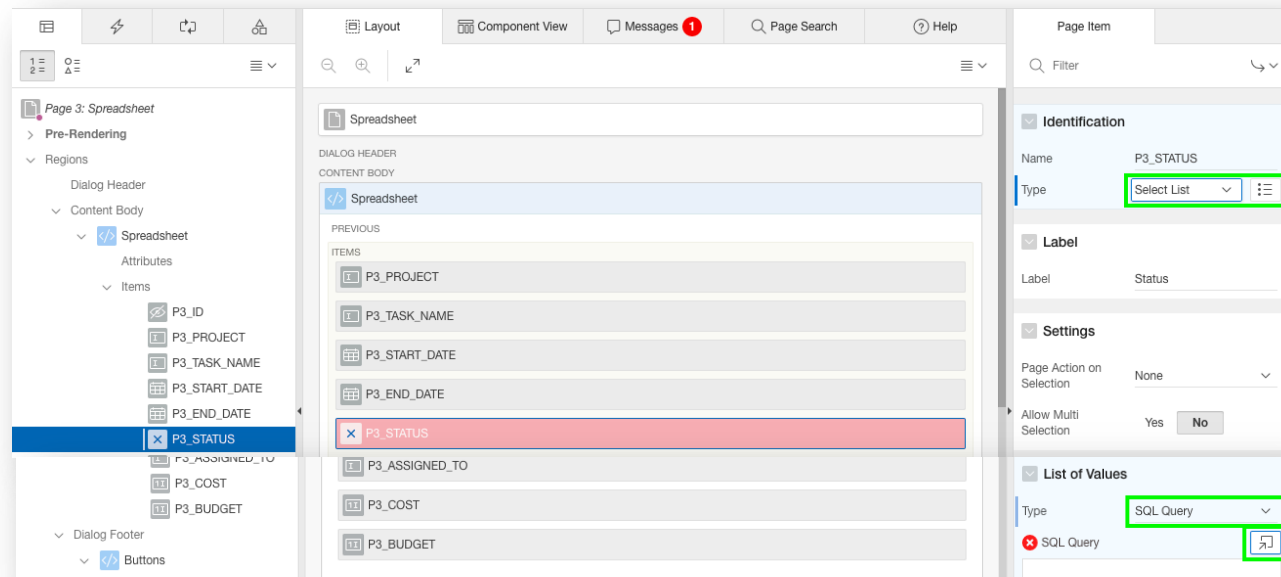
- In the runtime environment, click the edit icon on a record
- A modal page will be displayed
- In the Developer Toolbar, click **Quick Edit**
- Hover over the **Status** item (until a blue outline appears) and click the mouse
- Page Designer displays with focus on the Status item





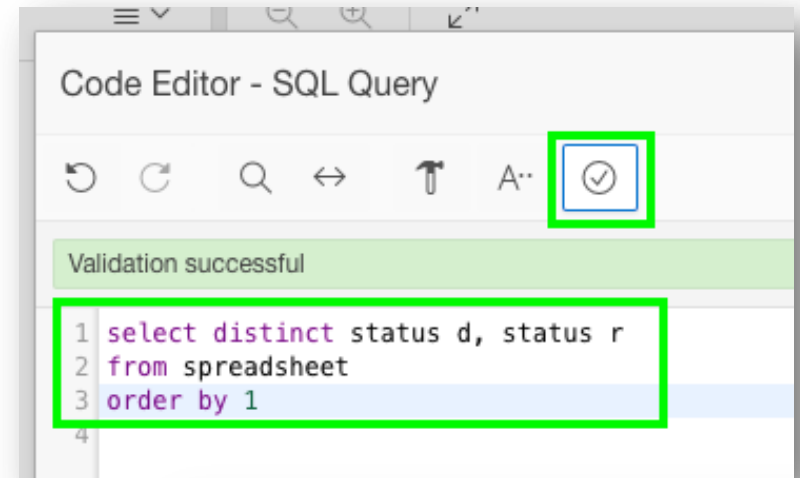
# Step 3.5b – Restrict the Status

- In Page Designer, within the Property Editor (right pane), for Type select **Select List**
- Under List of Values, for Type select **SQL Query**
- Next to SQL Query, click **Code Editor**



## Step 3.5c – Restrict the Status

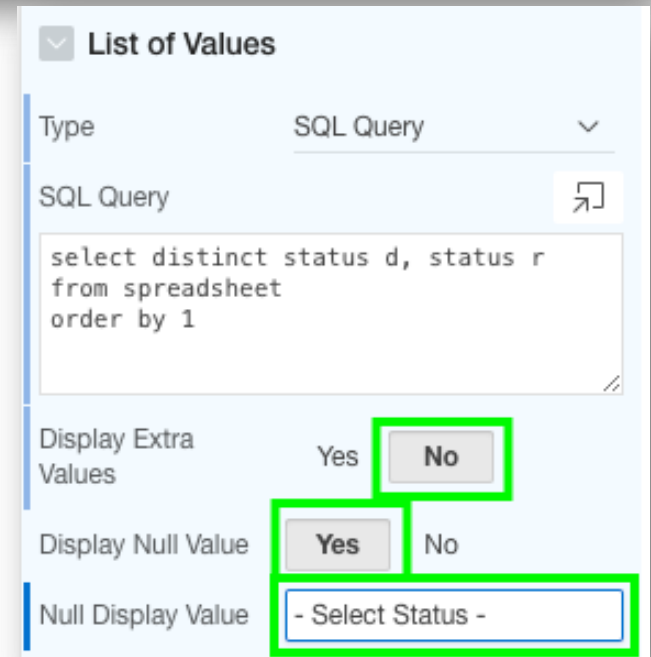
- Within the Code Editor, enter the following:  
select distinct status d, status r  
from spreadsheet  
order by 1
- Click **Validate**
- Click **OK**
  
- Display Extra Values, select **No**
- Null Value Display, enter - **Select Status** -
- Click **Save** (In the toolbar - top right)



```
Code Editor - SQL Query
```

Validation successful

```
1 select distinct status d, status r
2 from spreadsheet
3 order by 1
4
```



List of Values

Type SQL Query

SQL Query

```
select distinct status d, status r
from spreadsheet
order by 1
```

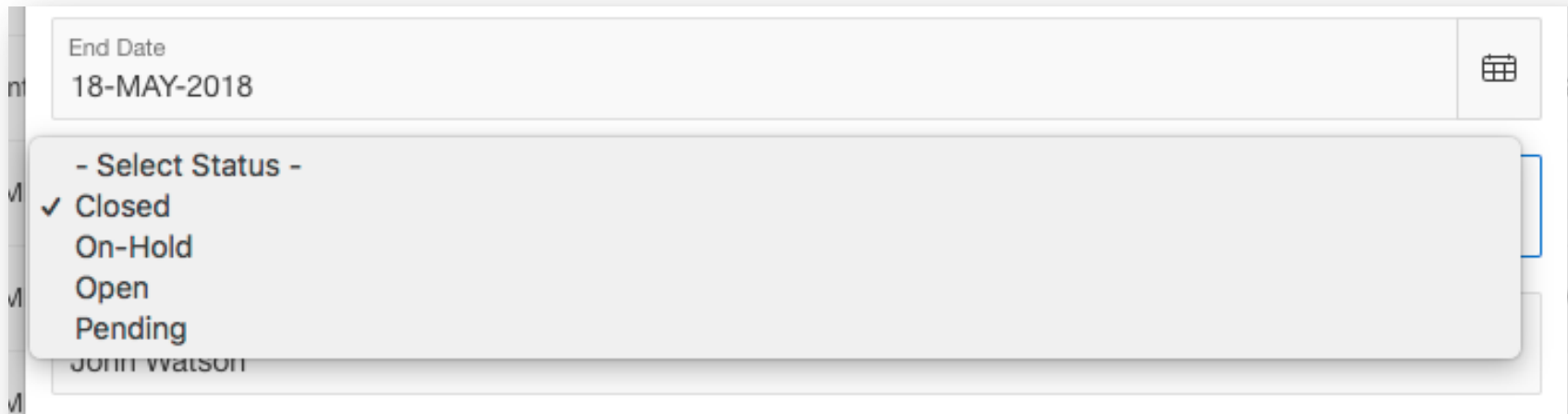
Display Extra Values Yes **No**

Display Null Value **Yes** No

Null Display Value **- Select Status -**

## Step 3.6 – Run the App

- Navigate back to the runtime environment
- Refresh the browser
- Edit a record
- Click **Status**



The screenshot shows a web application form with the following elements:

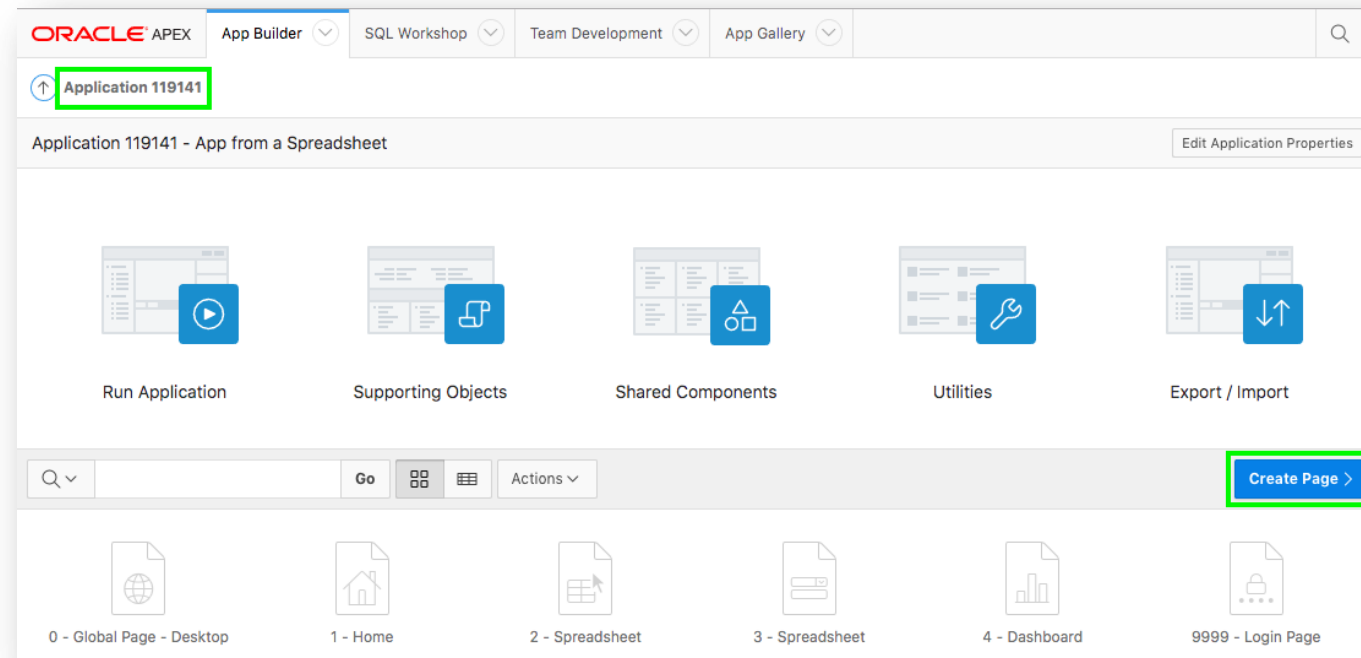
- End Date:** 18-MAY-2018
- Status Dropdown:** - Select Status -
  - ✓ Closed
  - On-Hold
  - Open
  - Pending
- Name:** JOHN WATSON

Using the Runtime Environment

# Adding a Calendar

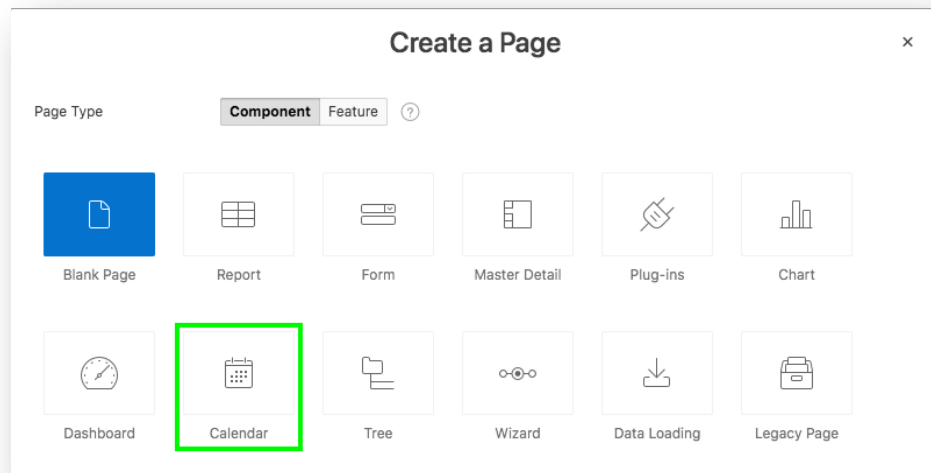
# Step 4.1 – Add a Calendar

- Navigate back to the development environment
- In App Builder, navigate to the App Home Page
- Click **Create Page**

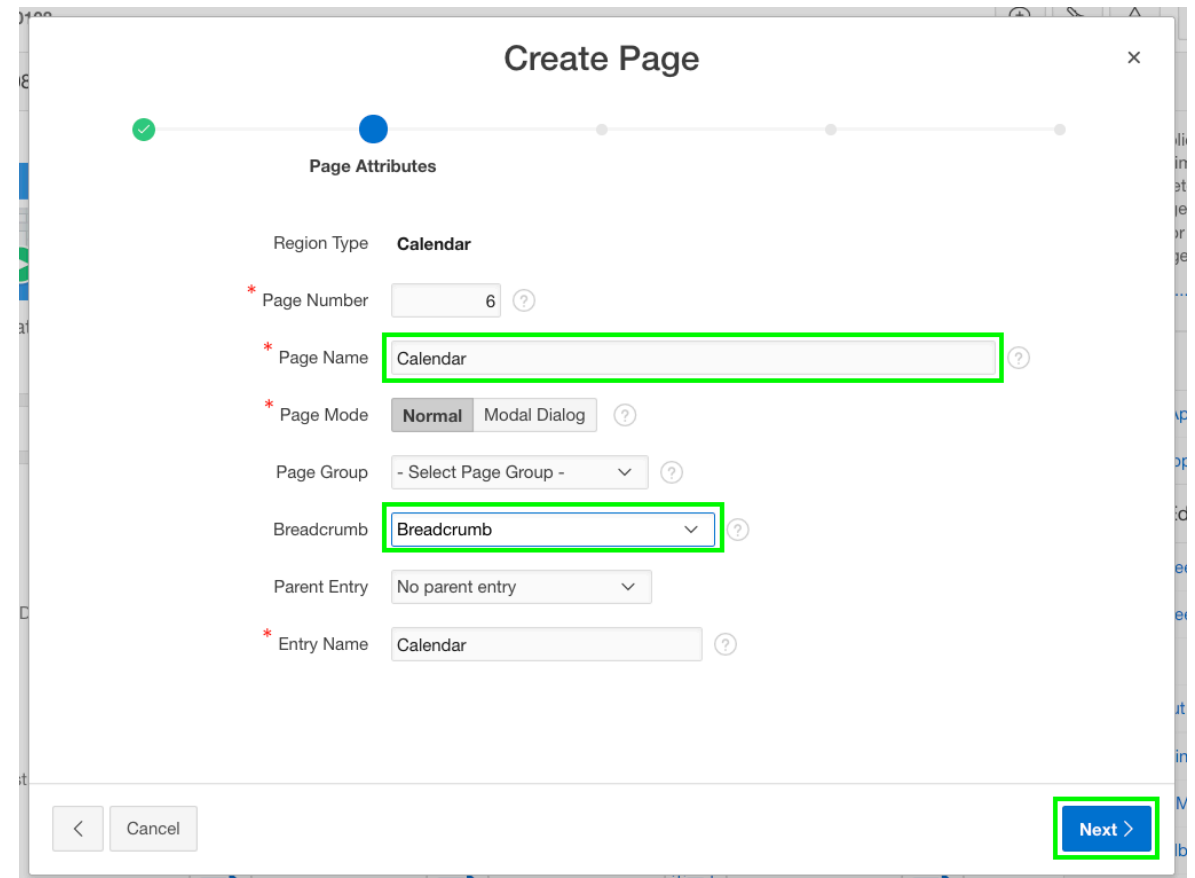


# Step 4.1b – Add a Calendar

- Click **Calendar**

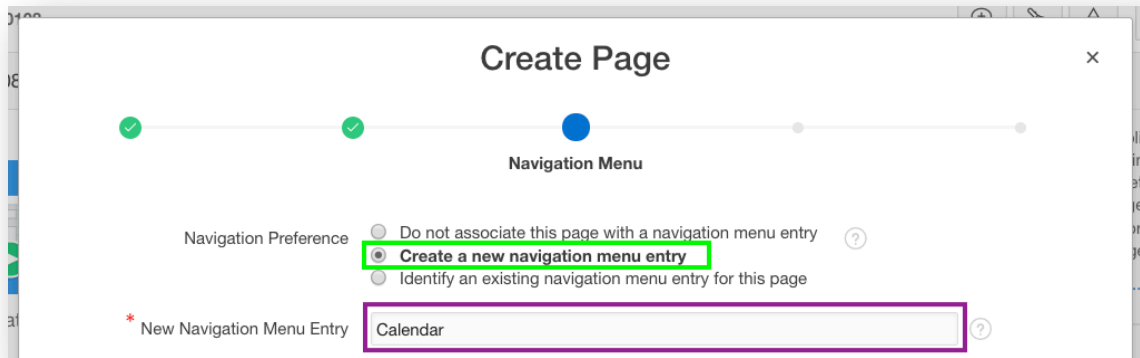


- Page Name, enter **Calendar**
- Breadcrumb, select **Breadcrumb**
- Click **Next**

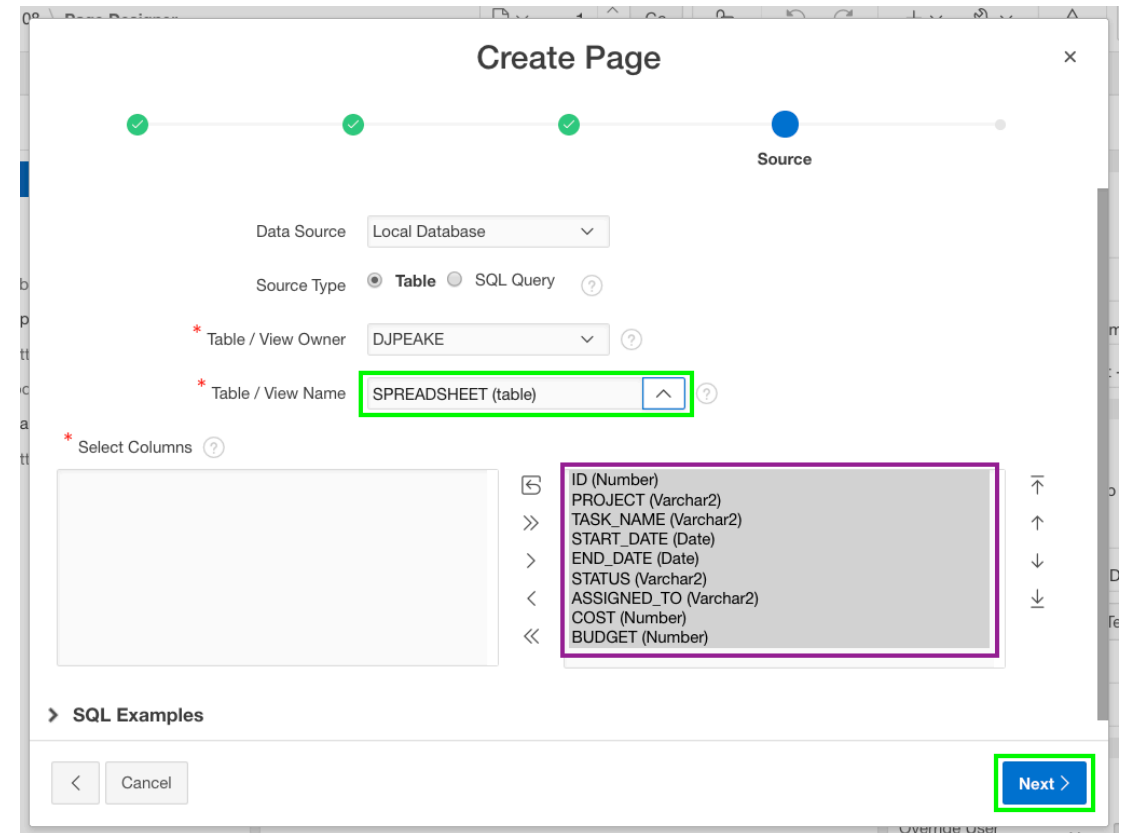


# Step 4.1c – Add a Calendar

- Navigation Preference, click **Create a new navigation menu entry**
- Click **Next**



- Table / View Name, select **SPREADSHEET (table)**
- Click **Next**



## Step 4.1d – Add a Calendar

- Display Column, select **TASK\_NAME**
- End Date Column, select **END\_DATE**
- Click **Create**

The screenshot shows the 'Create Page' dialog box in Oracle APEX. The dialog has a title bar with a close button (X) and a progress bar with four green checkmarks and a blue circle for 'Settings'. Below the progress bar, there are four dropdown menus:

- Display Column: TASK\_NAME (highlighted with a green box)
- Start Date Column: START\_DATE
- End Date Column: END\_DATE (highlighted with a green box)
- Show Time: No

At the bottom right, there is a blue 'Create' button (highlighted with a green box). At the bottom left, there are 'Cancel' and 'Back' buttons.



## Step 4.2 – Link the Calendar to the Update Form

- In the Rendering tab, under Calendar, click **Attributes**
- In the Property Editor (right pane), click **View / Edit Link**
- Page, select **3**
- Set Items – Name, select **P3\_ID**; Value, select **ID**
- Clear Cache, enter **3**
- Click **OK**
- Click **Save and Run**

The screenshot displays the Oracle APEX Page Designer interface. On the left, the 'Page Designer' pane shows the 'Calendar' region selected, with the 'Attributes' tab highlighted. The main workspace shows the 'Link Builder - View / Edit Link' dialog. The 'Target' section is set to 'Page in this application' with 'Page' set to '3'. The 'Set Items' section has 'Name' set to 'P3\_ID' and 'Value' set to '&ID.'. The 'Clear Session State' section has 'Clear Cache' set to '3'. On the right, the 'Attributes' pane shows the 'View / Edit Link' property set to 'No Link Defined'. A green arrow points from the 'View / Edit Link' property in the Attributes pane to the 'View / Edit Link' property in the Link Builder dialog.

# Step 4.2b – Link the Calendar to the Update Form

The screenshot shows the Oracle App from a Spreadsheet interface. On the left, a calendar view displays a task entry for 'Customize solutions' on Sunday, June 1st, 2018. A green box highlights this entry, and a green arrow points from it to the 'Task Name' field in the 'Spreadsheet' update form on the right. The form contains the following fields:

- Project: Load Packaged Applications
- Task Name: Customize solutions
- Start Date: 23-JUN-2018
- End Date: 18-SEP-2018
- Status: Open
- Assigned To: John Watson
- Cost: 1500
- Budget: 4000

At the bottom of the form are buttons for 'Cancel', 'Delete', and 'Apply Changes'.

*Note:  
You may need to  
navigate to the  
month of May  
to see calendar  
entries.*

Learn More

Useful Links

# Useful Links

- APEX on Autonomous <https://apex.oracle.com/autonomous>
- APEX Collateral <https://apex.oracle.com>
- Tutorials <https://apex.oracle.com/en/learn/tutorials>
- Community <https://apex.oracle.com/community>
- External Site + Slack <http://apex.world>

ORACLE®