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Oracle APEX Hands-On Lab

Creating an App based on Existing Tables

for **Oracle Autonomous Cloud Service**

July, 2019 (v19.1.3)

Step Up to Modern Cloud Development

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Overview

This lab walks you through creating an application based on existing tables in your Oracle Database.

Go from zero to hero in a ridiculously short period of time!

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

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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}

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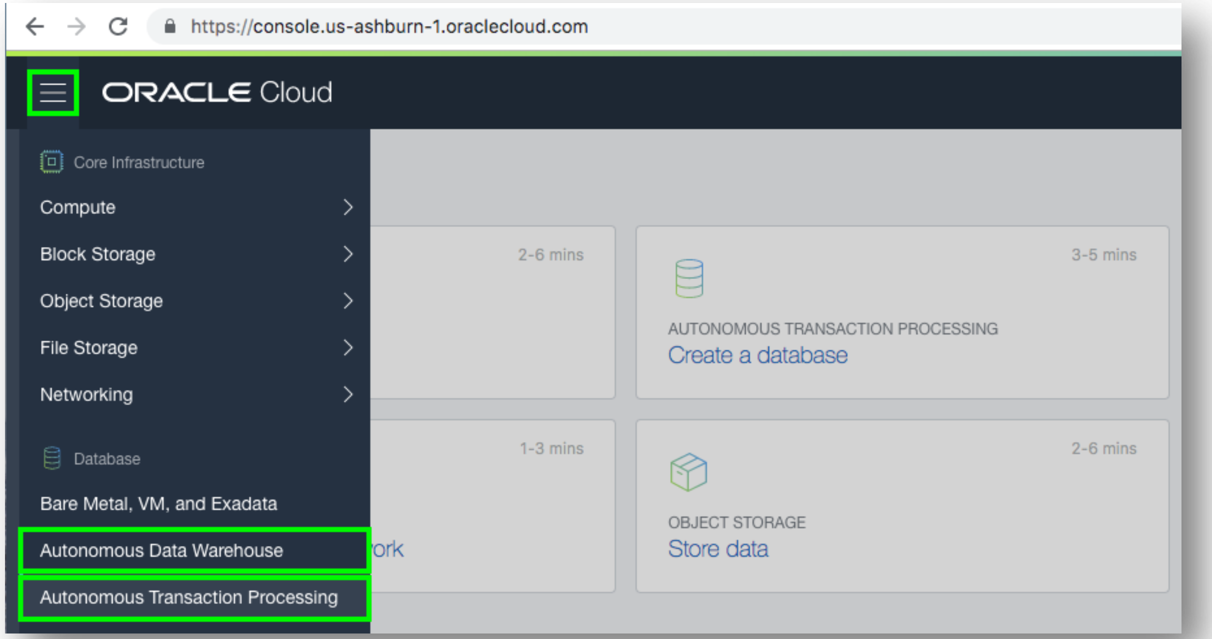
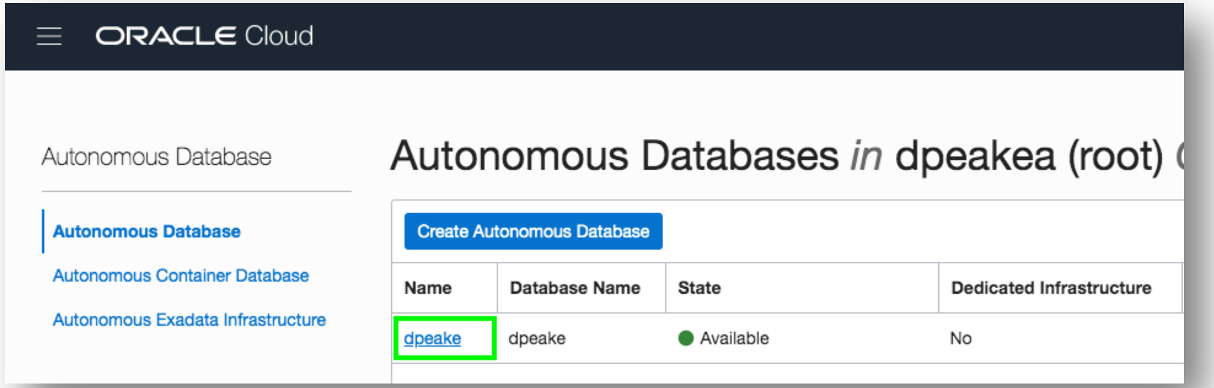
Step 1.1 – Accessing APEX

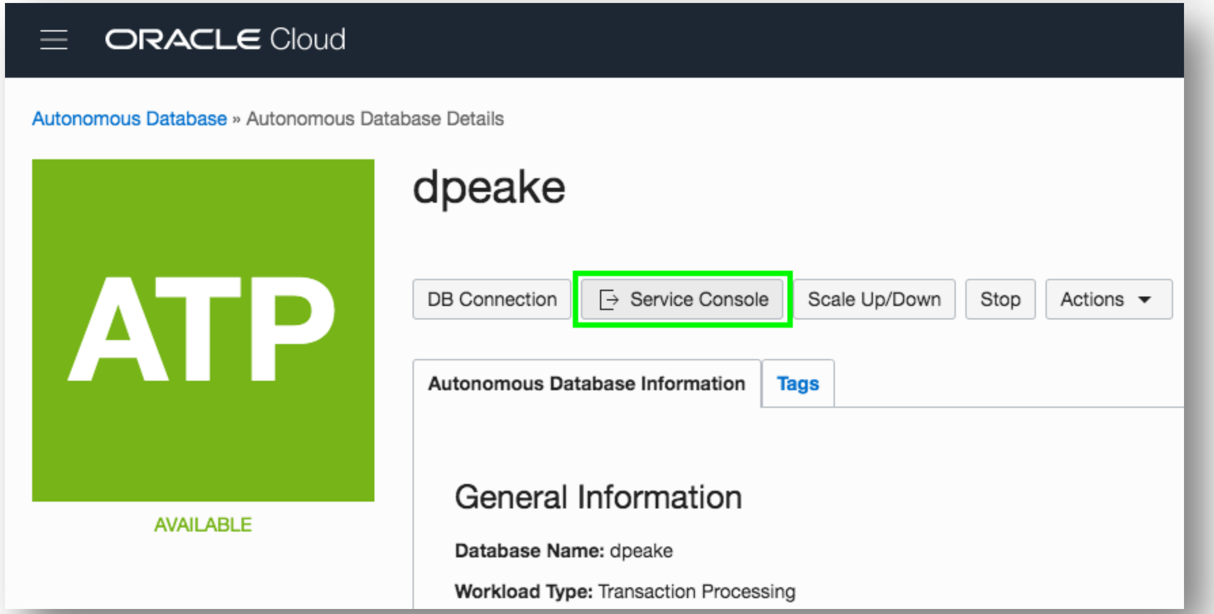
- Sign into your Oracle Cloud service
- Click the hamburger (top left), select Autonomous Data Warehouse or Autonomous Transaction Processing, based on which service(s) you have defined.



Step 1.1b – Accessing APEX

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





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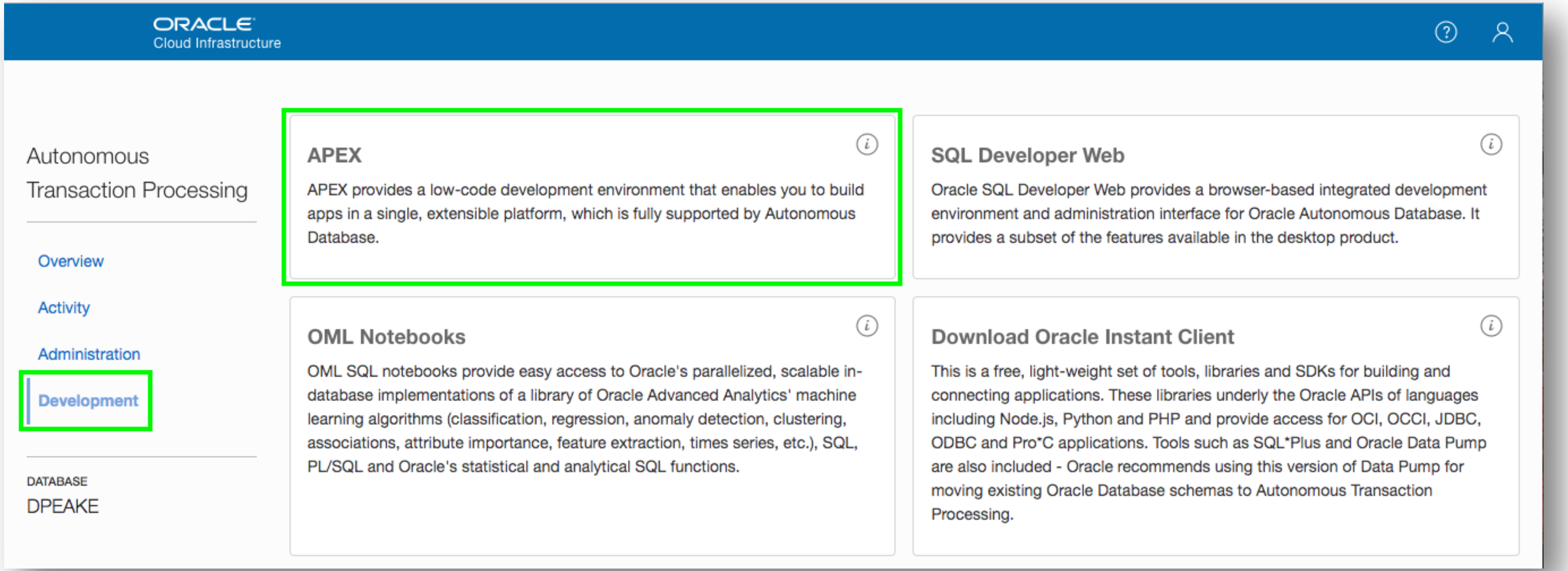
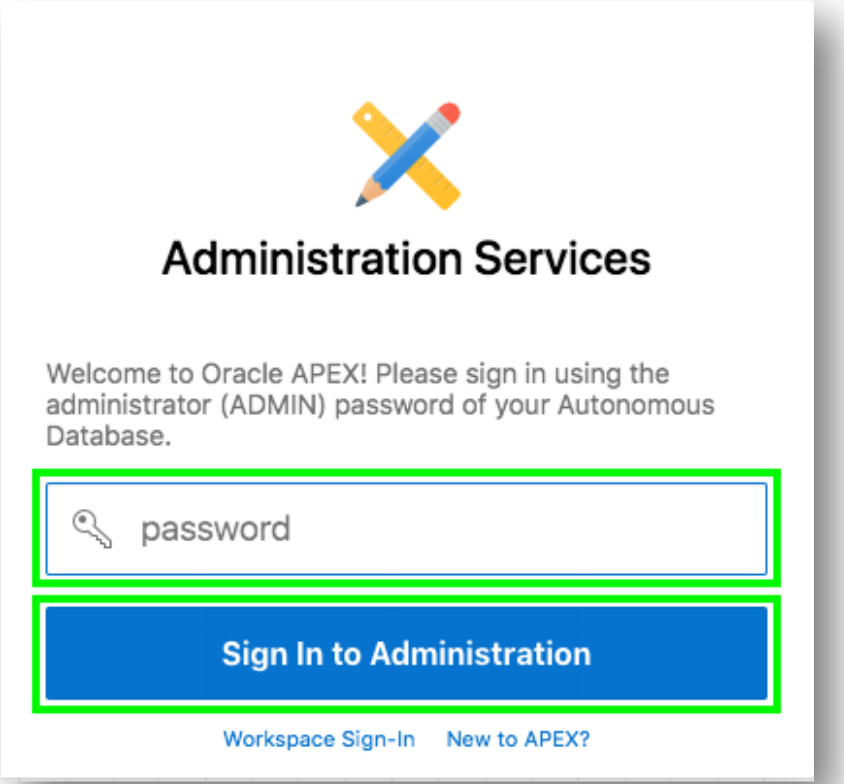
Step 1.1c – Accessing APEX

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



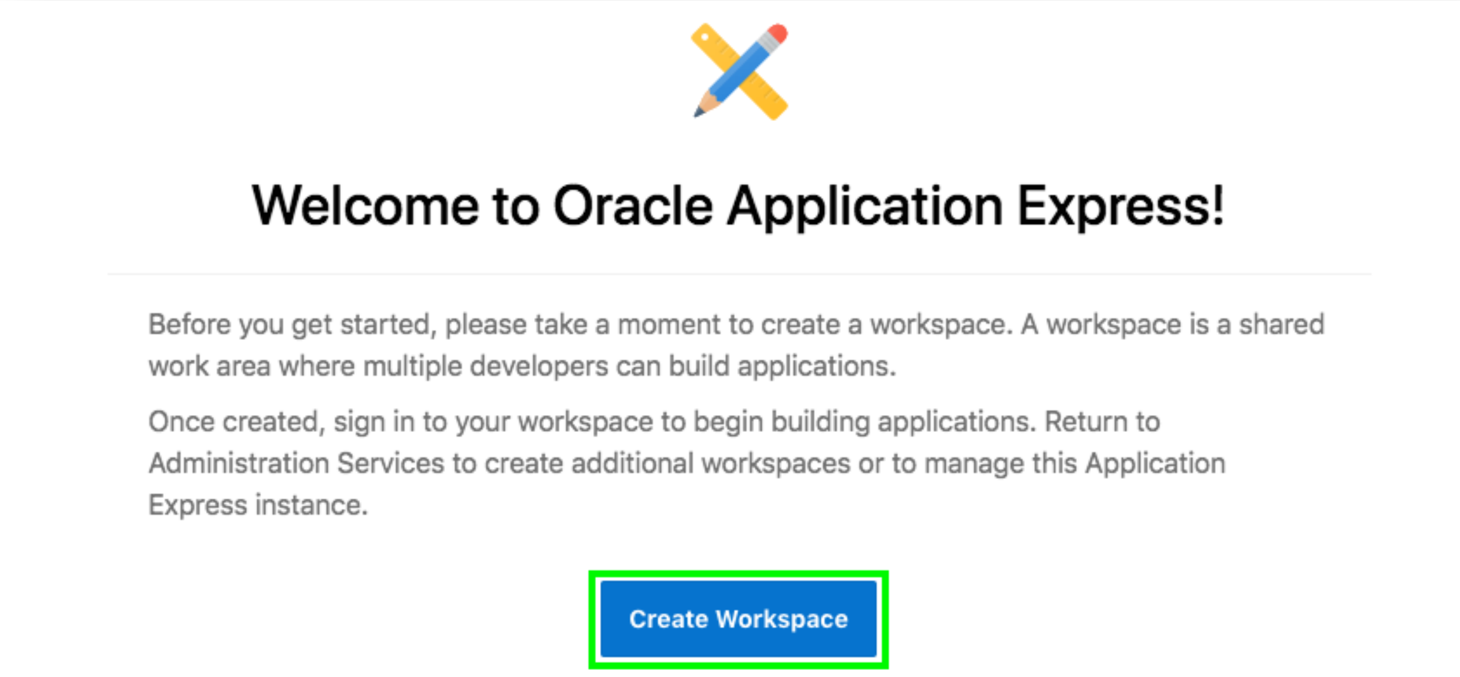
Step 1.2 – Creating a Workspace

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



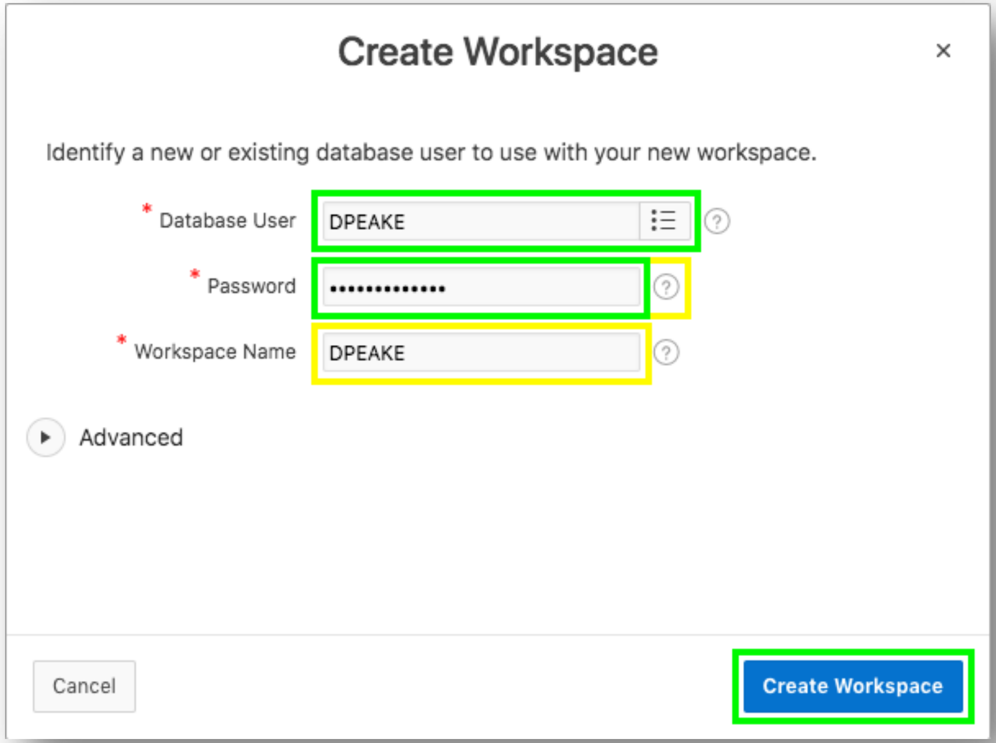
Step 1.2b – Creating a Workspace

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



Step 1.2c – Creating a Workspace

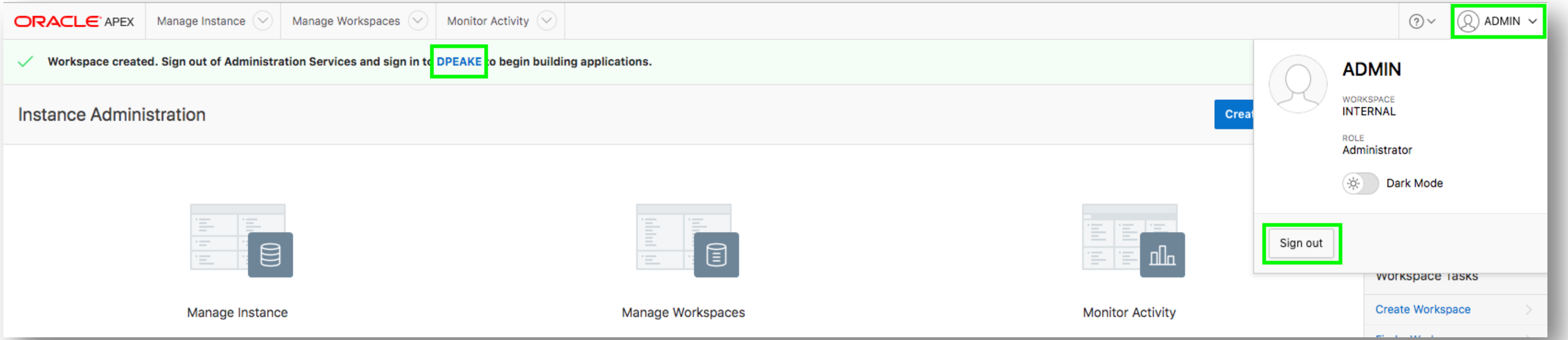
- For Database User enter an appropriate name
- Enter a Password
  {Click the ? Icon to see password complexity rules}
- Click **Create Workspace**



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

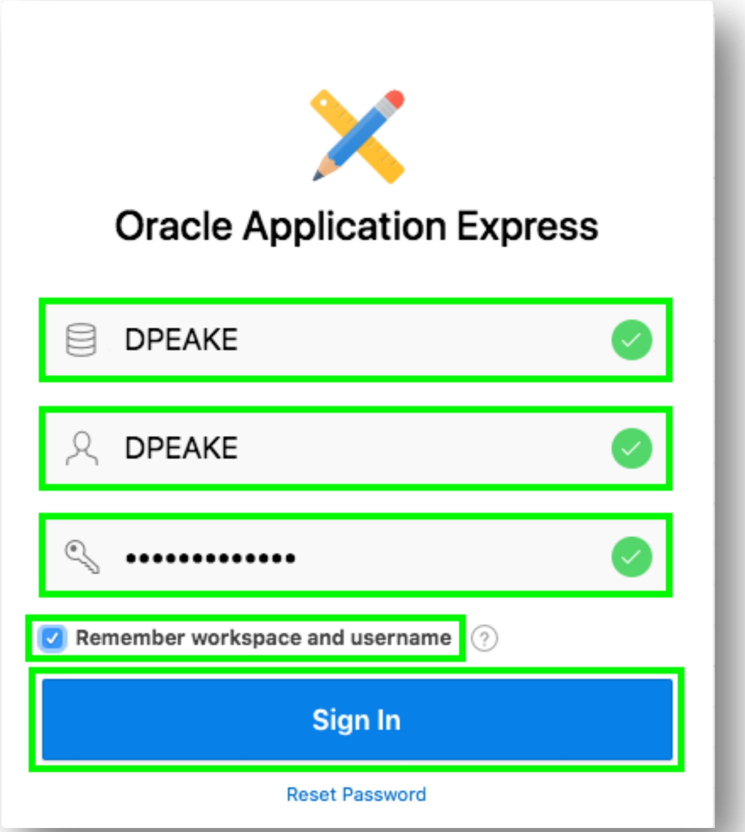
Step 1.3 – Log into your New Workspace

- 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**



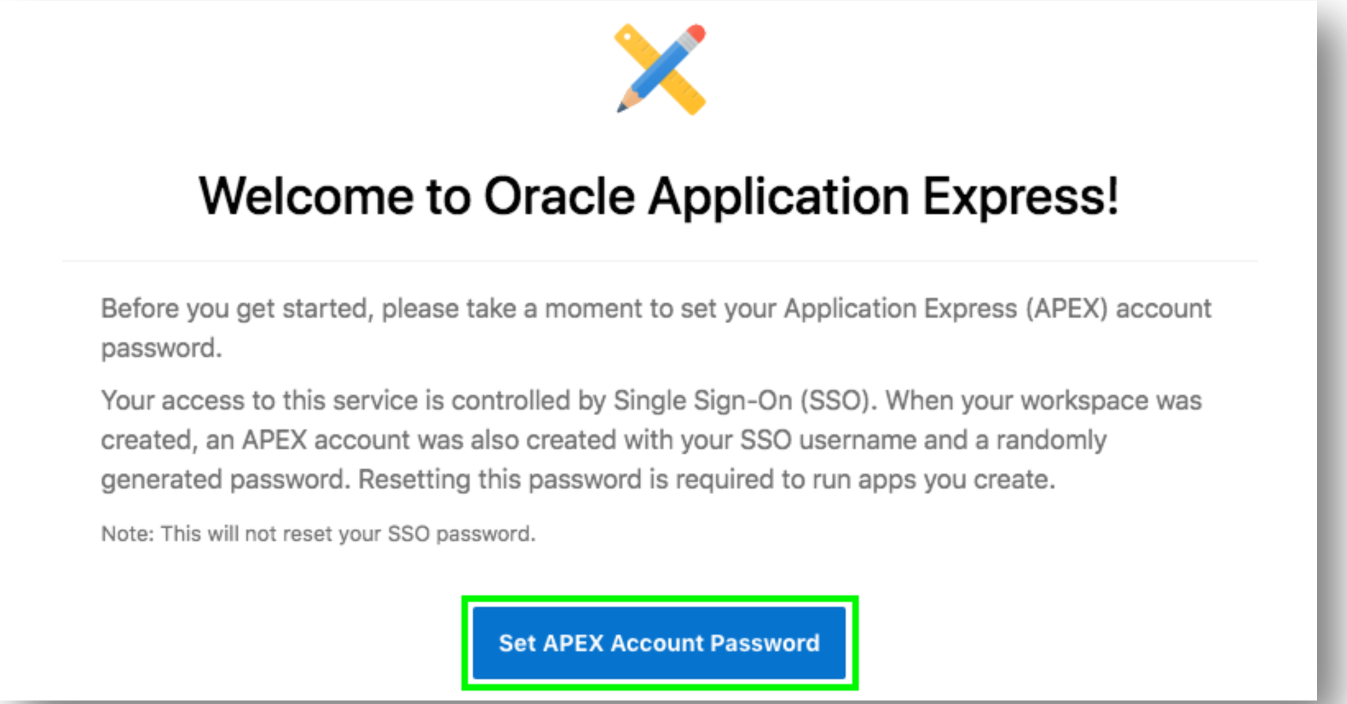
Step 1.3b – Log into your New Workspace

- 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}*



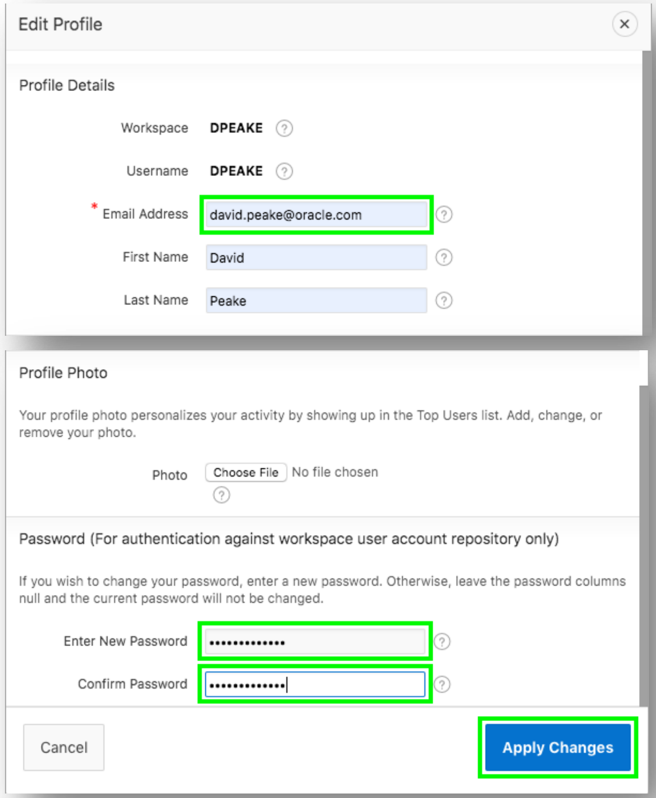
Step 1.3c – Log into your New Workspace

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

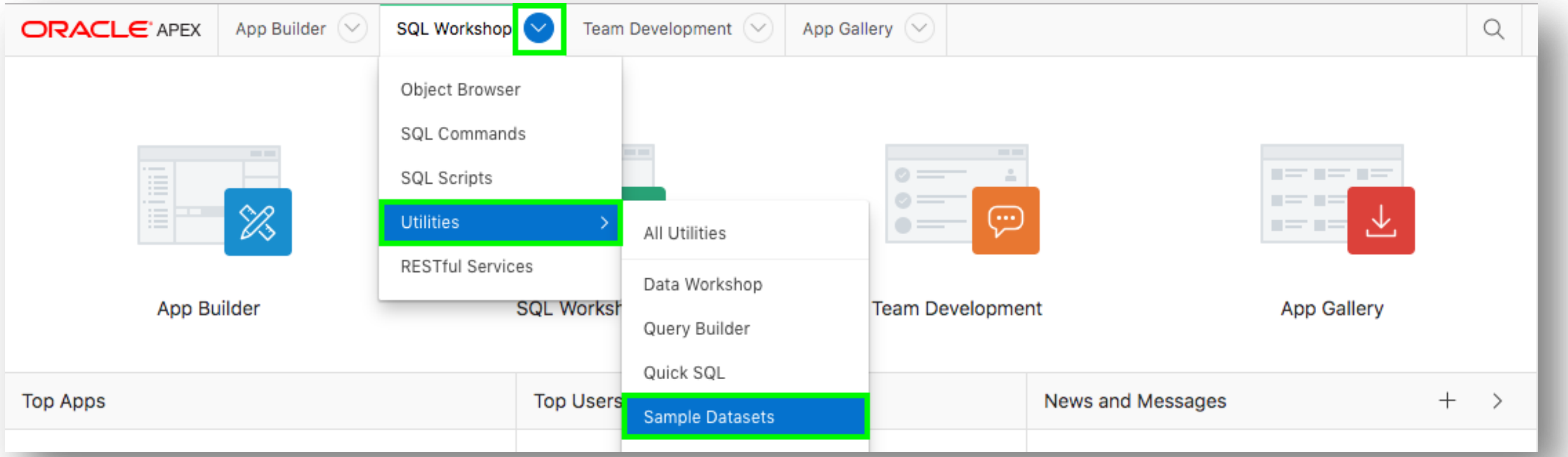


Building your tables and view

Installing Sample Tables

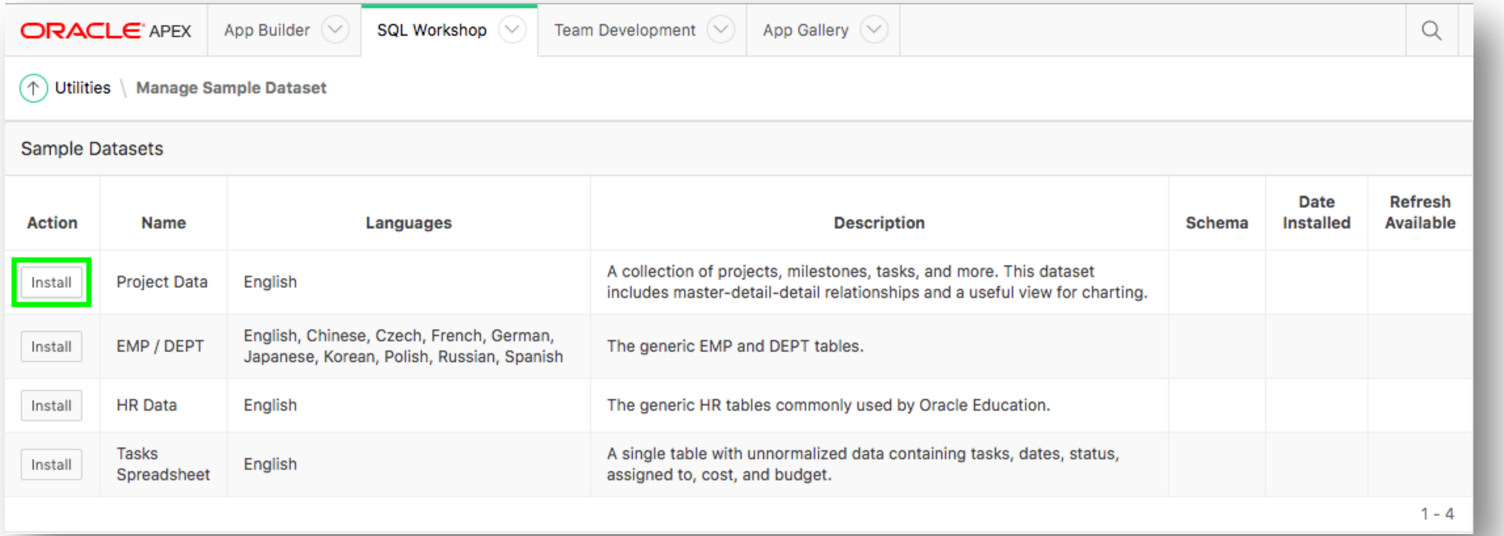
Step 2.1 – Logging In

- In the main menu, select **SQL Workshop**, select **Utilities**, click **Sample Datasets**



Step 2.2 – Creating the EMP and DEPT Tables

- On the Project Data row, click **Install**



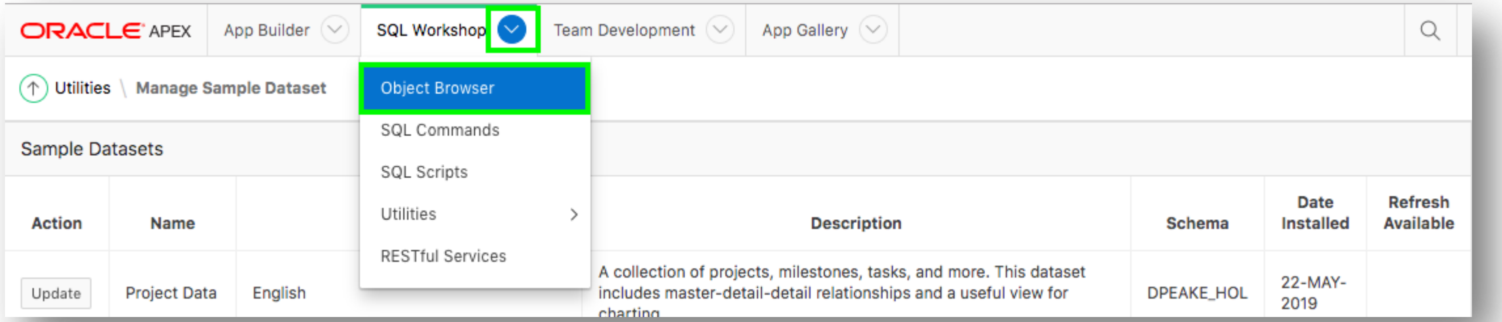
Action	Name	Languages	Description	Schema	Date Installed	Refresh Available
Install	Project Data	English	A collection of projects, milestones, tasks, and more. This dataset includes master-detail-detail relationships and a useful view for charting.			
Install	EMP / DEPT	English, Chinese, Czech, French, German, Japanese, Korean, Polish, Russian, Spanish	The generic EMP and DEPT tables.			
Install	HR Data	English	The generic HR tables commonly used by Oracle Education.			
Install	Tasks Spreadsheet	English	A single table with unnormalized data containing tasks, dates, status, assigned to, cost, and budget.			

1 - 4

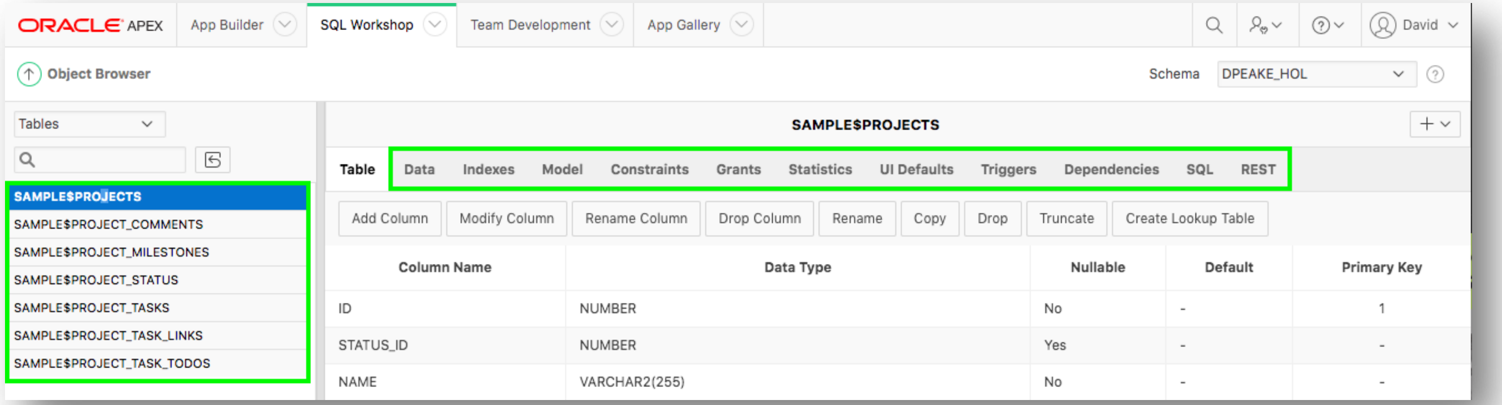
- Click **Next**
- Click **Install Dataset**
- Click **Exit**
  {We do not want to create an application directly on the tables}

Step 2.3 – Review Database Objects

- In the App Builder Menu, select **SQL Workshop**, and click **Object Browser**.



- Click on the tables and the various tabs (such as Data, Constraints, etc.) to review the table details



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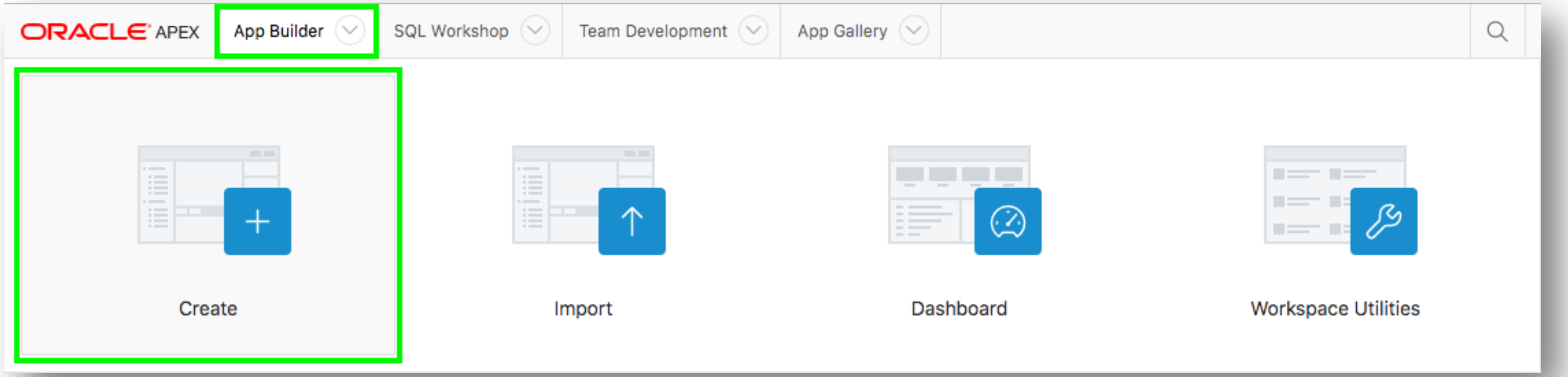
Section 3

Building your app

Using the Create Application Wizard

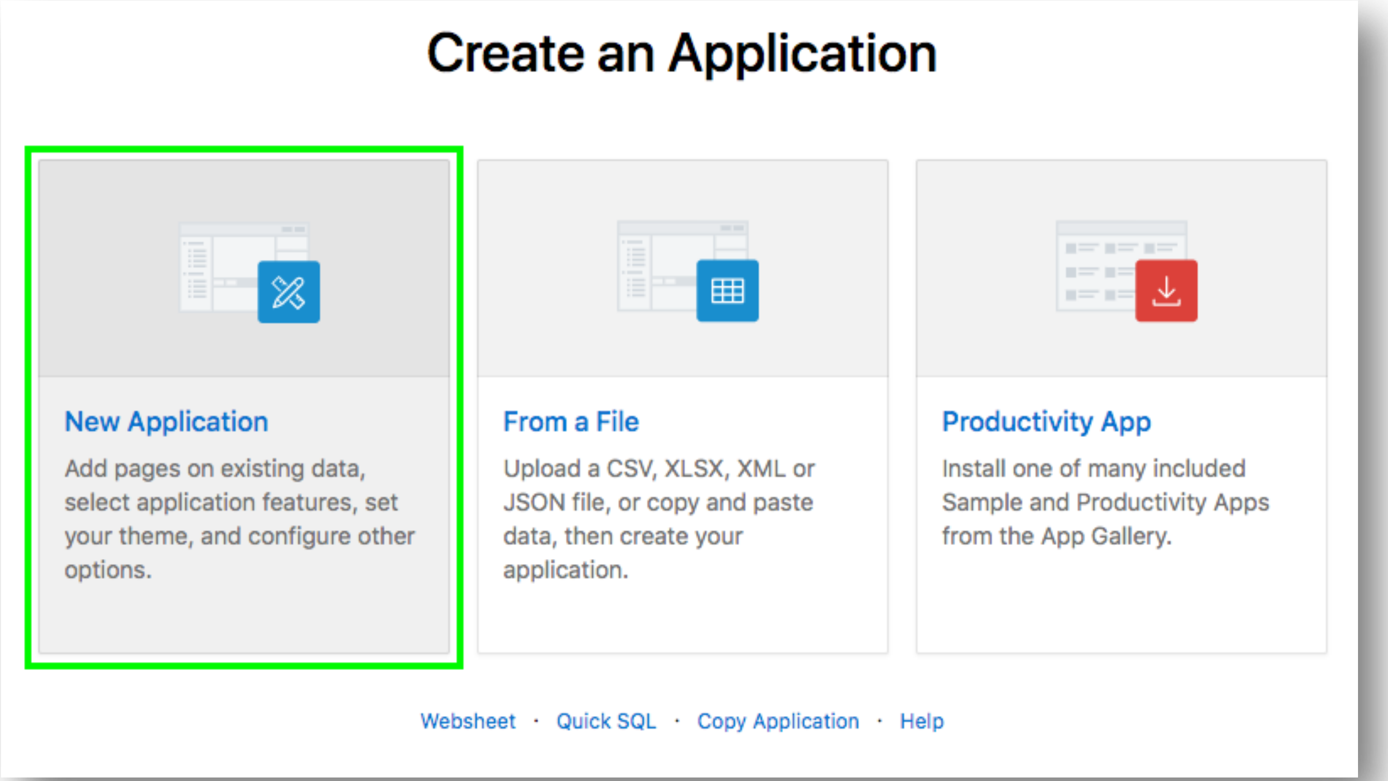
Step 3.1 – Creating an App

- In the App Builder menu, click **App Builder**
- Click **Create**



Step 3.2 – Selecting App Type

- Click **New Application**



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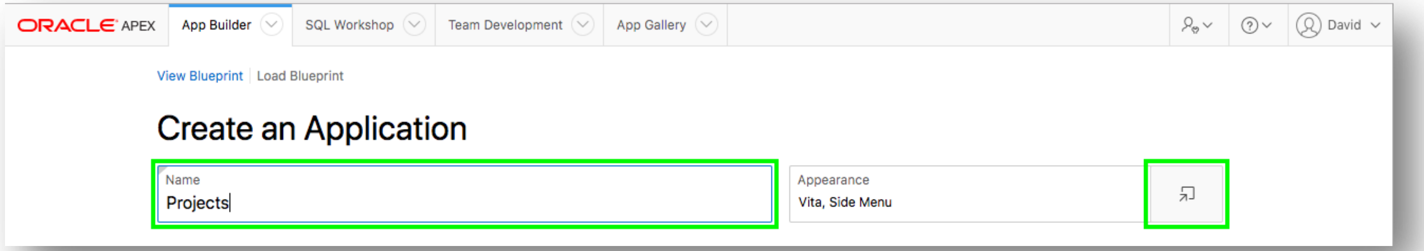
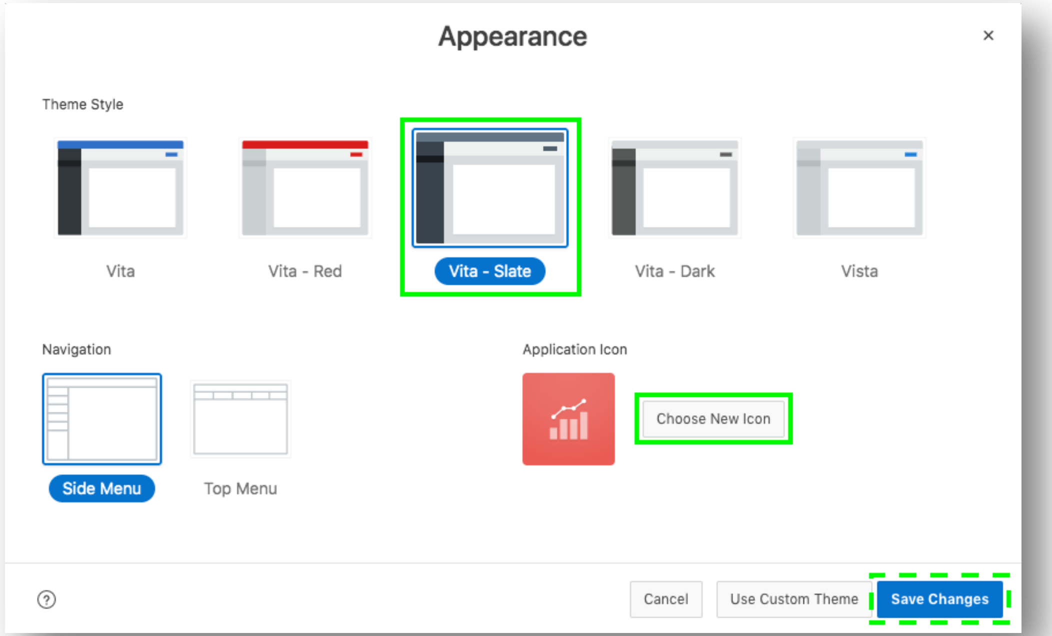
Step 3.3 – Naming the App

- For Name enter **Projects**
- Click **Appearance**

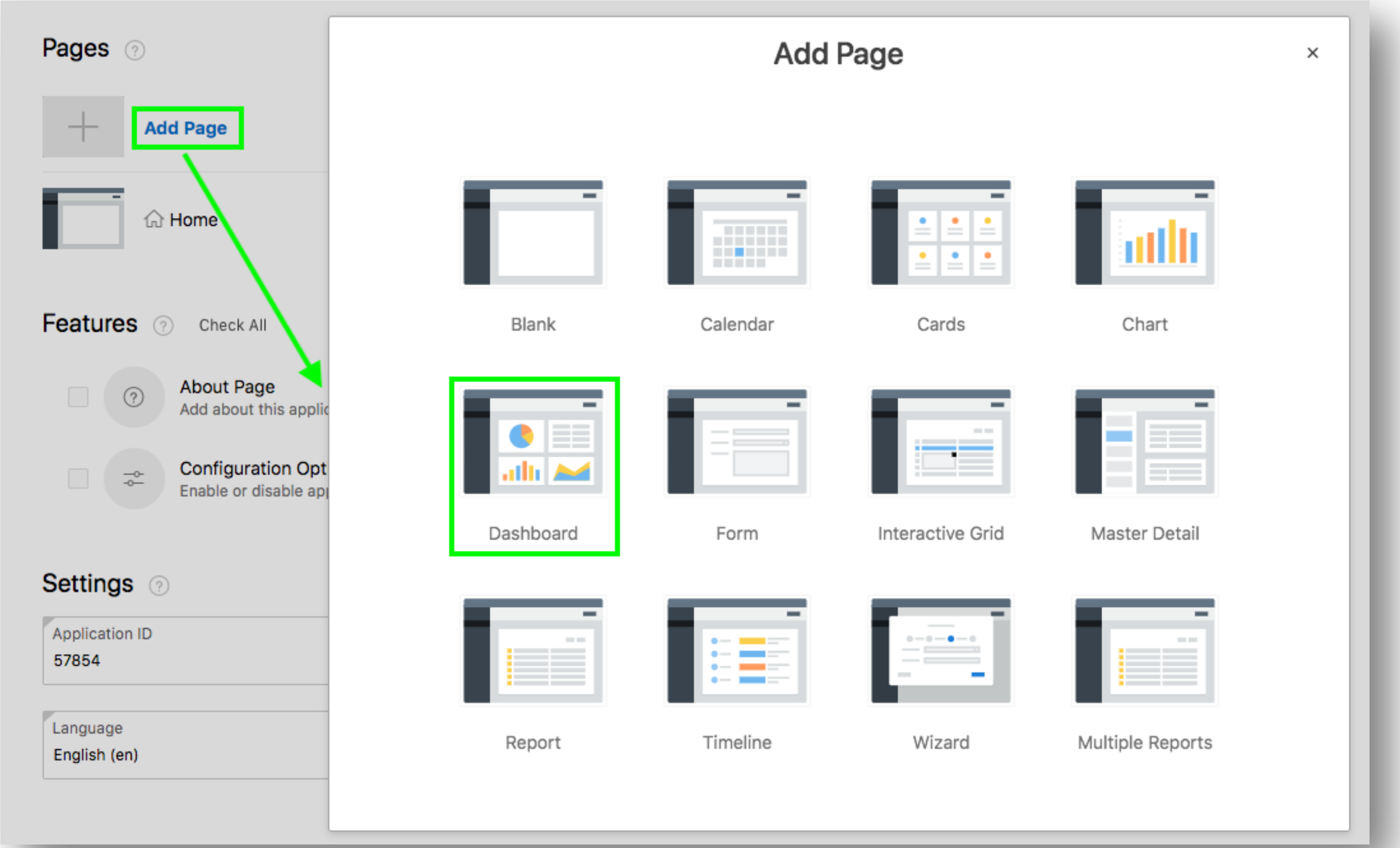


- For Theme Style select **Vita – Slate**
- Click **Choose New Icon**
- Select the icon color and an icon
- Click **Set Application Item**
- Click **Save Changes**



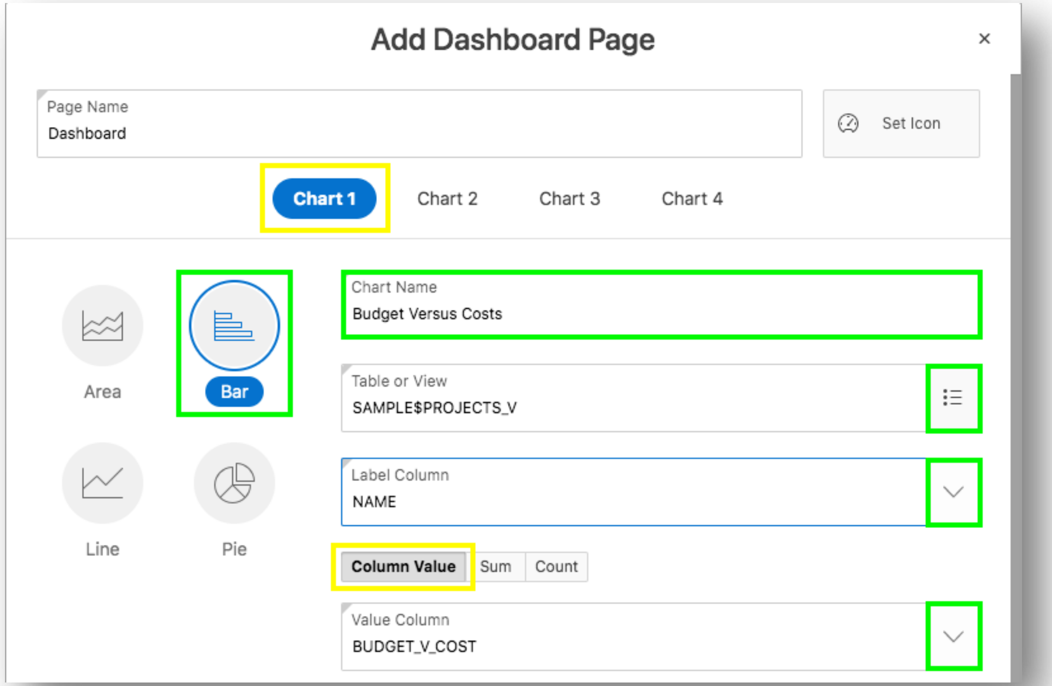
Step 3.4 – Add the Dashboard Page

- Click **Add Page**
- Click **Dashboard**



Step 3.4b – Add the Dashboard Page

- For Chart 1, enter the following:
  - Chart Type – select **Bar**
  - Chart Name – enter **Budget versus Cost**
  - Table or View – select **SAMPLE$PROJECTS_V**
  - Label Column – select **NAME**
  - Value Column – select **BUDGET_V_COST**



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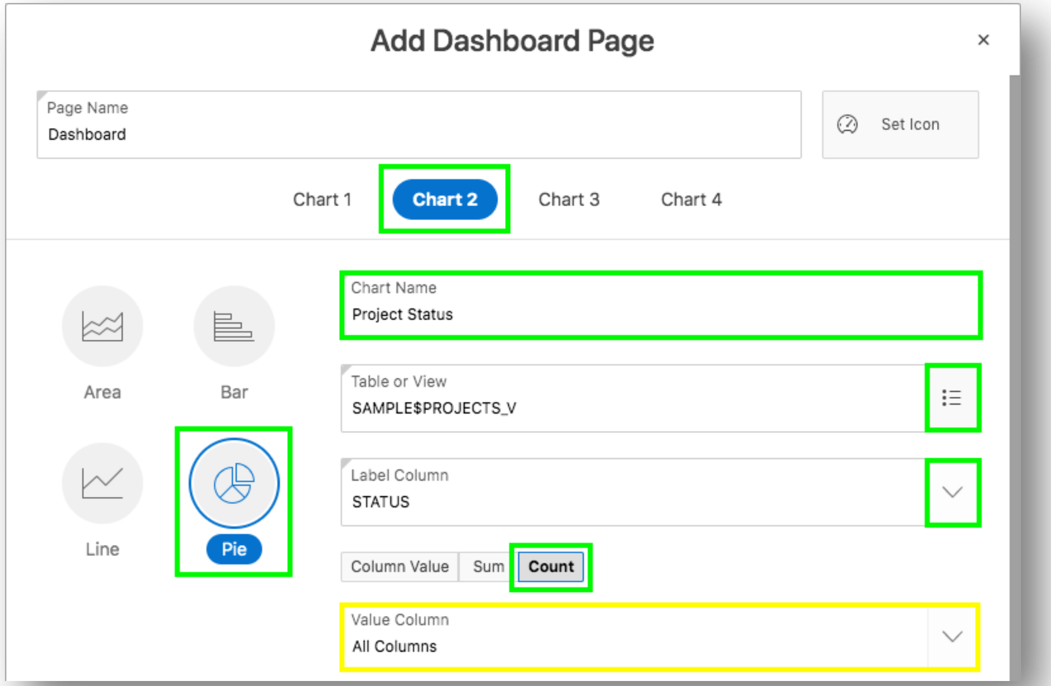
Step 3.4c – Add the Dashboard Page

- For Chart 2, enter the following:
  - Chart Type – select **Pie**
  - Chart Name – enter **Project Status**
  - Table or View – select **SAMPLE$PROJECTS_V**
  - Label Column – select **Status**
  - Type – select **Count**



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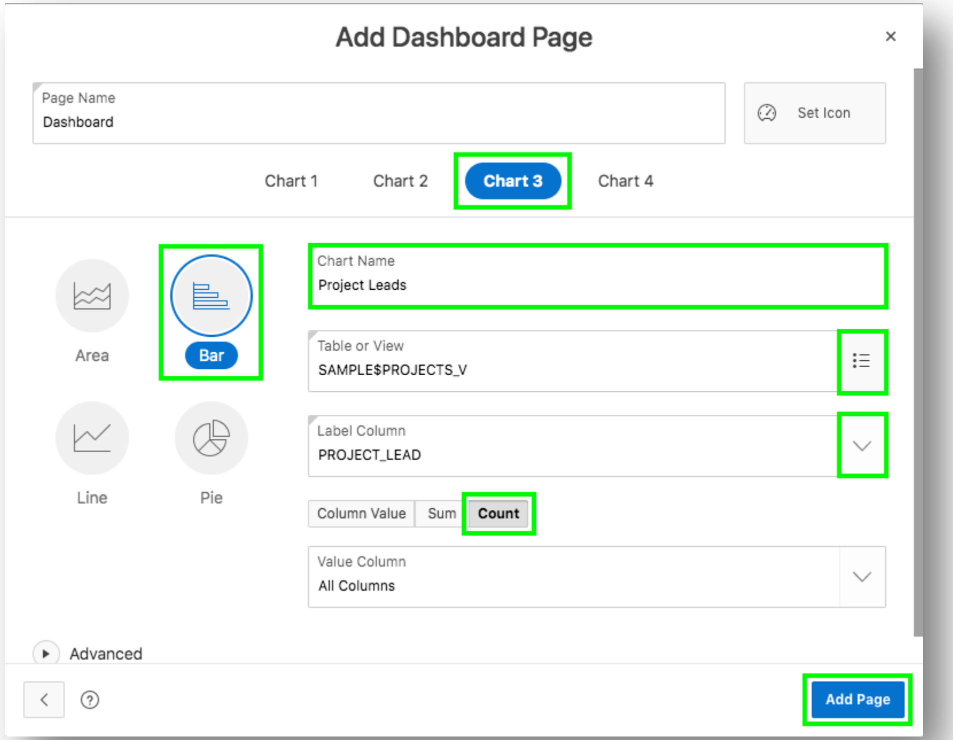
Step 3.4d – Add the Dashboard Page

- For Chart 3, enter the following:
  - Chart Type – select **Bar**
  - Chart Name – enter **Project Leads**
  - Table or View – select **SAMPLE$PROJECTS_V**
  - Label Column – select **PROJECT_LEAD**
  - Type – select **Count**

- Click **Add Page**



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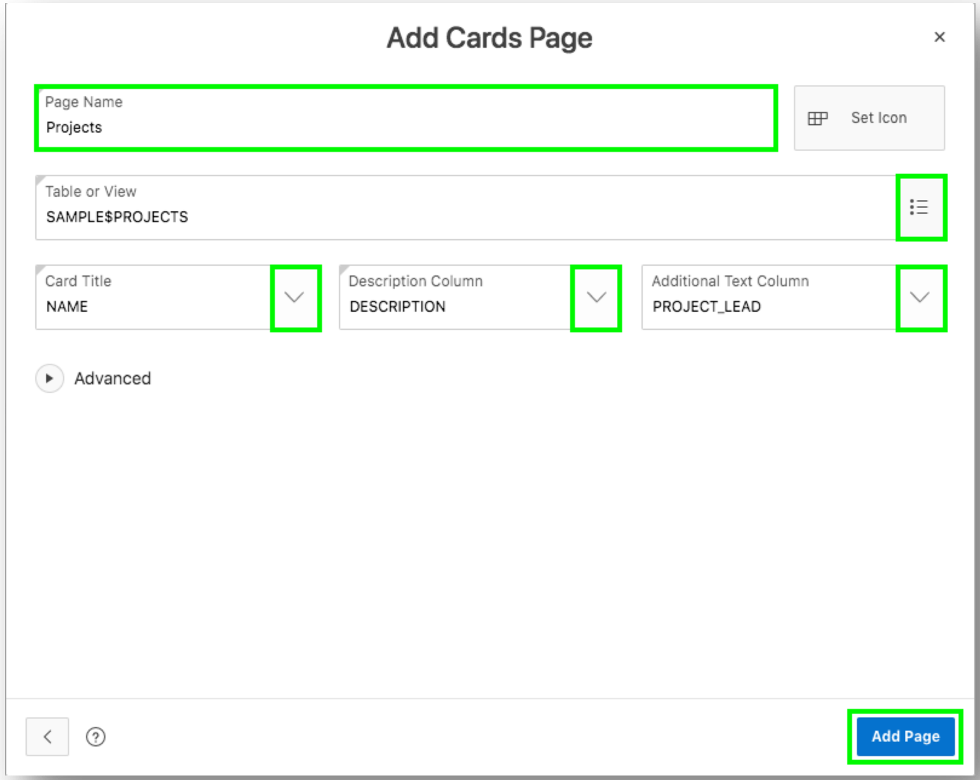
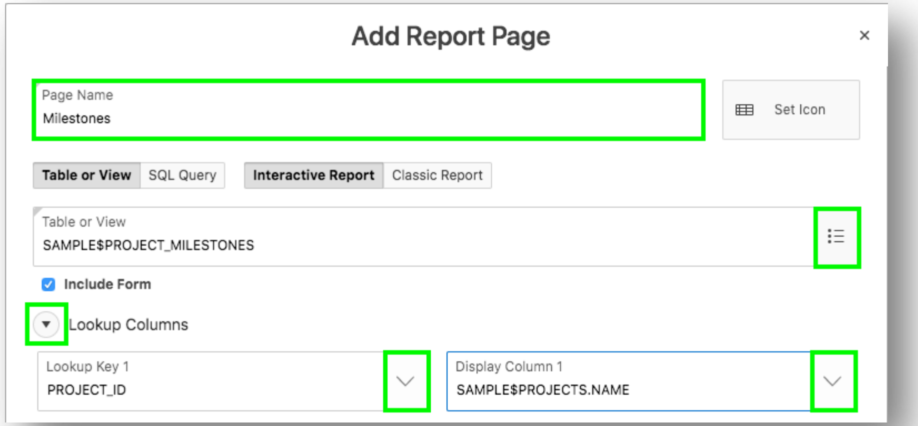
Step 3.5 – Add the Project Page

- Click **Add Page**
- Click **Cards**
- Enter the following:
  - Page Name - enter **Projects**
  - Table - select **SAMPLE$PROJECTS**
  - Card Title - select **NAME**
  - Description - select **Description**
  - Additional Text - select **PROJECT_LEAD**
- Click **Add Page**



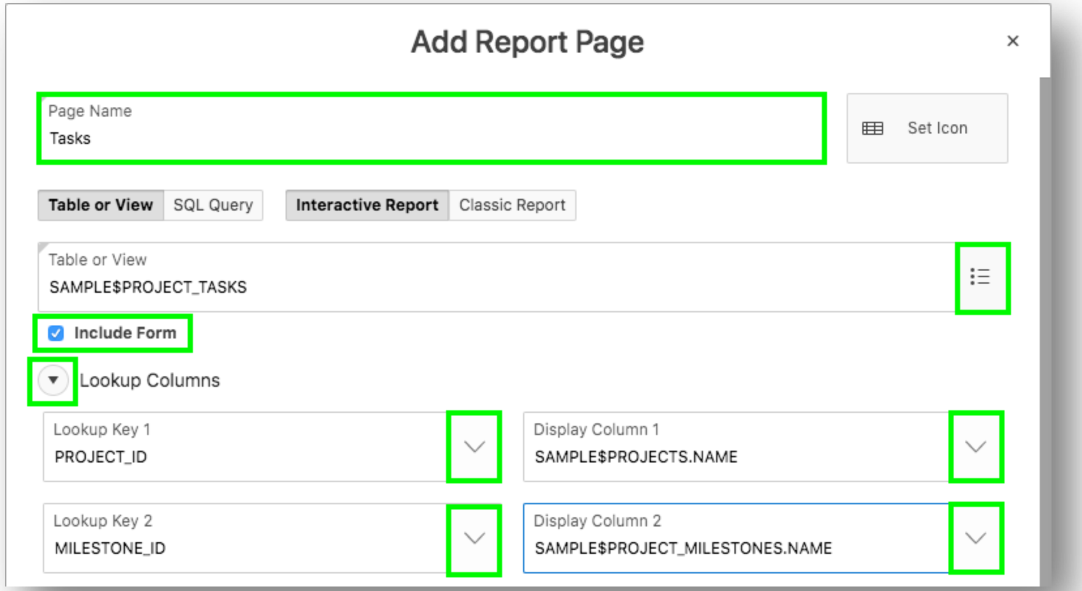
Step 3.6 – Add the Milestone Pages

- Click **Add Page**
- Click **Report**
- Enter the following:
  - Page Name - enter **Milestones**
  - Table - select **SAMPLE$PROJECT_MILESTONES**
  - Check **Include Form**
  - Lookup Key 1 - select **PROJECT_ID**
  - Display Col 1 - select **SAMPLE$PROJECTS.NAME**
- Click **Add Page**



Step 3.7 – Add the Task Pages

- Click **Add Page**
- Click **Report**
- Enter the following:
  - –Page Name - enter **Tasks**
  - –Table - select **SAMPLE$PROJECT_TASKS**
  - –Check **Include Form**
  - –Lookup Key 1 - select **PROJECT_ID**
  - –Display Col 1 - select **SAMPLE$PROJECTS.NAME**
  - –Lookup Key 2 - select **MILESTONE_ID**
  - –Display Col 2 - select **SAMPLE$PROJECT_MILESTONES.NAME**
- Click **Add Page**



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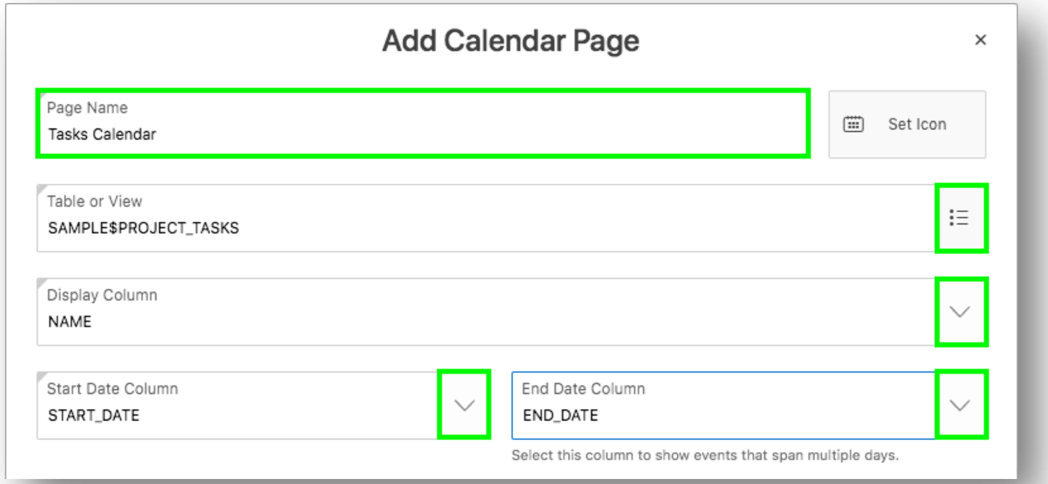
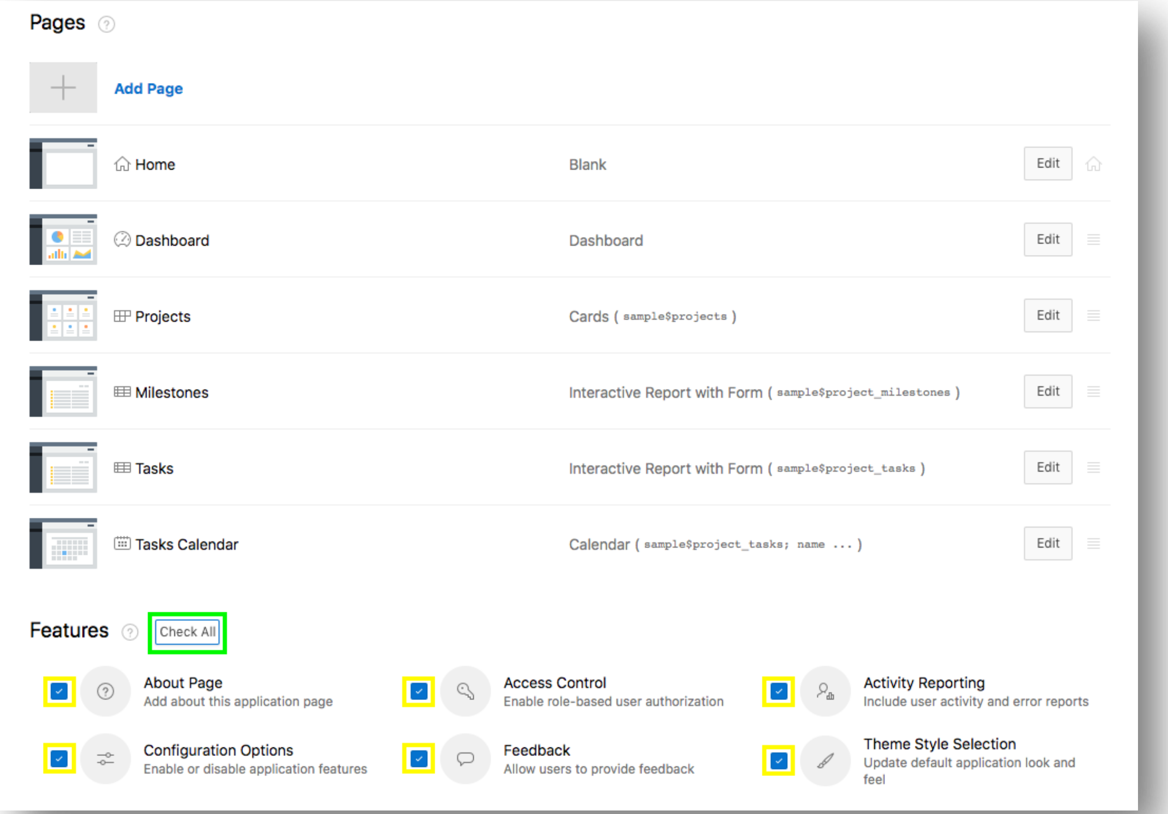
Step 3.8 – Add a Calendar Page

- Click **Add Page**
- Click **Calendar**
- Enter the following:
  - Page Name - enter **Tasks**
  - Table - select **SAMPLE$PROJECT_TASKS**
  - Display Column - select **NAME**
  - Start Date Column - select **START_DATE**
  - End Date Column - select **END_DATE**
- Click **Add Page**



Step 3.9 – Include All Features

- Next to Features, click **Check All**



- Click **Create Application**

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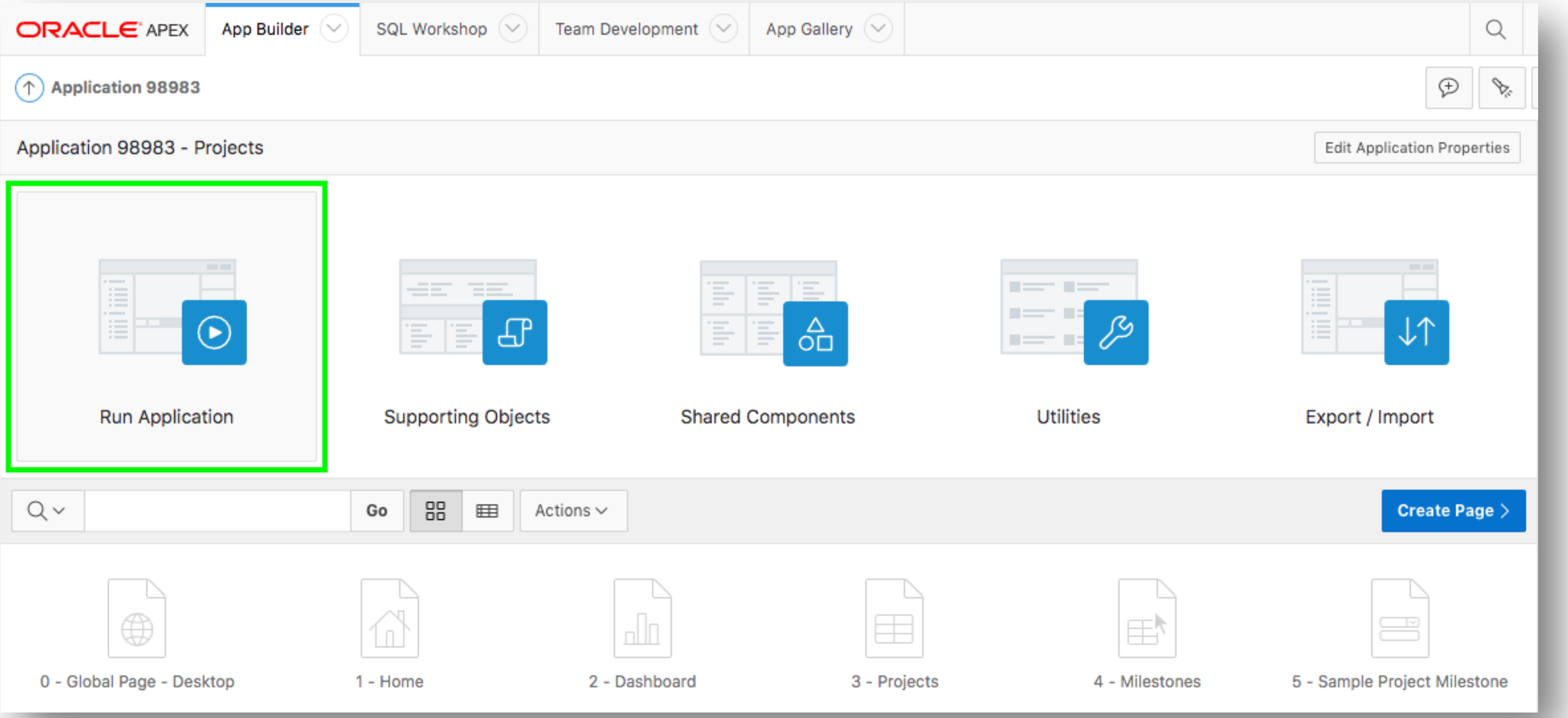
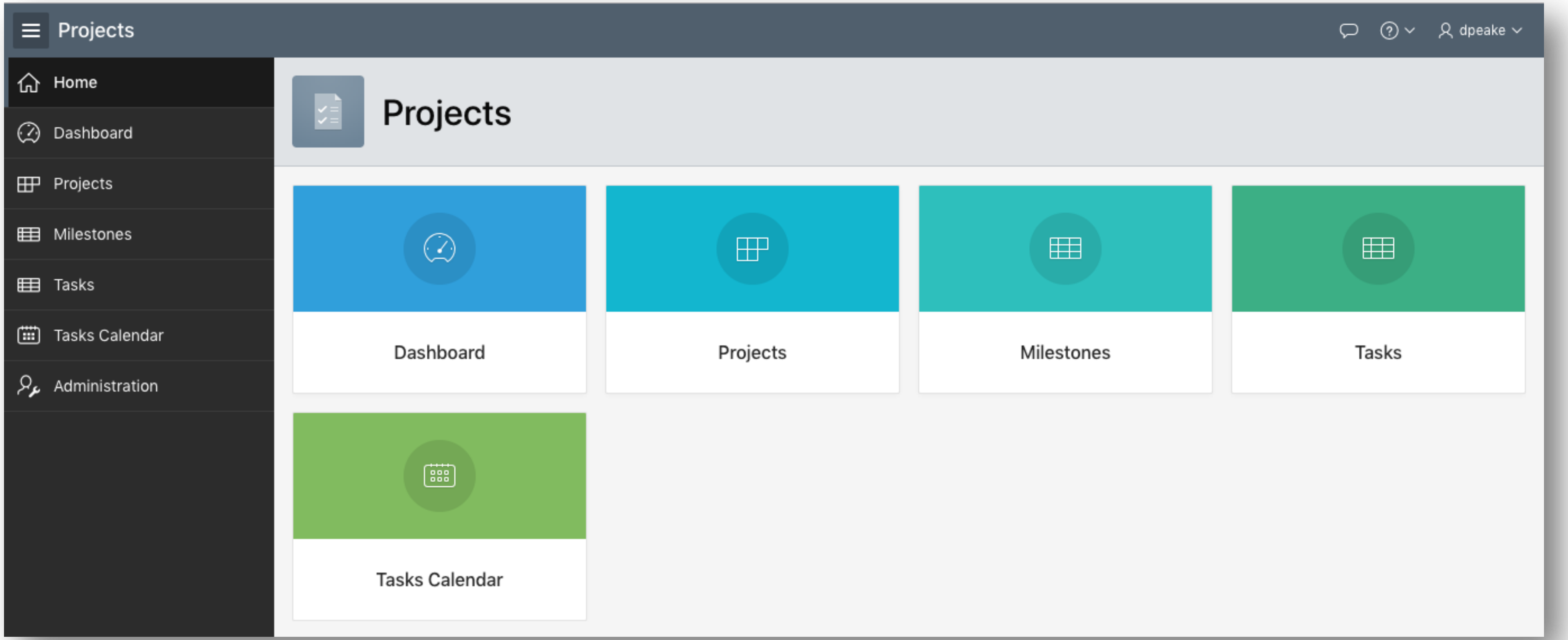
Step 3.10 – App in Page Designer

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



Step 3.11 – Runtime App

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



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Section 4

Recreating the App

Improving the Generated App

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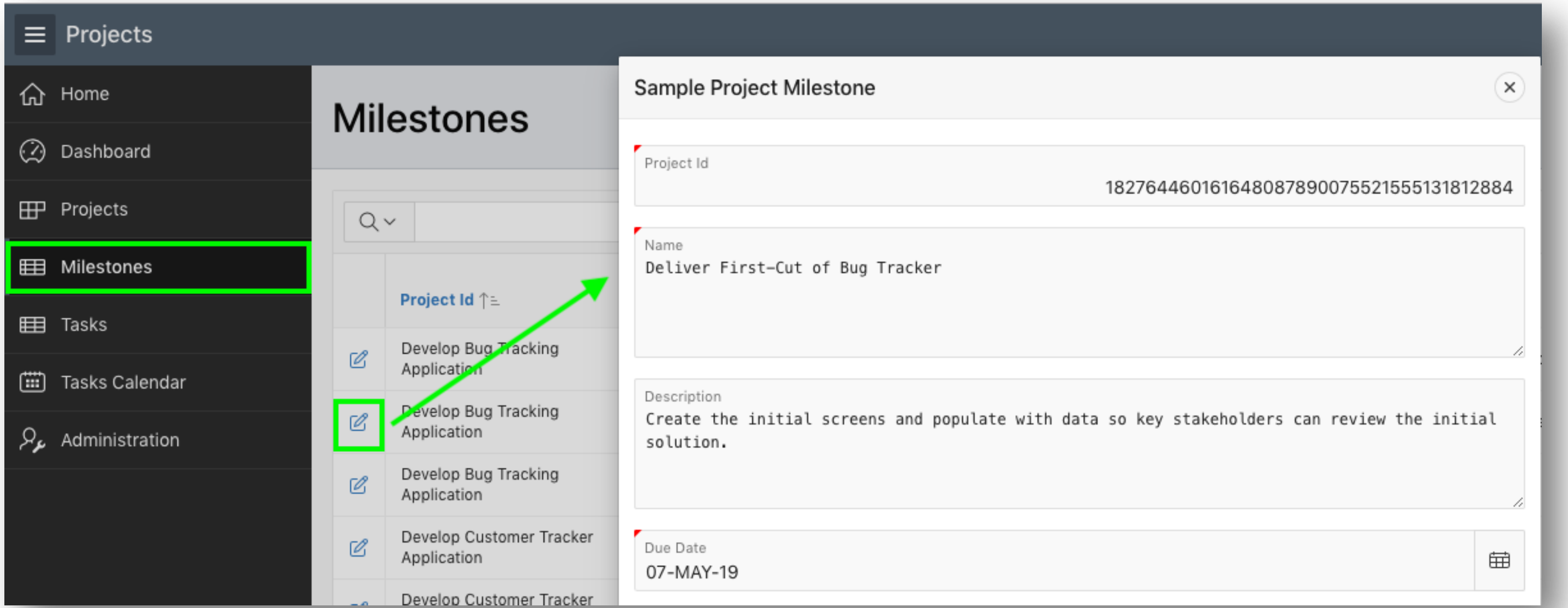
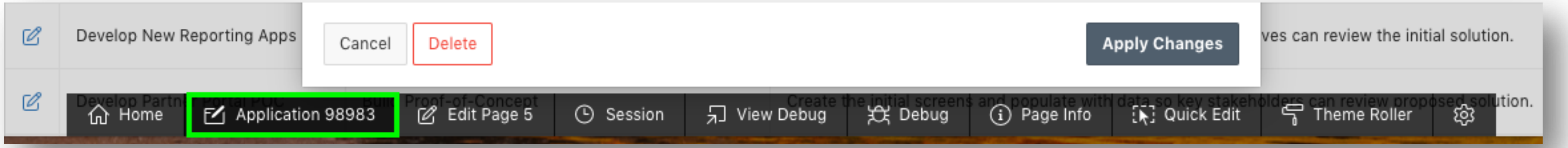
Step 4.1 – View Milestone Form

- In the runtime environment, within the menu, click **Milestones**
- Click the edit icon for a milestone
  Notice that there are only a few items
  – An Interactive Grid may work better.



Step 4.2 – Return to the App Builder

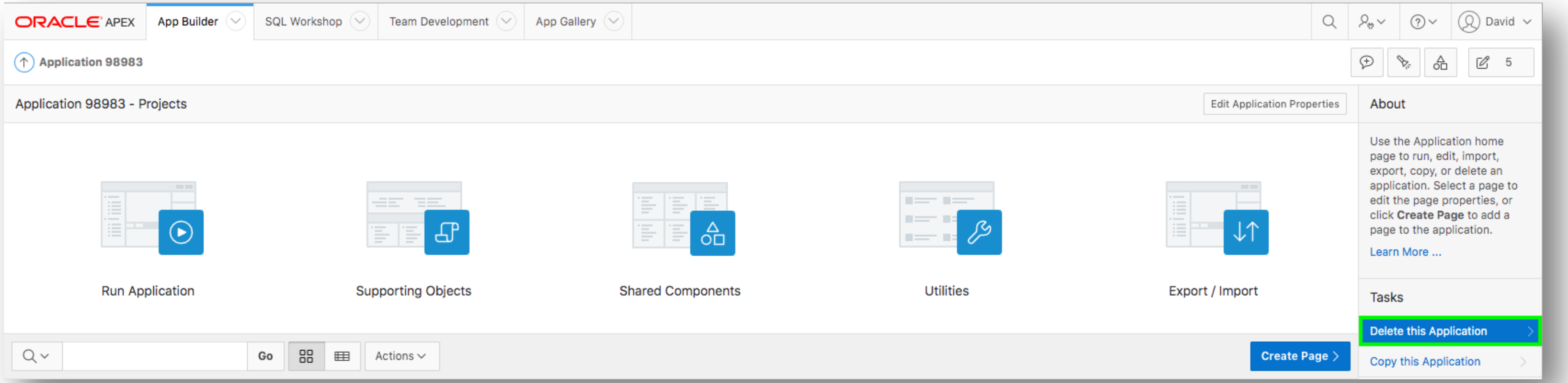
- In the runtime environment, within the develop toolbar, click **Application xxxxx**



{Note: The Developer Toolbar is only shown to developers who run the application from the App Builder.
End users will never be shown the Developer Toolbar}

Step 4.3 – Delete the App

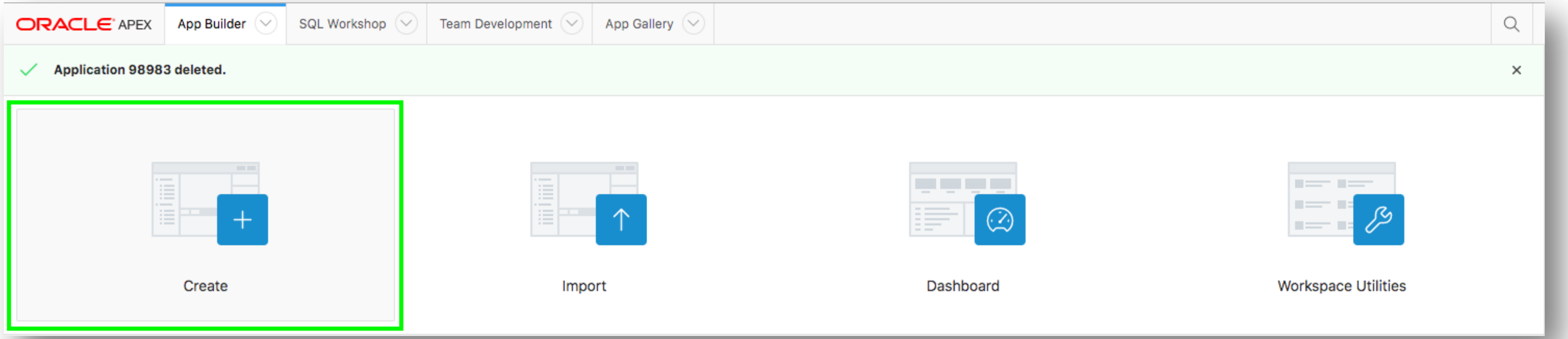
- From the App Home Page, under Tasks, click **Delete this application**



- Click **Permanently Delete Now**

Step 4.4 – Create a new App

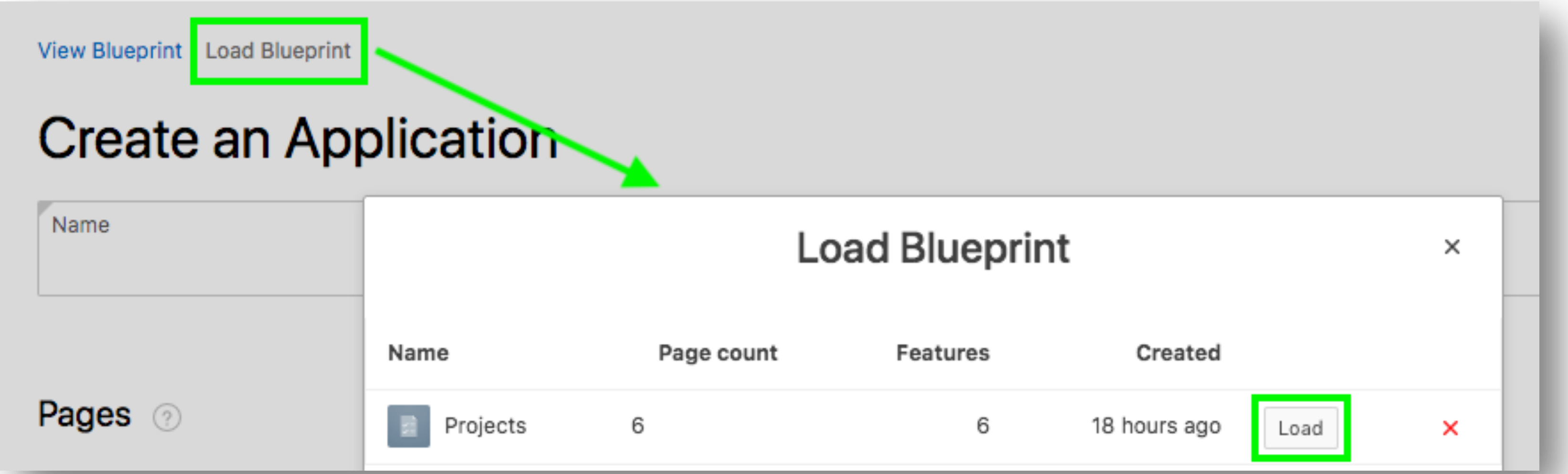
- From the App Builder Home Page, click **Create**



- Click **New Application**

Step 4.5 – Load Blueprint

- Click **Load Blueprint**
- For the latest app generated, click **Load**



The previously defined app definition will be displayed.

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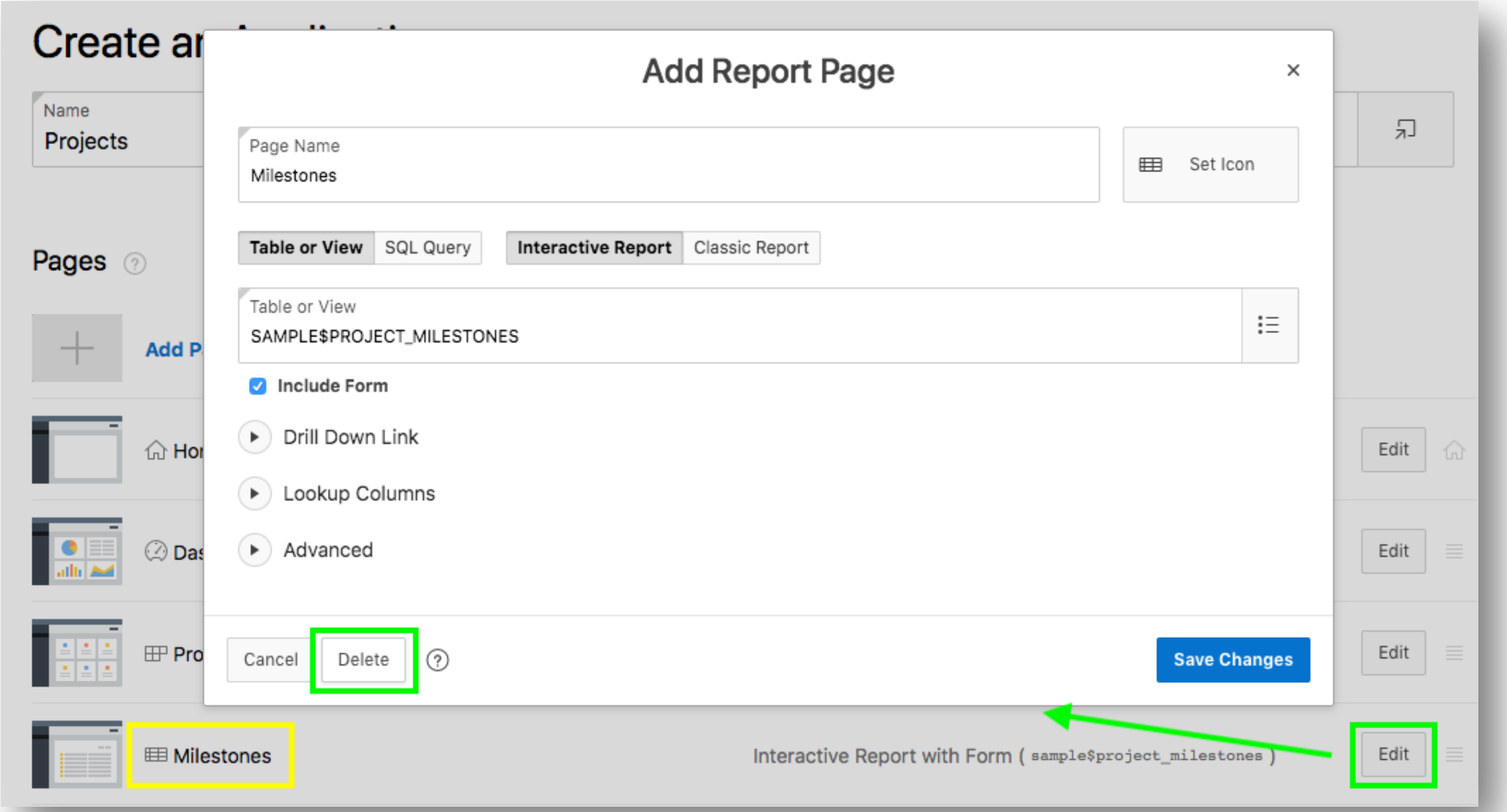
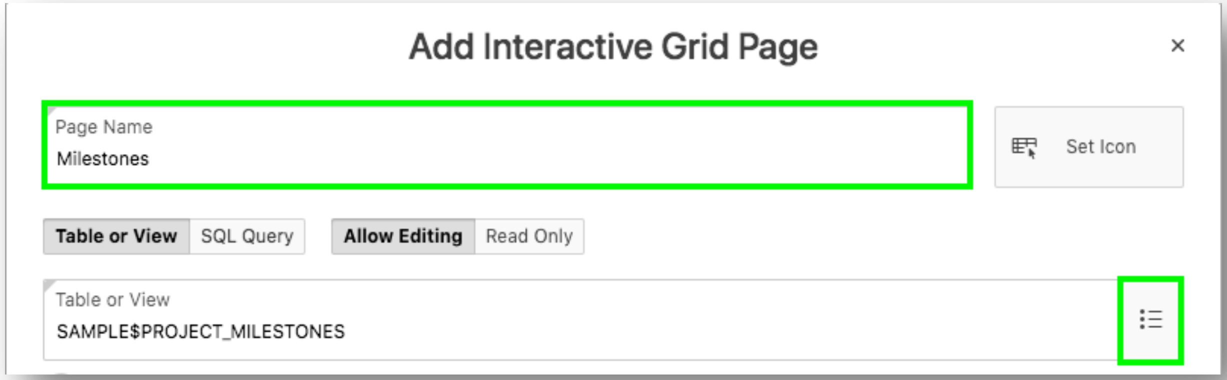
Step 4.6 – Delete the Milestones Report

- In the list of pages, for Milestones, click **Edit**
- Click **Delete**



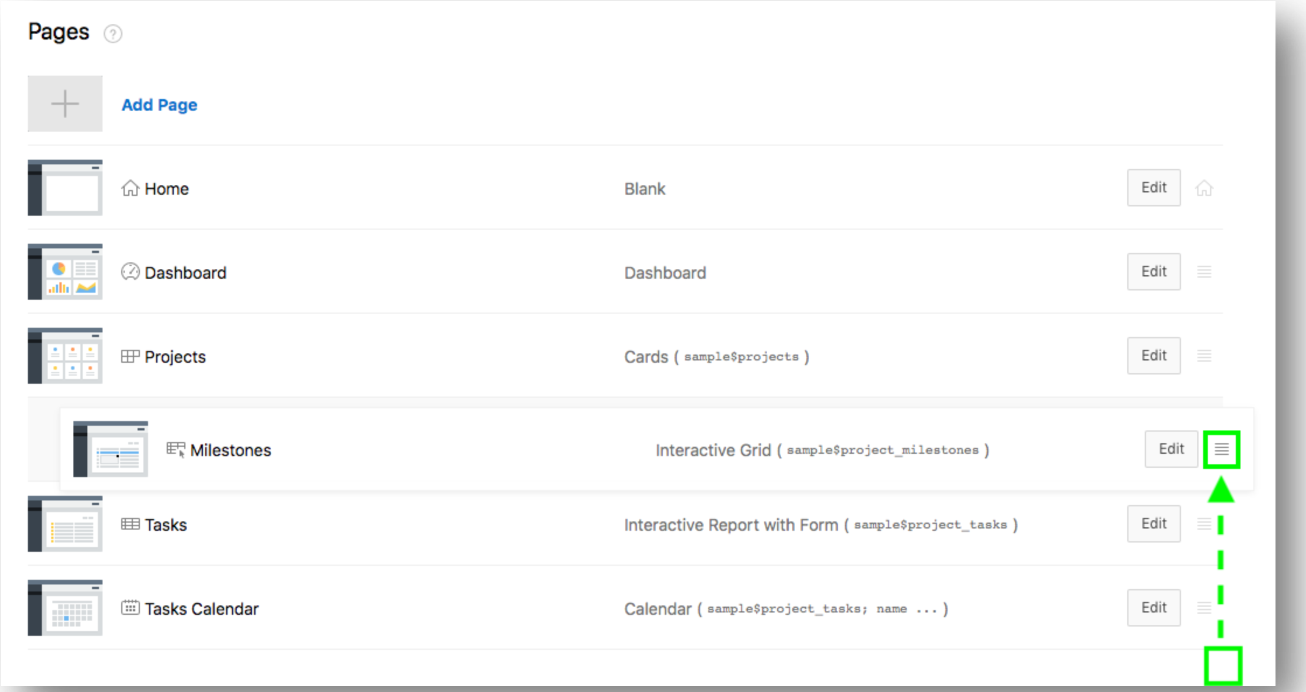
Step 4.7 – Add a new Milestone Page

- Click **Add Page**
- Click **Interactive Grid**
- Enter the following:
  - Page Name - enter **Milestones**
  - Table - select **SAMPLE$PROJECT_MILESTONES**
- Click **Add Page**



Step 4.8 – Reorder the pages

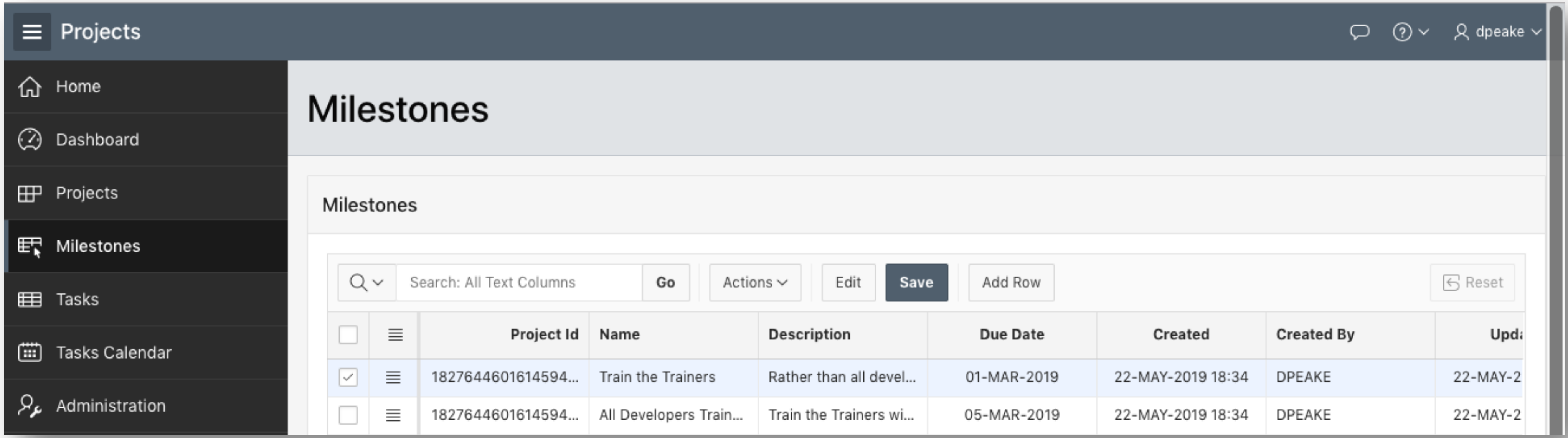
- In the list of Pages, for the Milestones page, select the hamburger
- Drag the page up until it is under the Projects page and drop



- Click **Create Application**

Step 4.9 – App in Page Designer

- Your new application will be displayed in Page Designer
- Click **Run Application**
- Enter your user credentials
- Navigate to **Milestones**



Using Page Designer

Updating the Milestones Page

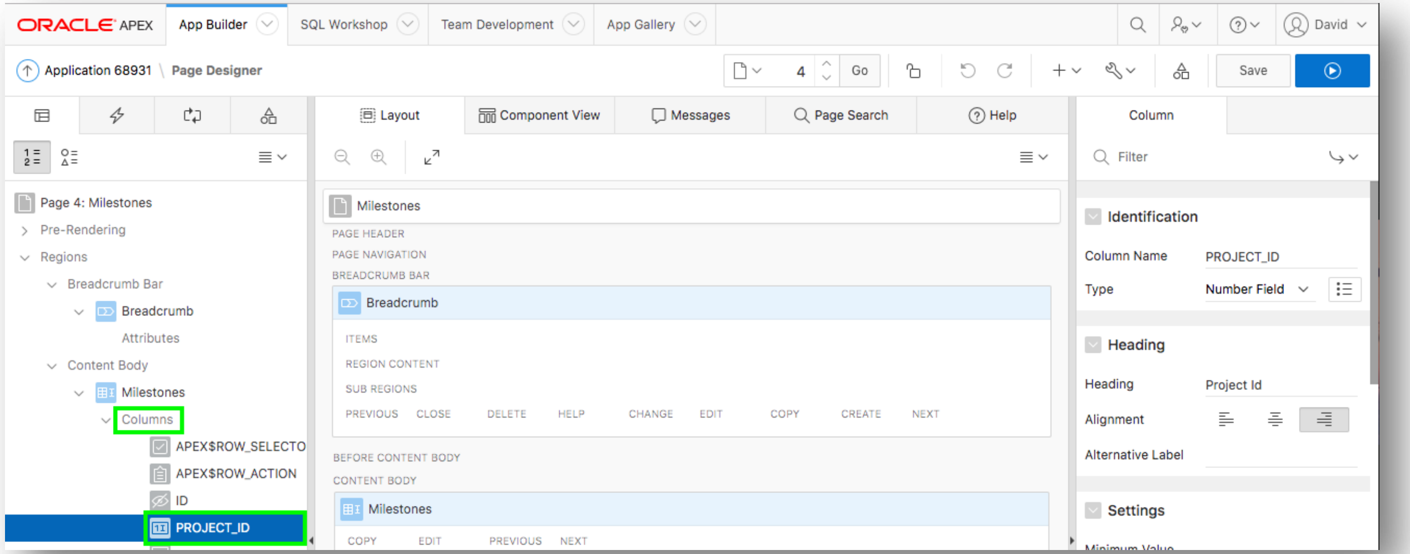
Step 5.1 – Update Project Id

To replace the Project Id with the Project Name, define an LOV

- In the runtime environment, within the developer toolbar, click **Edit Page 4**

Page Designer will be displayed for the Milestones page

- In the Rendering tree (left pane), click **Columns**, click **PROJECT_ID**



Step 5.1b – Update Project Id

- In the Property Editor (right pane), enter the following:
  - Identification > Type – select **Select List**
  - Heading – enter **Project**
  - List of Values > Type – select **SQL Query**
  - SQL Query enter
    select name, id
    from sample$projects
    order by 1
  - Display Extra Values – select **No**
  - Null Display Value – enter **- Select Project -**
- Click **Save**
- Run the application

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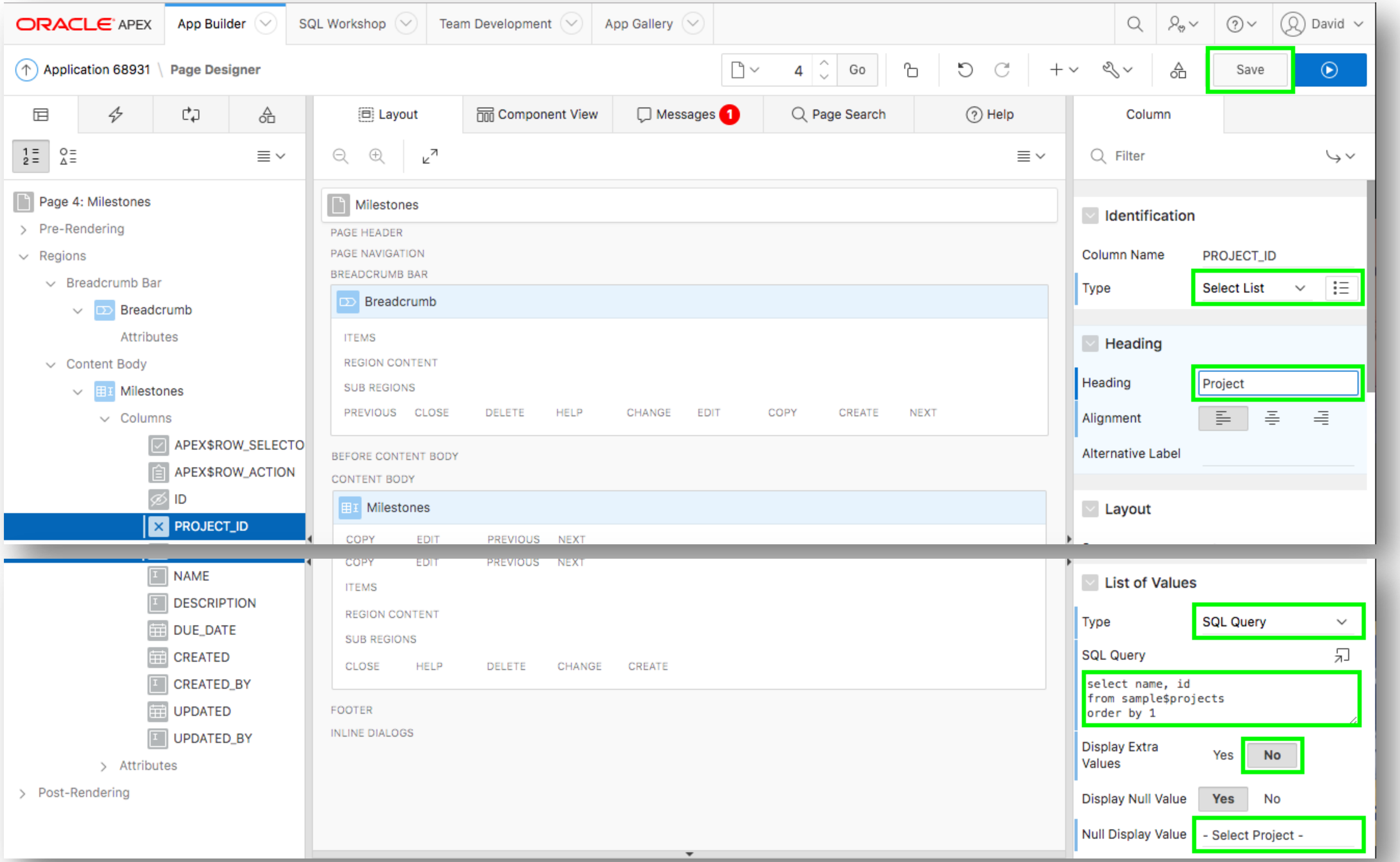
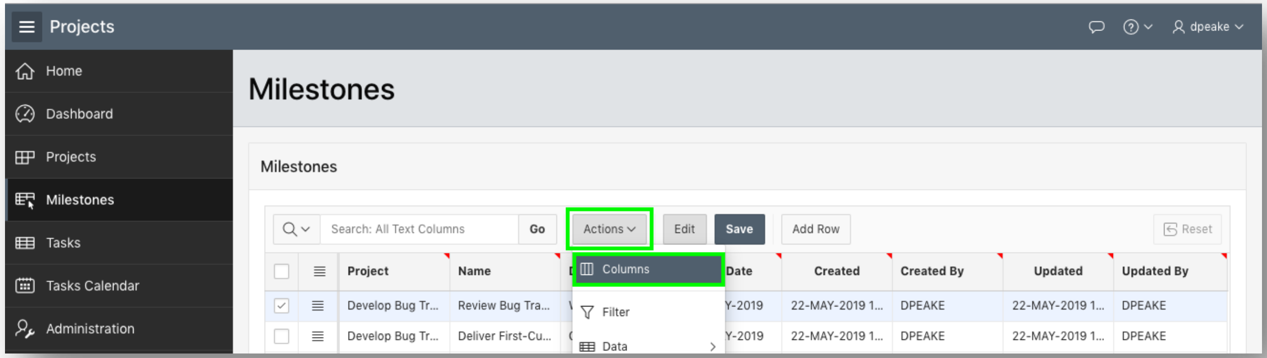
Step 5.1b – Update Project Id

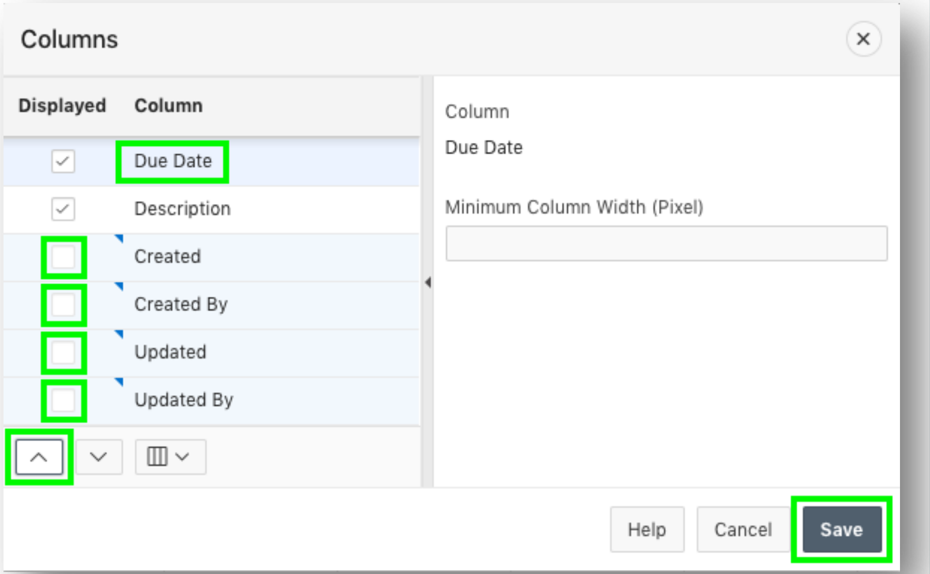


Step 5.2 – Manage Columns

- In the runtime environment, click **Actions**, click **Columns**

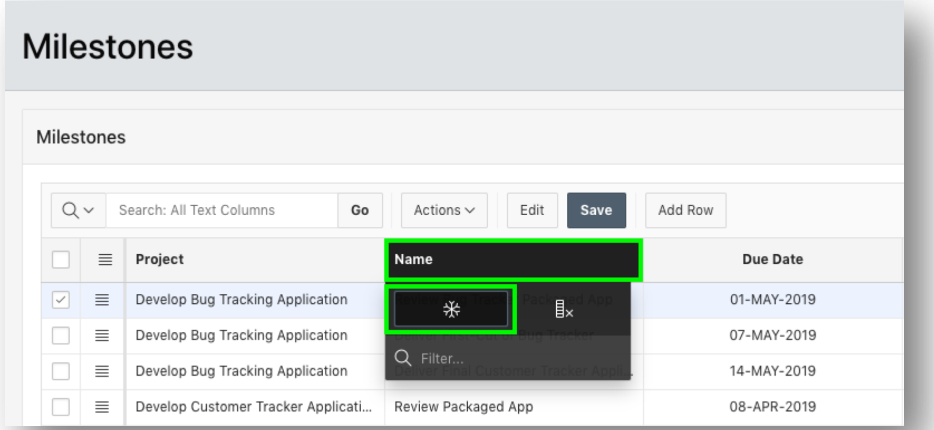


- Uncheck **Created**, **Created By**, **Updated**, and **Updated By**
- Select **Due Date**, click the Up Arrow
- Click **Save**

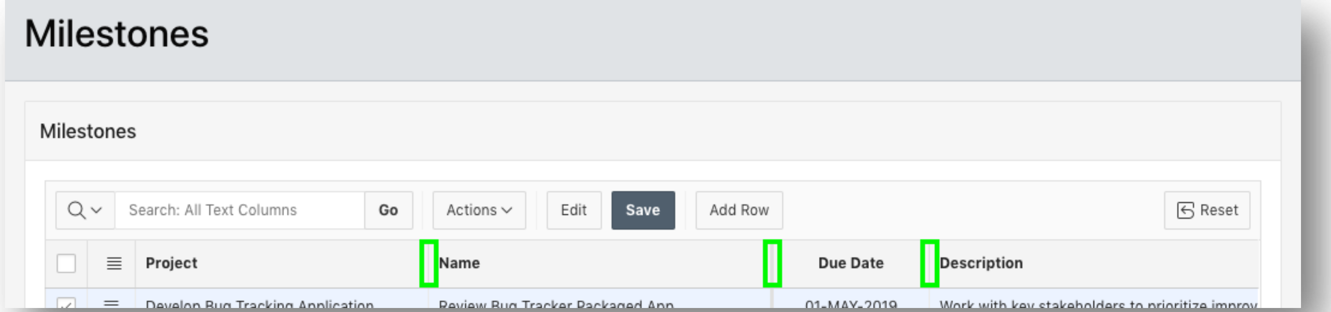


Step 5.3 – Freeze and Resize Columns

- Click the column heading **Name**
- Click **Freeze**

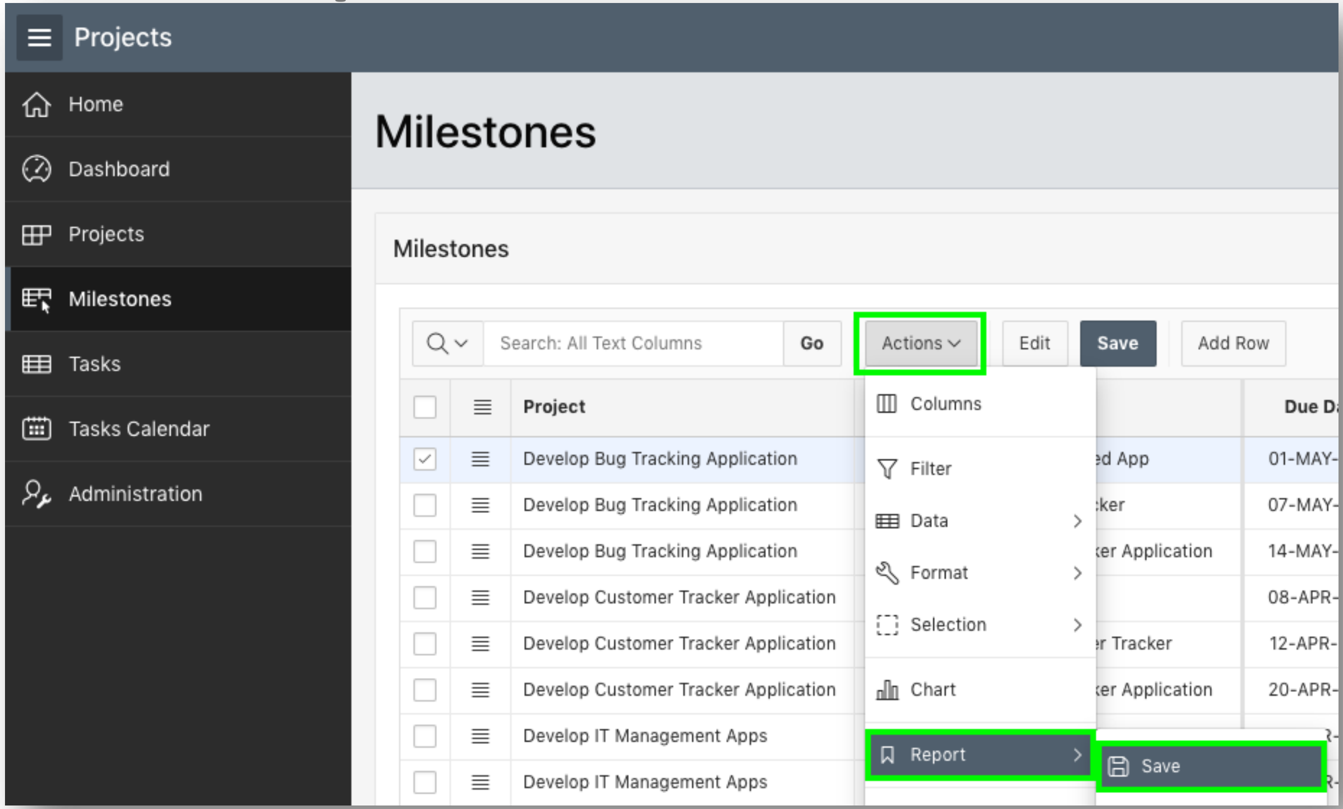


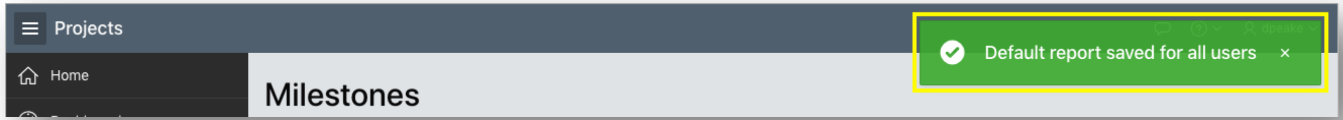
- Hover between the **Project** and **Name** columns until a bar displays
- Drag to the right until the **Project** resizes to a suitable size
- Repeat for other columns



Step 5.4 – Save the Report

- Click **Actions**, select **Report**, click **Save**





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Creating a page to update project records

Add the Project Form Page

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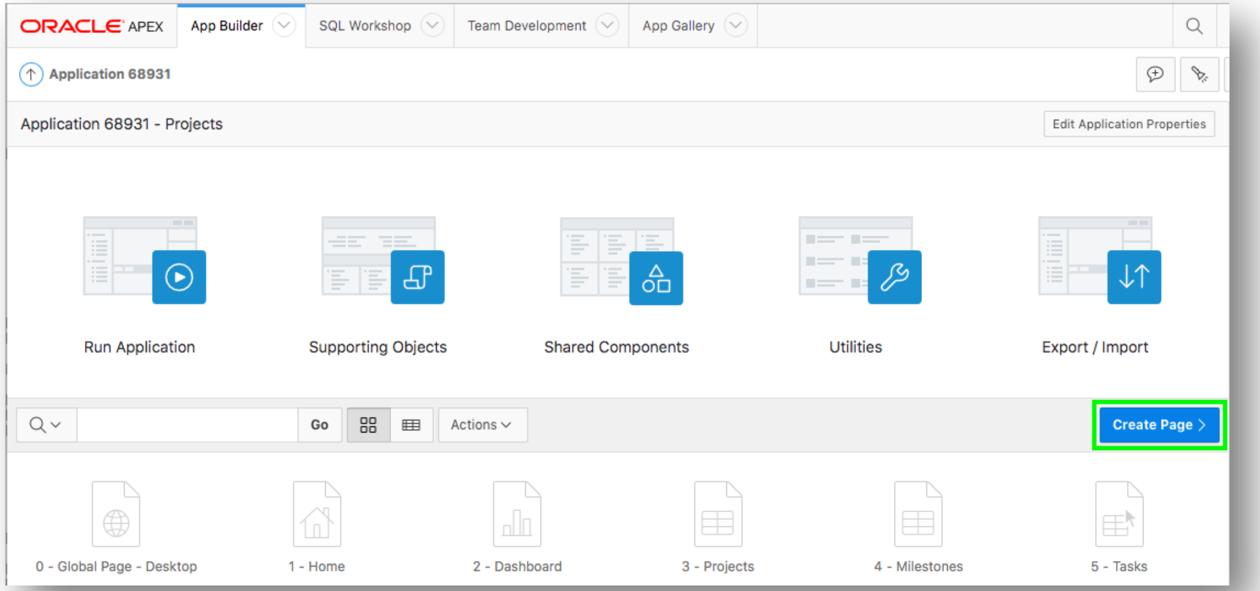
Step 6.1 – Adding a Page

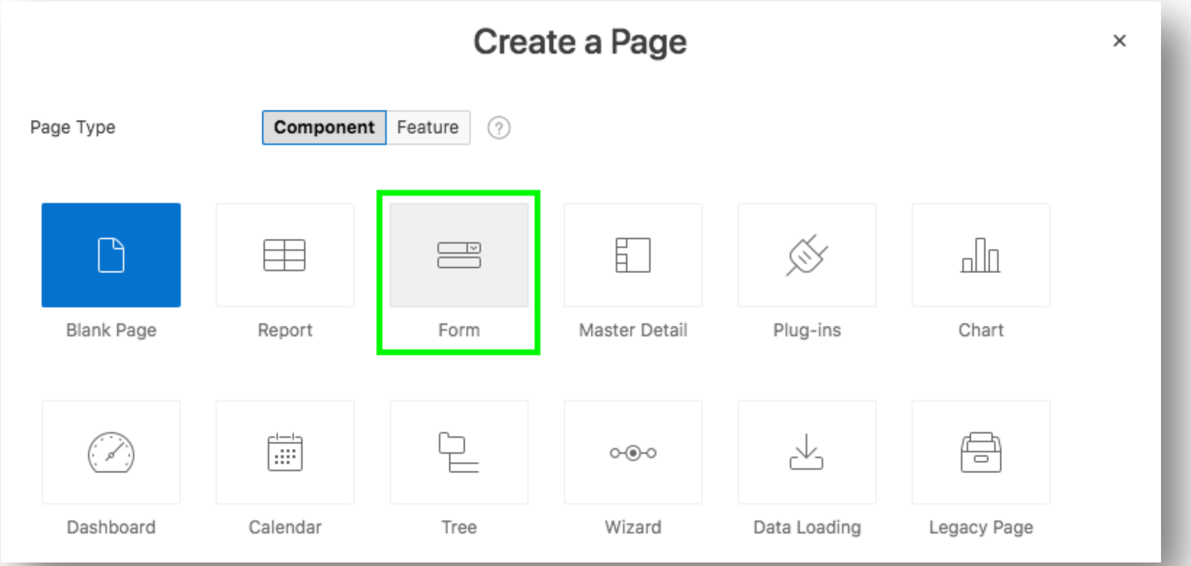
There is no form page to manage Projects details

- In the runtime environment, within the developer toolbar, click **Application xxxxx**
- In the Application Home Page, click **Create Page**

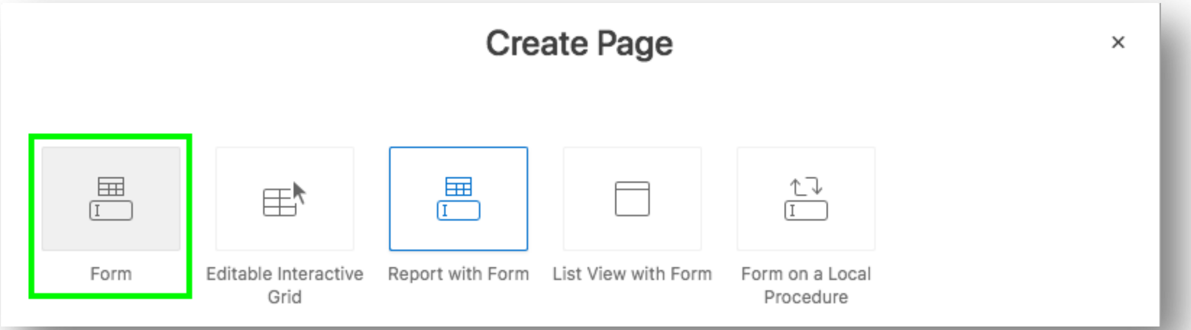


Step 6.1b – Adding a Page

- In the wizard, click **Form**

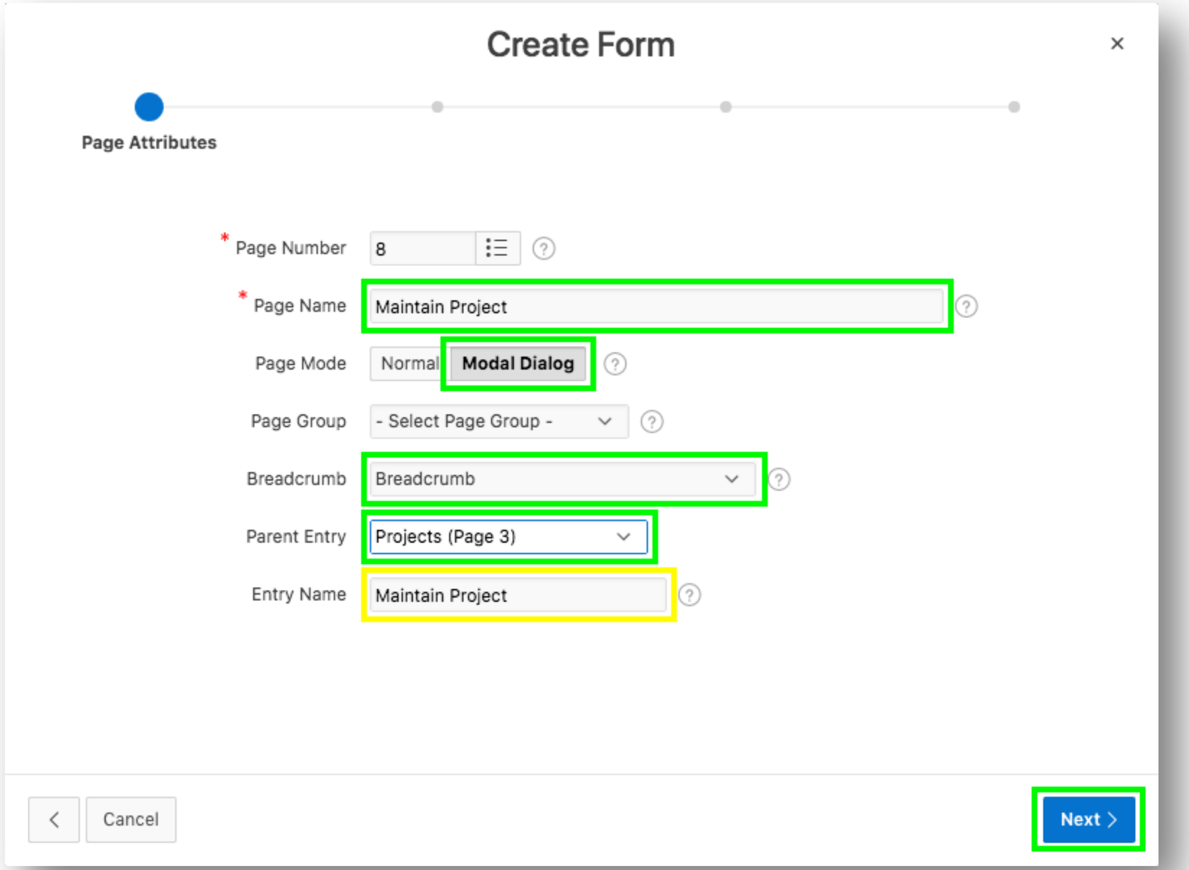


- Click **Form**



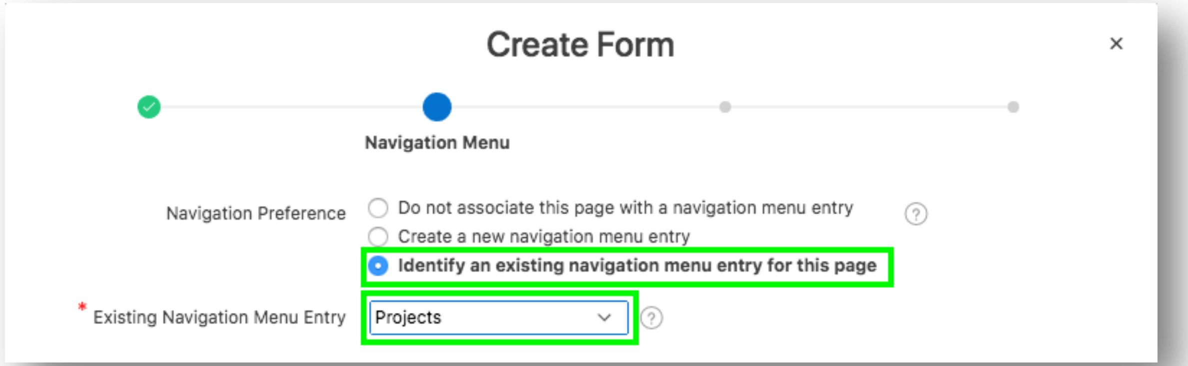
Step 6.1c – Adding a Page

- Enter the following:
  - Page Name – enter **Maintain Project**
  - Page Mode – select **Modal Dialog**
  - Breadcrumb – select **Breadcrumb**
  - Parent Entry – select **Projects (Page 3)**
- Click **Next**

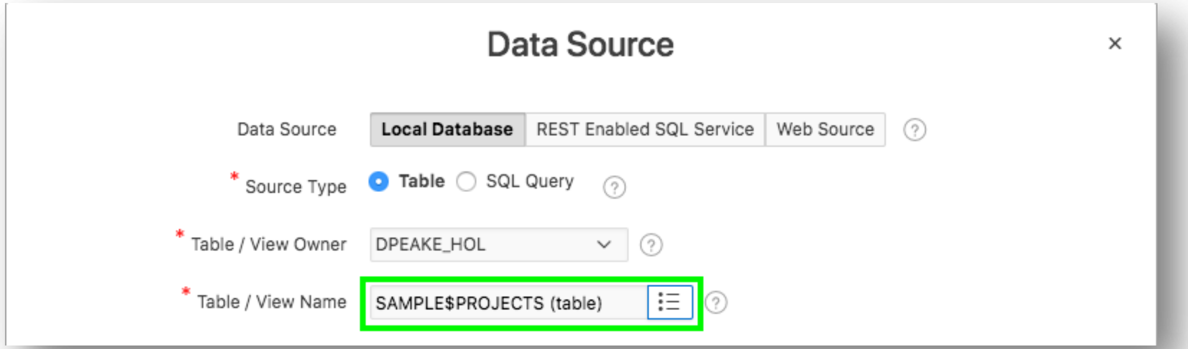


Step 6.1d – Adding a Page

- For Navigation Preference, select **Identify an existing navigation menu entry for this page**
- For Existing Navigation Menu Entry, select **Projects**
- Click **Next**



- For Table/ View Name, select **SAMPLE$PROJECTS (table)**
- Click **Next**



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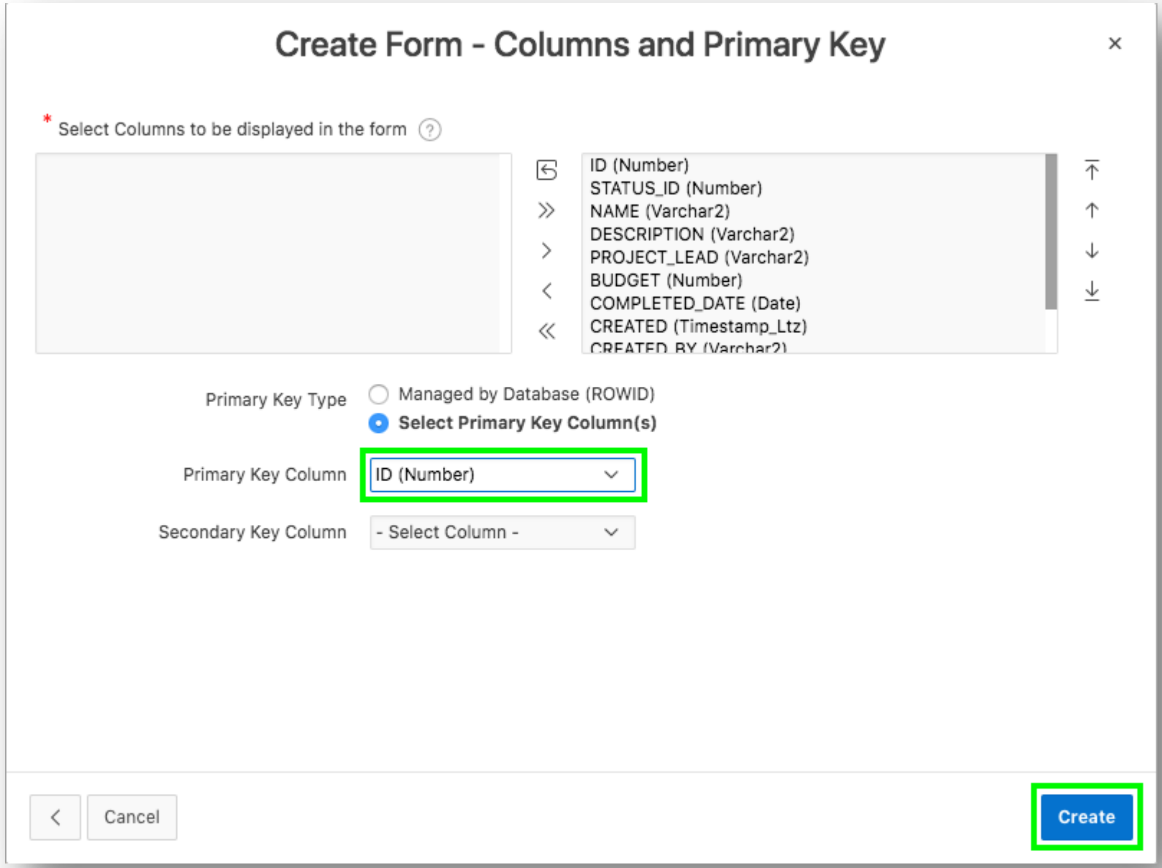
Step 6.1e – Adding a Page

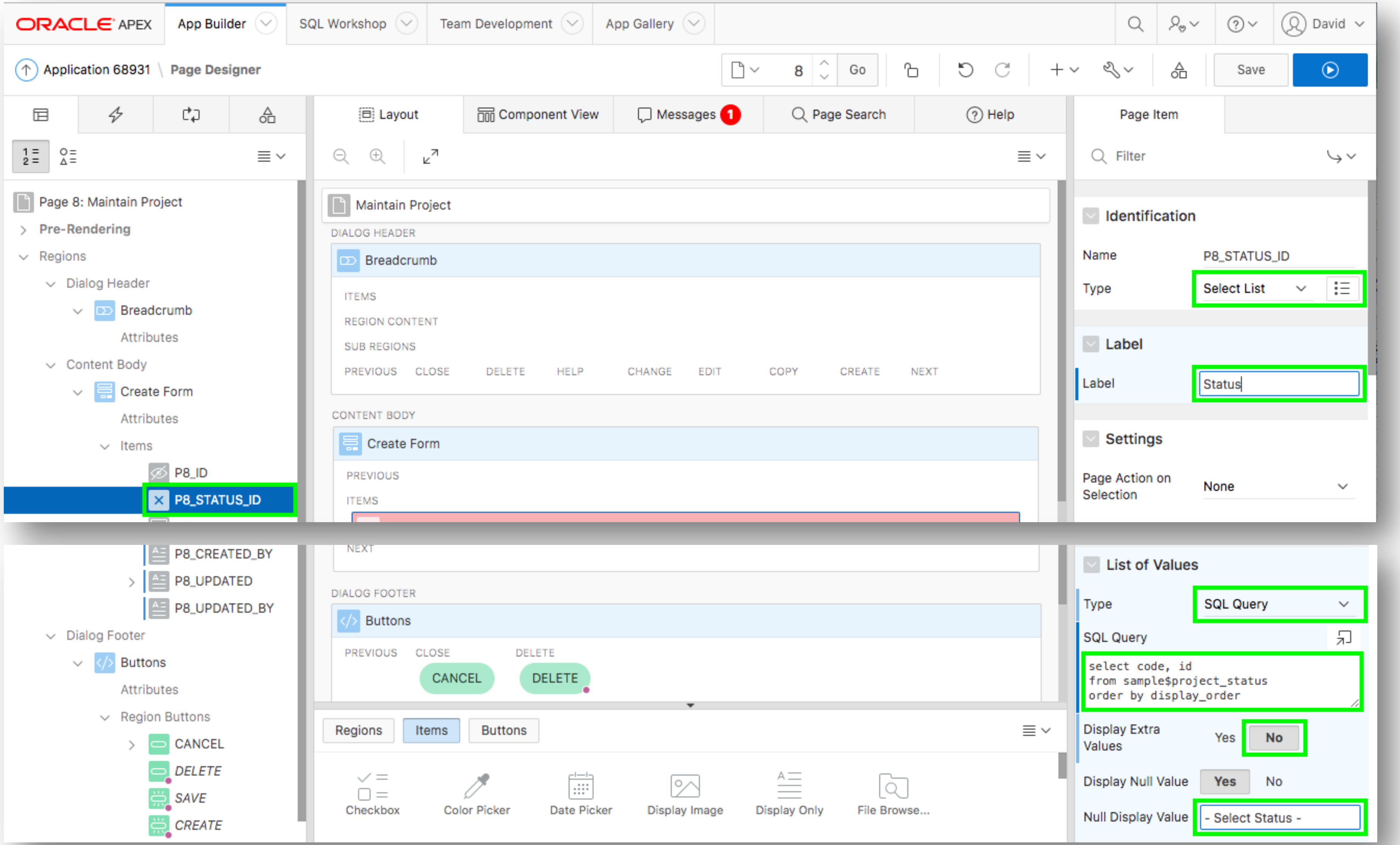
- For Primary Key Column, select **ID (Number)**
- Click **Create**



Step 6.2 – Update the Status Item

- In the Property Editor, in the Rendering tree (right pane), select **P8_STATUS_ID**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Select List**
  - Label > Label enter **Status**
  - List of values > Type select **SQL Query**
  - SQL Query enter
    select code, id from sample$project_status
    order by display_order
  - Display Extra Values click **No**
  - Null Display Value enter **– Select Status -**

Step 6.2b – Update the Status Item



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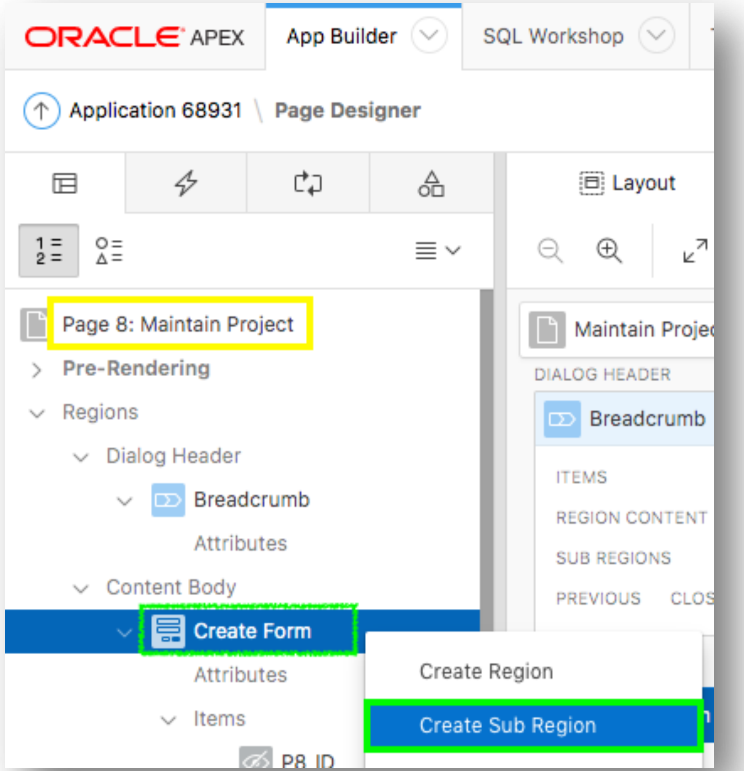
Step 6.3 – Create the Audit Details Region

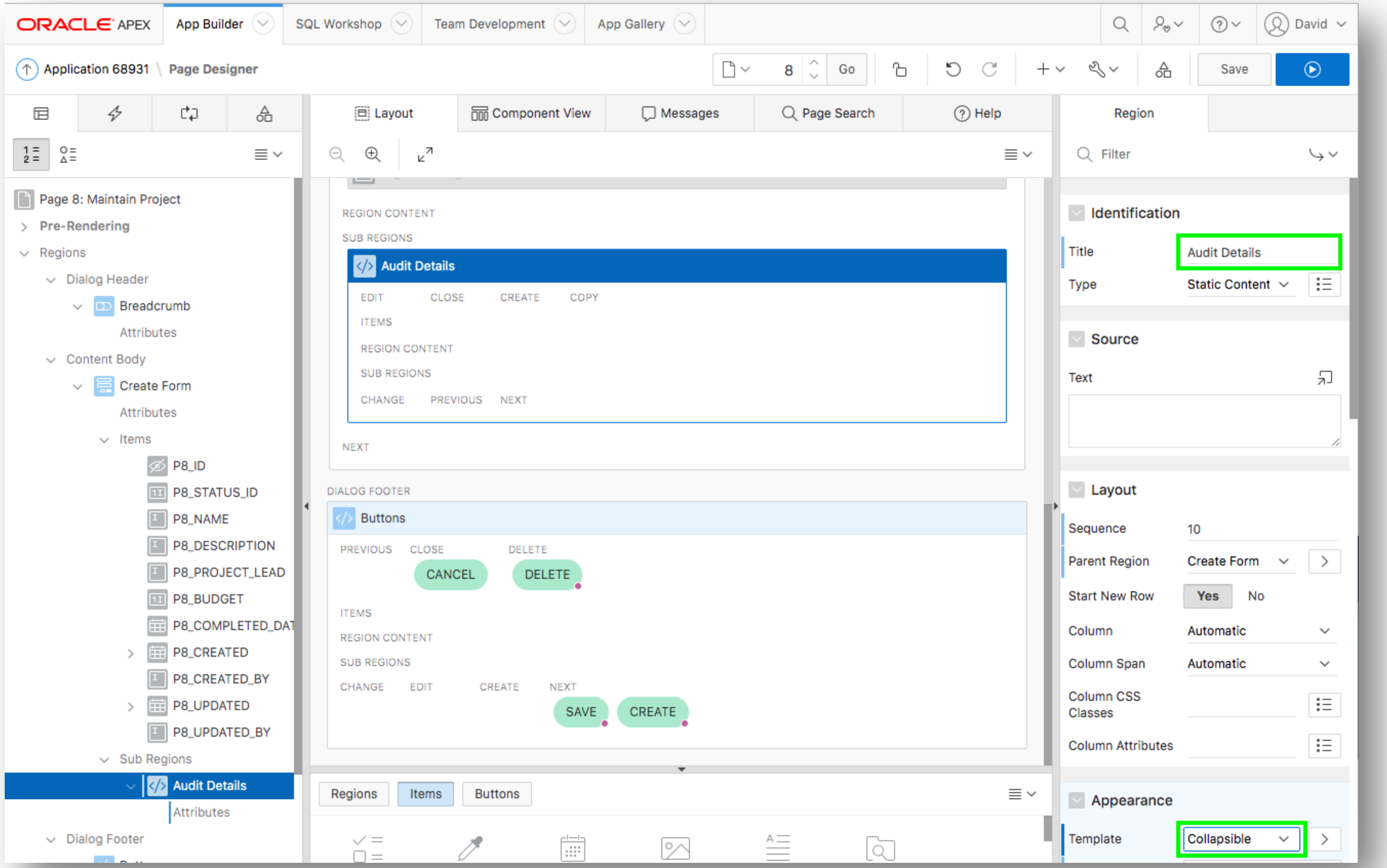
The Created, Created By, Updated, and Updated By columns should be moved into a collapsible region and made display only as they maintained by a trigger on the table.

- In Page Designer, right-click on **Create Form**
- Click **Create Sub Region**



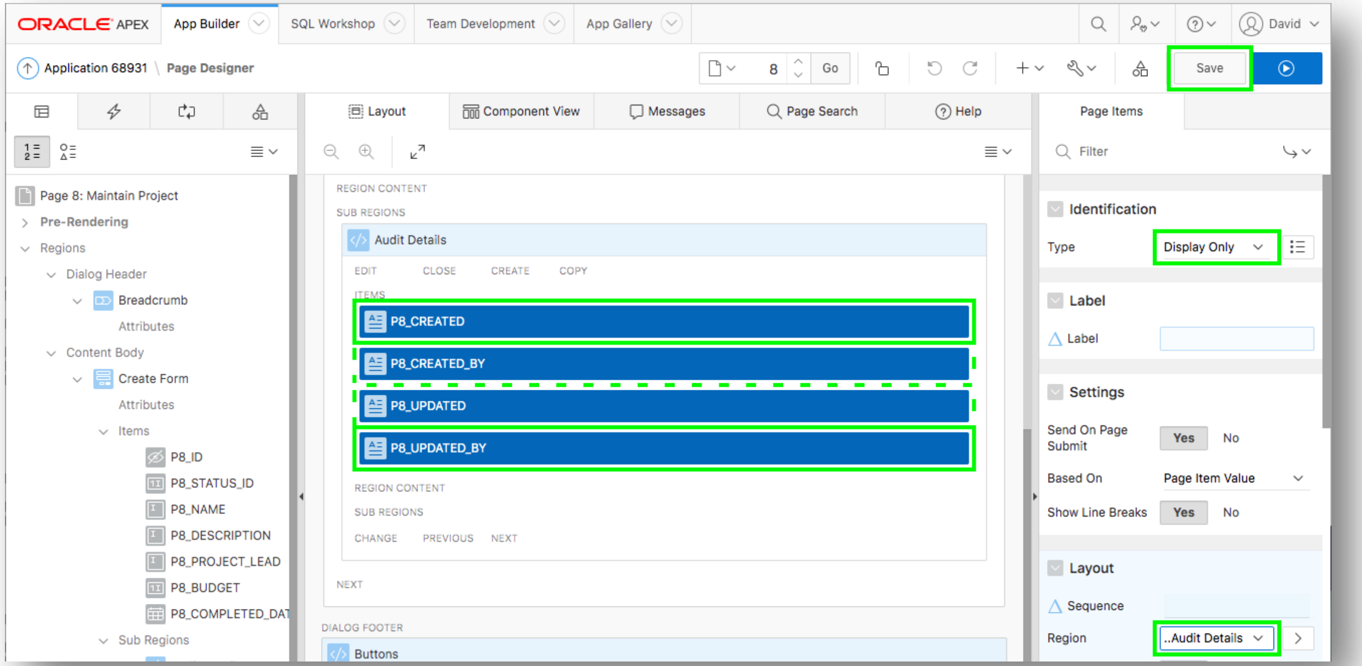
Step 6.3b – Create the Audit Details Region

- In the Property Editor (right pane), enter the following:
  - Identification > Name enter **Audit Details**
  - Appearance > Template select **Collapsible**



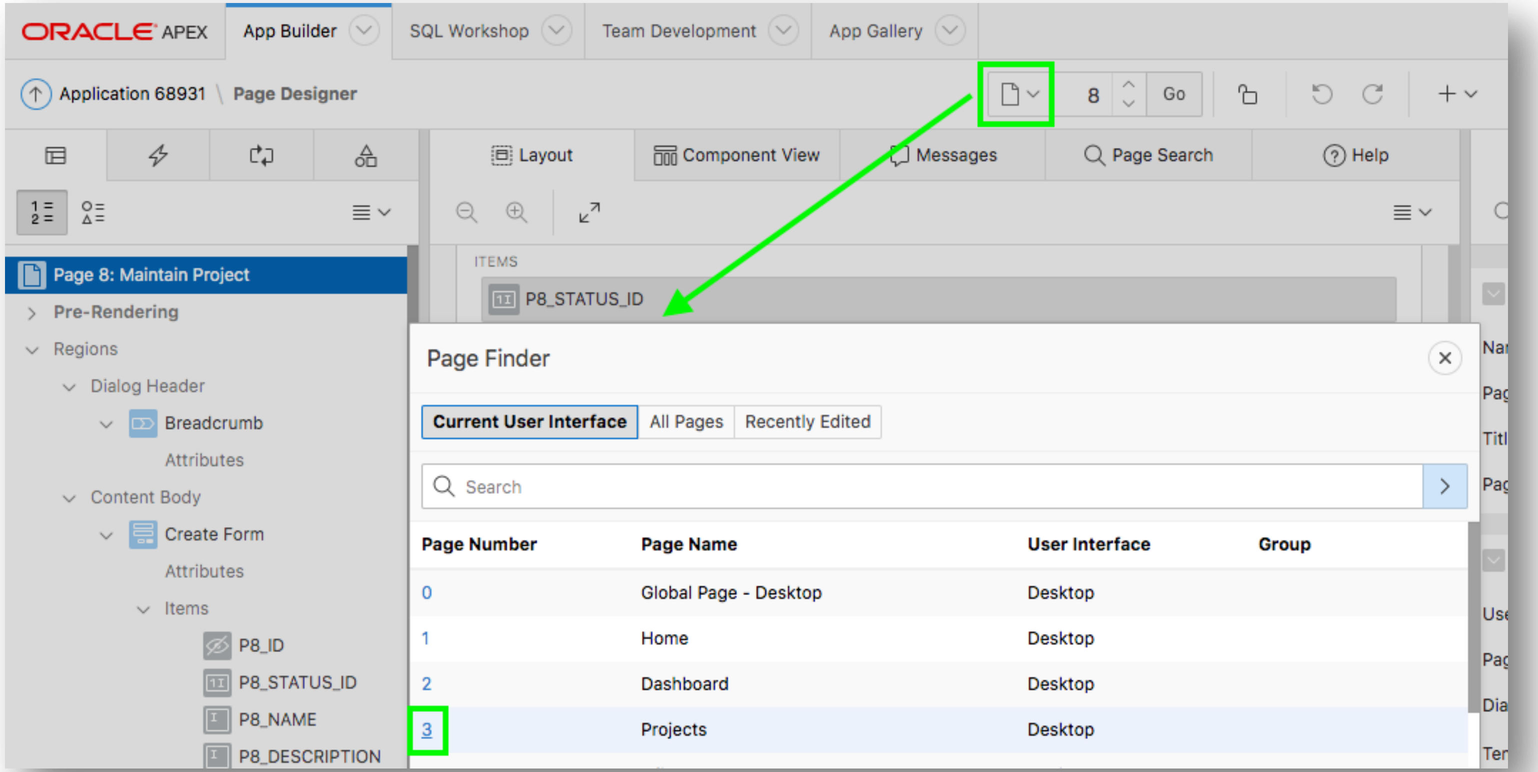
Step 6.4 – Move the audit columns

- In Layout (center pane), select **P8_CREATED**
- Hold the **<Shift>** key and click **P8_CREATED_BY**, click **P8_UPDATED**, and click **P8_UPDATED_BY**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Display Only**
  - Layout > Region select **..Audit Details**
- Click **Save**



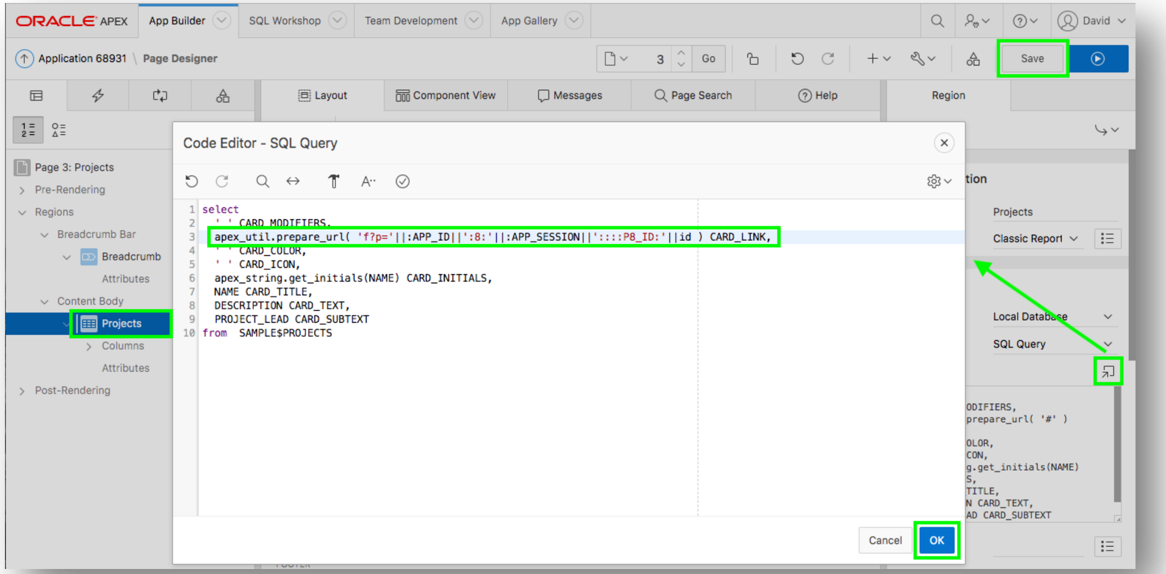
Step 6.5 – Link to Projects Page

- In the Application Toolbar, click the page selector in front of the page number (8)
- Click **3**, for the Projects page



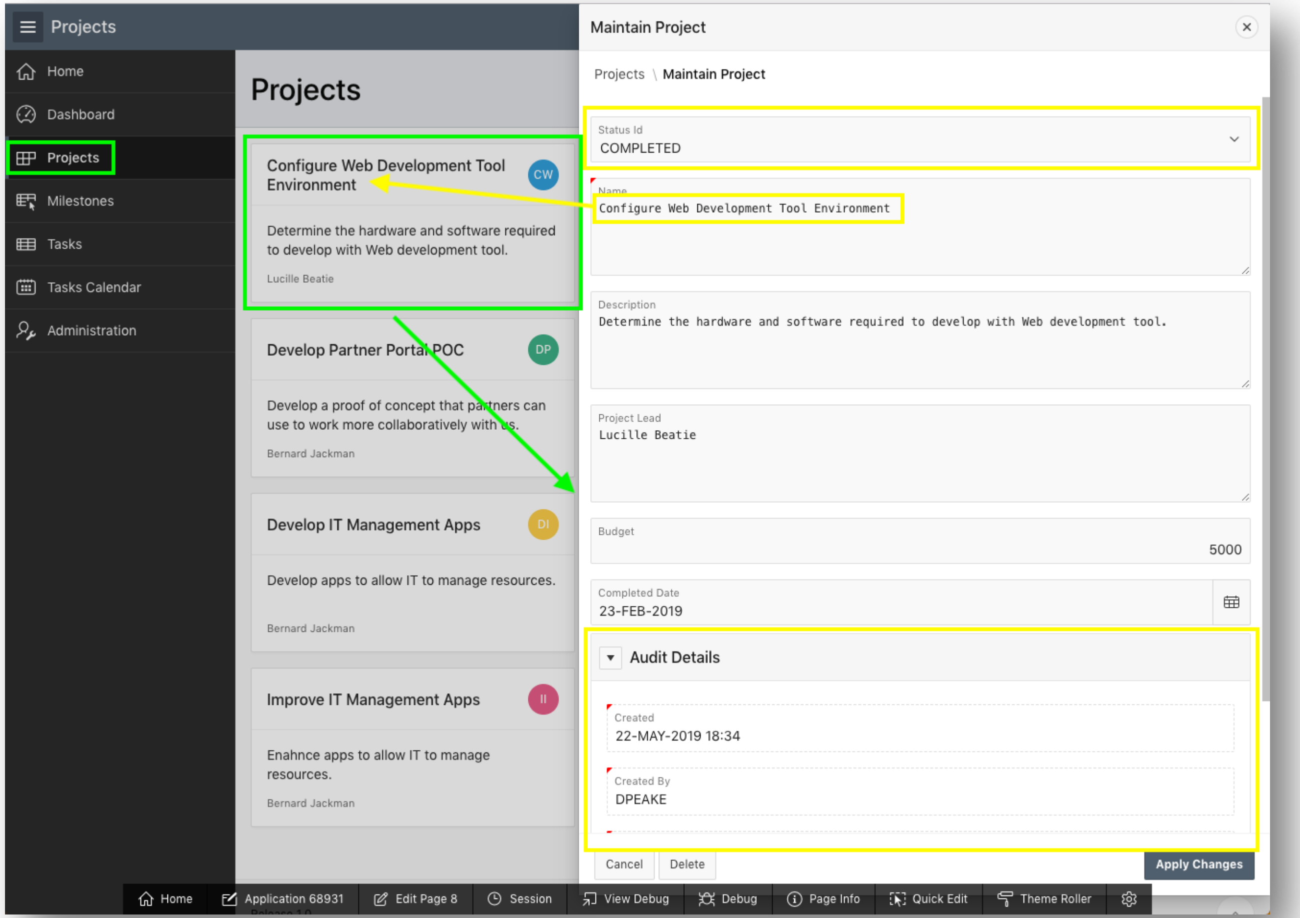
Step 6.5b – Link to Projects Page

- In the Rendering tree (left pane), select **Projects**
- In the Property Editor (right pane), click **Code Editor**
- For the CARD_LINK selection, input the following:
  apex_util.prepare_url('f?p='||:APP_ID||':8:'||:APP_SESSION||'::::P8_ID:'||id) CARD_LINK,
  {*f?p=* is the call to an APEX page;
  :APP_ID is the Application Id;
  8 is the target page (Project form page);
  :APP_SESSION is the current user's session;
  P8_ID is an item on the target page;
  id is the primary key from the Projects table
  }
- Click **OK**
- Click **Save**



Step 6.6 – Test the Project Pages

- In the runtime environment, within the Navigation Menu (left-side) click **Projects**
- Click a card record to display the corresponding record in the form page
- Make changes and click **Apply Changes**, or click **Cancel**

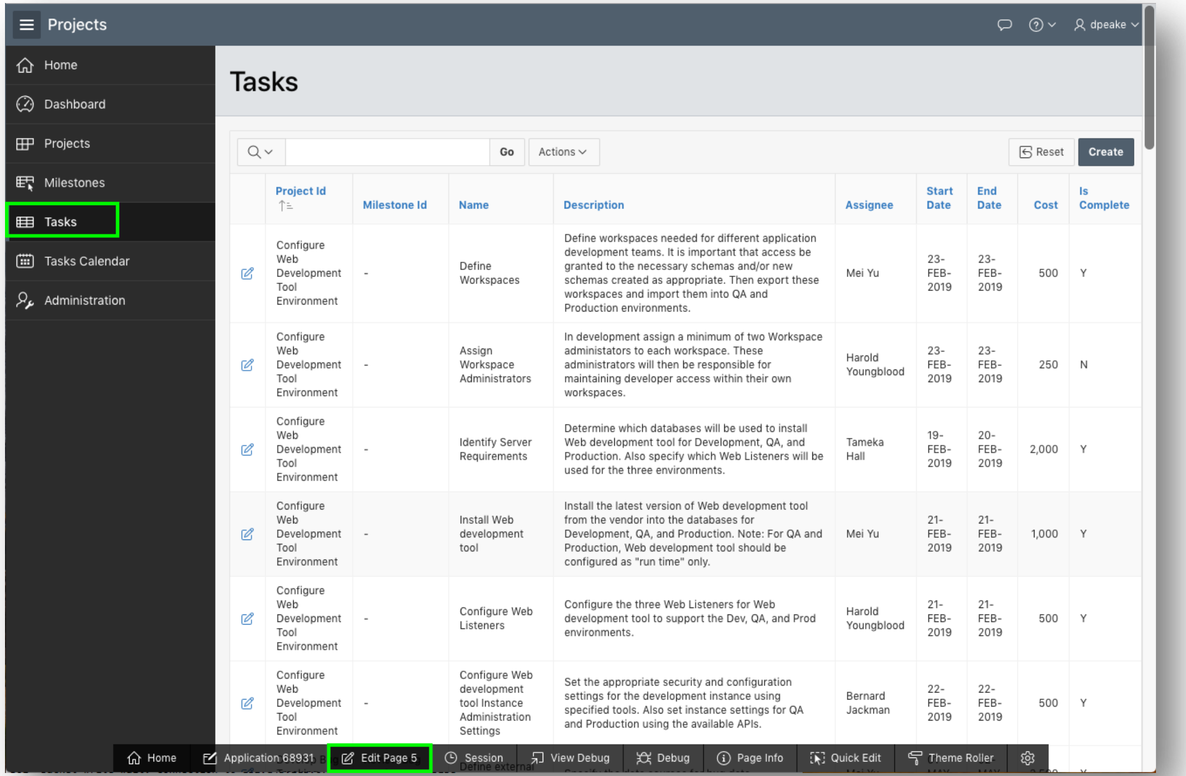


Improving Usability

Updating the Task Pages

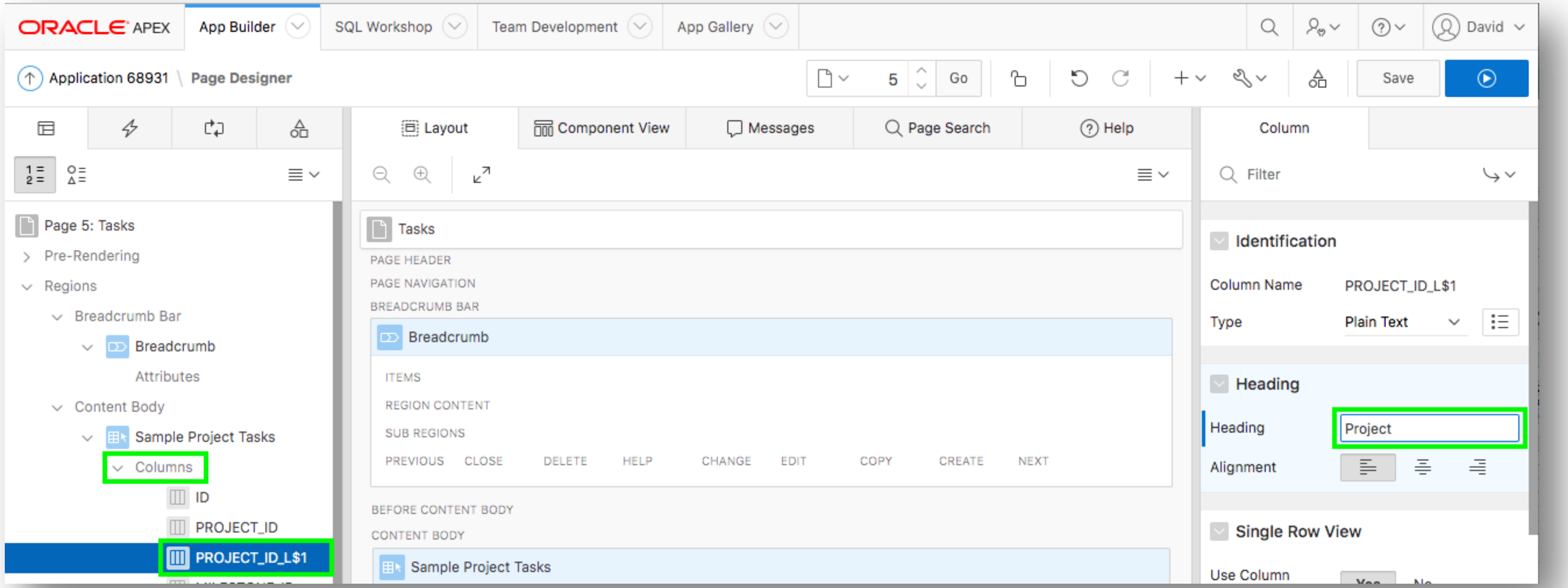
Step 7.1 – Improving the Report

- In the runtime environment, within the Navigation Menu, click **Tasks**
- In the Develop Toolbar (bottom of the screen), click **Edit Page 5**



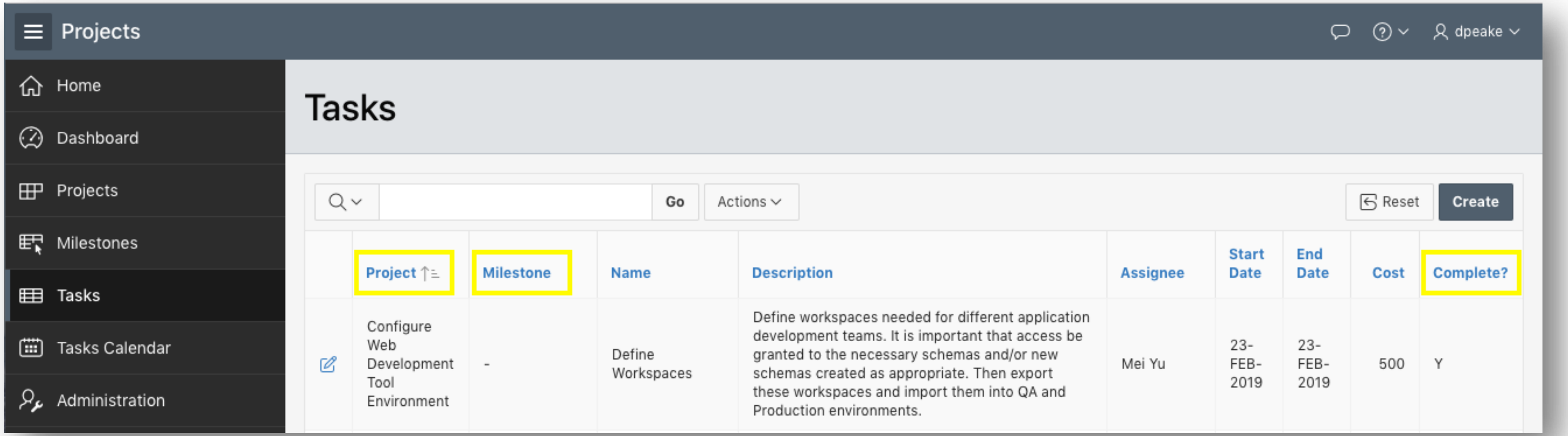
Step 7.1b – Improving the Report

- In Page Designer, within the Rendering tree (left panel), under Sample Project Tasks region, click **Columns**
- Click **PROJECT_ID_L$1**
- In the Property Editor (right pane), for Heading enter **Project**



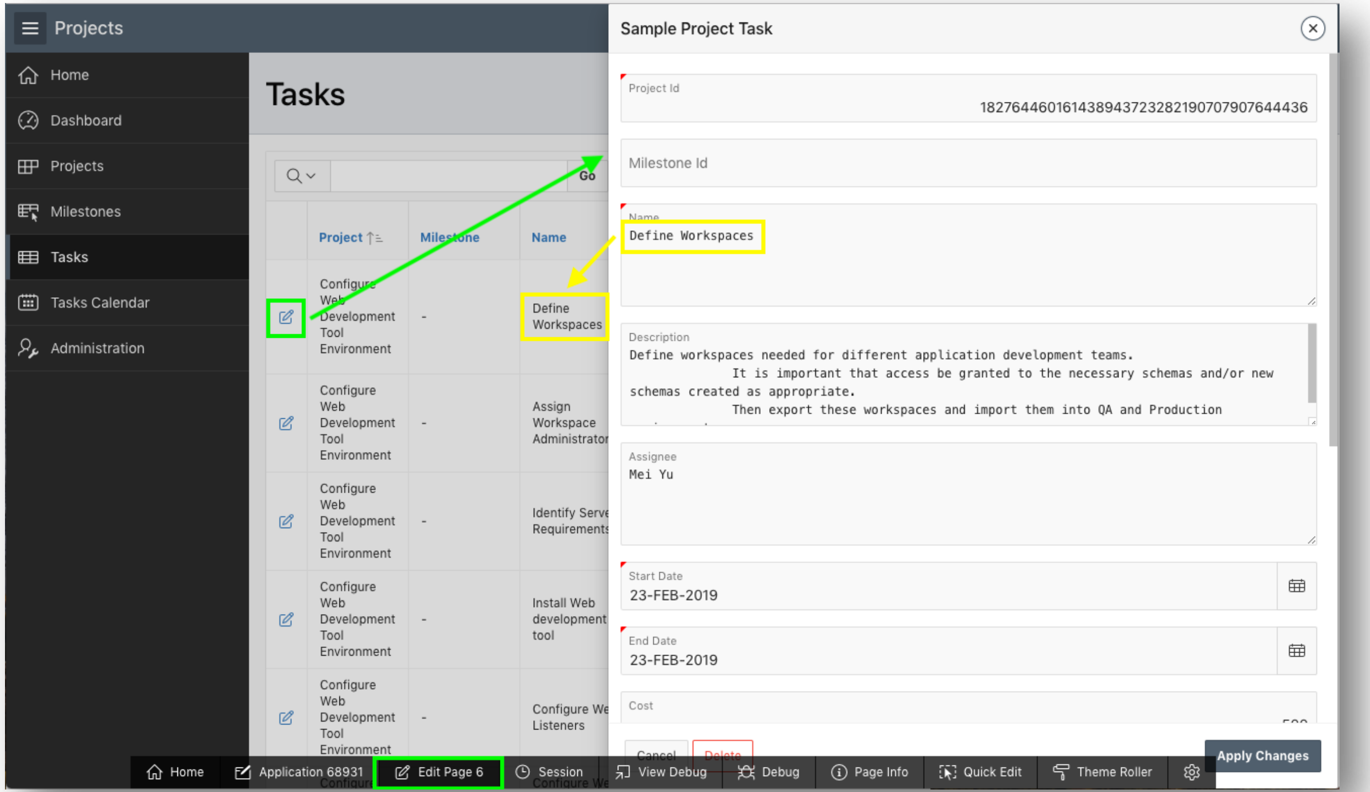
Step 7.1c – Improving the Report

- In the Rendering tree (left panel), click **MILESTONE_ID_L$1**
- In the Property Editor (right pane), for Heading enter **Milestone**
- In the Rendering tree (left panel), click **IS_COMPLETE_YN**
- In the Property Editor (right pane), for Heading enter **Complete?**
- Click **Save**



Step 7.2 – Adding Select Lists

- In the runtime environment, click the edit icon for a Task
- In the Develop Toolbar (bottom of the screen), click **Edit Page 6**



Step 7.2b – Adding Select Lists

- In Page Designer, within the Rendering tree (left panel), click **P6_PROJECT_ID**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Select List**
  - Label > Label enter **Project**
  - List of values > Type select **SQL Query**
  - SQL Query enter
    select name, id from sample$projects
    order by 1
  - Display Extra Values click **No**
  - Null Display Value enter **– Select Project -**

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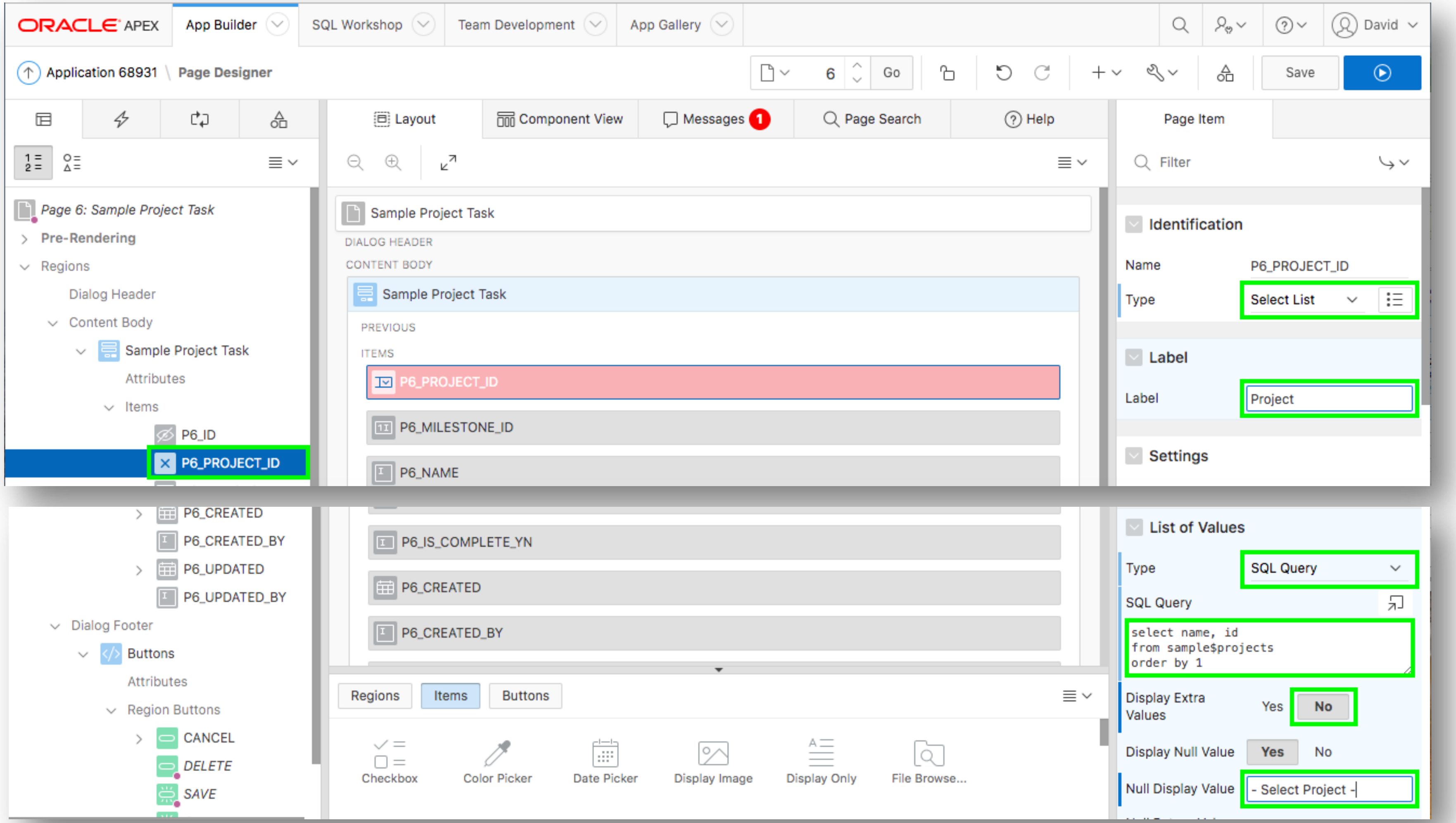
Step 7.2c – Adding Select Lists



Step 7.2d – Adding Select Lists

- In Page Designer, within the Rendering tree (left panel), click **P6_MILESTONE_ID**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Select List**
  - Label > Label enter **Milestone**
  - List of values > Type select **SQL Query**
  - SQL Query enter
    select name, id from sample$project_milestones order by 1
  - Display Extra Values click **No**
  - Null Display Value enter **– Select Milestone -**

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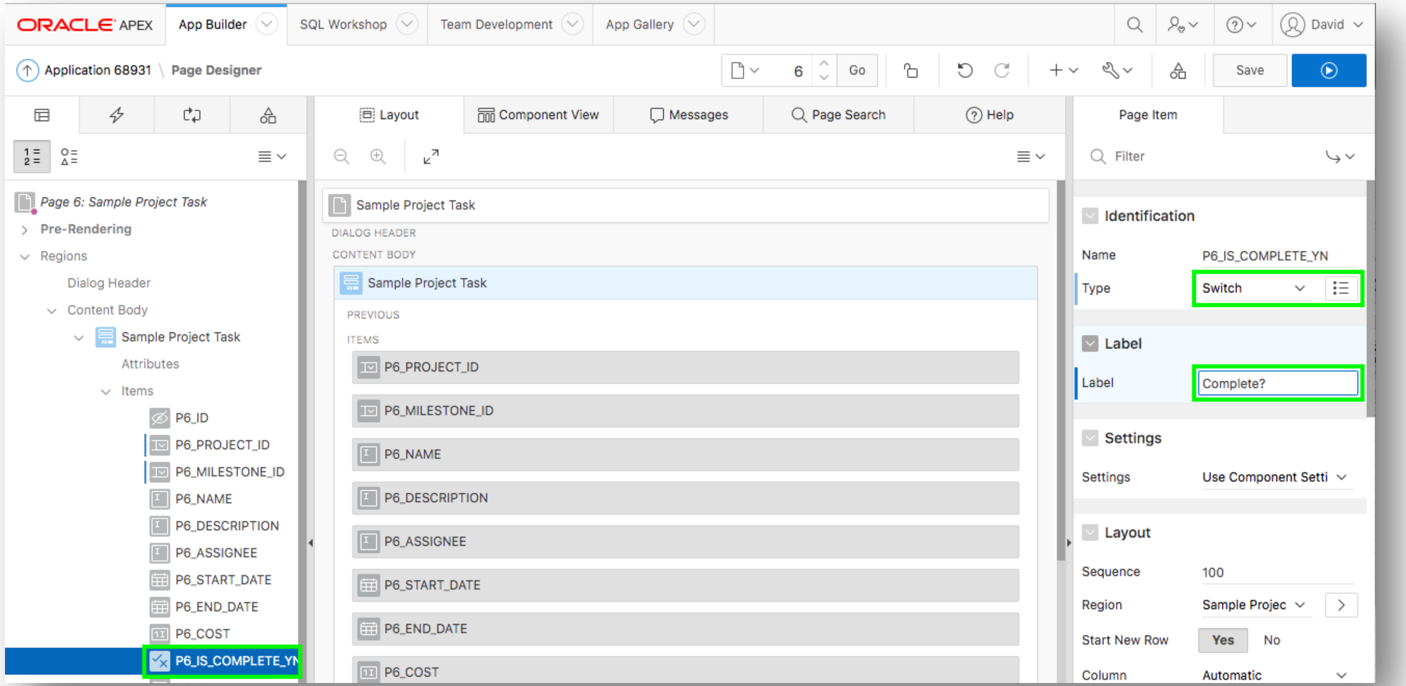
Step 7.3 – Updating Is Complete

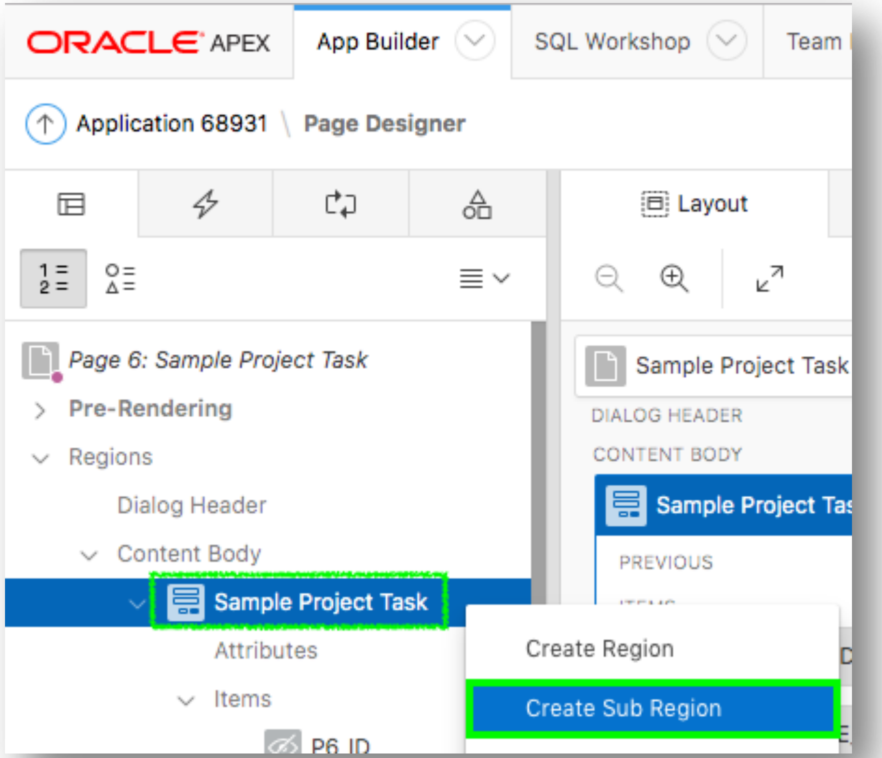
- In the Rendering tree (left panel), click **P6_IS_COMPLETE_YN**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Switch**
  - Label > Label enter **Complete?**



Step 7.4 – Create the Audit Details Region

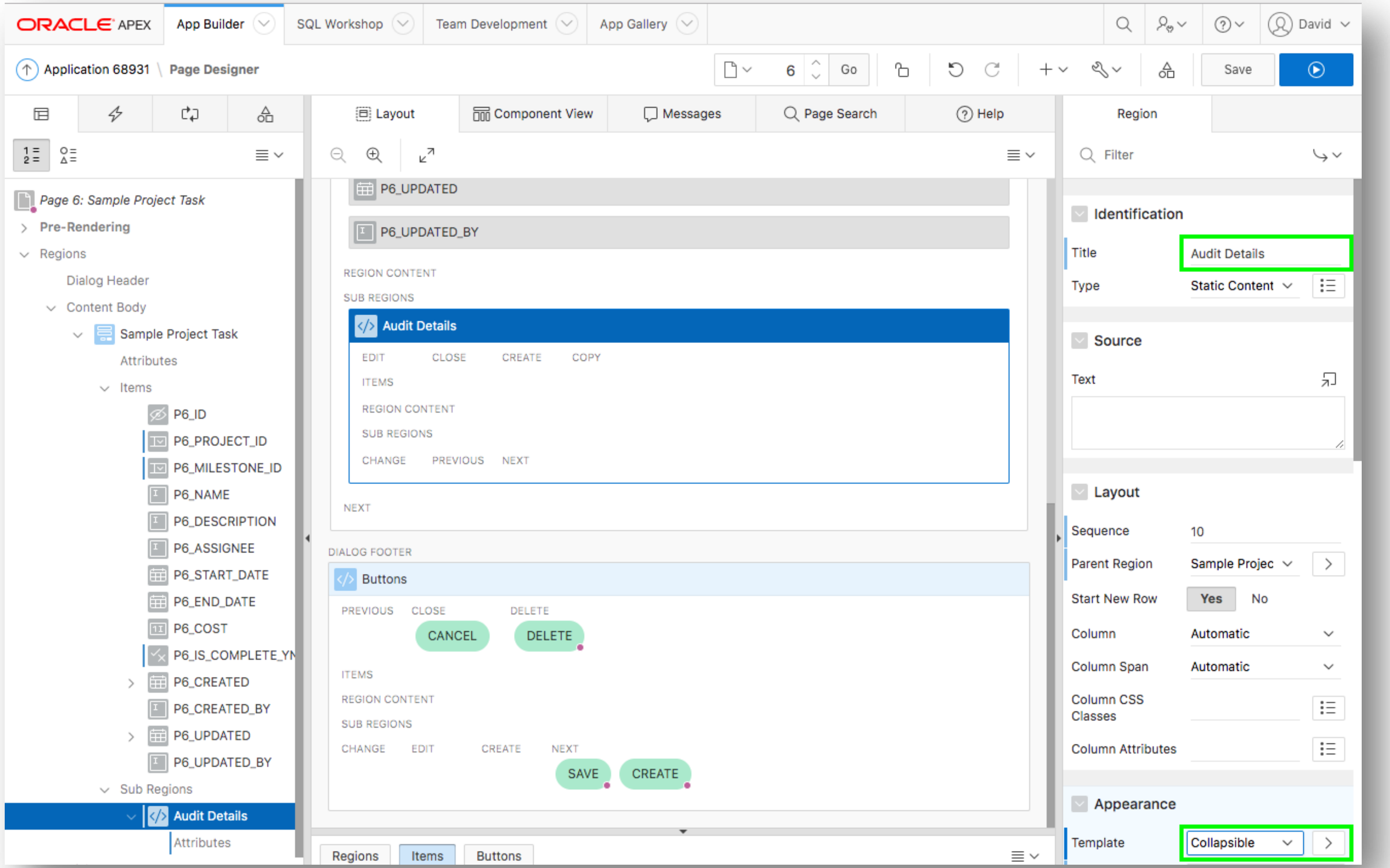
The Created, Created By, Updated, and Updated By columns should be moved into a collapsible region and made display only as they maintained by a trigger on the table.

- Right-click on **Sample Project Tasks**
- Click **Create Sub Region**



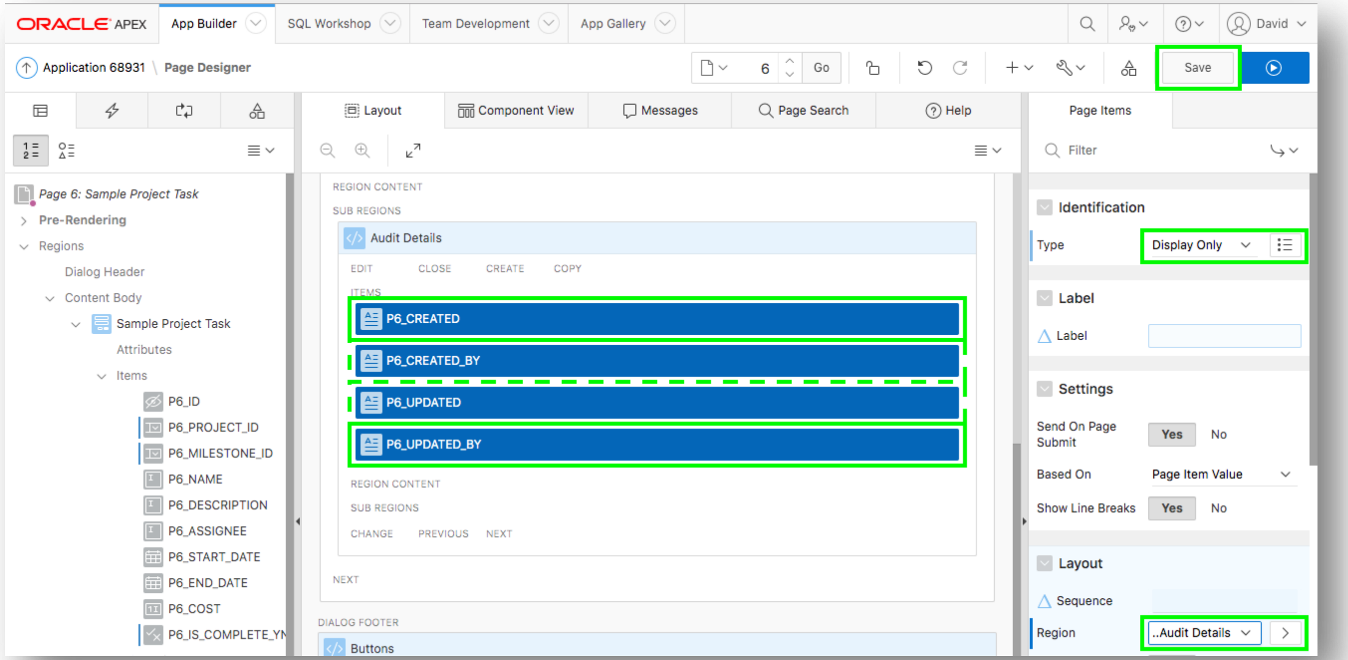
Step 7.4b – Create the Audit Details Region

- In the Property Editor (right pane), enter the following:
  - Identification > Name enter **Audit Details**
  - Appearance > Template select **Collapsible**



Step 7.5 – Move the audit columns

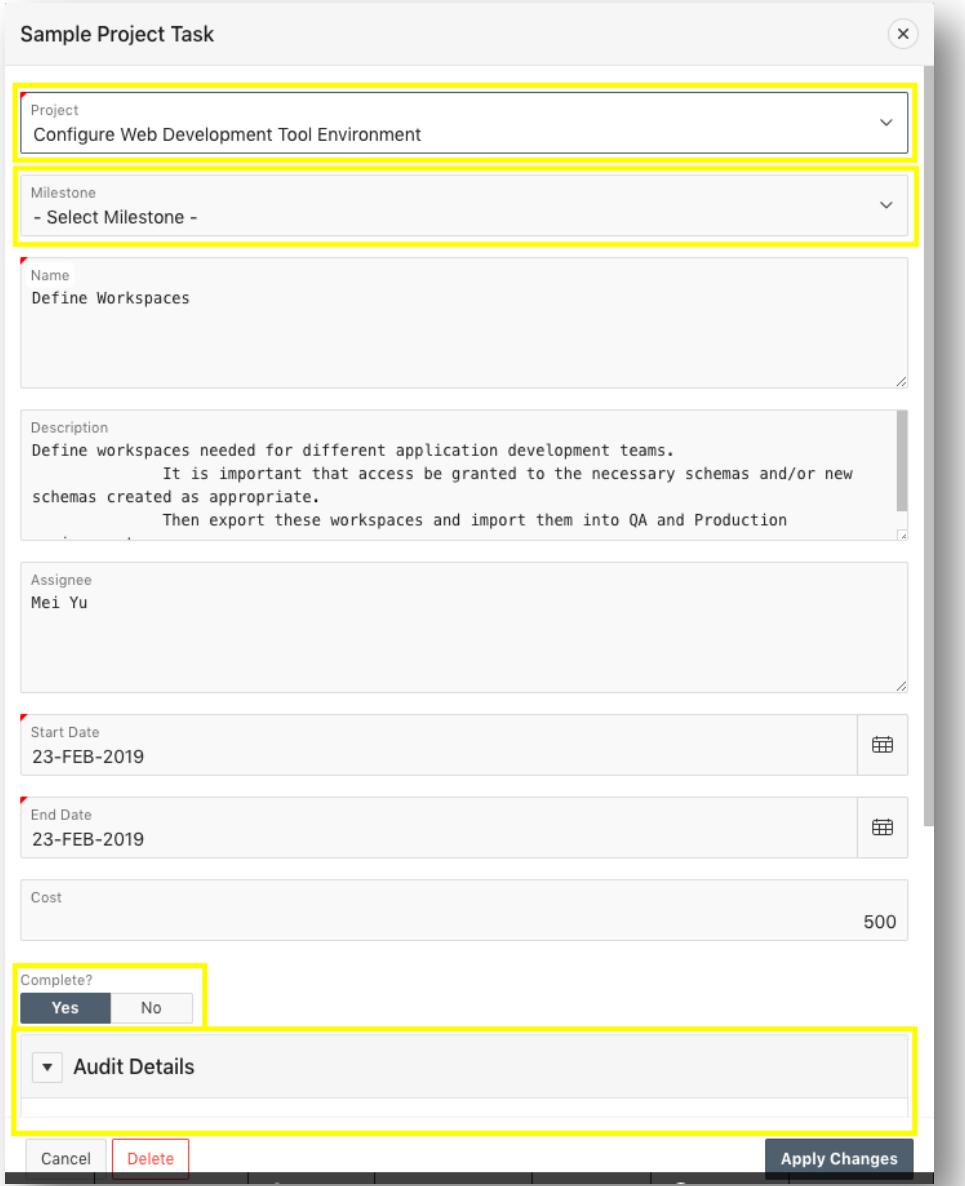
- In Layout (center pane), select **P6_CREATED**
- Hold the **<Shift>** key and click **P6_CREATED_BY**, click **P6_UPDATED**, and click **P6_UPDATED_BY**
- In the Property Editor (right pane), enter the following:
  - Identification > Type select **Display Only**
  - Layout > Region select **..Audit Details**
- Click **Save**



Step 7.6 – Review the Page

- Navigate back to the runtime environment, and refresh the browser
- Click the edit icon for a Task

Note: The date items include a date picker and the numeric item (Cost) gives an error when saving if non-numeric values are entered



Linking pages

Link the Calendar to the Tasks Form Page

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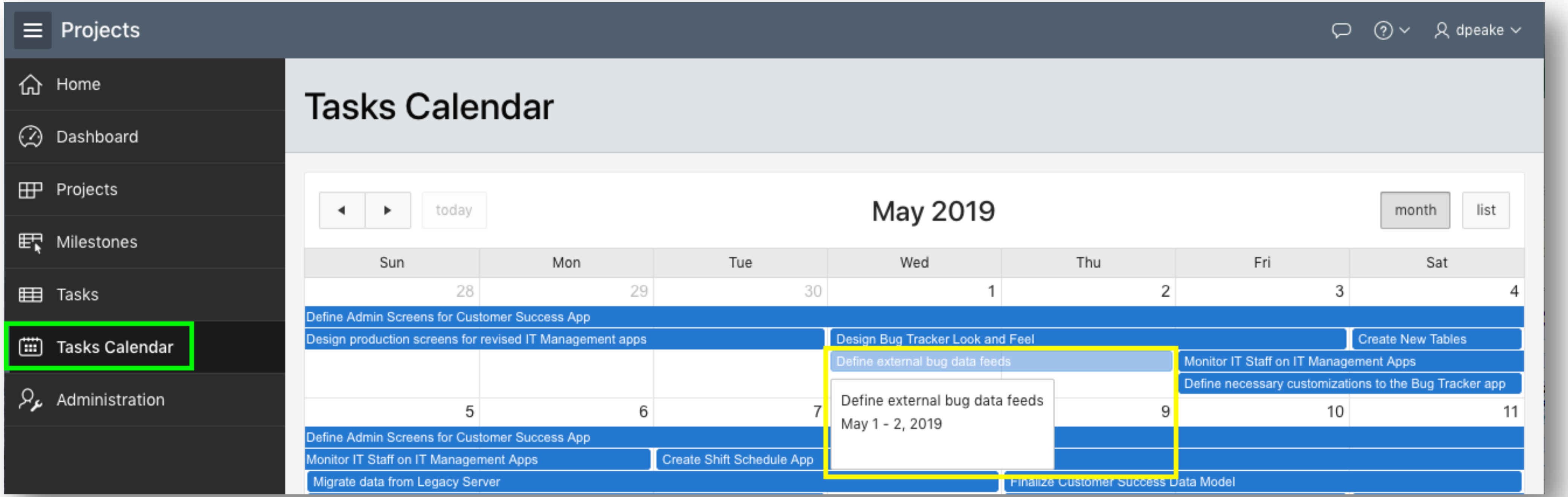
Step 8.1 – Adding a Link

- In the runtime environment, within the Navigation Menu, click **Tasks Calendar**
- Clicking on any entry simply displays the event details



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Step 8.1b – Adding a Link

- In the Developer Toolbar (bottom of page), click **Edit Page 7**
- In Page Designer, within the Rendering tree (left pane), under **Tasks** Calendar region, click **Attributes**
- For Settings > View / Edit Link click **No Link Defined**
- In the Link Builder, enter the following:
  - Target > Page select **6**
  - Set Items > Name select **P6_ID**
  - Set Items > Value select **ID** {Returns **&ID.**}
  - Clear Cache enter **6**
- Click **OK**
- Click **Save**

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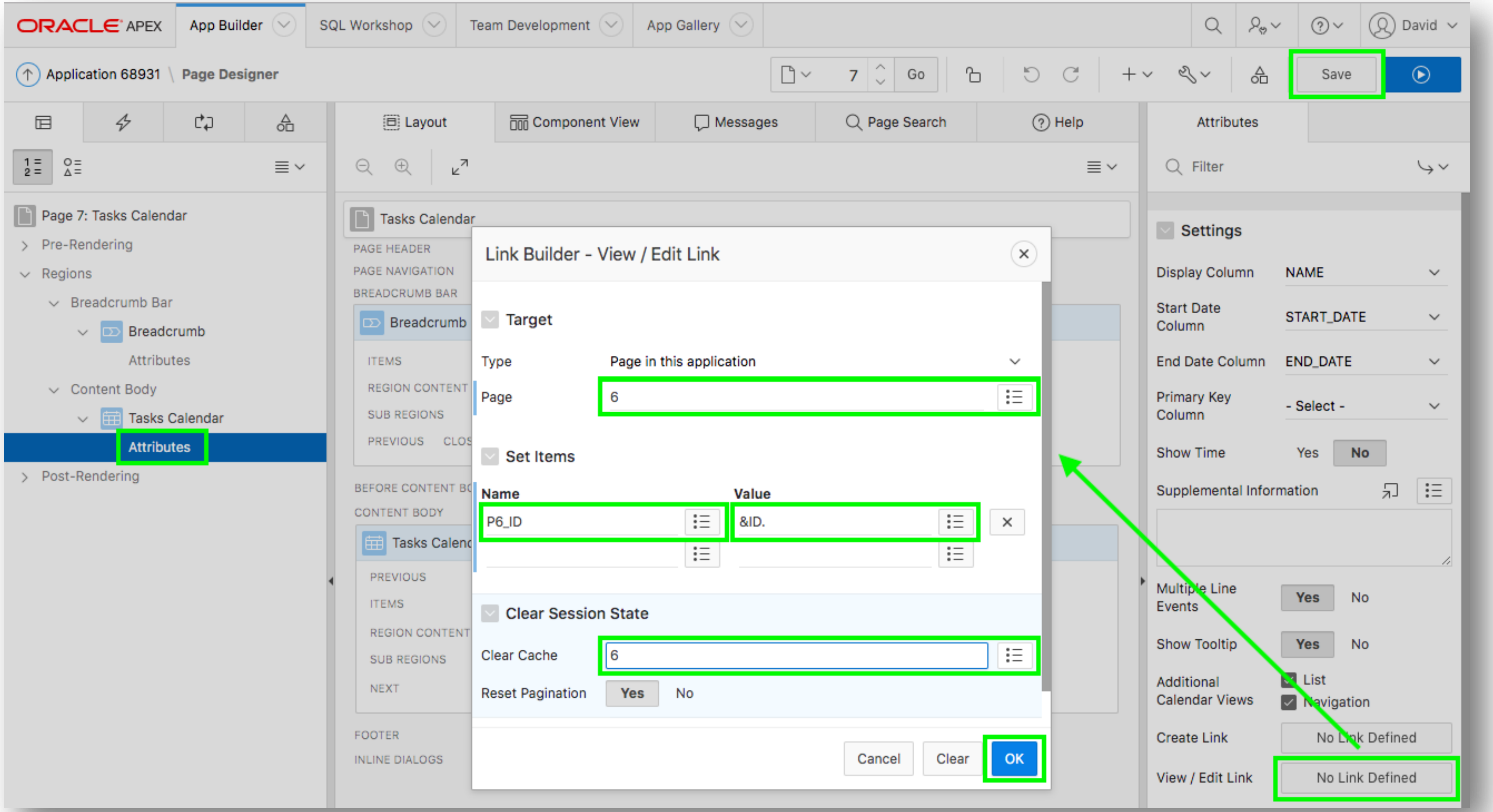
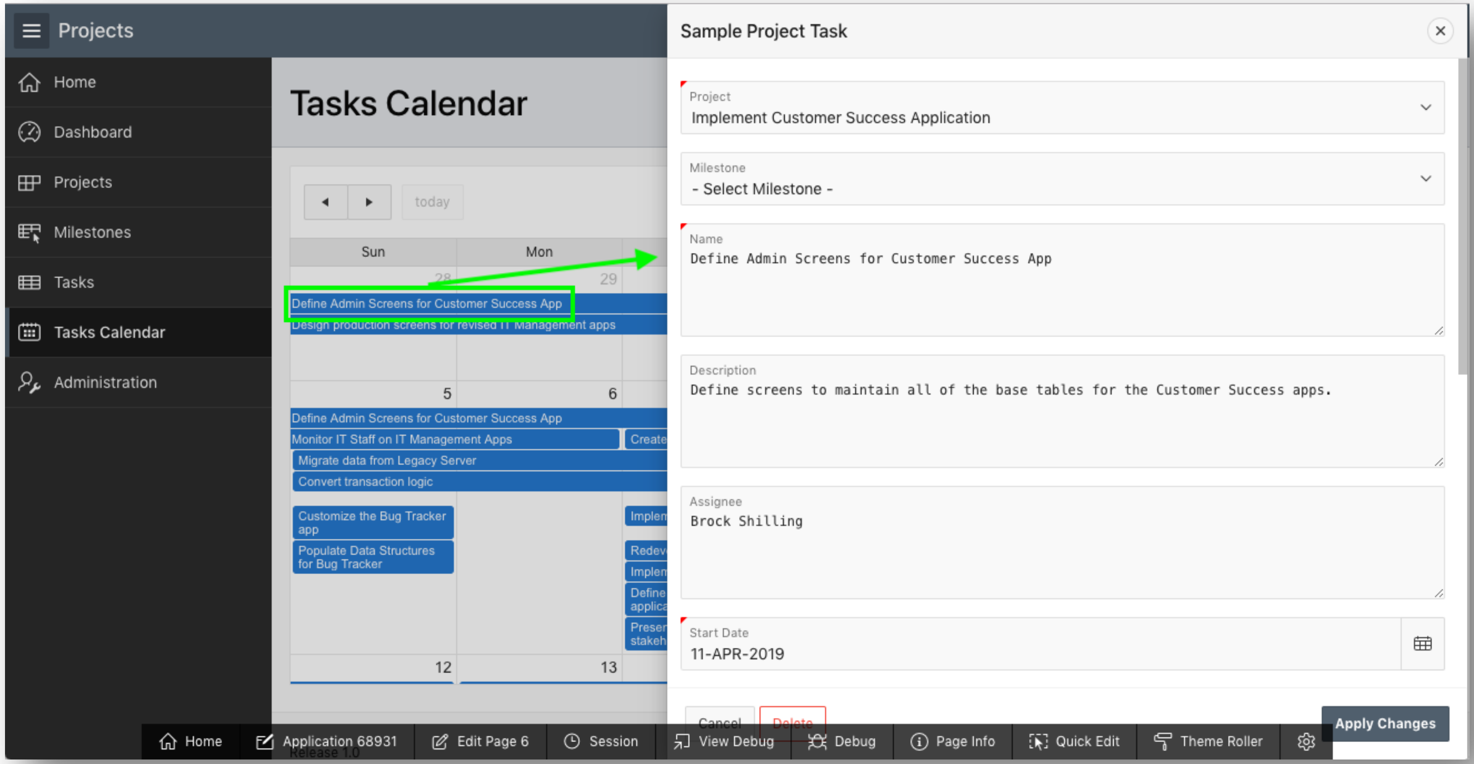
Step 8.1c – Adding a Link



Step 8.2 – Run the Application

- Navigate back to the runtime environment, and refresh the browser
- Click a calendar entry



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