PowerApps and Azure

Hands-on Lab

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Lab Overview & Objective

Objective:

This lab has two key objectives:

- To demonstrate how PowerApps platform can help unlock the potential of untapped assets within an Enterprise (legacy APIs, data sources, processes) with a low-code / no code approach.
- To demonstrate how the above pattern can, in turn, engender Azure consumption in the enterprise.

Overview

Most enterprises have a majority of their core business data trapped in several silos (legacy databases & apps - Systems of Records). It is essential for digital transformation to break those data silos and make the information trapped in those systems available to employees and business teams as needed.

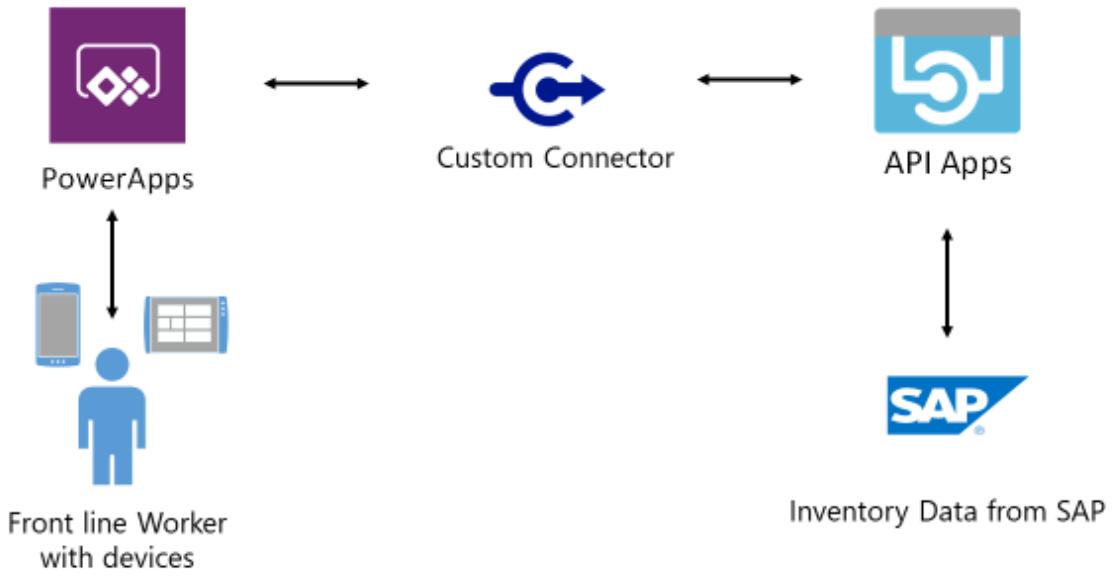
It is also important to modernize the user experience of the enterprise apps in order to drive productivity. PowerApps along with Azure could be an effective way to bridge this gap, by enabling an RESTful API layer powered by Azure which could encapsulate and standardize the enterprise data for use with apps + PowerApps as the Rapid application development User Interface where business apps can be built with agility and in collaboration with the business.

Environment

The lab requires access to a PowerApps environment with permission to create apps and custom connectors.

Note: Exercise 1 & 2 is targeted toward Azure developers. If you are not comfortable with Azure you can skip Exercise 1 and 2 & go straight to Exercise 3 & 4. There is a pre-configured API provided for completing Exercise 3 & 4.

Main components of the lab

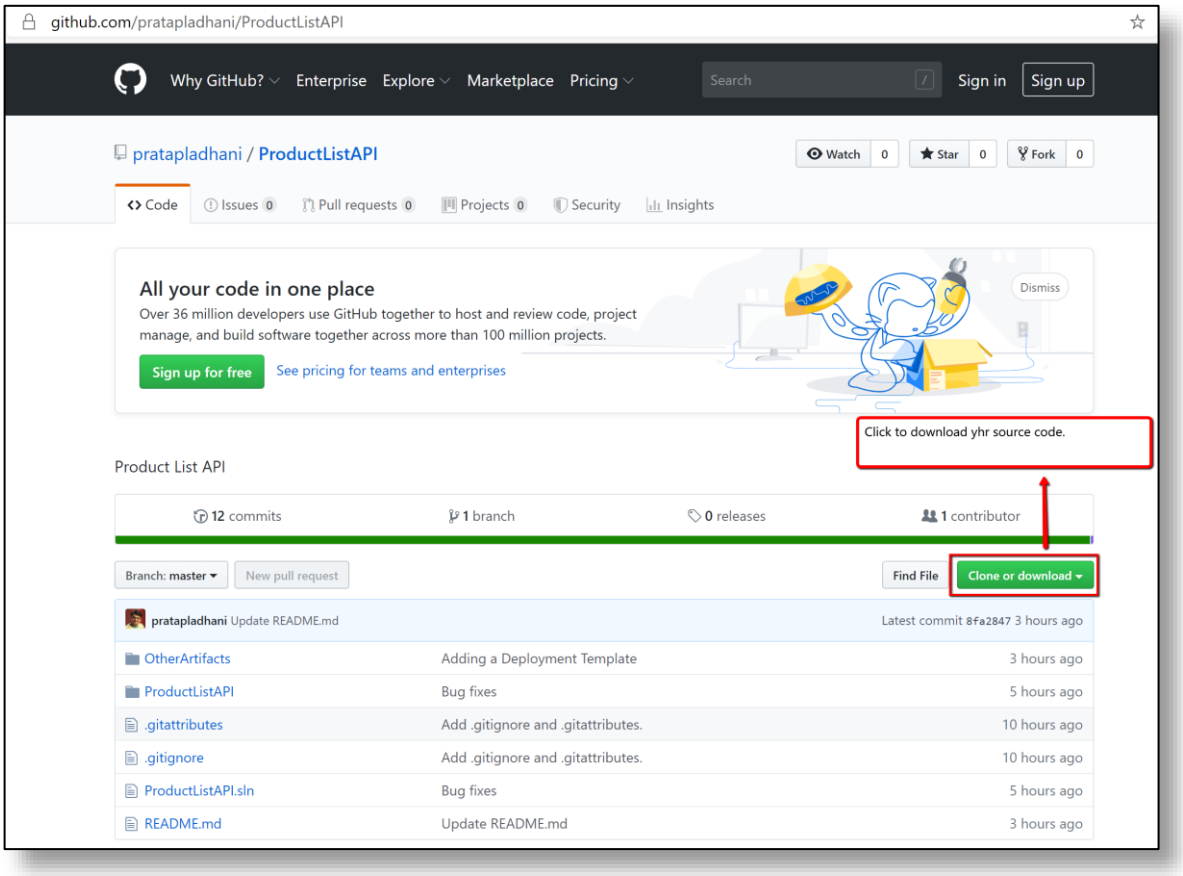


There are three main components of the lab:

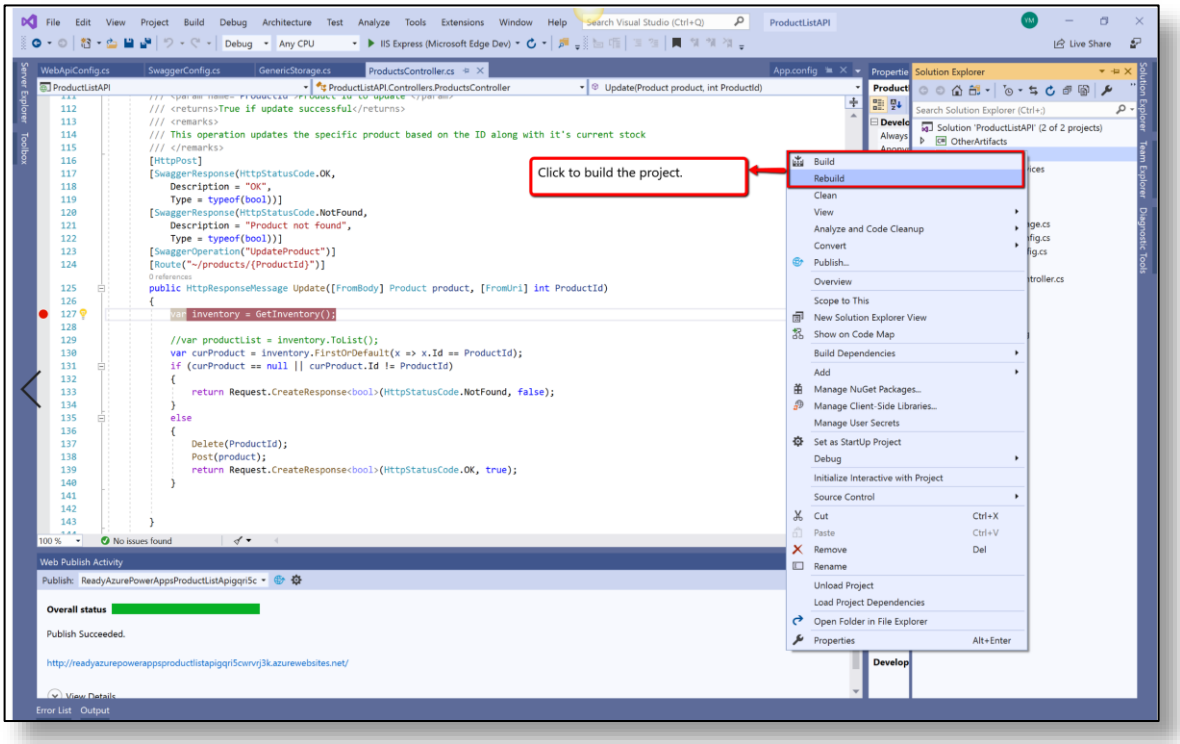
1. An **Azure API App** which represents a Mock API connecting to back-end enterprise data (like SAP) and exposes a REST API endpoint for performing CRUD operations against that data.
2. A **custom connector** which exposes this API endpoint to PowerApps and Microsoft Flow makers
3. A **PowerApps canvas app** which in-turn uses the custom connector and provides a User Interface for end-users to performs CRUD operations. This app can be accessed from any device, browser or embedded experiences (like SharePoint webparts, Microsoft Search, Teams etc.)

Exercise 1 – Build the API App

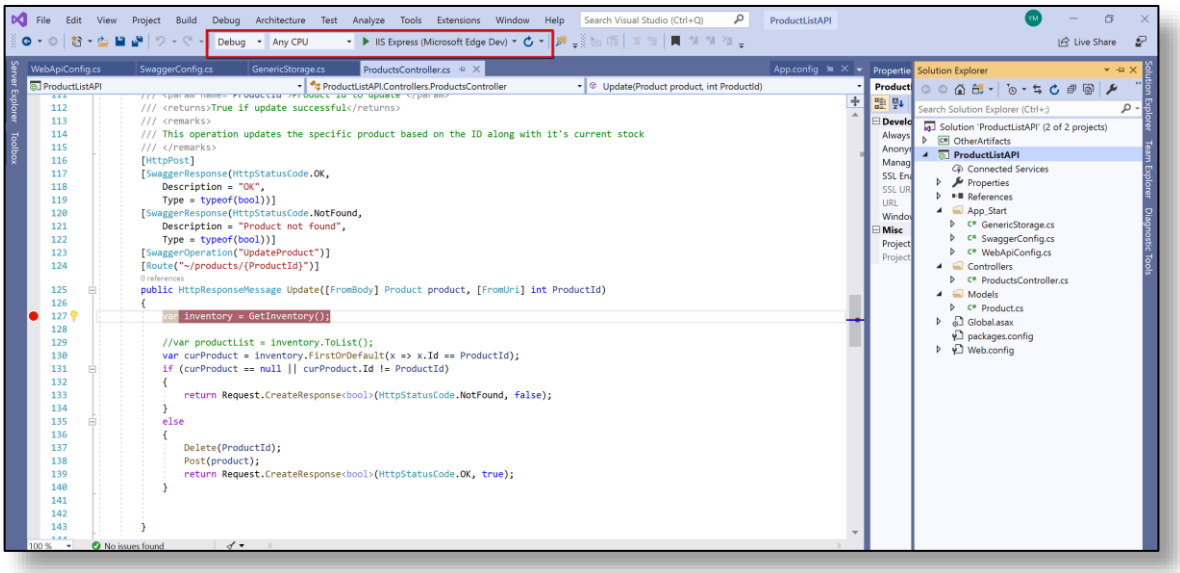
Step 1. Download the source code or clone the GitHub repo:
https://github.com/pratapladhani/ProductListAPI



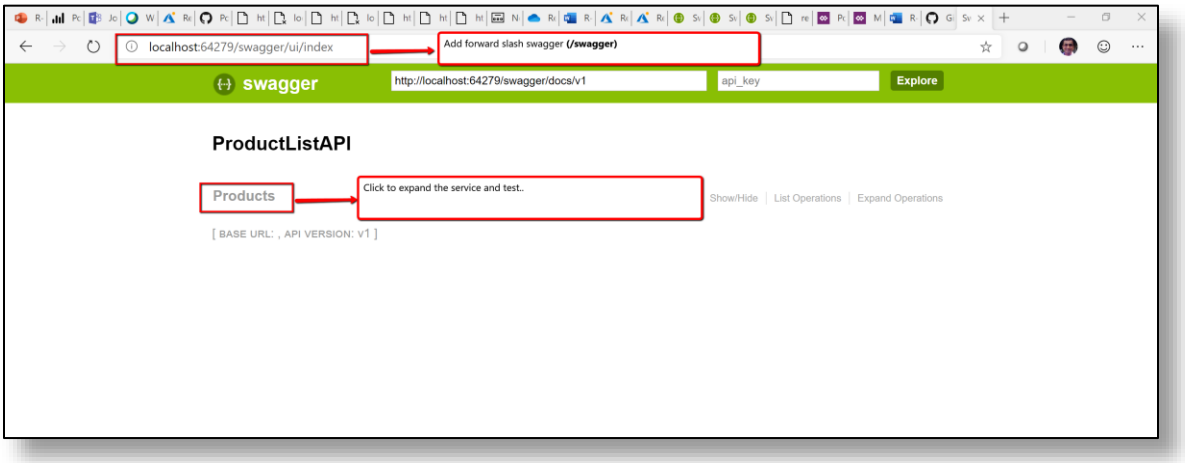
Step 2. Open the source code in Visual Studio and compile the source code.



Step 3. Run the Service in Local IIS Express of Visual Studio

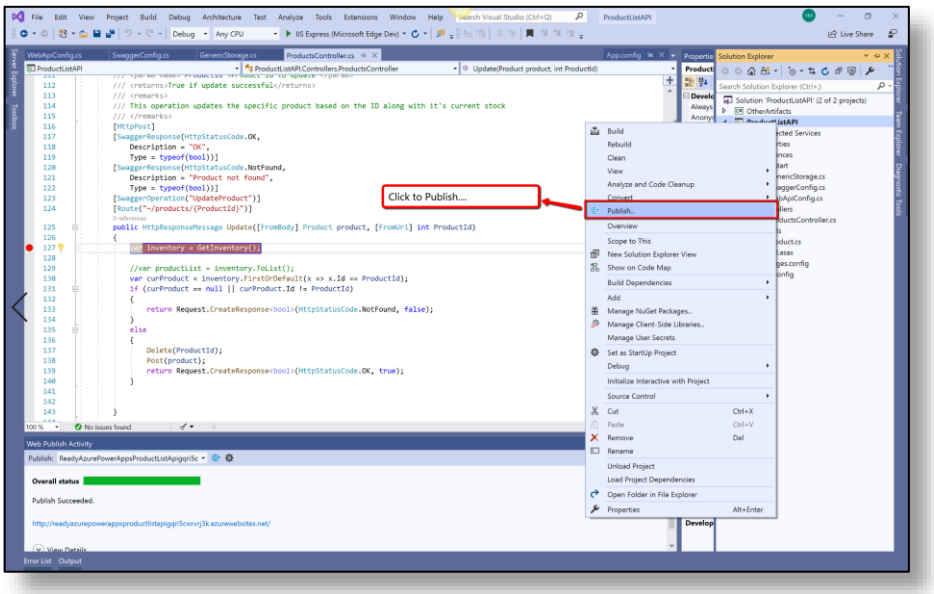


Step 4. Test the Service in the Browser. Append "/swagger" to the URL if the swagger UI is not automatically loaded.

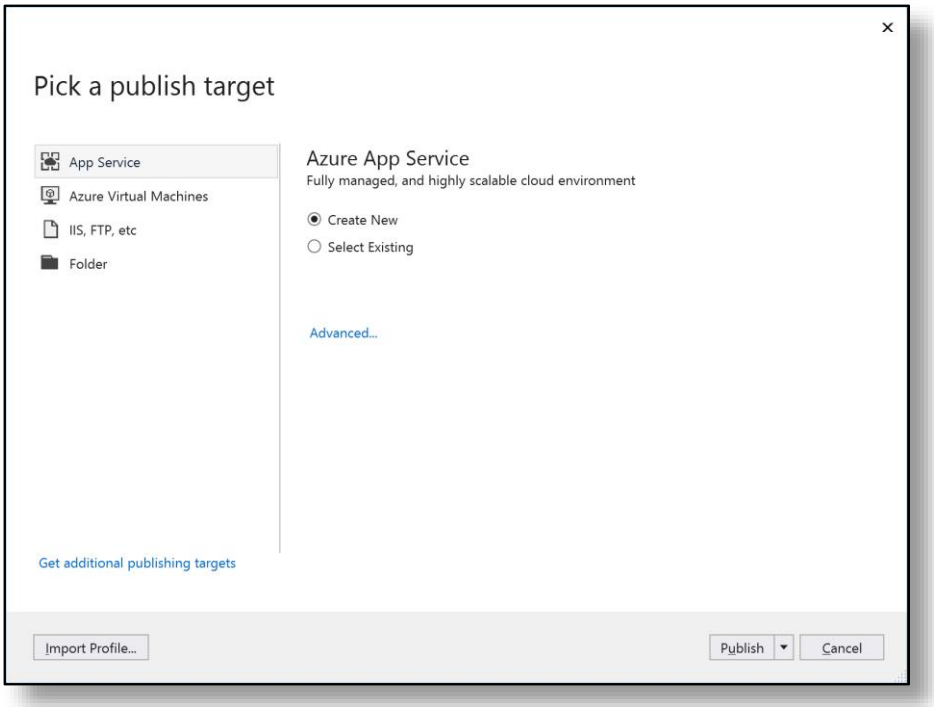


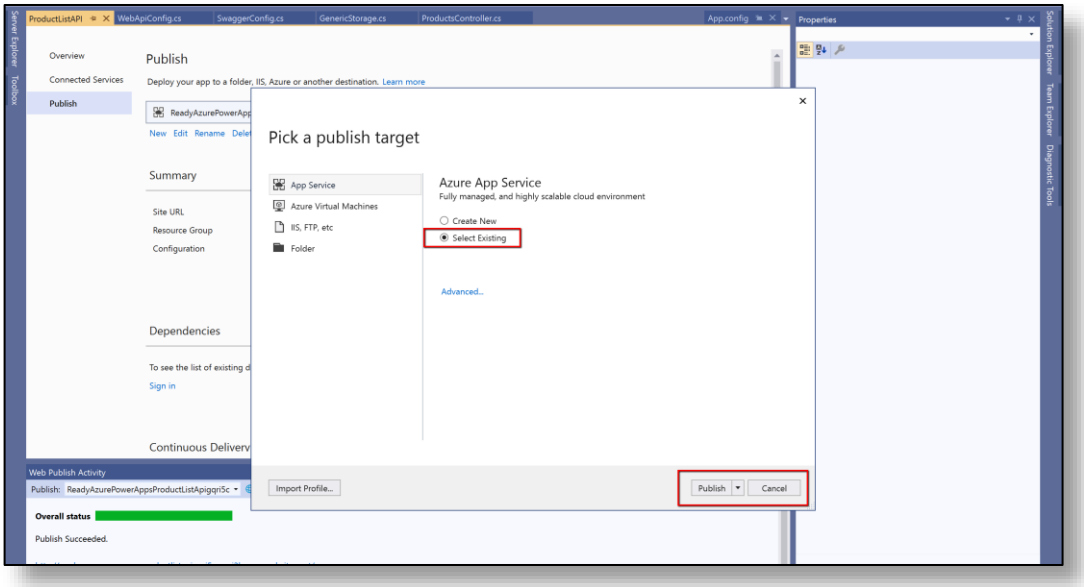
Exercise 2 – Deploy to Azure

Step 5. Open Visual Studio and then right click your publish your App to Azure.

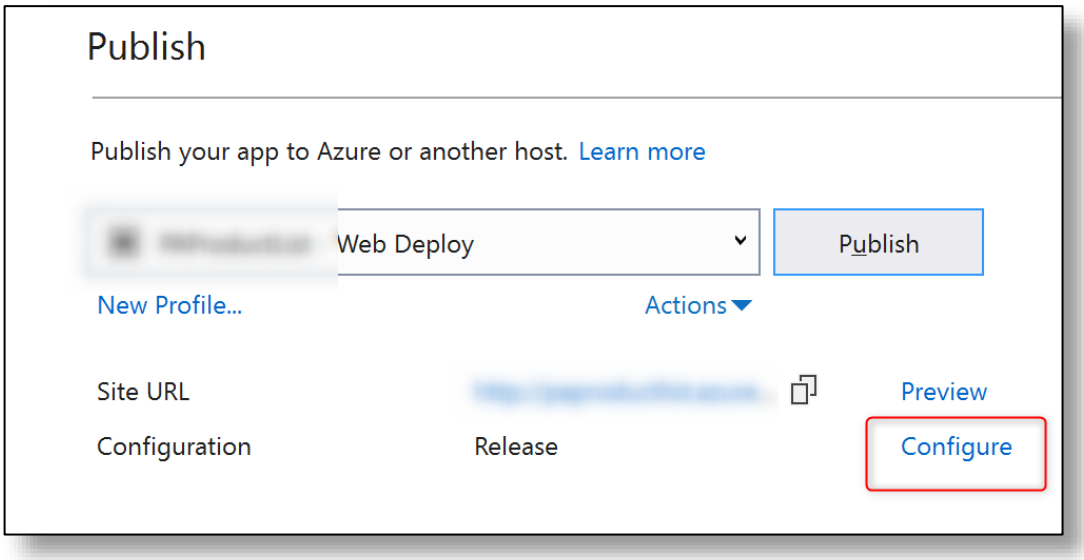


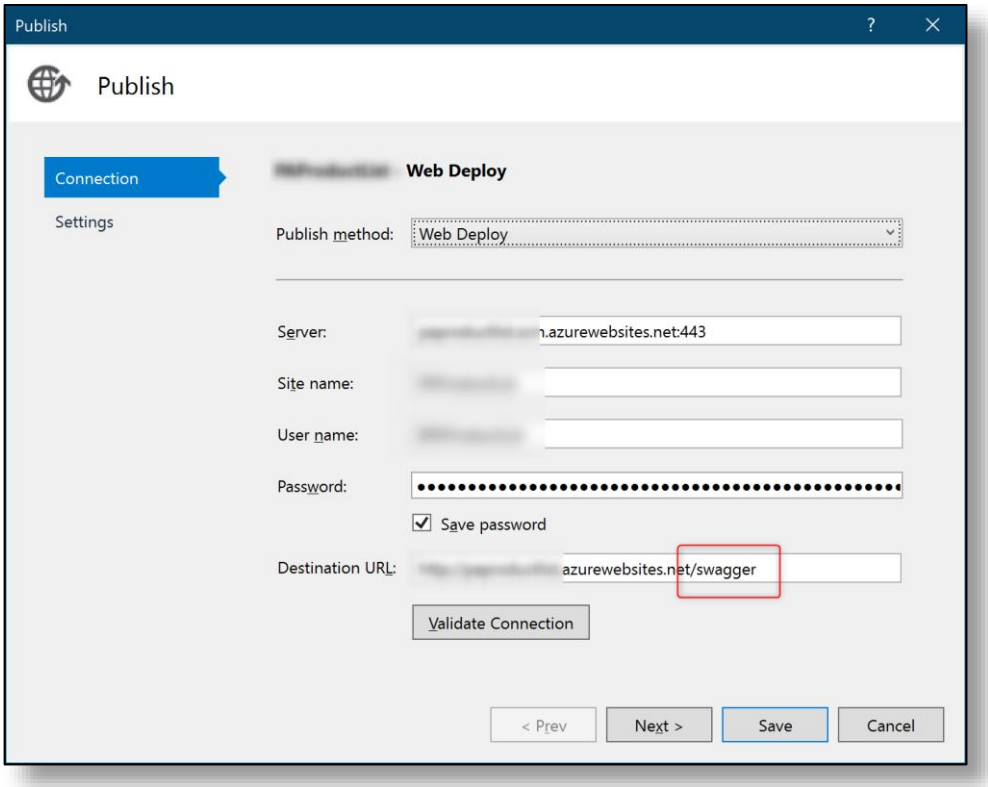
Step 6. Open the Azure publishing dialog to either create a new App Service OR select an existing App Service.



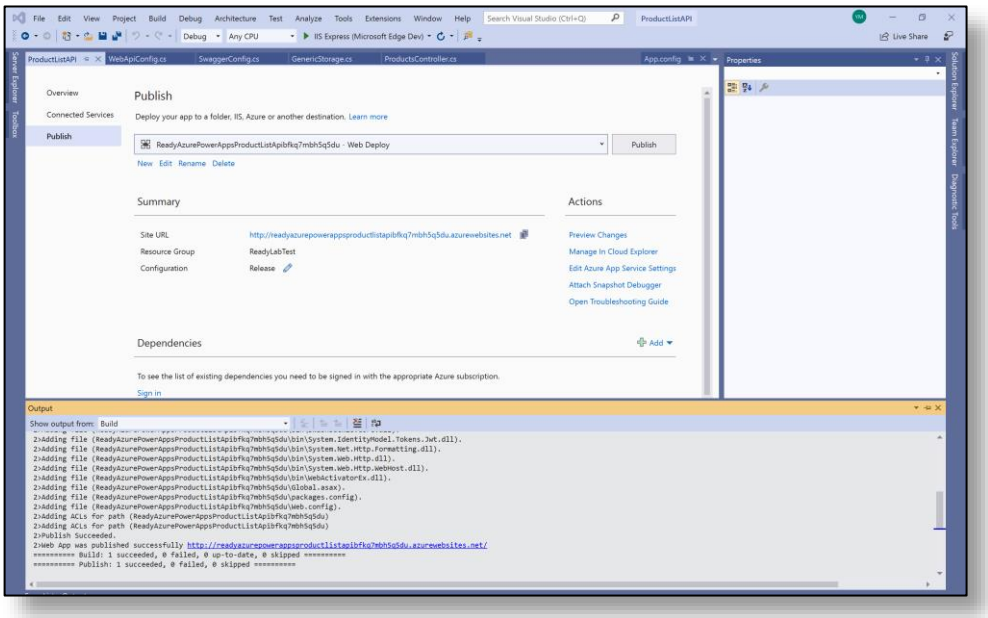


Step 7. Click on Configure > Edit the Site URL and append "/swagger" at the end of the Site URL, so that it automatically loads that URL once published for debugging purposes.

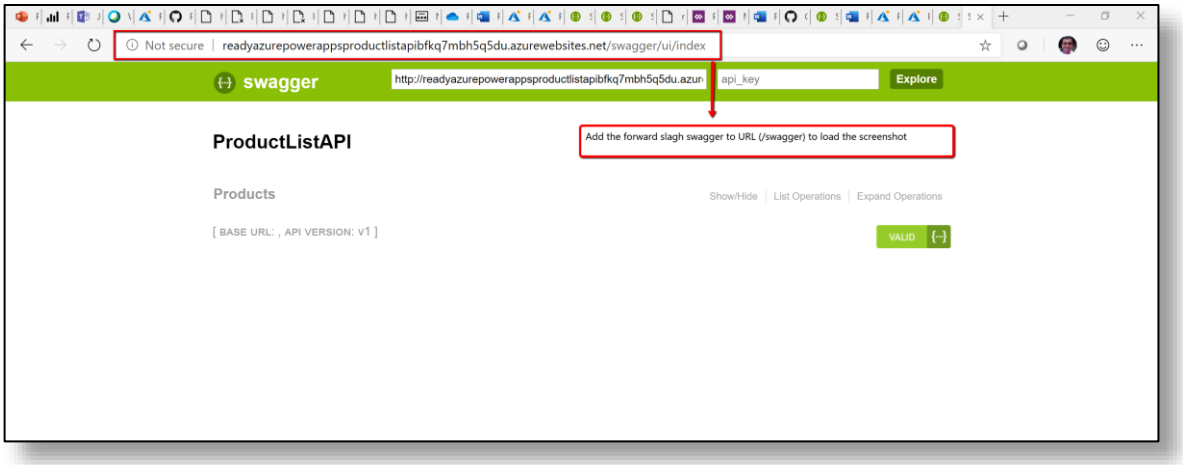




Step 8. Verify that the application is published successfully…



Step 9. After the application is published, if the swagger UI page is not displayed - append forward slash swagger (/swagger) to the URL to load the swagger UI.

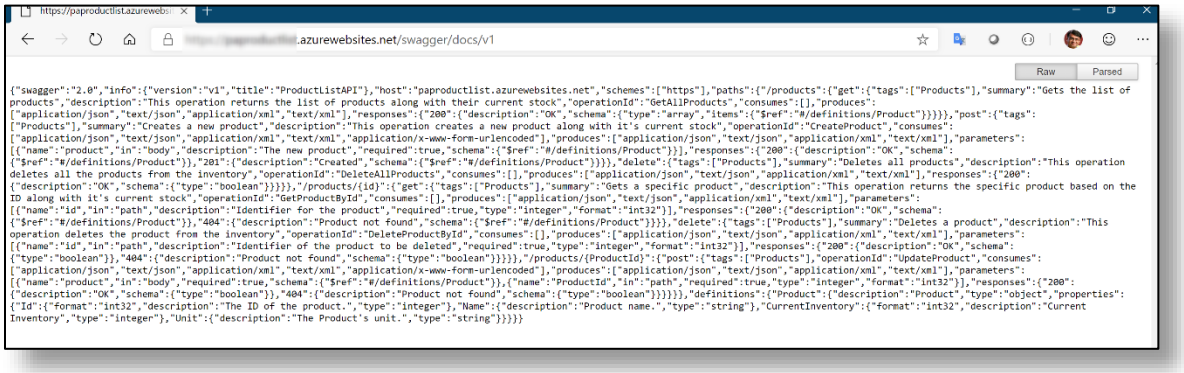


Step 10. Test the API using the Swagger UI Link by visiting the URL on the browser and trying out the different operations.

Exercise 3 – Create custom connector

Step 11. Copy the URL from the Swagger UI page top center.

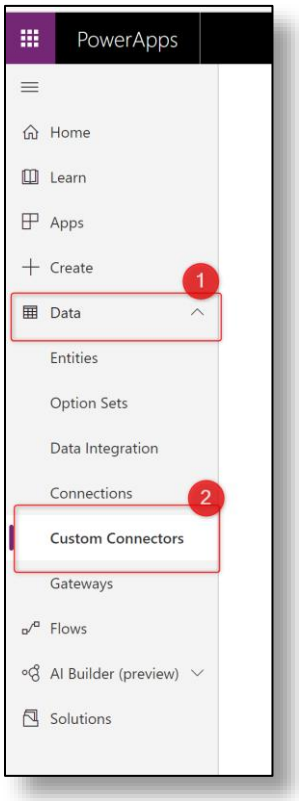
Step 12. Paste that URL in a new browser tab and press enter.



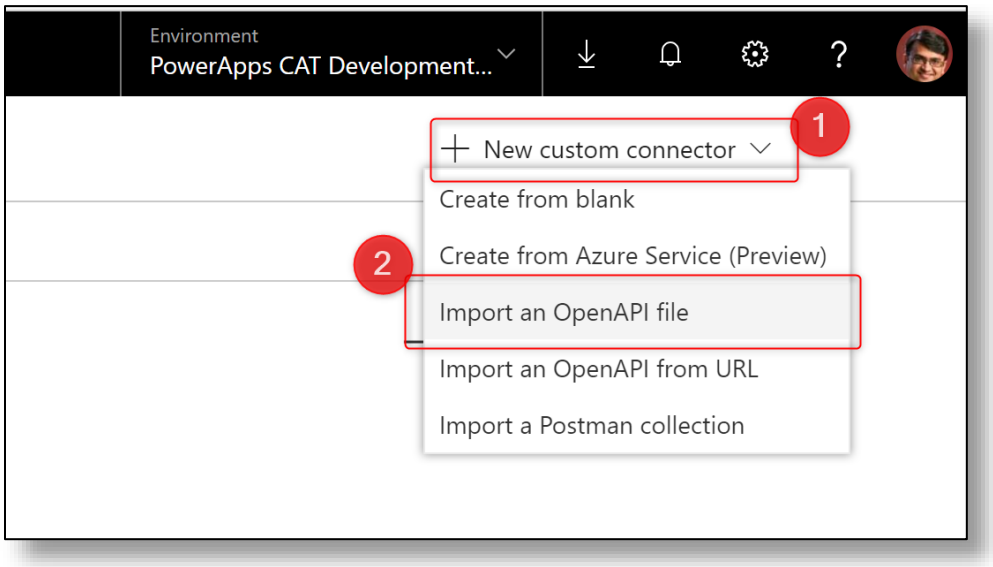
Step 13. Copy all the content of the page and paste it in Notepad and save the file somewhere on your local machine with the name "Swagger.json".

Step 14. Open up your favorite browser and navigate to https://make.powerapps.com. Login if required. This lab doesn't require CDS, so feel free to pick up any environment where you have maker access.

Step 15. Click on Data > Custom Connectors on the Left Navigation.

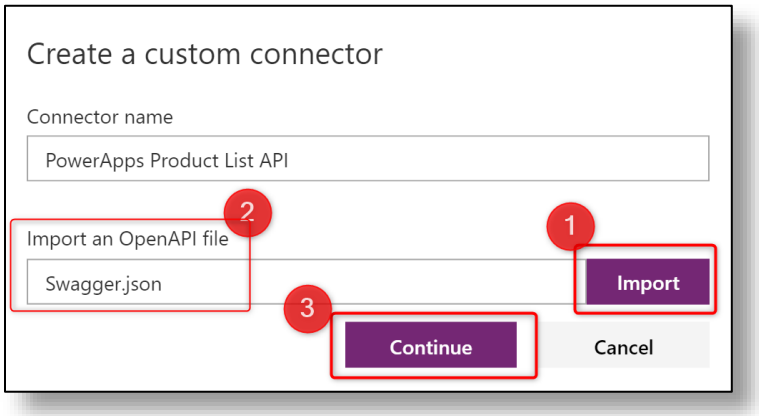


Step 16. Click on the + New Custom Connector link on the top right.

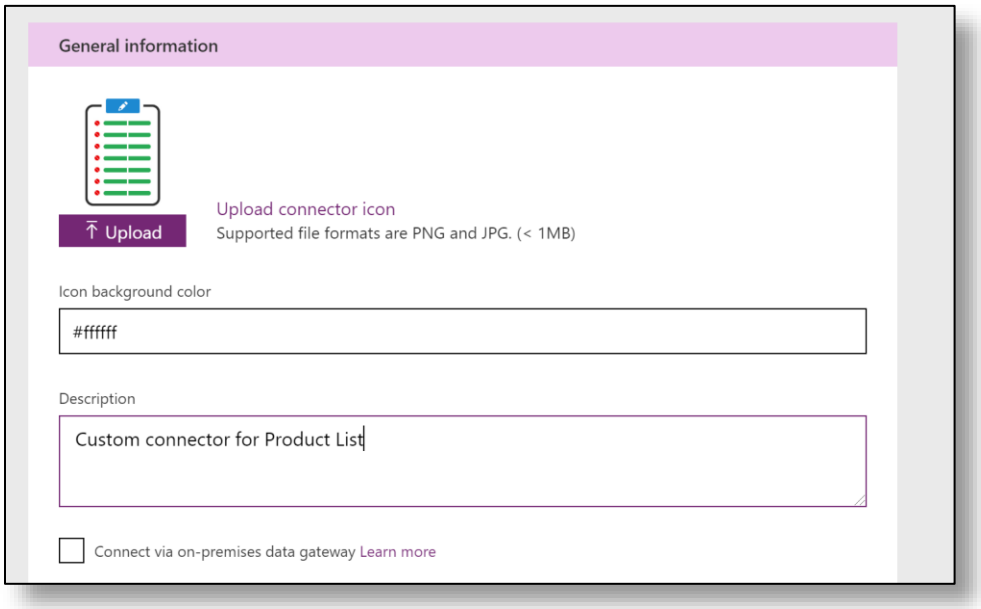


Step 17. Give a name to the Custom Connector - for e.g. "**PowerApps Product List API**".

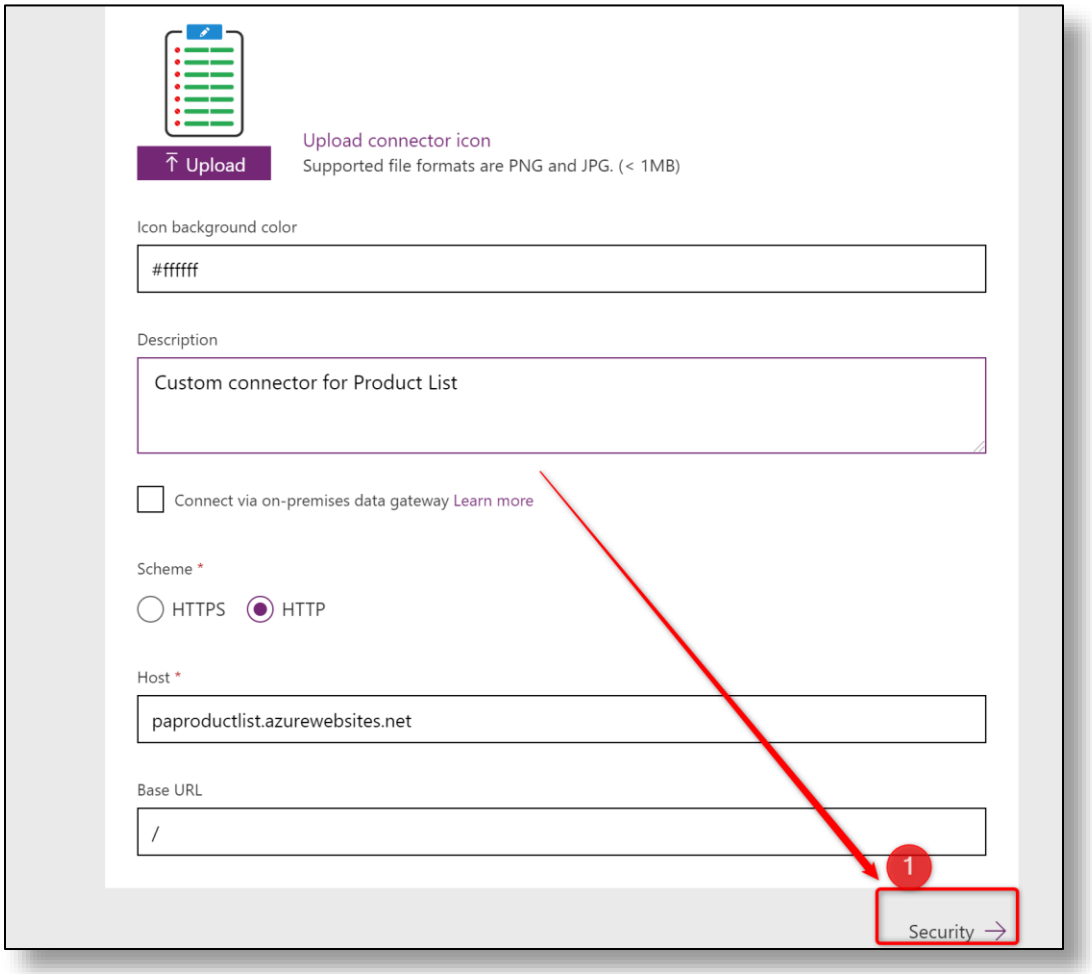
Step 18. Click on the **Import** button and select the "**Swagger.json**" file that you had saved earlier for Import an Open API file and click on **Continue**.



Step 19. (Optional) Upload a picture for the Custom Connector. I have one uploaded here, if you want to reuse: https://github.com/pratapladhani/ProductListAPI/blob/master/OtherArtifacts/Swagger/Products_list_icon.jpg Provide a color code of your choice for e.g. #ffffff and provide a description.



Step 20. Click on Security > in the bottom right.

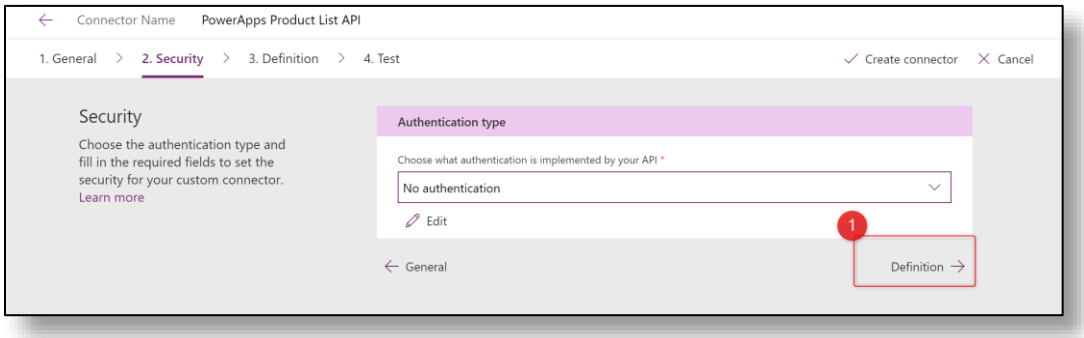


Step 21. Keep the default "No authentication" option in the next screen.

Note:

This is not advisable in Production APIs – we are skipping this only for saving time in this lab. Refer to this article : https://docs.microsoft.com/en-us/connectors/custom-connectors/azure-active-directory-authentication for the guidance for protecting the API endpoint with Azure AD.

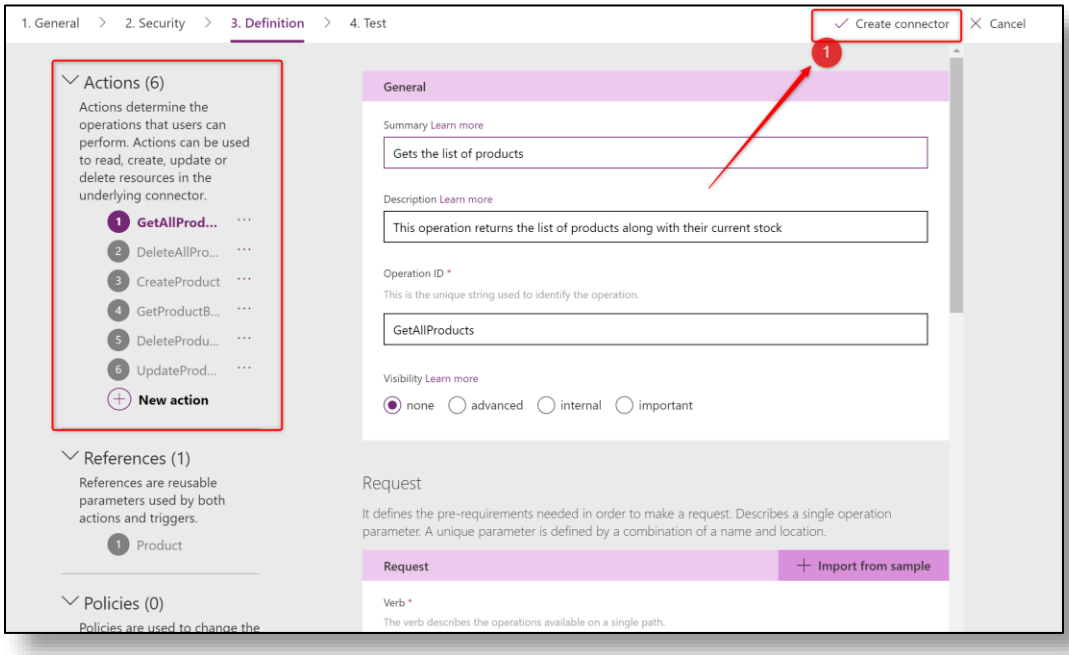
Step 22. Click on Definition to go to the next tab.



Step 23. Validate that all the methods have the right Summary and Description.

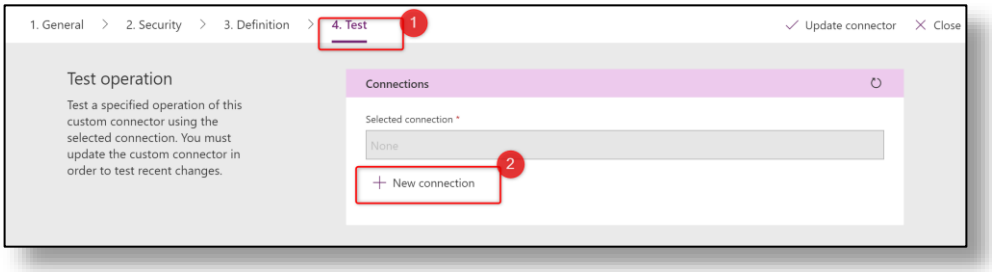
Note:
Since we had generated Summary and Description through XML comments for all our operations, we don't have to type in the summary and description for most methods.

Step 24. Click on Create connector on the top right.

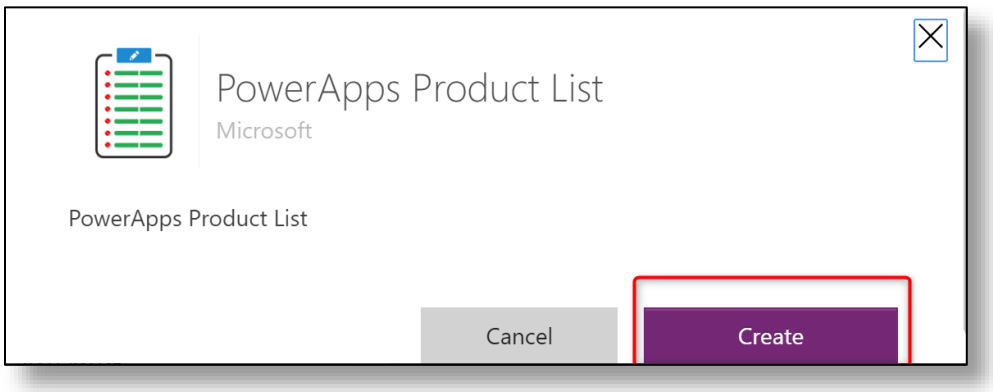


Step 25. Once the connector is saved successfully, click on **4. Test**.

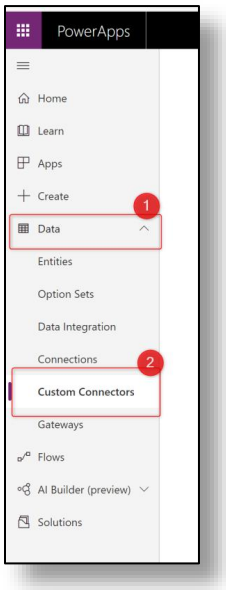
Step 26. Click on **+ New connection**.



Step 27. Click on **Create**.

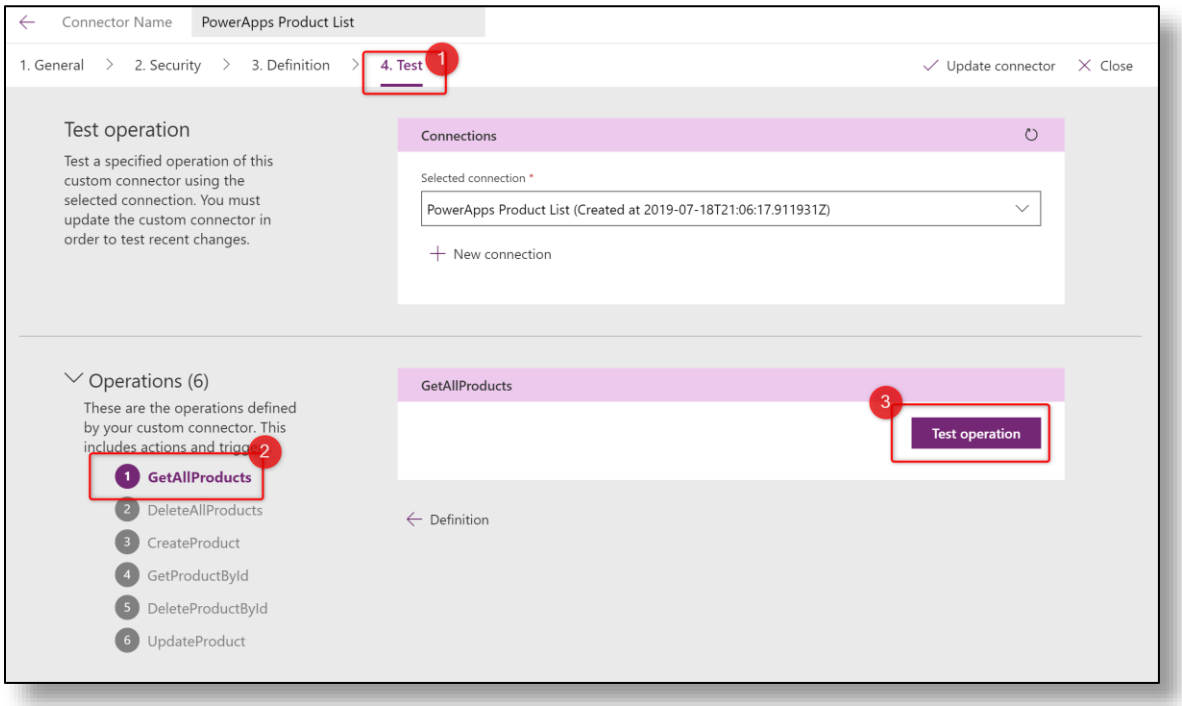


Step 28. After the connection is created, it will navigate you to the connections tab. Click on the **Left Nav** > **Data** > **Custom Connectors** link again.

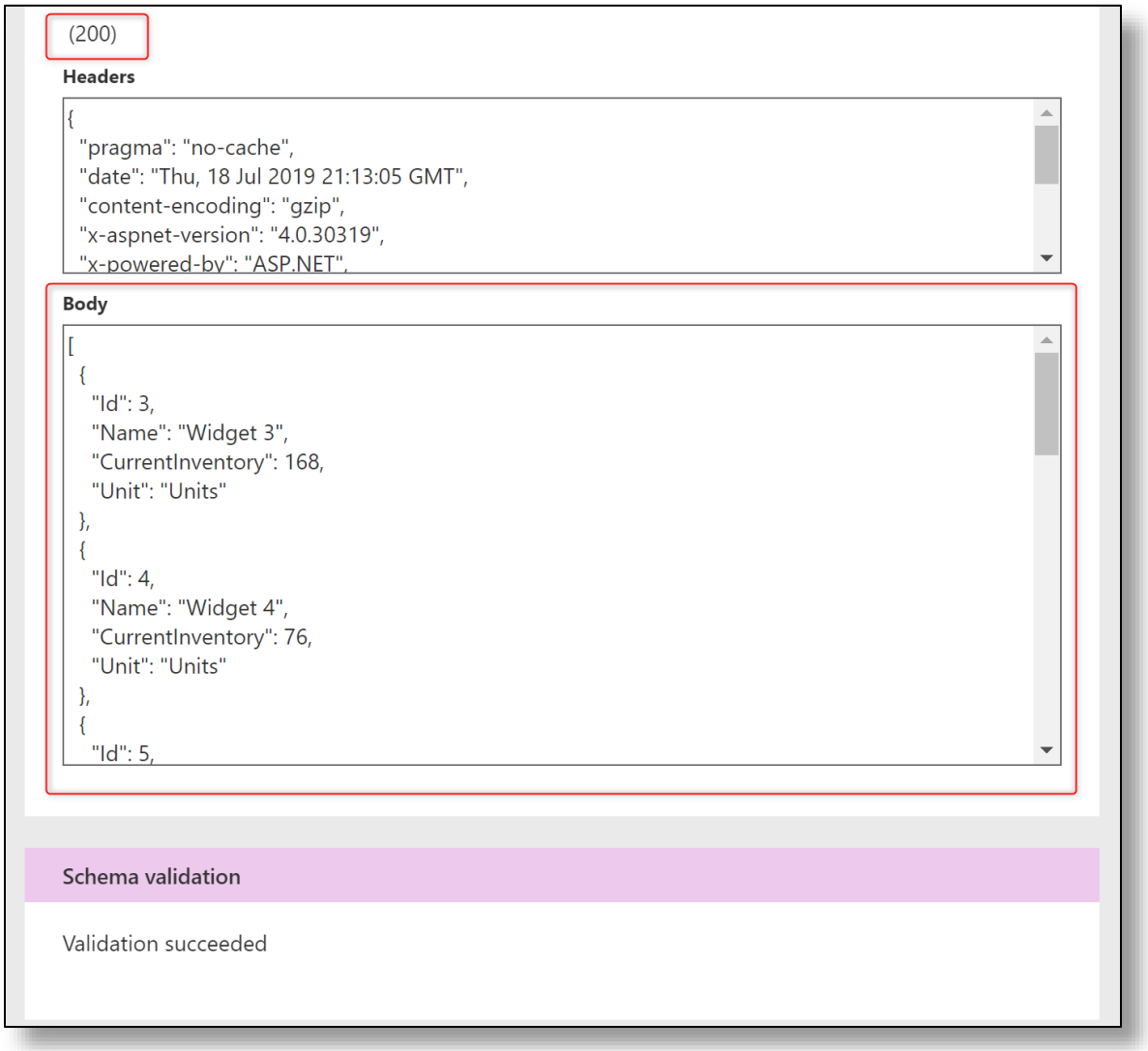


Step 29. Select the connector you just created and click the Edit icon to edit the connector.

Step 30. Click on 4. Test tab. Now the connection that you created in the previous step must have been populated. Click the GetAllProducts operation and click on the Test operation.



Step 31. You should be able to see a 200 status with the JSON of the results from your API showing in the Test Results.



Step 32. The next step is to create a canvas app using this custom connector.

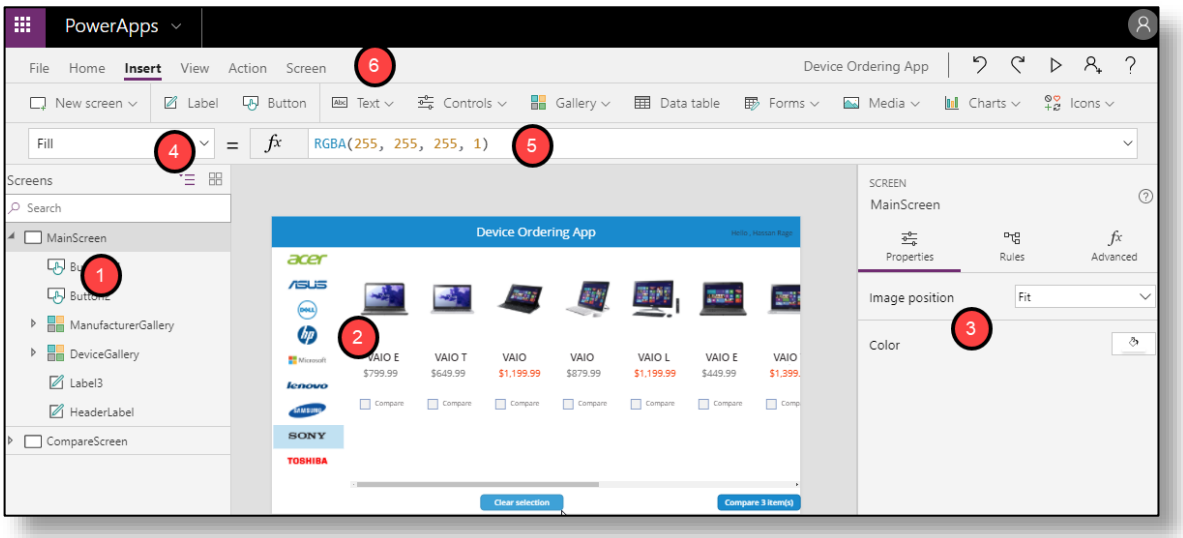
Exercise 4 – Create canvas app

PowerApps Canvas Studio Layout

PowerApps Canvas Studio is available as a web application (http://make.powerapps.com) that you can use in any modern browser.

PowerApps Studio is designed to have a user interface familiar to users of the Office suite. It has three panes and a ribbon that make app creation feel **like building a slide deck in PowerPoint.** Formulas are entered within a function bar that is like Excel. Studio components:

1. **Left navigation bar**, which shows all the screens and controls in your app
2. **Middle pane**, which contains the app screen you are working on
3. **Right-hand pane**, where you configure properties for controls, bind to data, create rules, and set additional advanced settings
4. **Property** drop-down list, where you select the property for the selected control that you want to configure
5. **Formula bar**, where you add formulas (like in Excel) that define the behavior of a selected control
6. **Ribbon**, where you perform common actions including customizing design elements



Locale-specific difference in formulas

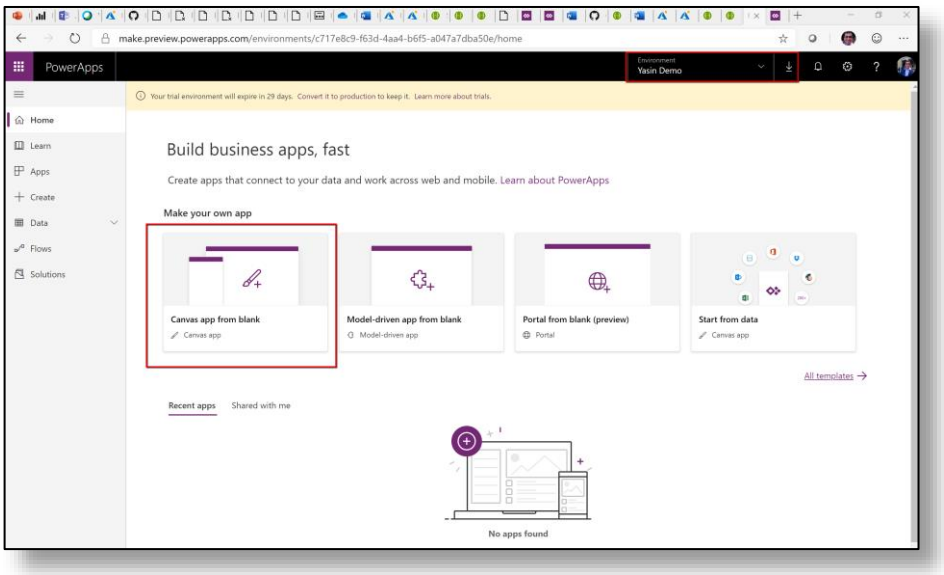
Before you begin, please note that if your computer has its regional settings set to use the comma ',' for its decimal separator (like in much of Europe) your formulas will need to use a semicolon ';' instead of a comma in your formulas. For example:

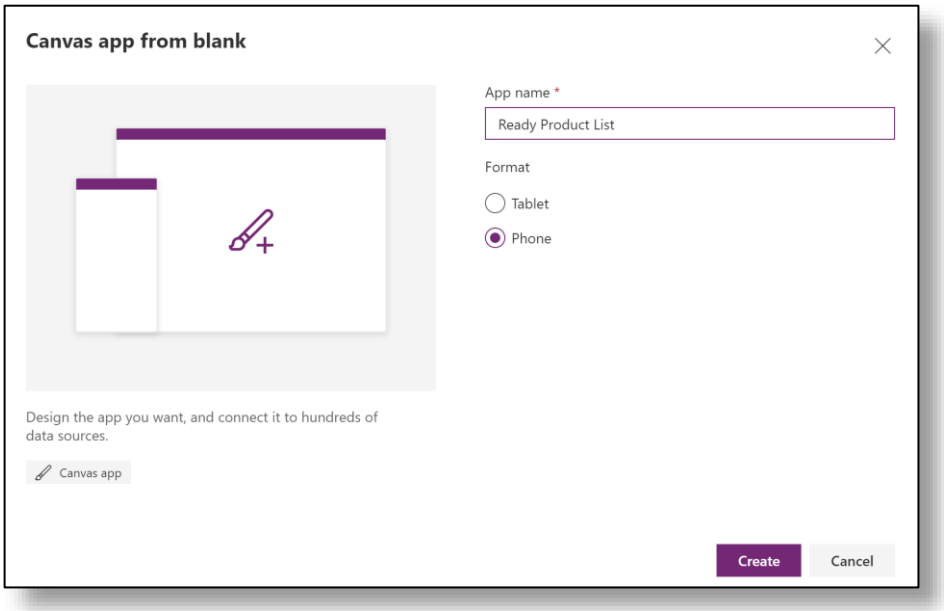
En-US `Filter(Machines, OEMsGallery.Selected.MFR=MFR)`

de-DE `Filter(Machines; OEMsGallery.Selected.MFR=MFR)`

Step 33. Create a Canvas App with Phone Layout

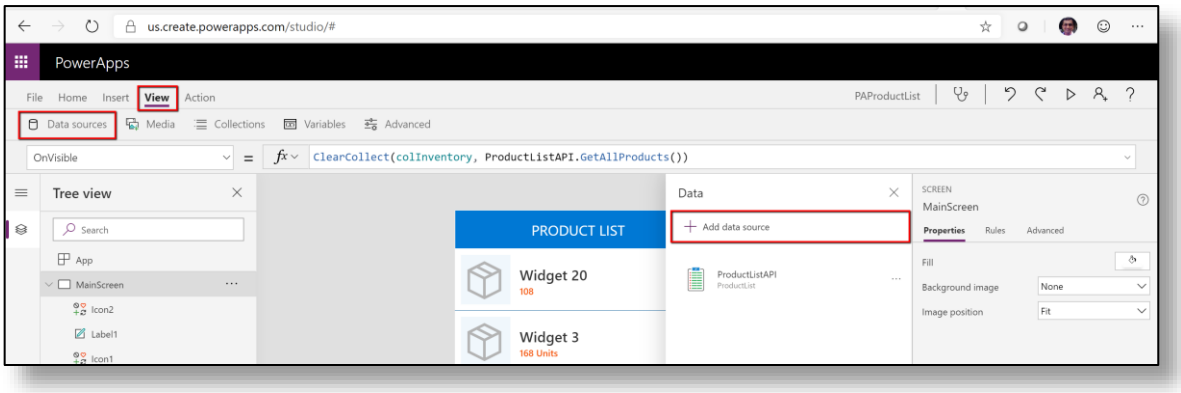
Go To http://make.powerapps.com and select your environment where you deployed custom connector in Exercise 3.





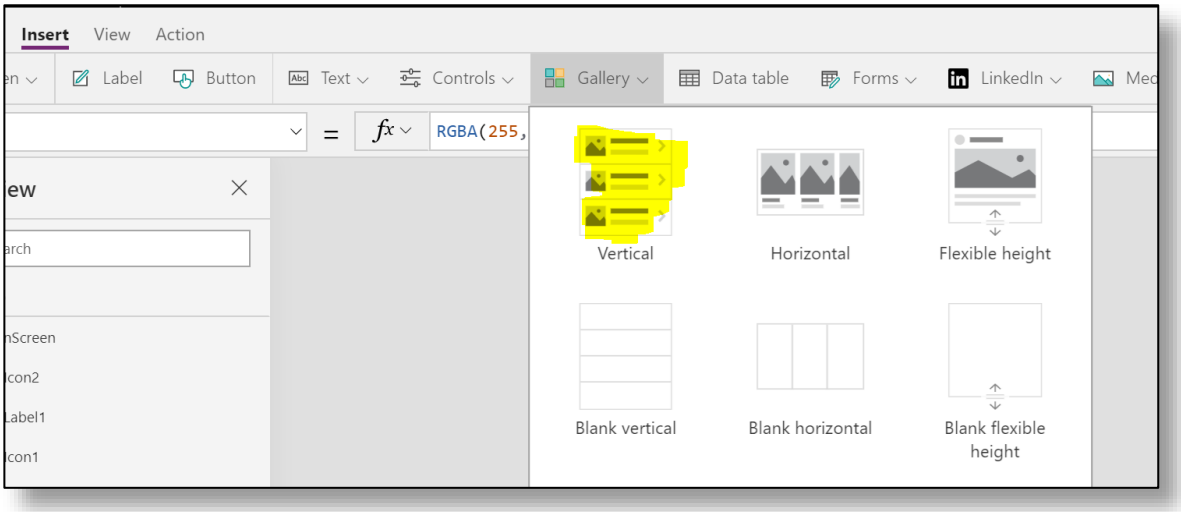
Step 34. Add your custom connector that you configured in Exercise 3

1. Go to View->Data Sources. Select "+ Add data source."
2. Select "+ New Connection"
3. Search for the Custom Connector You created in the previous steps
4. Select and Create the connection



Step 35. Bind Data to the Gallery

1. Rename Screen1 to MainScreen
2. Add a Header
   a. Insert a Label
   b. Change Text to "PRODUCT LIST"
   c. Change Fill Color to Blue
   d. Change Color to White
3. Insert a vertical Gallery Control



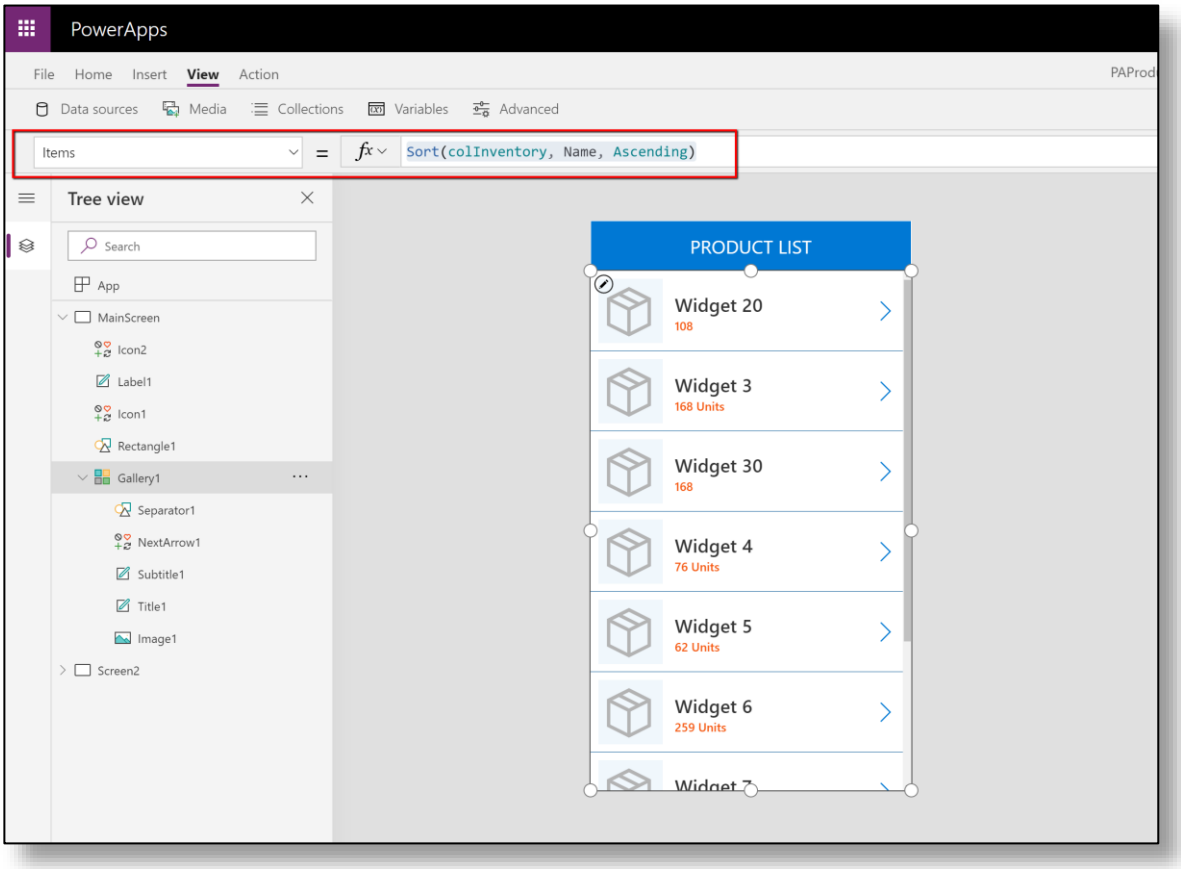
4. Go MainScreen > OnVisible >
5. Enter the following formula

```
ClearCollect(colInventory, ProductListAPI.GetAllProducts())
```

(This will be call the API and save data in a local collection called **colInventory**)

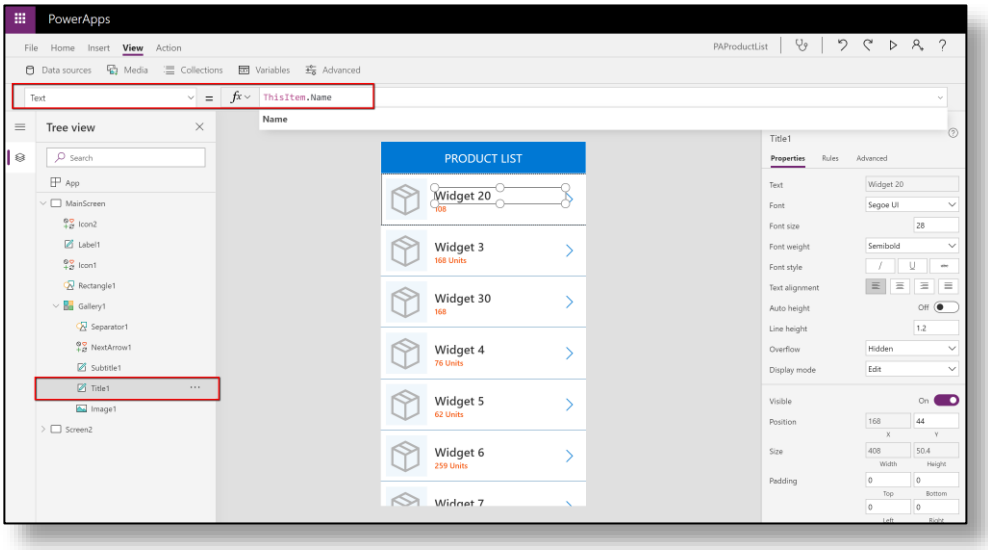
6. Create Screen 2 . Select Screen 2 and then select Screen1. This will encure the OnVisible function will be triggered and the data is saved to the collection.
7. Select Gallery1=> Items property and type the following: >

```
Sort(colInventory, Name, Ascending)
```



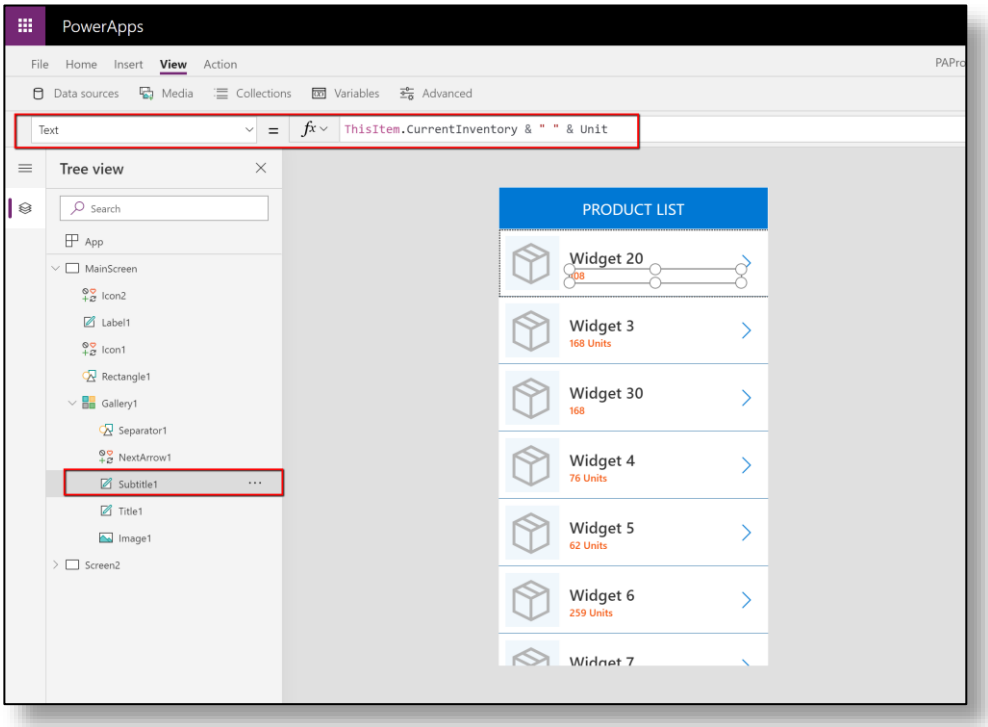
8. Set the label item formula >

```
ThisItem.Name
```

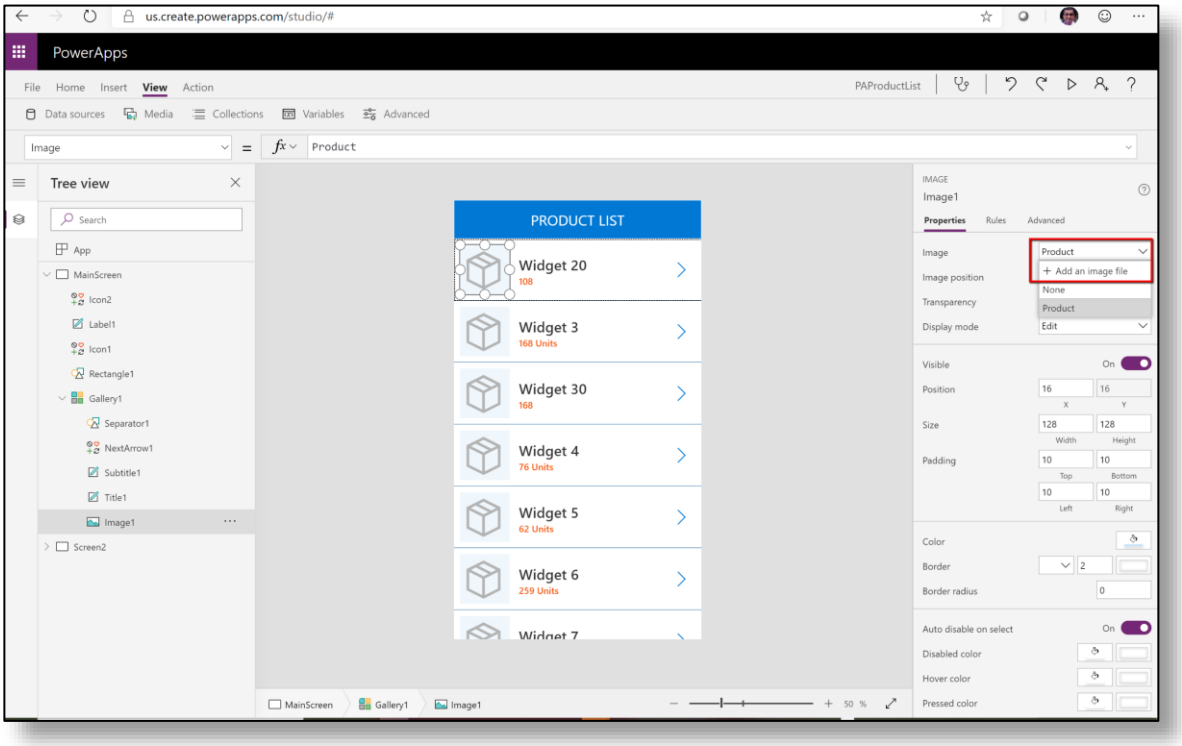


9. Set the label item formula >

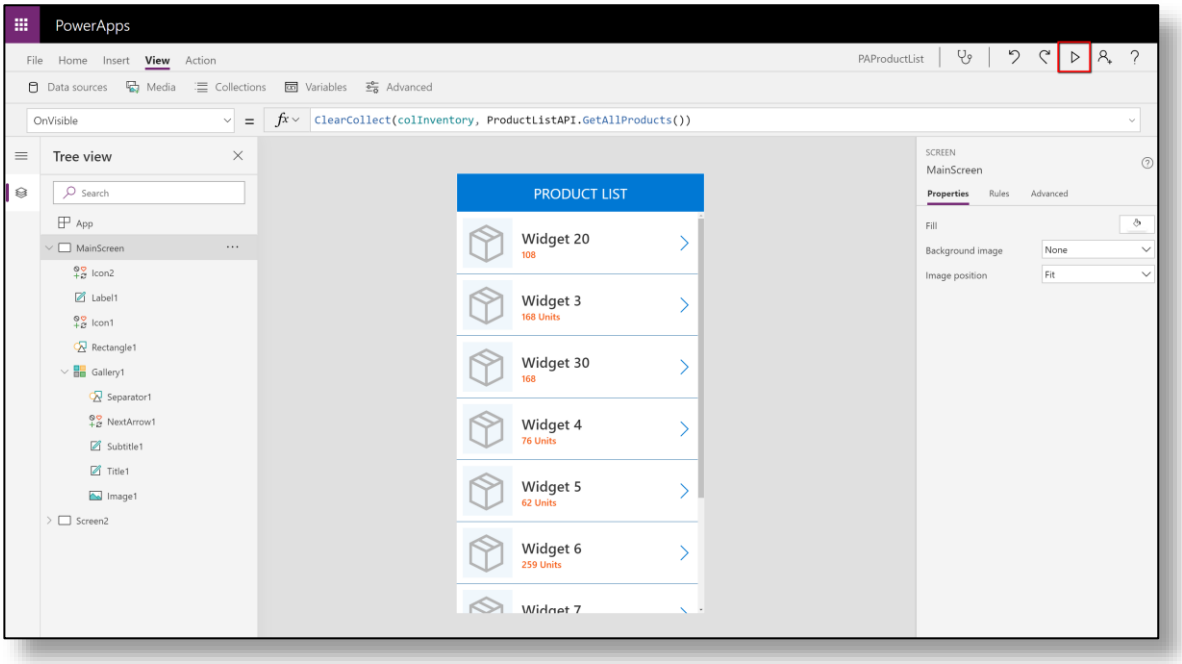
```
ThisItem.CurrentInventory & " " & Unit
```



10. Select a default image product.svg



11. Slect the play button to test your app.



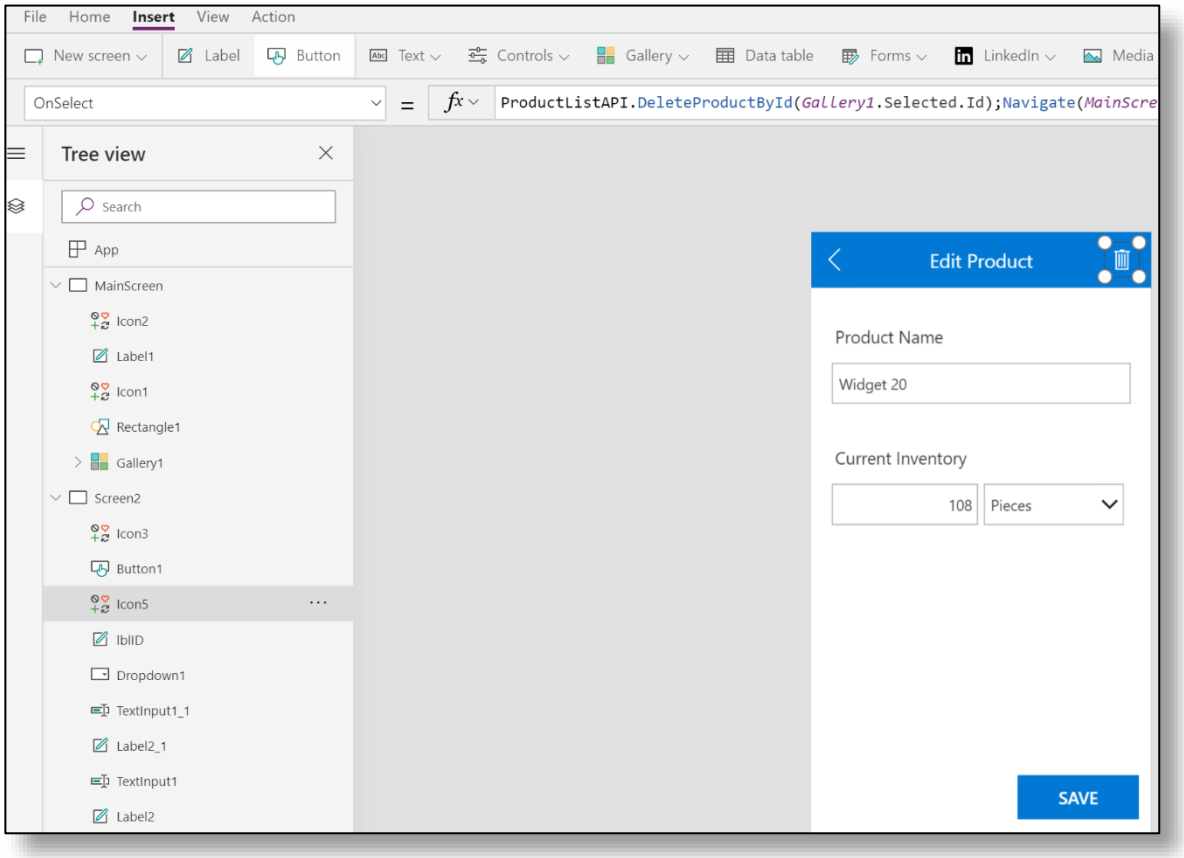
Step 36. Create the Detail Screen to Edit and Delete Products

1. Copy Header control from MainScreen and paste into Screen2
2. Add the Back icon, Select the OnSelect property and type

```
Back(ScreenTransition.UnCoverRight)
```

3. Add Delete icon and enter the following formula:

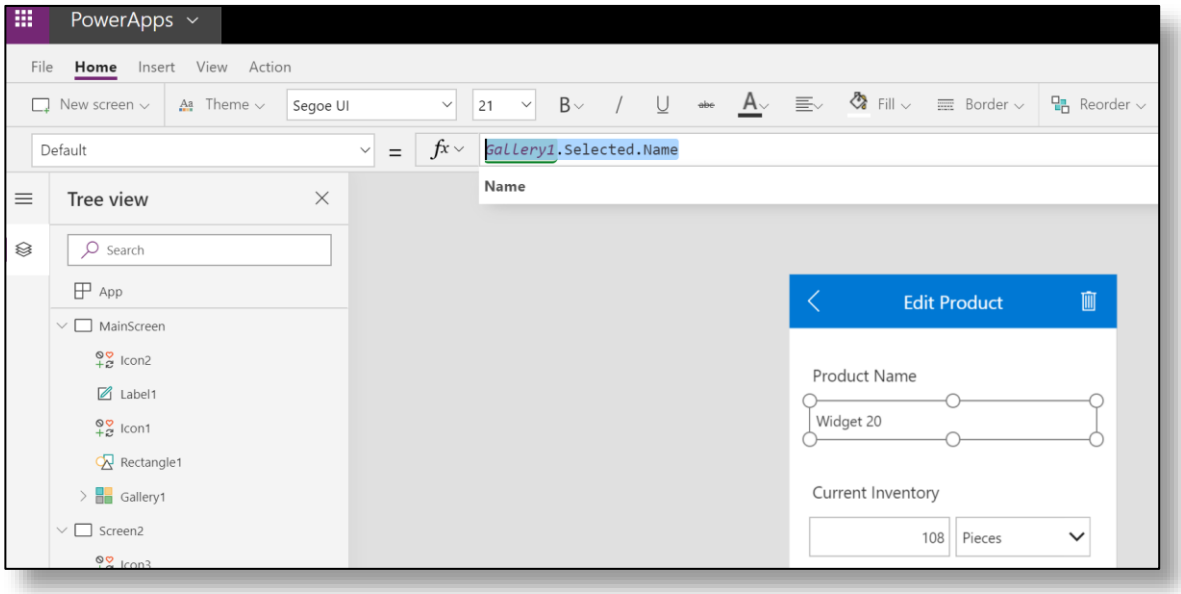
```
ProductListAPI.DeleteProductById(Gallery1.Selected.Id);Navigate(Main
Screen,ScreenTransition.UnCover)
```



4. Add the Label for “Product Name”

5. Add TextInput and bind Default property to

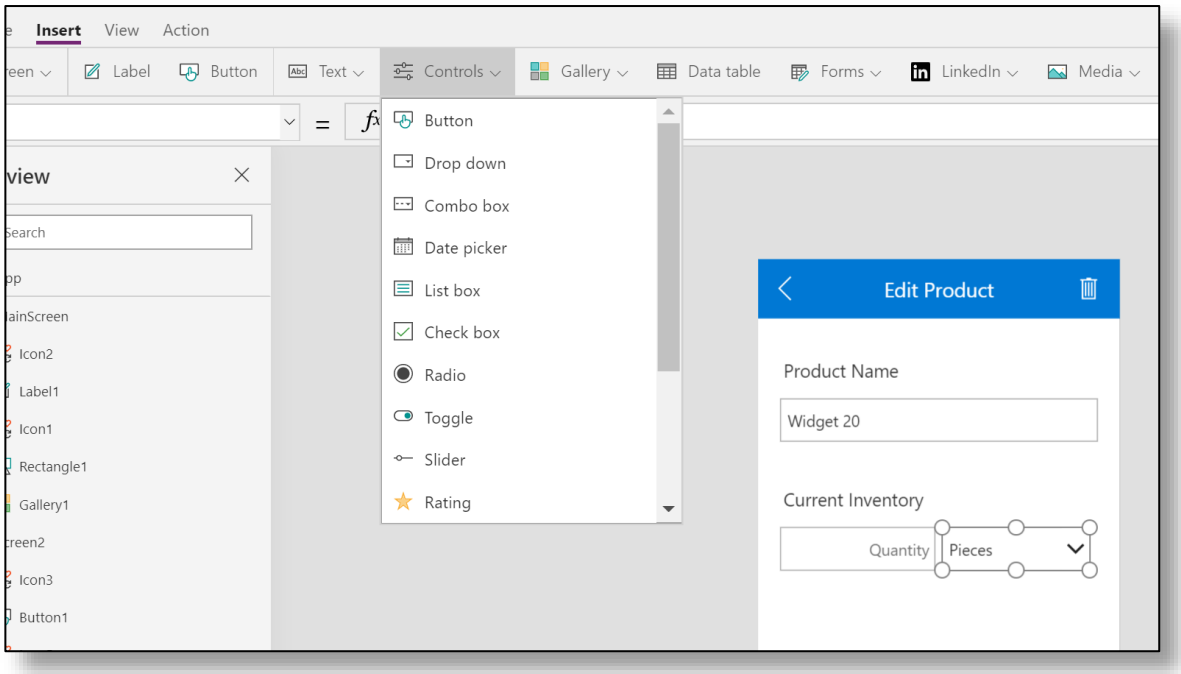
```
Gallery1.Selected.Name
```



6. Add the Label for "Current Inventory"
7. Add TextInput and bind the Default property to

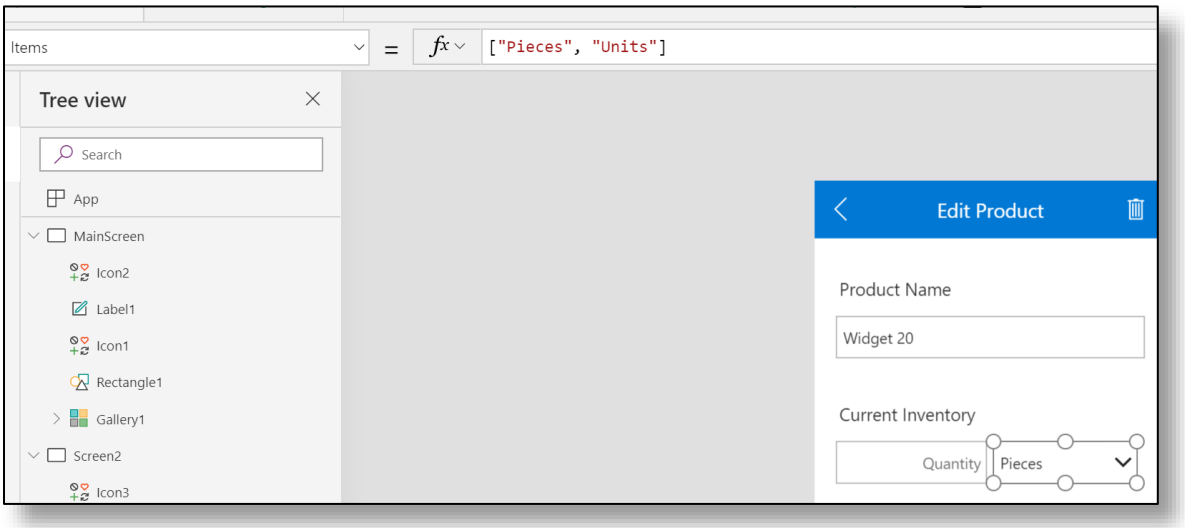
```
Gallery1.Selected.CurrentInventory
```

8. Add a dropdown control



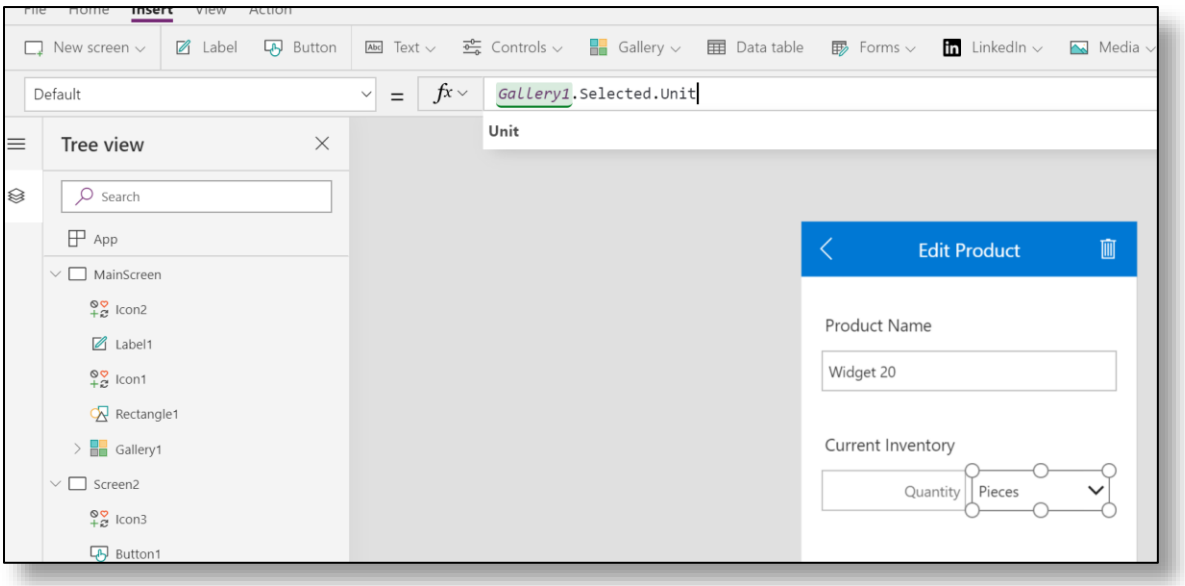
9. Bind the Items property to

```
["Pieces", "Units"]
```



10. Set the Default property

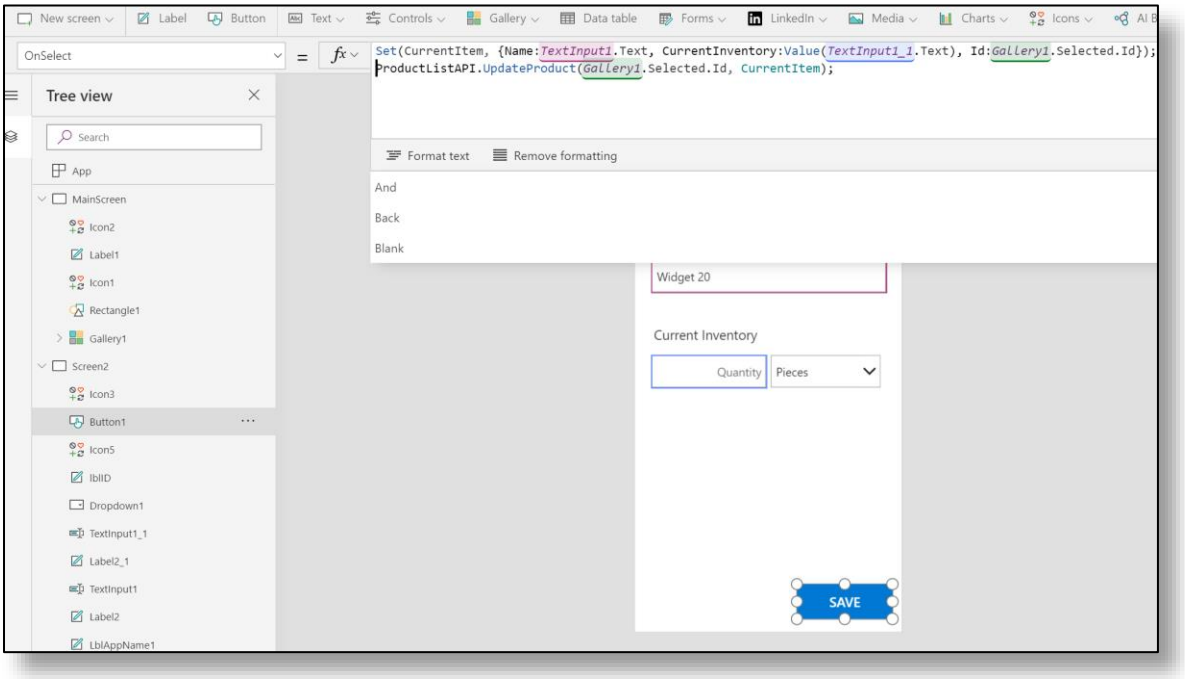
```
Gallery1.Selected.Unit
```



11. Add Save Button

12. Bind the OnSelect to

```
Set(CurrentItem, {Name:TextInput1.Text,
CurrentInventory:Value(TextInput1_1.Text),
Id:Gallery1.Selected.Id});
ProductListAPI.UpdateProduct(Gallery1.Selected.Id, CurrentItem);
```



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