Getting Started with PowerApps Studio

Lab Time: 60 minutes

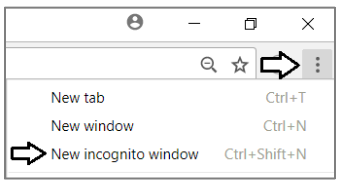
Lab Folder: C:\Student\Modules\01_GettingStarted\Lab

Lab Overview: This lab covers how to get up and running with the Power Platform by creating a new Microsoft 365 tenant with trial subscriptions to Office 365, PowerApps, Flow, Power BI and SharePoint Online. The act of creating and configuring this new Microsoft 365 tenant will yield an isolated testing and development environment for building and testing the apps and components you can build with PowerApps and Flow. One valuable aspect of creating your own new Microsoft 365 tenant is that you will have Global tenant administrative permissions allowing you to create multiple Microsoft 365 user accounts for testing your apps and flows in isolation from any other existing Microsoft 365 tenant.

Exercise 1: Create a new Microsoft 365 Trial Tenant

In this exercise, you will create a new Microsoft 365 tenant which allows you to create up to 25 user accounts with Office 365 Enterprise E5 trial licenses. Note that the Enterprise E5 trial license provides the benefits of the PowerApps, Flow, Power BI Pro and SharePoint licenses.

1. Navigate to the Office 365 trial sign up page using an Incognito browser window.
   a) Launch the Chrome browser.
   b) Using the dropdown menu in the upper right, select the command to open a **New incognito window**.

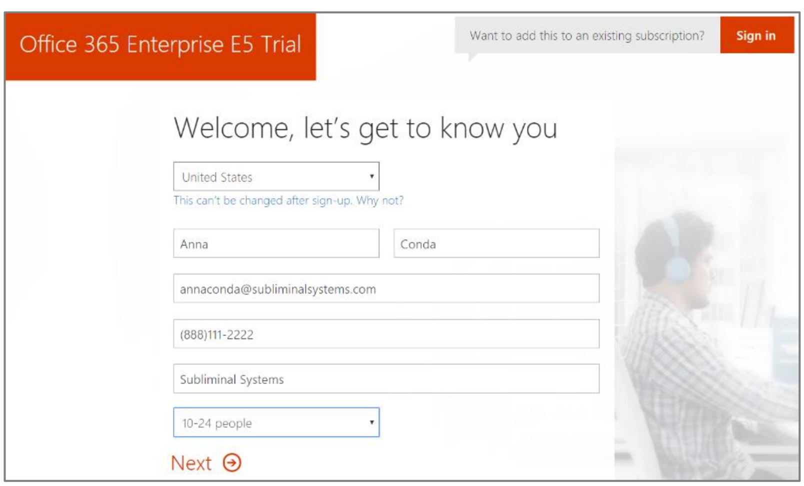


   c) Copy and paste the following URL into the address bar of the incognito window to navigate to the sign up page.

```
https://go.microsoft.com/fwlink/p/?LinkID=698279&culture=en-US&country=US
```

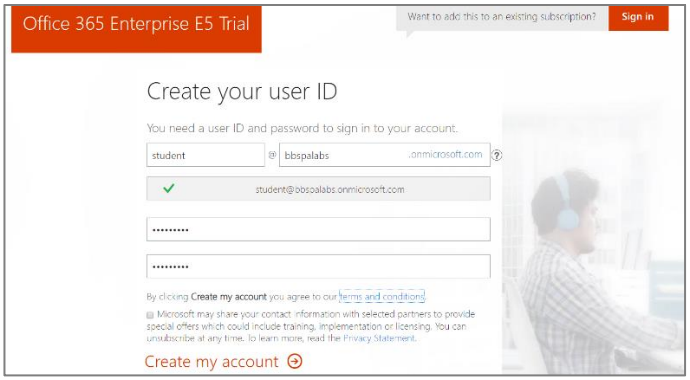
It's not always necessary to sign up for an Office 365 trial account using an incognito window. However, most errors that occur when attempting to sign up are caused by cached browser settings from another Office 365 account such as your work account. The solution to overcoming most errors when signing up for a trial account is using an incognito window.

2. Fill out the form with your personal information and click **Next**.



The information you provide on the next page of the signup process will be used to name your new Microsoft 365 tenant.

3. On the **Create your user ID** page…
   a) Enter a user name
   b) Enter a unique company name *(you might have to try a few before you get one that's unique)*
   c) Enter a password that you will remember.

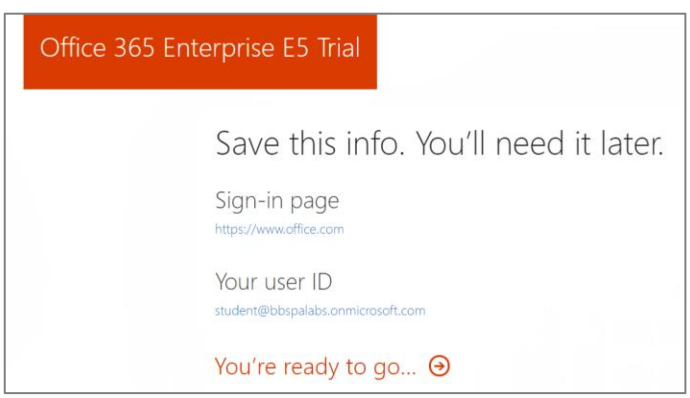


Note that the company name you enter on this page will be used to create the domain name for your new Office 365 trial tenant. For example, if you were to enter a company name of **bbspalabs**, it would result in the creation of a new Microsoft 365 tenant within a domain of **bbspalabs.onMicrosoft.com**. The user name you enter will be used to create the first user account which will be given administrative permissions within the Microsoft 365 tenant. If you enter a user name of **Student**, then the email address as well as user principal name for this account will be **Student@bbspalabs.onMicrosoft.com**.

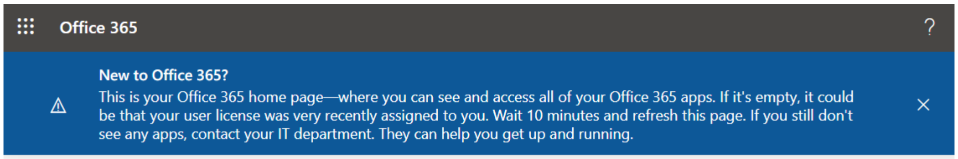
   d) Click **Create my account** to continue and move to the next step.

4. Complete the validation form to prove you are not a robot.
   a) Select the **Text me** option and provide the number of your mobile phone.
   b) When you go through this process, a Microsoft service will send you a text message that contains an access code.
   c) You retrieve the access code form your mobile device and use it to complete the validation process.

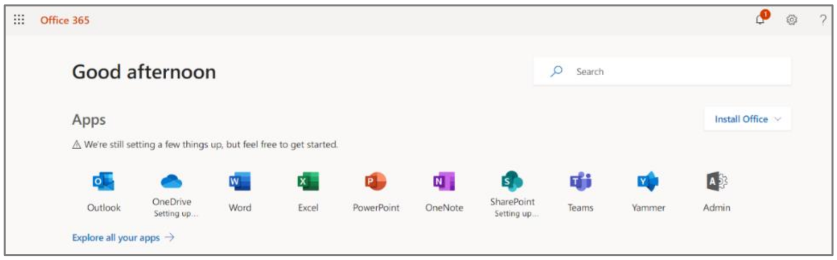
5. Once you have completed the validation process, click the **You're ready to go…** link to navigate to the portal welcome page for your new Office 365 trial tenant. Note that you should already be logged on using the user account that was created during the signup process.



6. If you are prompted an Office 365 promotion dialog, click the **x** button in the top right corner to close it.



7. At this point, you should be located on an Office 365 welcome page. Notice the fancy new icons for all the Office applications!

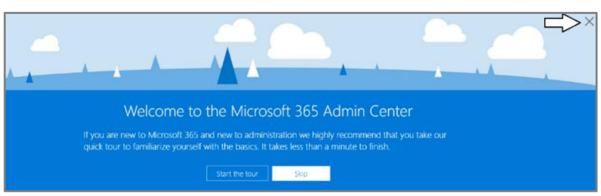


At this point, you have already created your new Microsoft 365 tenant which can support creating up to 25 user accounts with Office 365 Enterprise E5 trial licenses. Note that some Microsoft 365 services within your new Microsoft 365 tenant such as the Microsoft 365 admin center, PowerApps, Flow and Power BI can be accessed immediately. Other services in your Microsoft 365 tenant such as Outlook, OneDrive for Business and SharePoint Online will not be ready immediately and can take some time to provision.

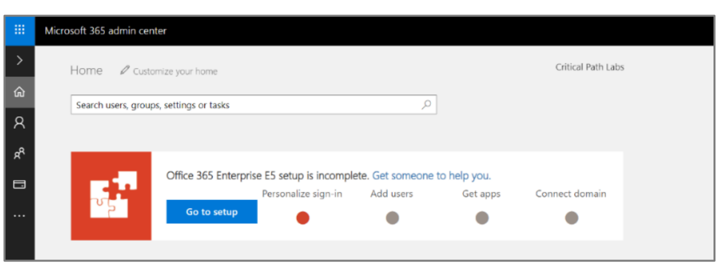
There is no more need to run the browser in incognito mode anymore because it's only required to get through the signup process. You can now return to using a standard browser window. However, it's always a good thing to check to see who you are logged in as because sometimes the browser may log you on using a different Office 365 account you have instead of your new trial account.

8. Click the **Admin** tile to go to the **Microsoft 365 admin center**

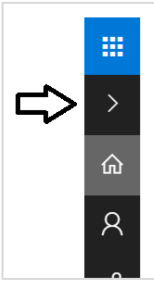
9. If you are presented with the **Welcome to the Microsoft 365 Admin Center** dialog, close it by clicking the **X** in the top right corner.



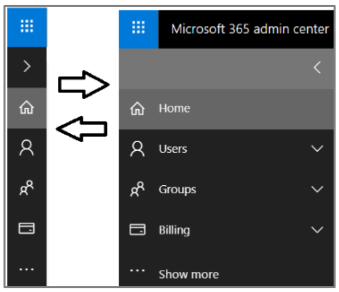
10. Verify that you are able to access the home page of the **Microsoft 365 admin center** at https://admin.microsoft.com/AdminPortal.
    a) The following screenshot shows the home page of the Microsoft 365 admin center.



b) Locate the top **Menu** button for the left navigation menu. It's the second button from the top with the arrow icon which sits just beneath the Microsoft 365 app launcher menu button.



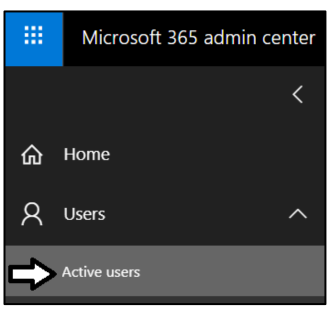
c) Click the top **Menu** button several times and see how it toggles the left navigation between a collapsed and expanded mode.



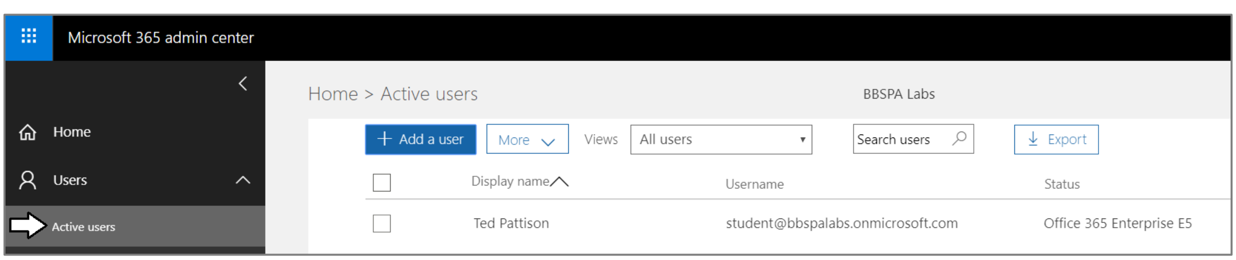
Over the next few steps, you will configure your new Microsoft 365 tenant by creating a secondary user account that you will need later when you begin experimenting with sharing apps and flows with other users.

1. Make sure you are in the browser on the home page of the Microsoft 365 admin center.
2. Inspect the set of Active Users in the current tenancy.

a) In the left navigation menu, expand the **Users** node and click **Active users** to navigate to the **Active users** page.

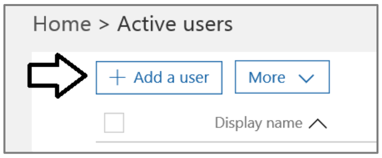


b) Once the **Active users** page is displayed, you should be able to verify that the user account you are currently logged on as is the only user account that exists in the current tenancy. Remember that this account has been set up as a global administrator within the Microsoft 365 tenant because it is the primary user account that was created when the tenant was initially created.

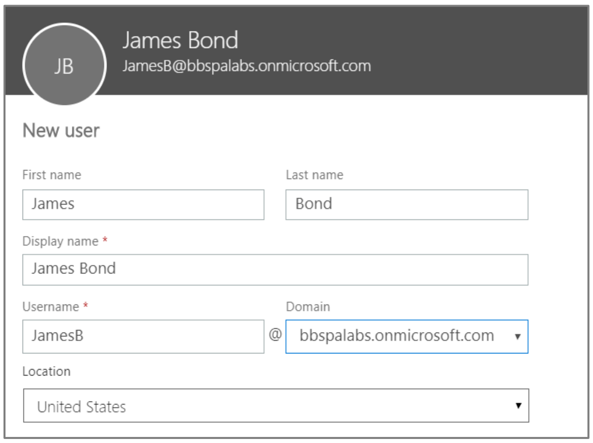


3. Create a new user account.

   a) On the **Active Users** page, click the **Add a user** button to create a new user account



   b) Fill in the **Create new user account** form with information for a new user account. When creating this account, you can use any name you would like. These lab instructions will demonstrate this by creating a user account for a person named **James Bond** with a user name and email of **JamesB@bbspalabs.onmicrosoft.com**.

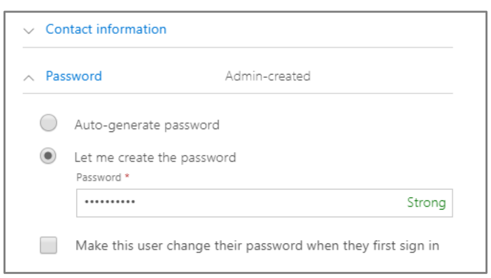


   c) Expand **Password** section under **Contact Information** section.

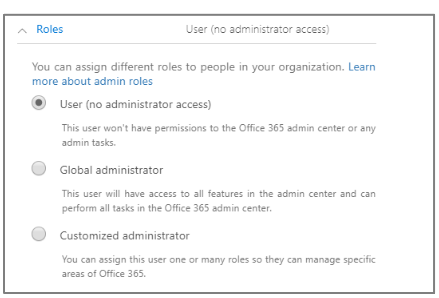
      i) Select the option for **Let me create the password**.

      ii) Enter a password of **pass@word1** into the textboxes labeled **Password** and **Retype Password**.

      iii) Uncheck the checkbox for the option labeled **Make this user change their password when they first sign in**.

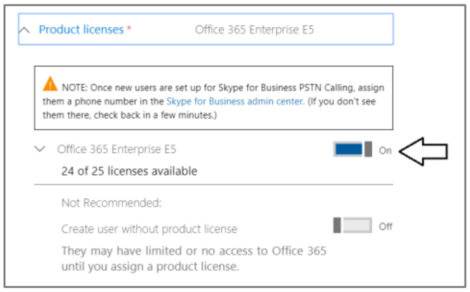


   d) Expand the **Roles** section. You do not need to change anything in this section, although you should note that this new user account will be created as a standard user account without any administrator access or privileges.



Note that the new account is usually assigned a trial license for **Office 365 Enterprise E5** plan. However, it's a good practice to check and make sure the new user has been assigned a license for **Office 365 Enterprise E5**.

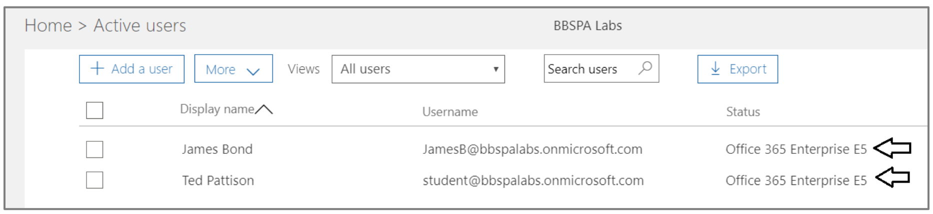
e) In the **Product licenses** section, make sure the **Office 365 Enterprise E5** license is set to **On**..



f) Click the **Add** button at the bottom of the new user form to create the new user account.

g) When you see the **User was added** message, click **Send email and close** to dismiss the **Add new user** task pane.

h) Verify that the new user account has been created and is displayed along with your primary user account.

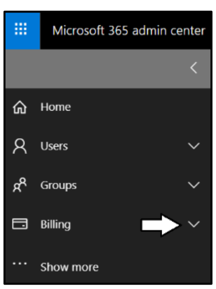


Exercise 2: Create a Trial Subscription for PowerApps Plan 2

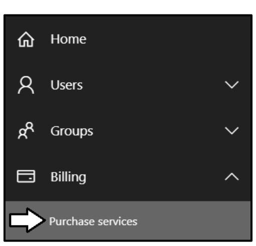
In this exercise, you will configure your new Microsoft 365 tenant by creating a new subscription based on PowerApps Plan 2.

1. Navigate to the home page of the Microsoft 365 Admin center.
2. Create a new subscription for PowerApps Plan 2.

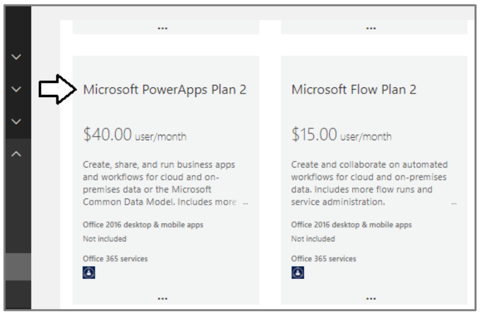
a) Click on **Billing** in the left navigation to expand the menu items underneath.



b) Click on the **Purchase services** navigation link.

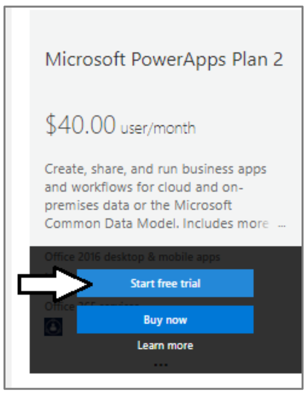


c) Scroll down the page and find the subscription with the name **Microsoft PowerApps Plan 2**.

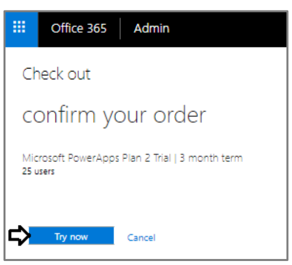


d) Hover over the ellipse (…) menu at the center on the bottom to see the flyout menu.

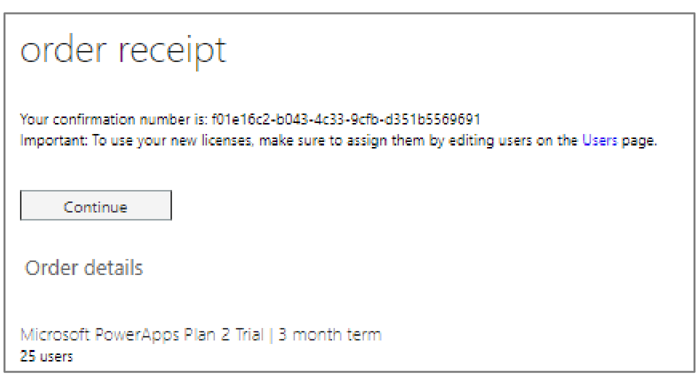
e) Click the **Start free trial** button



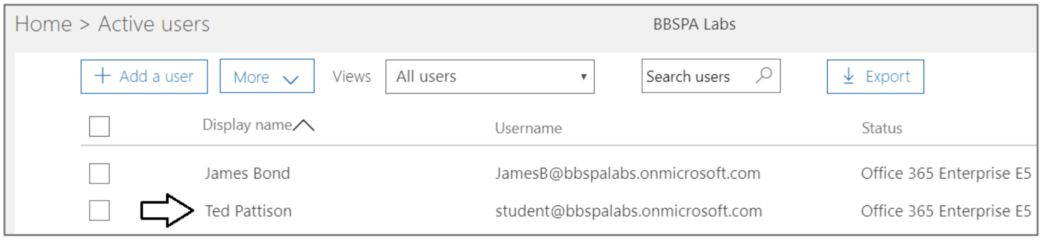
f) When prompted to confirm your order, click **Try now**.



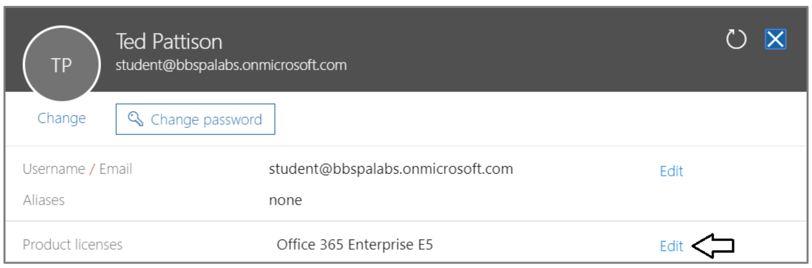
g) You should see an order receipt to confirm you have created the new trial subscription.



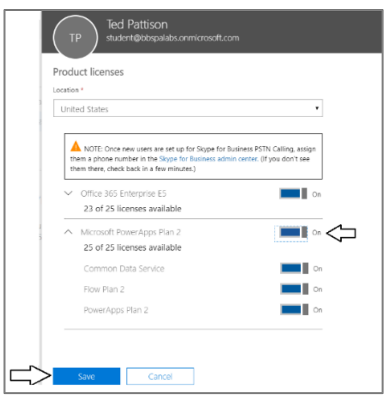
3. Configure your user account by assigning a PowerApps Plan 2 license.
   a) Navigate back to the Active Users page in the Office 365 Admin center.
   b) Click on your user account to edit it.



   c) Click the **Edit** link for **Product licenses**.

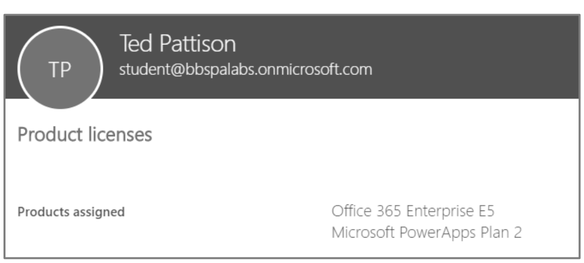


   d) Enable the **Microsoft PowerApps Plan 2** subscription and then click Save below.



After creating a new subscription for PowerApps Plan 2, it might take a minute or two before it shows up in the Product licenses dialog.

   e) You should be able to confirm your user account has been configured with a **Microsoft PowerApps Plan 2** subscription.



You will not actually need the Microsoft PowerApps Plan 2 subscription until you reach the lab exercises which work with the Common Data Service for Apps. However, the PowerApps Plan 2 does provide the extra licensing beyond the Office 365 license such as the ability to use premium connectors and custom connectors.

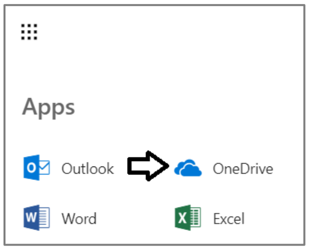
Exercise 3: Create a Canvas App using the Start From Data Template

In this exercise you will create a new app using **Start from Data** template.

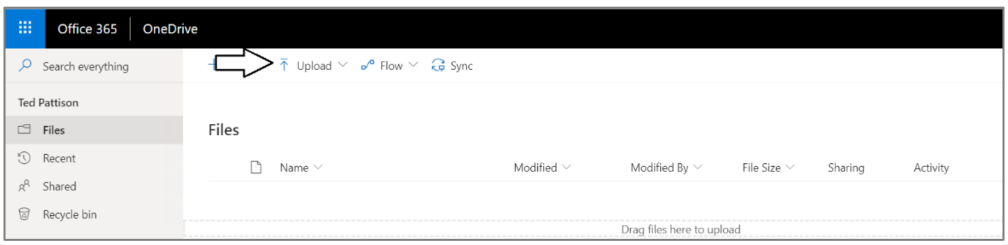
1. Upload the Excel workbook named **Expenses.xlsx** to OneDrive for Business.
   a) Using Windows Explorer, verify that there is an Excel workbook file named **Expenses.xlsx** located at the following path.

```
C:\Student\Modules\01_GettingStarted\Lab\Expenses.xlsx
```

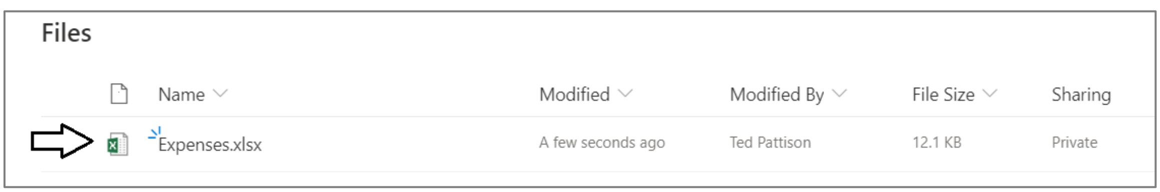
   b) Drop down the Microsoft 365 app launcher menu and select **OneDrive** to navigate to your **Files** collection.



   c) Click the **Upload** button and then select **Expenses.xlsx** to upload this file to OneDrive for Business.

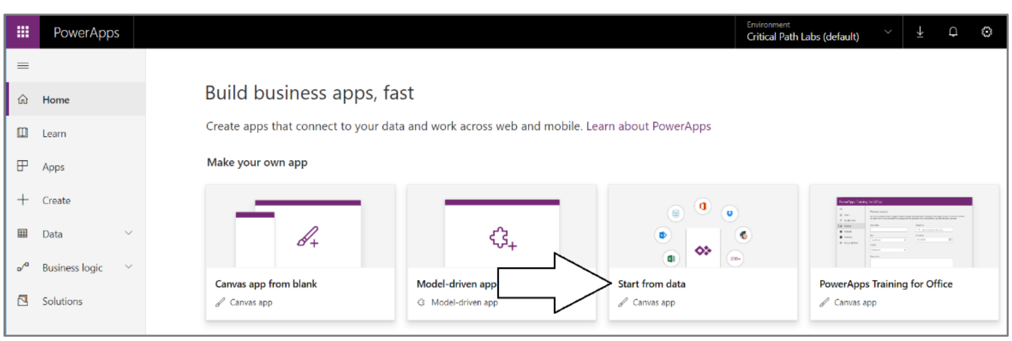


   d) Verify that **Expenses.xlsx** has been uploaded to your **Files** folder.

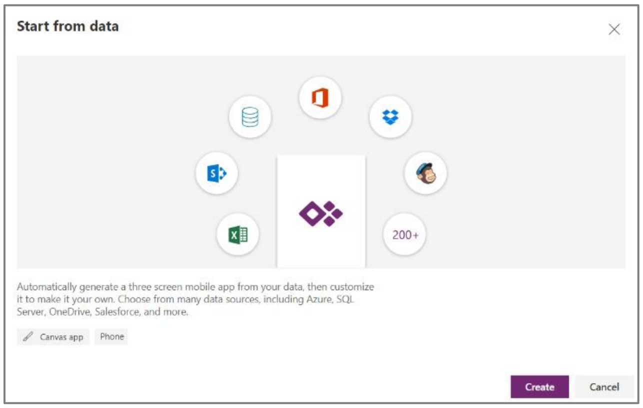


Next, you will create a new Canvas app in PowerApps Studio that will read and write to the **Expenses** table in this Excel workbook.

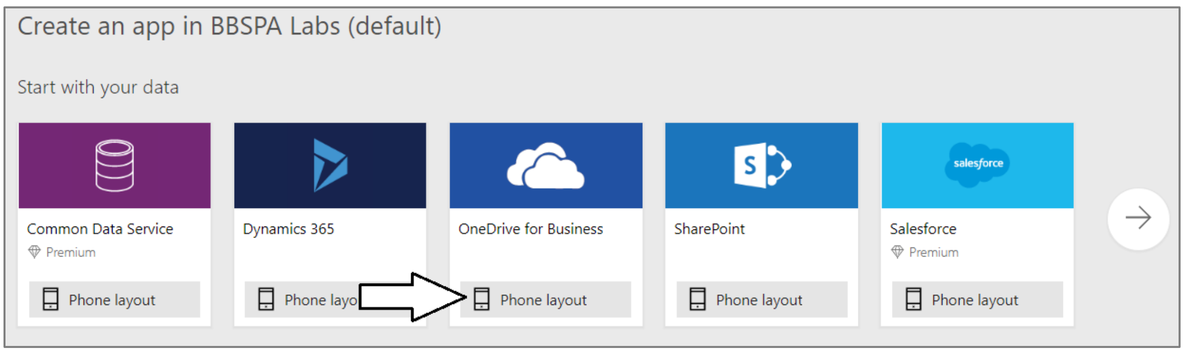
2. Create the new app using the data in the **Expenses.xlsx** workbook.
   a) Navigate back to the **Home** page of the PowerApps portal at https://web.powerapps.com.
   b) Click on the **Start from data** tile to begin the process of creating the new app.



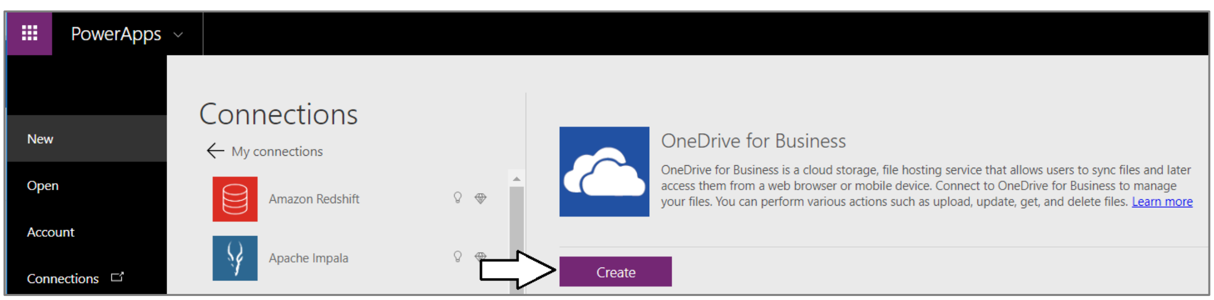
c) Next, click the **Make this app** button.



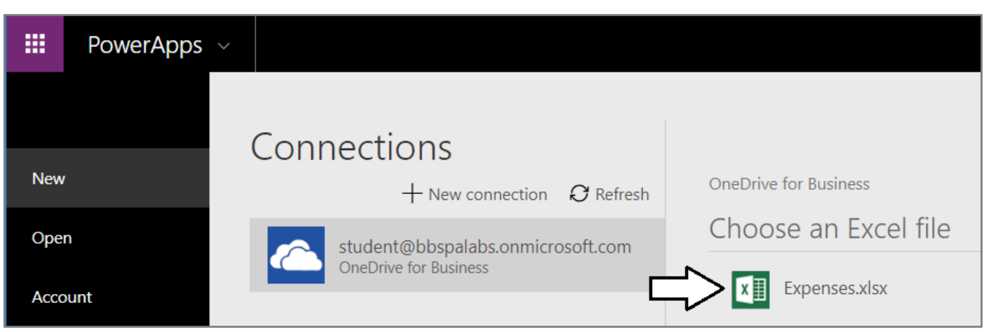
d) Next, click the **Phone layout** button inside the **OneDrive for Business** tile.



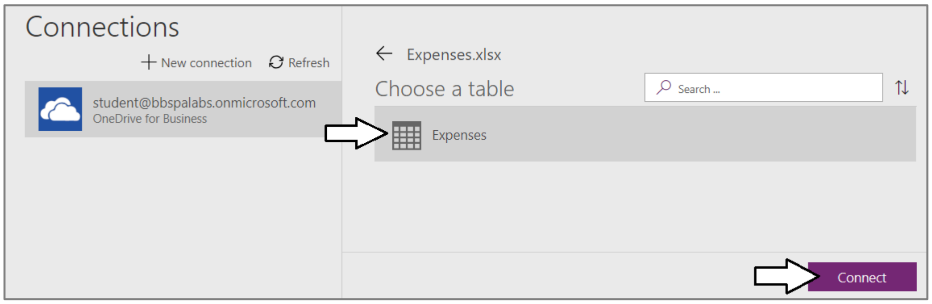
e) Click the **Create** button to create a new connection using the **OneDrive for Business** connector.



f) When prompted to **Choose an Excel file** on the **Connections** page, click the Excel workbook file named **Expenses.xlsx**.

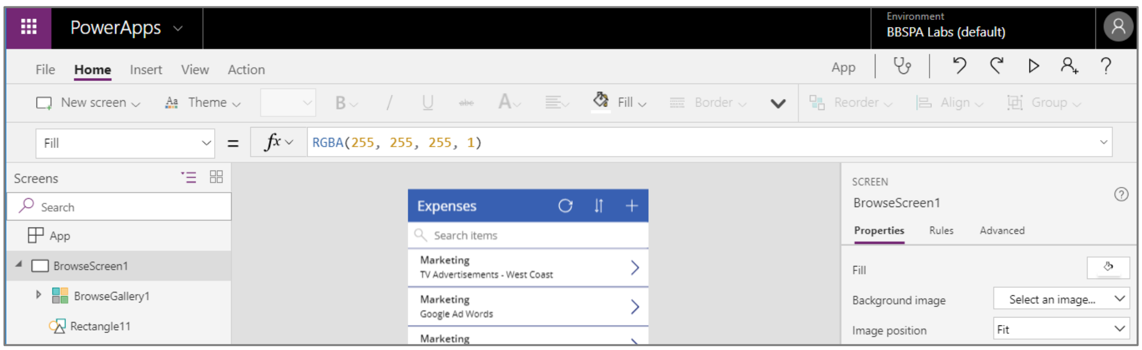


g) When prompted to **Choose a table** on the **Connections** page, select the **Expenses** table and then click **Connect**.



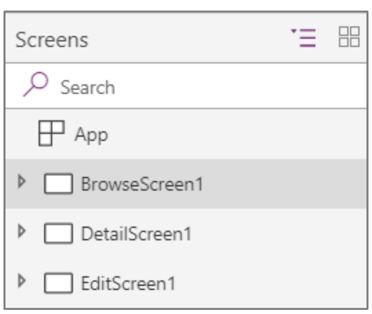
h) Wait while PowerApps Studio generates the starting point for your app.

i) Once PowerApps Studio has created the new app, it should appear as the one in the following screenshot.

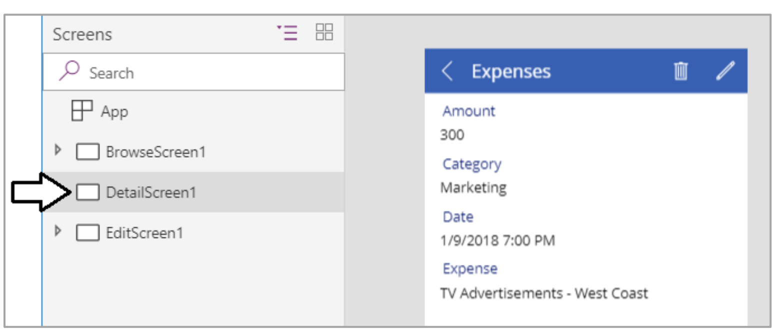


The new app has been created with three different screens. The browse screen shows many expenses at one time. The detail screen and the edit screen are both designed to display only one expense at a time.

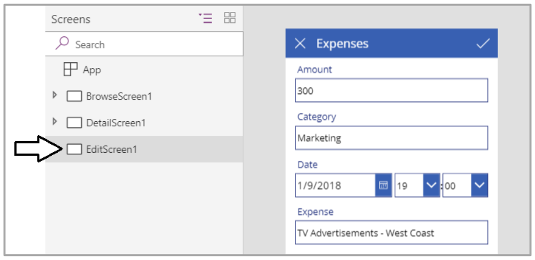
j) Collapse the screen nodes in the left navigation for **BrowserScreen1**, **DetailScreen1** and **EditScreen1**.



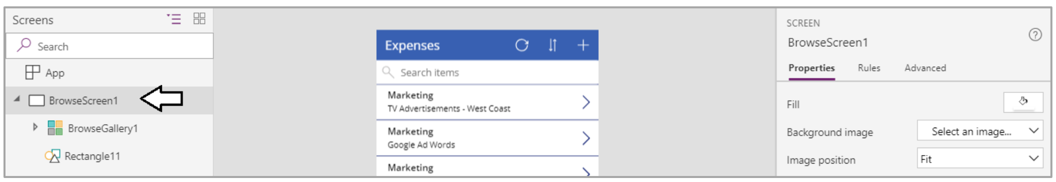
k) Click on **DetailScreen1** in the left navigation to inspect the detail form.



l) Click on **EditScreen1** in the left navigation to inspect the edit form.

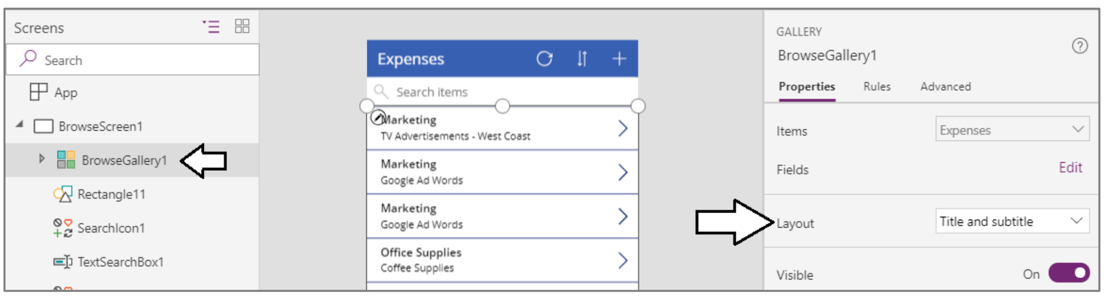


m) Click on **BrowseScreen1** and expand its node in the left navigation.

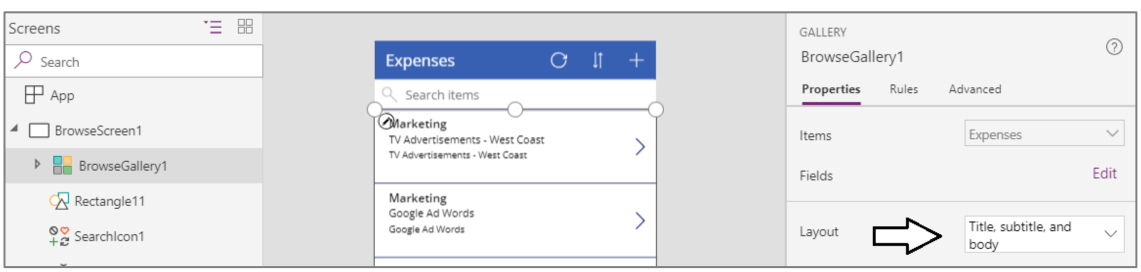


n) Click the **BrowserGallery1** control and then locate the Layout section in the Properties pane on the right.

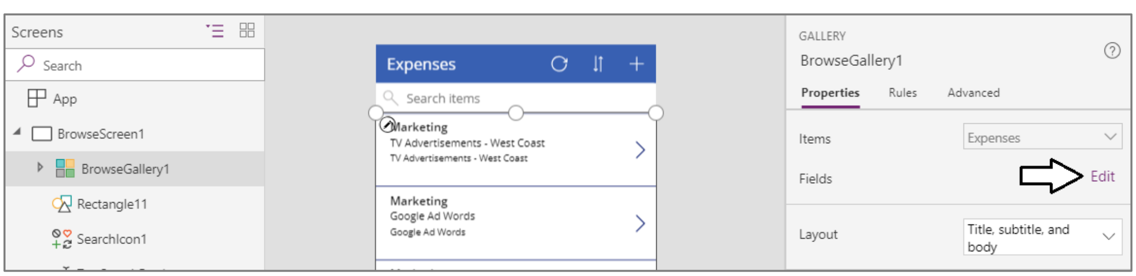
o) You should see that the **BrowseGallery1** control currently has a **Layout** setting of **Title and subtitle**.



p) Update the **Layout** setting for **BrowseGallery1** to a value of **Title, subtitle and body**.

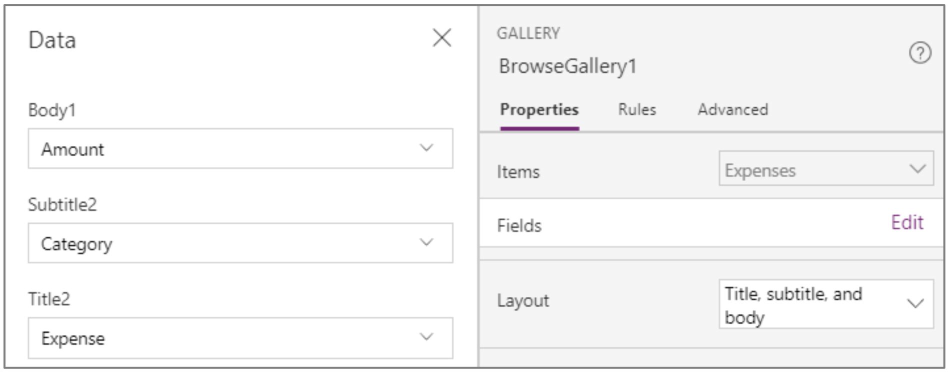


q) Click on the **Edit** link for the **Fields** property to Display the Data pane.

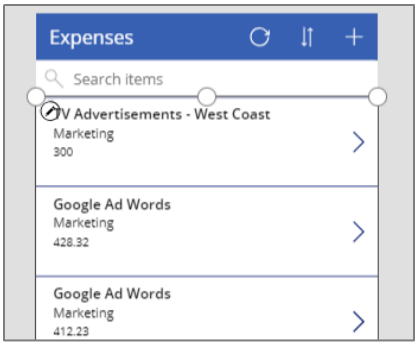


You should now see the Data pane allow you to map fields to items in the gallery template for **BrowseGallery1**.

r) Set **Body1** to the **Amount** field.
s) Set **Subtitle1** to the **Category** field.
t) Set **Title1** to the **Expense** field.

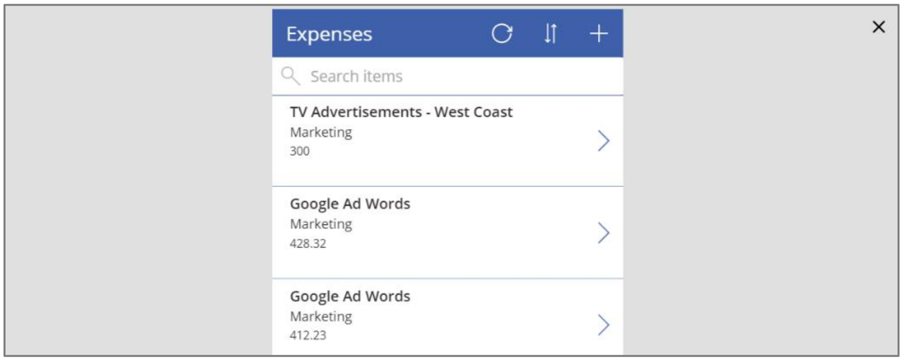


u) Close the Data pane by clicking the x in the top right corner.
v) The browse screen should now display its fields ordered by **Expense**, **Category** and **Amount**.

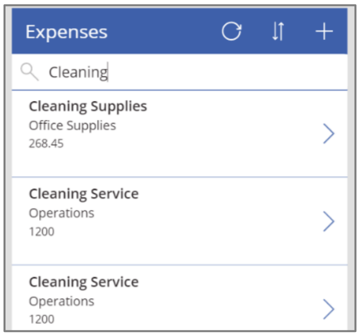


3. Test the app by starting it up and testing the search functionality.
   a) Click the Start button with the arrow icon to launch the app for testing.

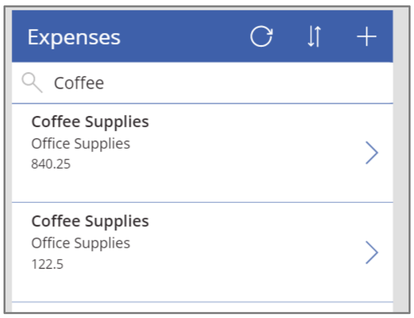
   b) The app should start and appear as shown in the following screenshot.



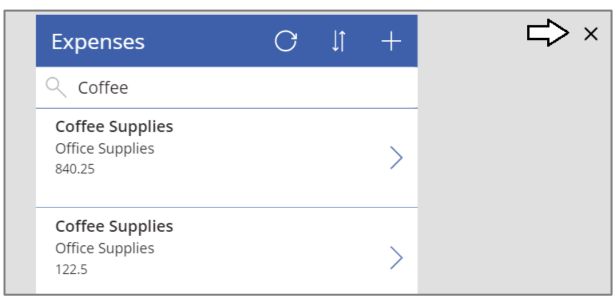
c) Test search functionality by typing the word “Cleaning” in the search box.



d) Try a different search by typing the word “Coffee” into the search box.

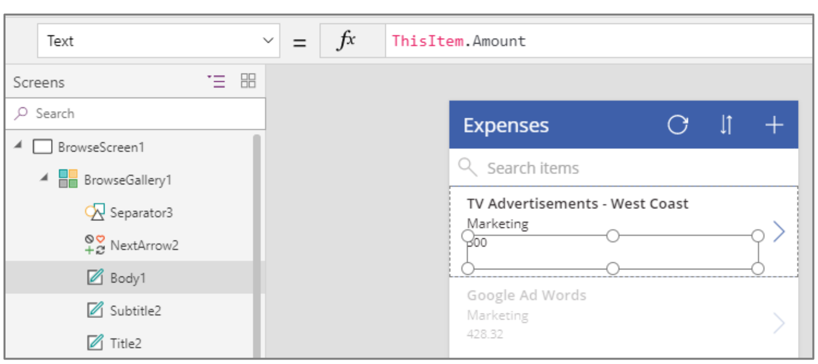


e) Once you have tested the search functionality, stop the app by clicking the button with the **X** icon at the top right.



4. Configure the formatting of the expense **Amount** field.

a) Select the textbox named **Body1** which displays the **Amount** field for each expense. You should be able to see that the **Text** value of this textbox currently configured with a formula which is **ThisItem.Amount**.



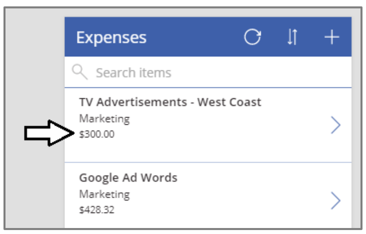
b) Update the **Text** property of the **Body1** textbox with the following formula.

```
Text(ThisItem.Amount, "$#,##0.00")
```

c) When you update the formula, it will initially match the following screenshot.

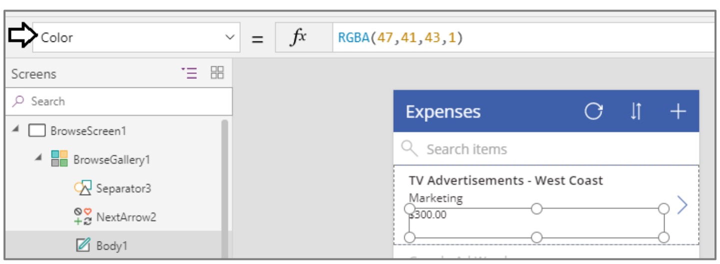
d) Note that after you update the formula, PowerApps Studio will automatically update the formula to include **[$-en-US]**.

e) The **Amount** field should now display its value with currency formatting.



5. Configure the **Color** property of **Body1** to display **Amount** values in red when they are $500 or greater.

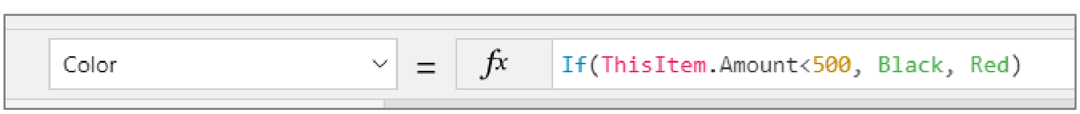
a) With the **Body1** control selected, use the property drop down to display the **Color** property.



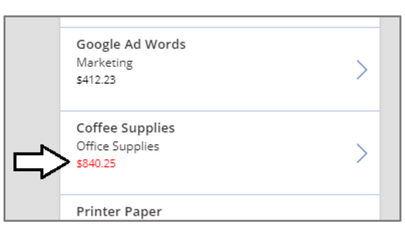
b) Update the **Color** property for **Body1** with the following formula.

```
If(ThisItem.Amount<500, Black, Red)
```

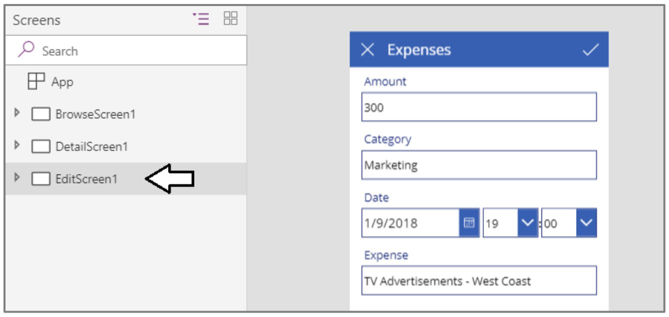
c) The formula bar should match the following screenshot.



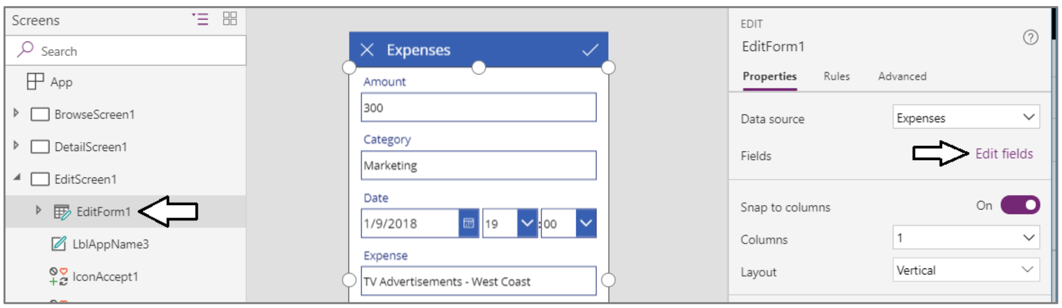
d) You should now see that **Amount** values of $500 or greater are displayed with a red font.



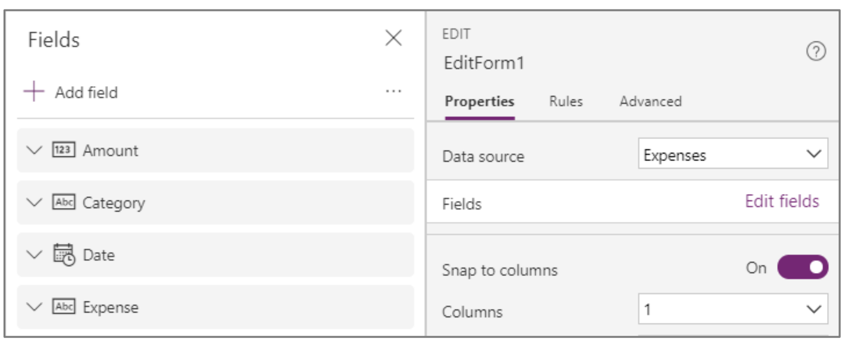
6. Modify the edit screen to streamline data entry for new expenses.
   a) Using the left navigation, move to the edit screen.



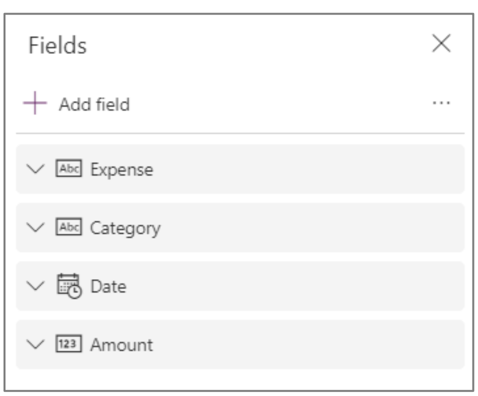
   b) Display the **Data** pane so you can see the **Fields** collection of the edit form. At this point, the fields are sorted alphabetically.



   c) Using the mouse, rearrange the fields by moving **Expense** to the top followed by **Category**, **Date** and then **Amount**.

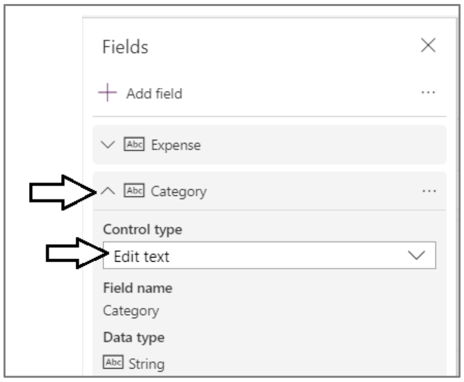


   d) The edit screen should now display its fields using the new sort order.

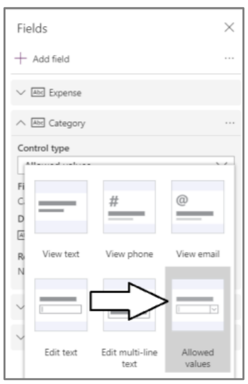


7. Update the data card for the **Category** field to provide a dropdown list with allowed values.

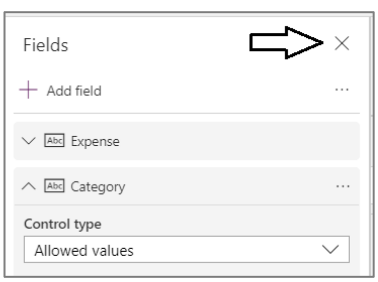
   a) Drop down the menu with the **abc** icon to the right of the **Category** field.



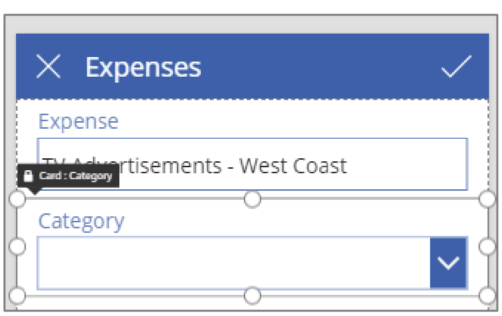
   b) Select a control type of **Allowed Values**.



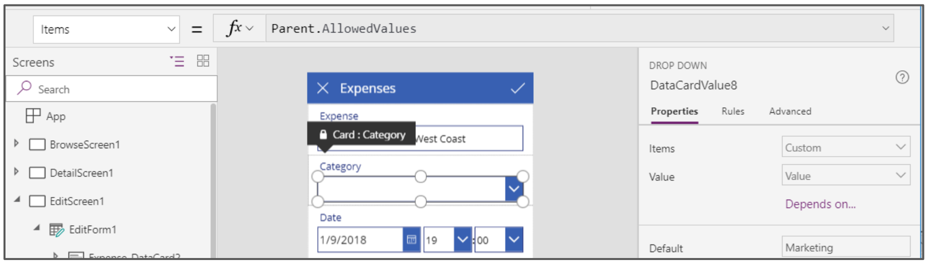
   c) Close the **Fields** pane.



   d) The control which displays the **Category** field should change to a dropdown menu.

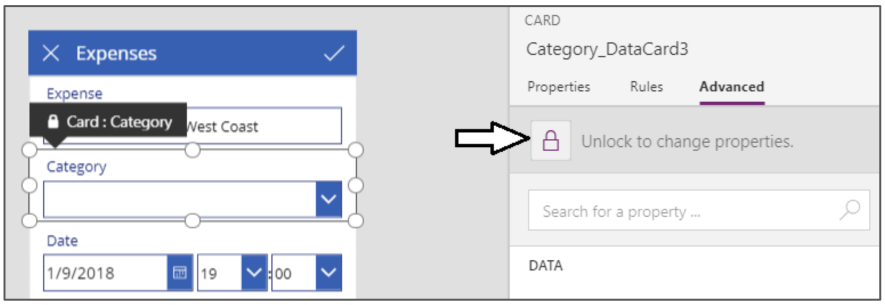


e) Select the dropdown menu and examine the **Items** property in the formula bar.



You will notice that the formula bar is read-only for the **Items** property because the data card is locked by default.

f) In the Advanced pane, click the Unlock to change properties button.

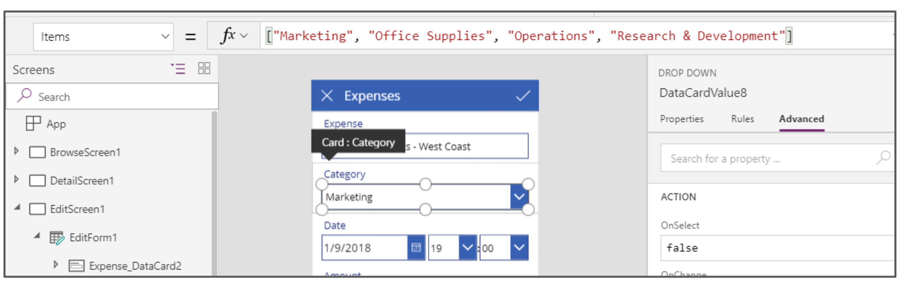


Note that the user interface experience might seem a bit strange when you click the **Unlock to change properties** button. At first it seems like nothing is happening. However, after a few seconds you should see that he **Items** property become editable.

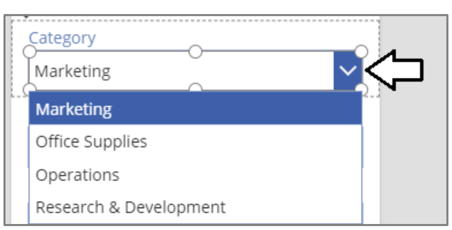
g) Update the **Items** property of the dropdown list with the following formula.

```
["Marketing", "Office Supplies", "Operations", "Research & Development"]
```

h) The formula bar should match the following screenshot.



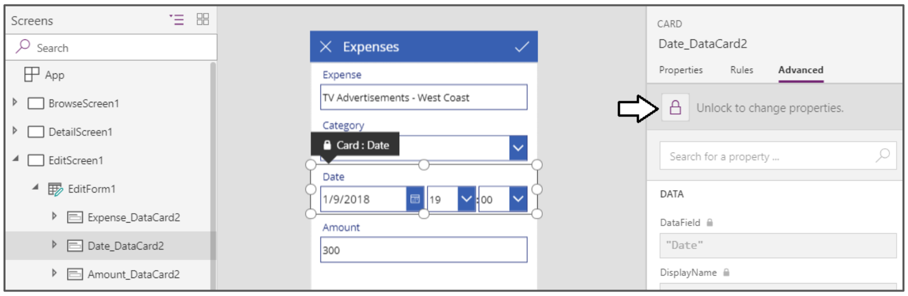
i) If you start the app, you should be able to test the dropdown list and verify that it provides four allowed values.



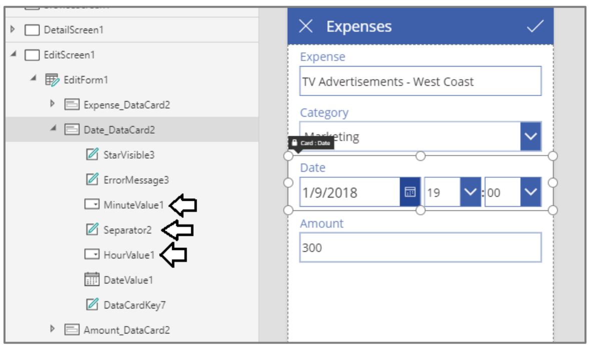
8. Update the data card for the **Date** field to make it a date-only.

a) Select the data card for the **Date** field.

b) In the **Advanced** pane, click the **Unlock to change properties** button for the data card for the **Date** field.

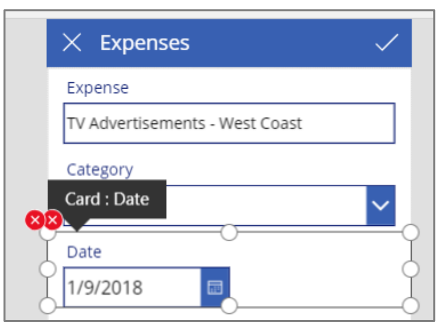


c) Using the left navigation, select and delete the controls named **MinuteValue1**, **Seperator2** and **HourValue1**.

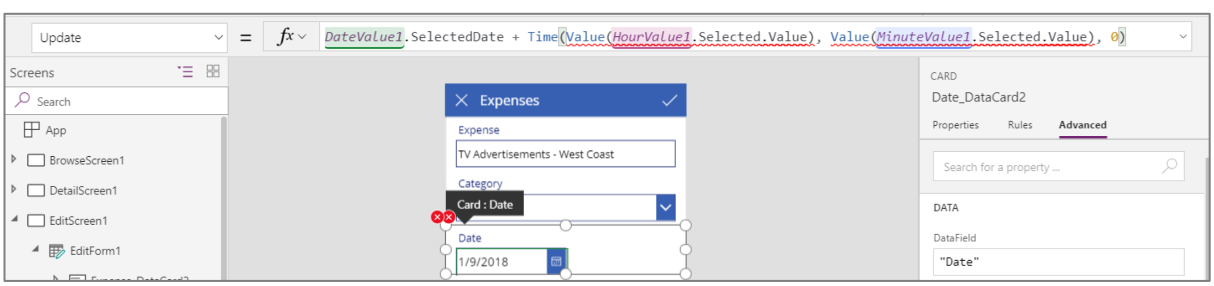


d) After deleting **MinuteValue1** and **HourValue1**, you will notice formula errors due to referencing deleted controls.

e) Click on the red error icon with to the left.



f) At this point, you should see the formula for the **Update** property in the formula bar.



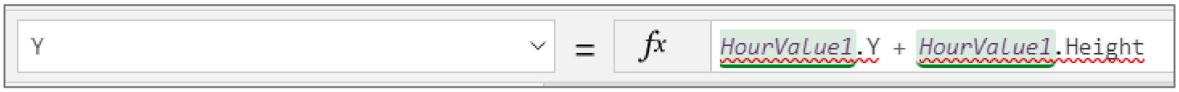
g) Replace the existing **Update** formula with the following formula to remove references to **HourValue1** and **MinuteValue1**.

```
DateValue1.SelectedDate
```


h) The formula for the **Update** property of the data card should now appear as the formula shown in the following screenshot.

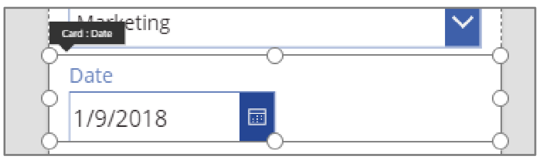
i) Click on the one remaining red error icon to display the other formula error.

j) You should see the **Y** property of **ErrorMessage3** contains references to the deleted control named **HourValue1**.

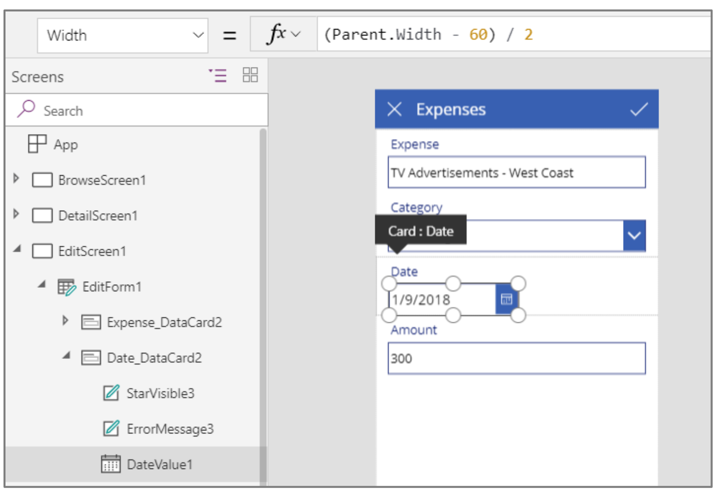


k) Replace the existing formula for the **Y** property with a value of **0** as shown in the following screenshot.

l) At this point, you should no longer see any error indicators.



m) Select he **DateValue1** control and examine its **Width** property.



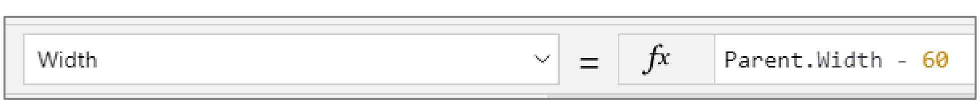
n) You should see that the formula of the **Width** property has the following value.

```
(Parent.Width – 60) / 2
```

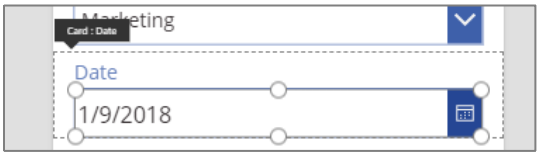
o) Update the formula of the **Width** property to the following formula.

```
Parent.Width – 60
```

p) Your formula bar should match the following screenshot.



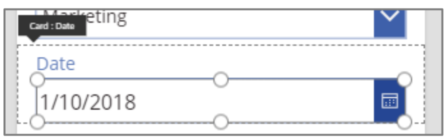
q) The **DateValue1** control should expand to the same width of the other input controls on the edit screen.



9. Update the **DataTimeZone** property of **DateValue1**.
   a) Inspect the **DateTimeZone** property of the **DateValue1** control. Its current value should be **Local**.

   b) Update the **DataTimeZone** property to a value of **DataTimeZone.UTC** as shown in the following screenshot.

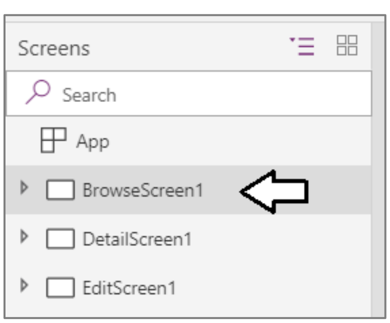
   c) All the dates displayed on the edit screen should now move ahead by one day and display their proper value.



The problem with date values in the Local format is that they are offset by the difference between Greenwich Mean Time and your local time zone. For example, if you are in Eastern Daylight Time (EDT), the date of **January 10, 2018** is displayed with a 5-hour offset which is **January 9, 2018 at 7:00 PM**. By setting the **DataTimeZone** property to **UTC**, you are effectively removing the offset and the dates are displayed more accurately.

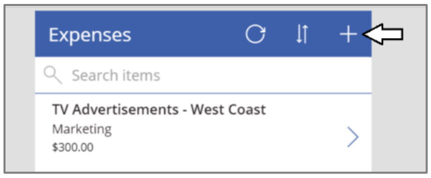
10. Configure the current day as the default value for **DateValue1**.
    a) Make sure the **DateValue1** control is selected.
    b) Inspect the **DefaultDate** property value for **DateValue1**.
    c) Update the **DefaultDate** property using the **Today()** function as shown in the following screenshot.

11. Test out the app by starting it and adding a new expense.
    a) Before starting the app, navigate to the screen named **BrowseScreen1**.

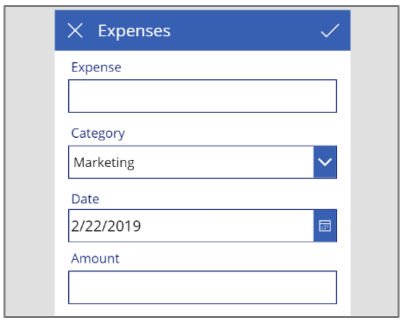


b) Click the Start button with the arrow icon to launch the app for testing.

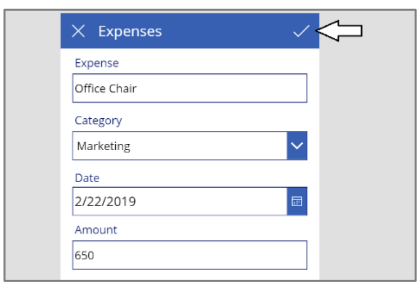
c) When the browse screen appears, click to button with the **+** icon to add a new expense.



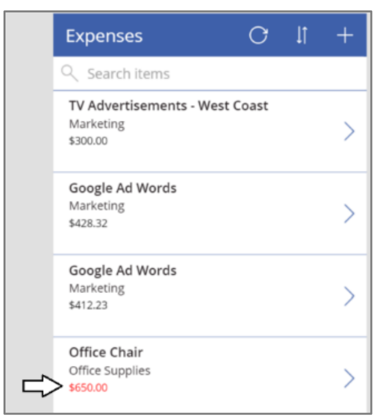
d) You should now see the edit form into which you can enter a new expense.



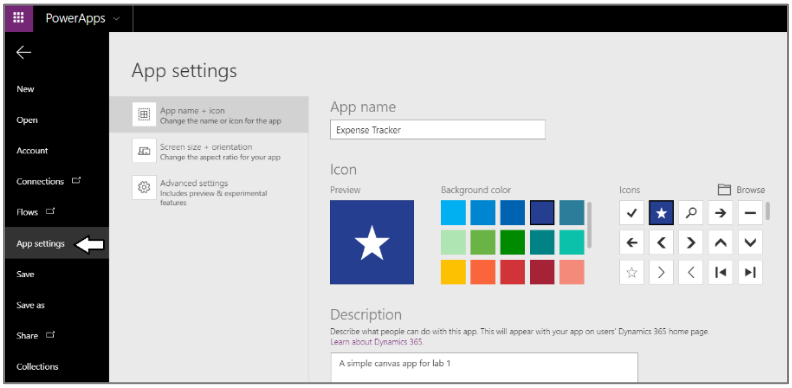
e) Fill in the edit form for the new expense using the data shown in the following screenshot and then click the button with the checkmark icon in the upper right to save your work.



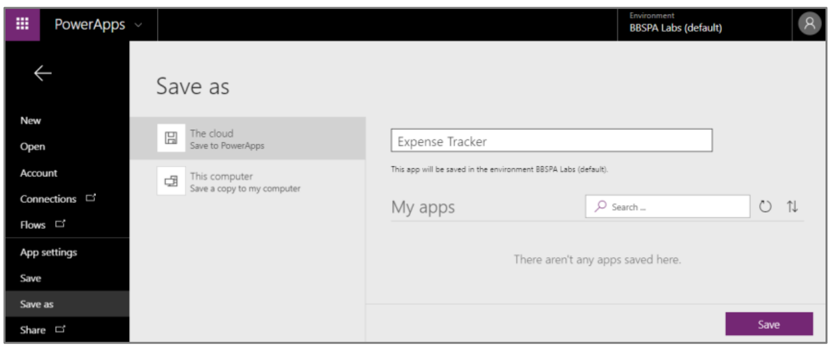
f) Once you have saved the new expense, you should be able to see it in the browse screen.



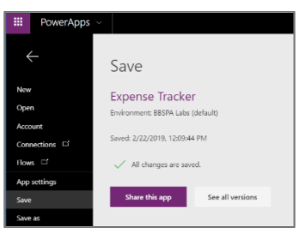
12. Save the app to the cloud.
    a) Drop down the **File** menu and click the **App settings** link.
    b) Name the app **Expense Tracker** and assign a color, icon and description as shown in the following screenshot.



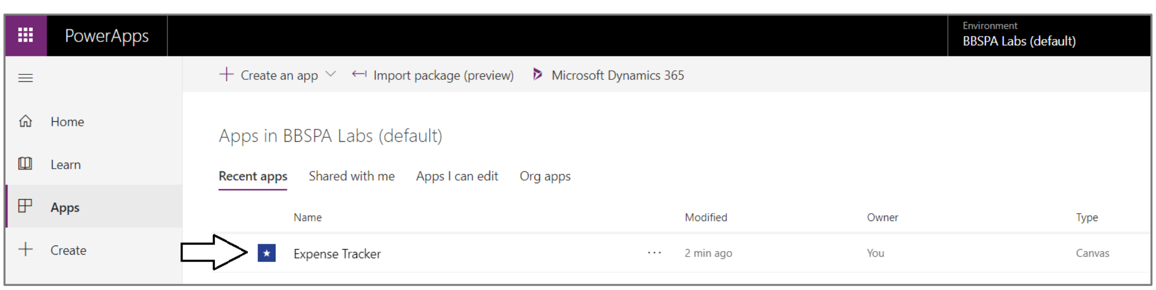
    c) Click the **Save** link in the left navigation and then click the **Save** button in the lower, right-hand side of the screen.



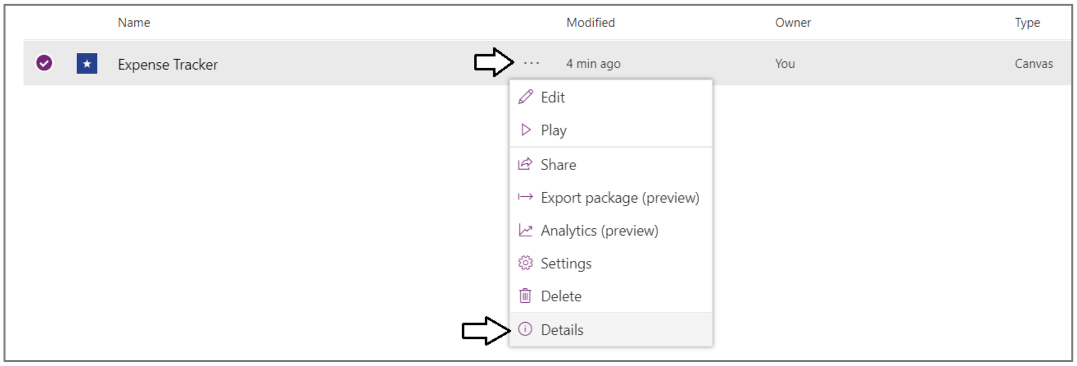
    d) You should be able to confirm that your app has been saved.



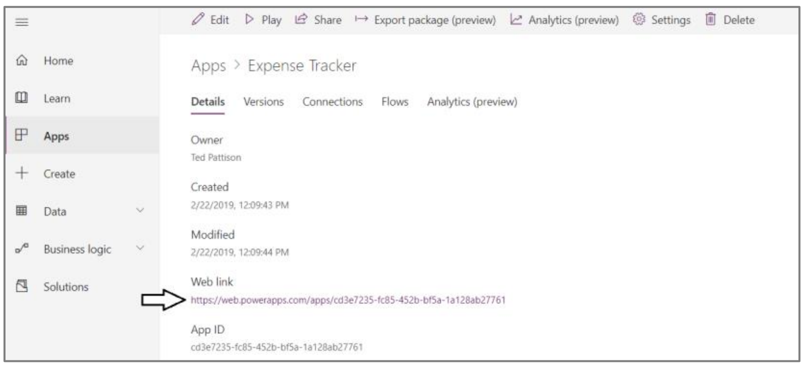
13. Examine the details of the new app.
    a) Return the PowerApps portal at https://web.powerapps.com and click the **Apps** link.
    b) Locate and the new app named **Expense Tracker**.



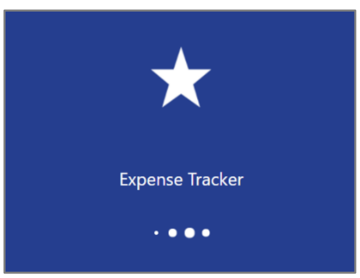
c) Click on the ellipse (**...**) dropdown menu to the right of **Expense Tracker** app and select **Details**.



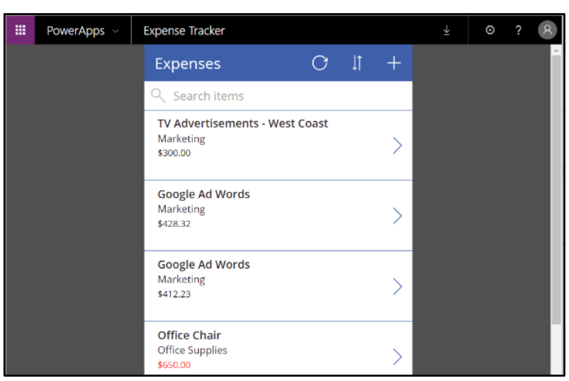
d) On the app **Details** page, locate the **Web link** and click on it to launch the app.



e) The app should start up when you click that Web link.



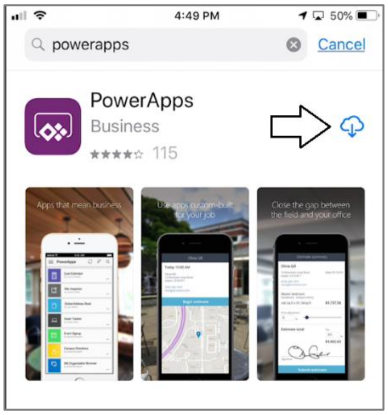
f) The app should now start up in the usual run mode for end users.



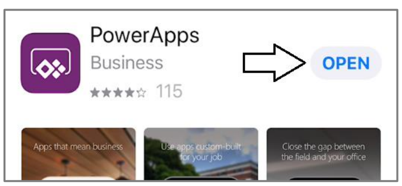
Exercise 4: Test the Expense Tracker Application From a Mobile Device

In this exercise you will create begin by installing the native PowerApps app on your mobile device. If you have already installed the PowerApps app pn your mobile device, you can skip step 1 and move to step 2 of this exercise. If you do not have a mobile device that supports the PowerApps native app, you can skip the entire exercise and move on to Exercise 5.

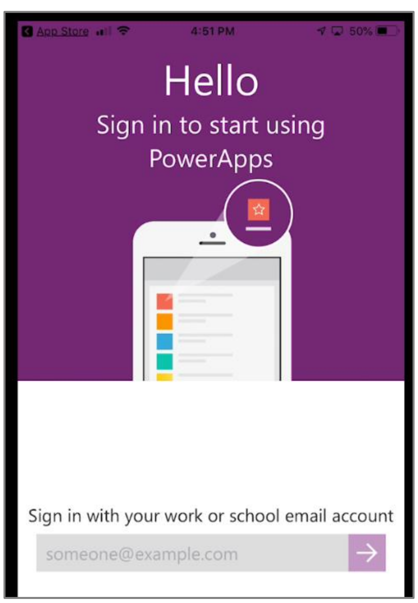
1. Install the PowerApps native app on your mobile phone. This lab assumes you have a mobile phone which supports the PowerApps native app which include iPhones, Android phones and Windows 10 phones.
   a) Navigate to the App Store for your mobile device and search for PowerApps.
   b) Locate and installed the PowerApps app on your mobile device.



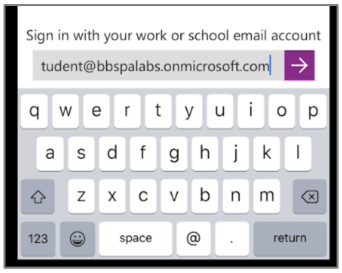
   c) Once the PowerApps app has been installed, open it.



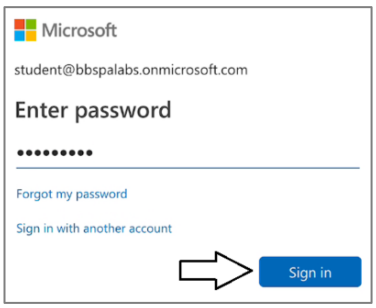
   d) You should now see the app welcome screen..



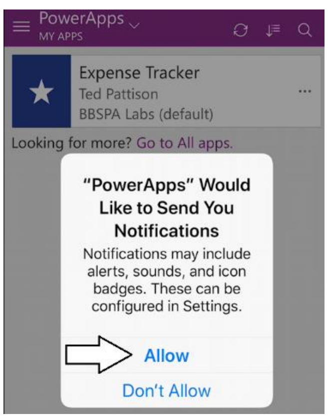
2. Sign into the PowerApps native app using the primary user account for the tenant you created at the start of this lab.
   a) Launch the PowerApps native app if it is not already running.
   b) Enter the user name (i.e. email address) of the primary user account for your new Microsoft 365 tenant.
   c) Click the purple button with the arrow to begin the sign in process.



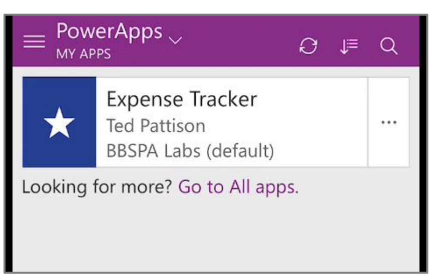
   d) When prompted, enter your password and click **Sign in**.



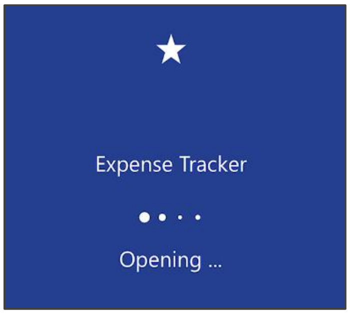
   e) If it's the first time you have run this app, you will be prompted to allow the app to send you notifications. Click **Allow**.



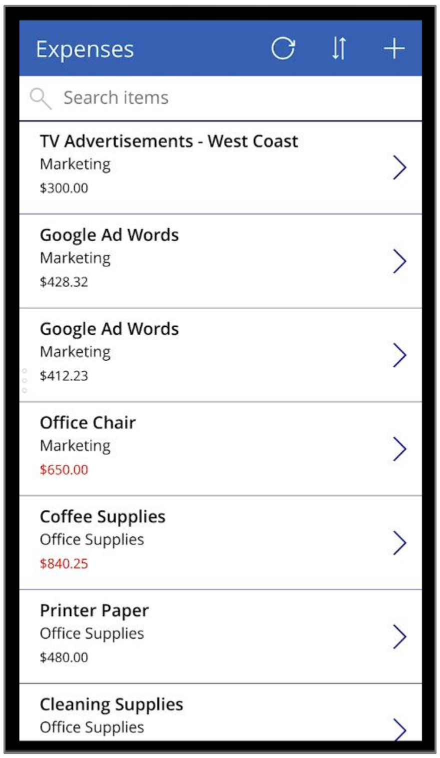
   f) Once you have logged in, you should be able to see the Expense Track canvas app in the list of apps.



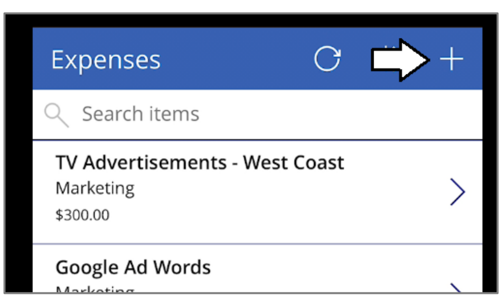
3. Open the Expense Tracker canvas app on your mobile device.
   a) Touch the Expense Tracker app in the apps list to launch it.
   b) You should see that app starting up.



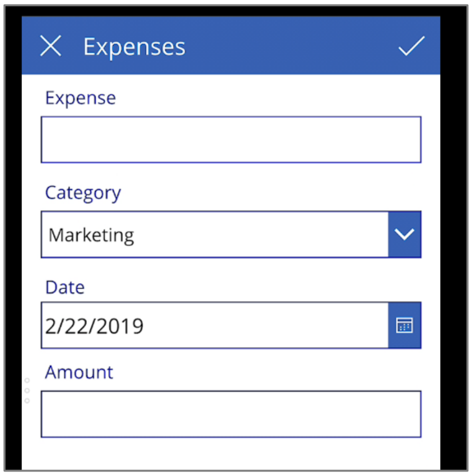
   c) When the app opens, you should be able to view existing expenses.



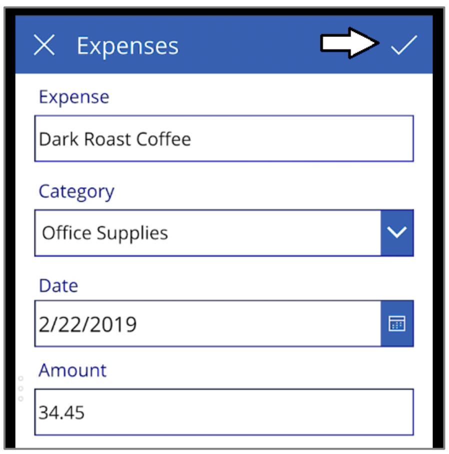
4. Use the mobile app to enter a new expense.
   a) Touch the button with the **+** sign to add a new expense.



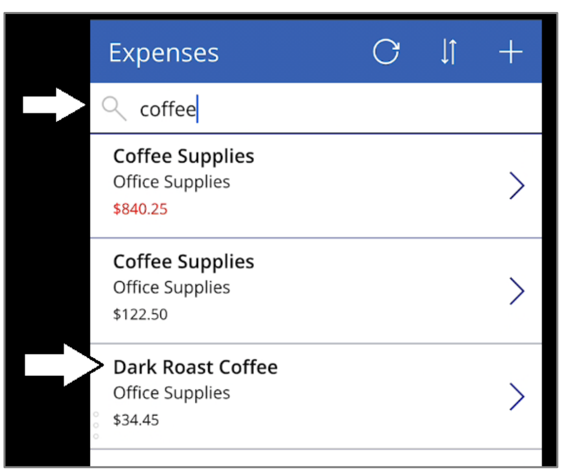
b) You should now see the screen for adding a new expense.



c) Add new expense data as shown in the following screenshot and touch the button with the checkmark to save your changes.



d) Once the expense has been saved, search for coffee and verify you can see the new expense.



The purpose of this exercise is to ensure you can test canvas apps on your mobile device. Once you have successfully added a new expense, you can close the app on your mobile device.and move ahead to the next exercise.

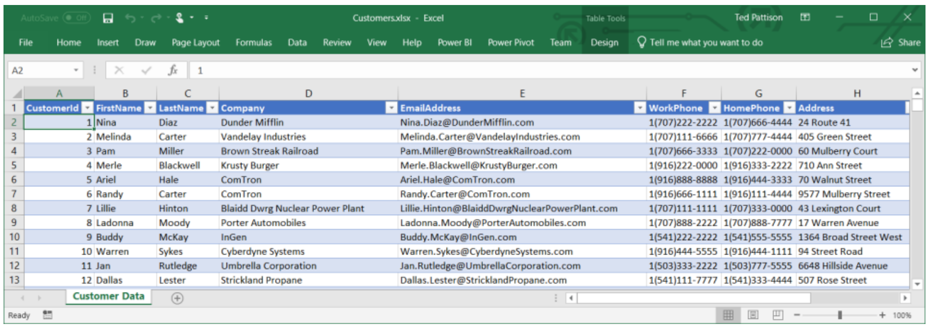
Exercise 5: Create a Canvas App using the Start from Blank Template

In this exercise you will create a new canvas app using **Canvas app from blank** template. This will give you experience creating the data binding for a canvas app without having to resort to using the **Start from data** template. In this lab you will also learn how to use the **Filter** function and the **Sort** function to manipulate data in a table. By the end, you will also work through the problems associated with a data source such as a table in an Excel workbook that does not support delegation.

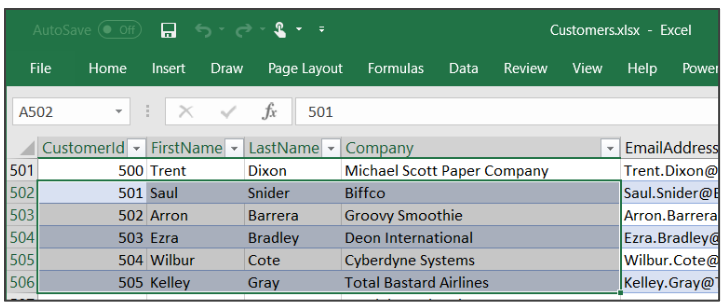
1. Inspect the Excel workbook named **Cusrtomers.xlsx** located in the Student folder.
   a) Using Windows Explorer, verify that there is an Excel workbook file named **Expenses.xlsx** located at the following path.

   ```
   C:\Student\Modules\01_GettingStarted\Lab\Customers.xlsx
   ```

   b) If you have Excel installed, open up this workbook and inspect what's inside.



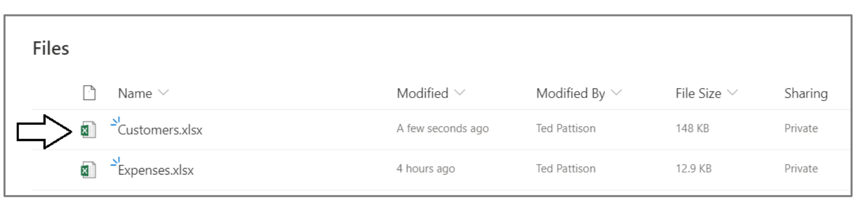
   c) Scroll down until you reach the rows with the **CustomerId** starting with 500.



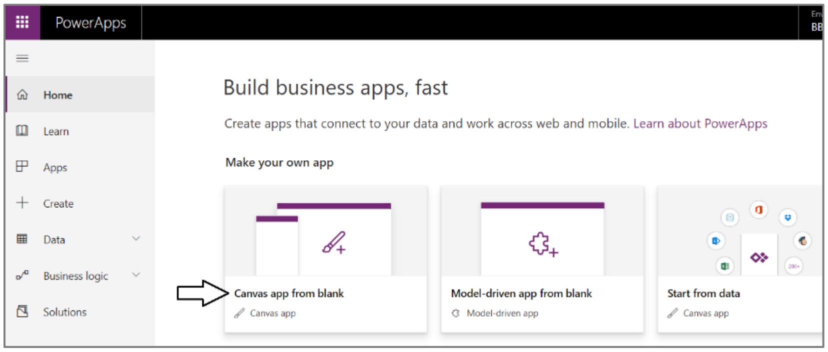
A key learning point in this exercise is gain an understanding about the behavior of data sources that do not support delegation. When a connector does not support delegation, it will only return a maximum of 500 records by default. Therefore, you will not see any customer records with an **CustomerId** over 500. Later in this lab you will search for customers with the last name "Barrera". What you will see later in this exercise is that you will not be able to find this customer with the default canvas app settings which limits the tables it returns to a maximum of 500 records.

   d) Close the Excel workbook named **Customers.xlsx** without saving any changes and then close Microsoft Excel.

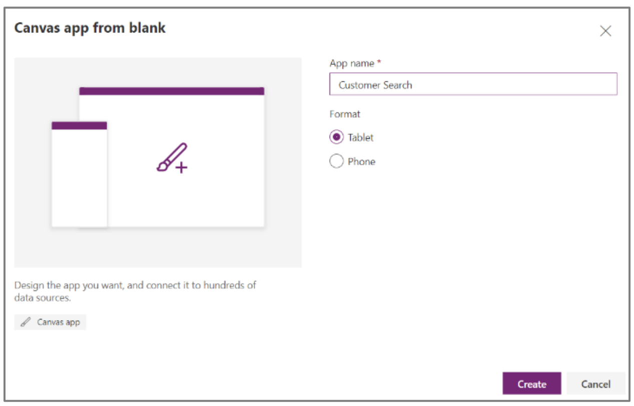
2. Upload the Excel workbook named **Customers.xlsx** to OneDrive for Business.
   a) Drop down the Microsoft 365 app launcher menu and select **OneDrive** to navigate to your **Files** collection.
   b) Click the **Upload** button and then select **Customers.xlsx** to upload this file to OneDrive for Business.
   c) Verify that **Customers.xlsx** has been uploaded to your **Files** folder.



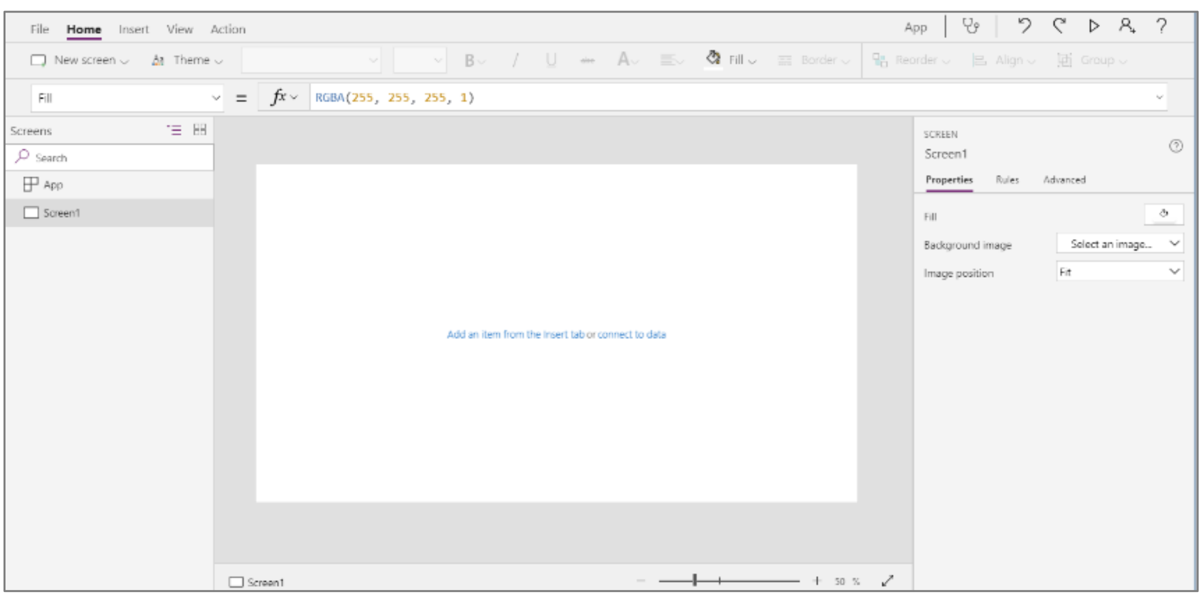
3. Create a new canvas app using the **Canvas app from blank** data template.
    a) Navigate to the PowerApps portal at https://web.powerapps.com.
    b) Create a new canvas app by clicking the **Canvas app from blank** button.



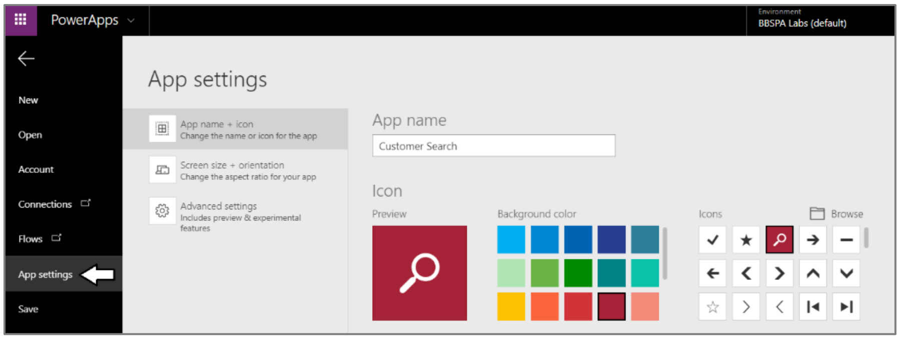
    c) When prompted with the Canvas app from blank dialog, enter an **App name** of **Customer Search**.
    d) Make sure to select a **Format** of the **Tablet** and then click **Create**.



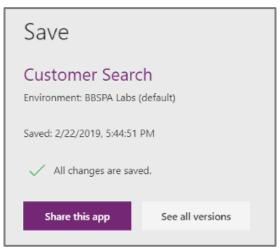
    e) After a few seconds, you should see your new canvas app in PowerApps Studio.



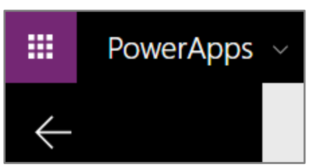
4. Configure the App settings and save your new app.
   a) Click the **File** menu and then click **App settings**.
   b) Make sure the **App name** is set to **Customer Search**.
   c) Select an icon and color of your choosing as shown in the following screenshot.



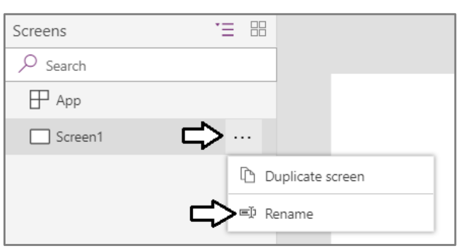
   d) Click Save in the left navigation and then click the Save button in the bottom right corner of the PowerApps Studio window.



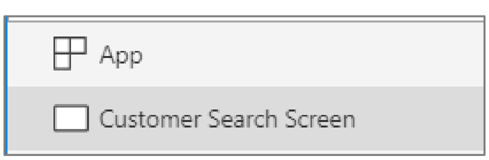
   e) Click the back arrow at the top left corner of PowerApps Studio to return to the canvas app in edit mode.



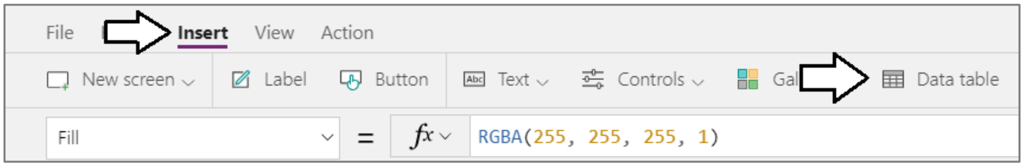
5. Update the name of **Screen1** to **Customer Search Screen**.
   a) Drop down the ellipse menu (**…**) for **Screen1** and select he **Rename** command.



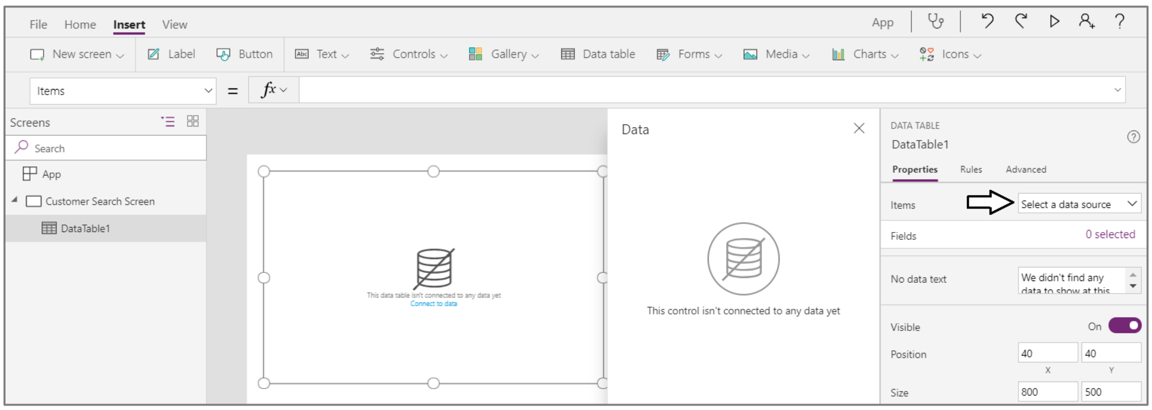
   b) Rename the screen to **Customer Search Screen**.



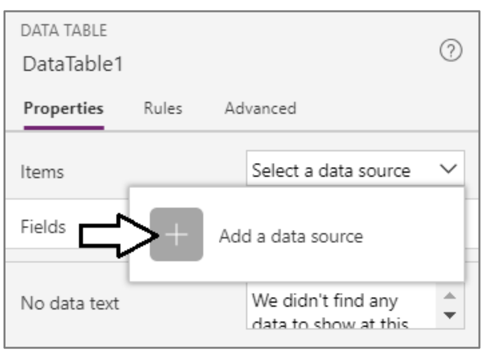
6. Add a new **Data table** control to display customer data.
   a) Navigate to the **Insert** tab in the ribbon.
   b) Click the **Data table** button to add a new Data table control to **Customer Search Screen**.



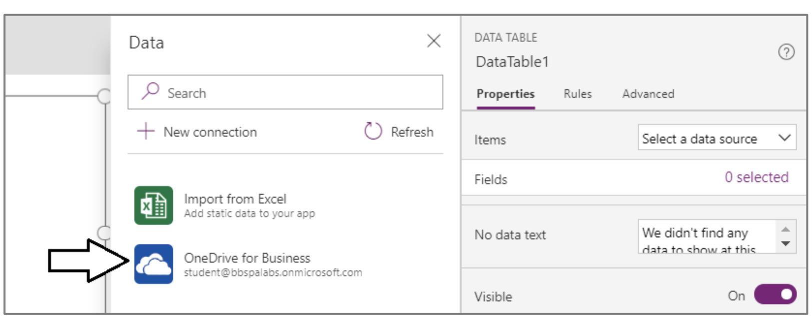
   c) Once the Data table control has been added, inspect its properties in the Properties pan on the right.
   d) Locate the **Items** property which has a dropdown menu with the caption **Select a data source**.



   e) Drop down the menu for the **Items** property and select **Add a data source** to display the **Data** pane.



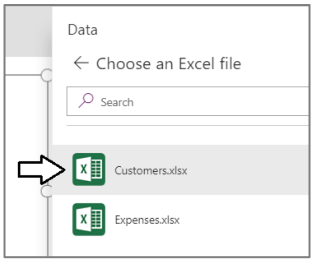
   f) When the **Data** pane appears, select the connection named **OneDrive for Business**.



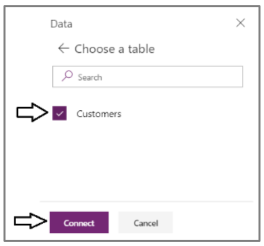
The **OneDrive for Business** connection should automatically appear because you created it when building the **Expense Tracker** app.

g) The **Data** pane should prompt you to **Choose an Excel file** and display the Excel workbooks at your OneDrive root library.

h) Select the Excel workbook named **Customers.xslx**.



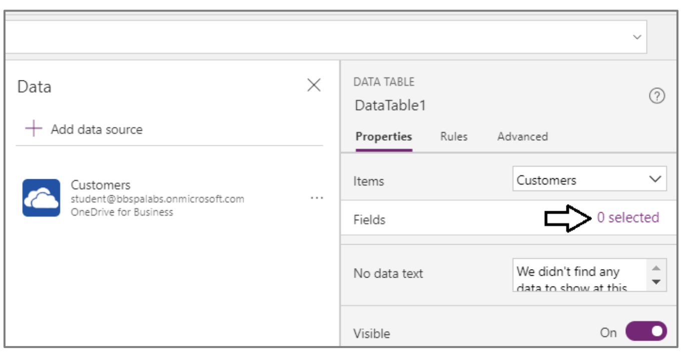
i) When prompted to **Choose a table**, select the **Customers** table and then click **Connect**.



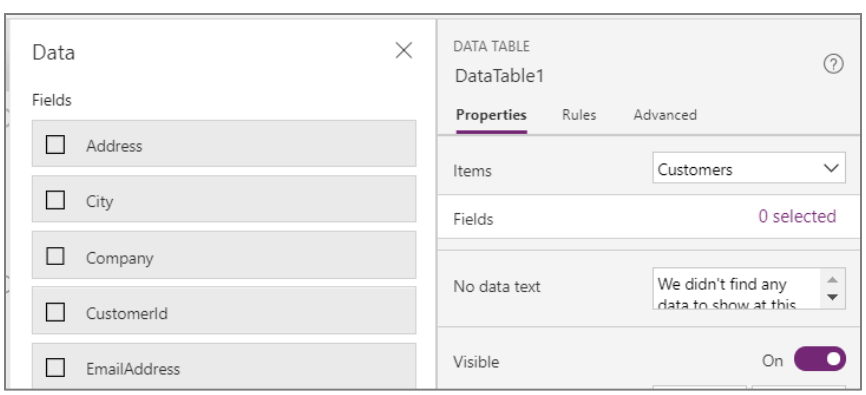
At this point, you have bound the **Customers** table to the Data table control but you have not selected any fields to display.

j) Inspect the **Items** property and the **Fields** property of the Data table control.

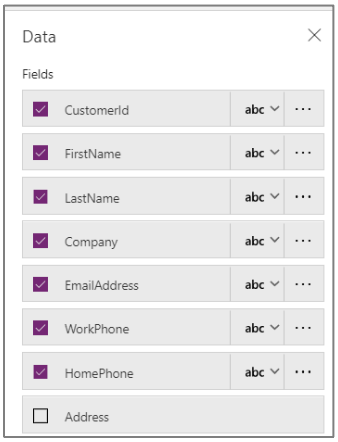
k) You should be able to verify that **Items** property has a value of **Customers** and the **Fields** property shows **0 selected**.



l) Click the link for the **Fields** property with the caption **0 selected** to display the **Fields** list in the **Data** pane.



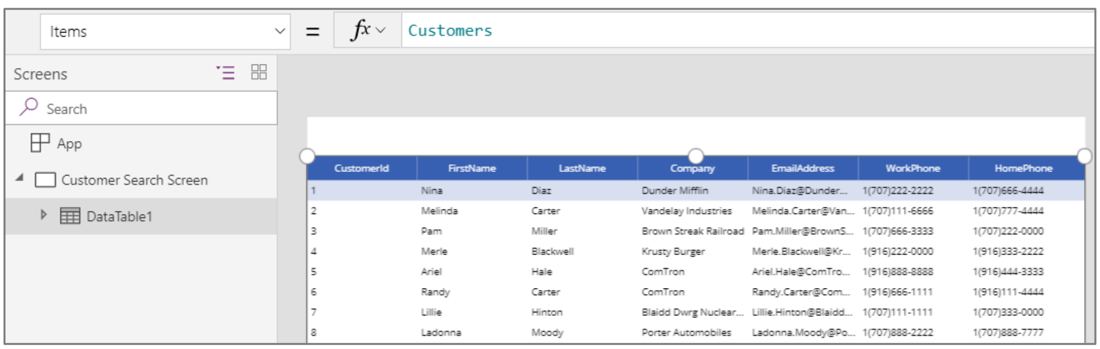
m) Select the fields **CustomerId**, **FirstName**, **LastName**, **Company**, **EmailAddress**, **WorkPhone** and **HomePhone**.



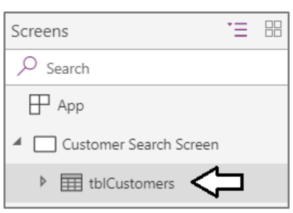
n) You should now see those fields appear in the Data table control.

o) Using the mouse, resize the Data table to take up and entire height and width of the screen.

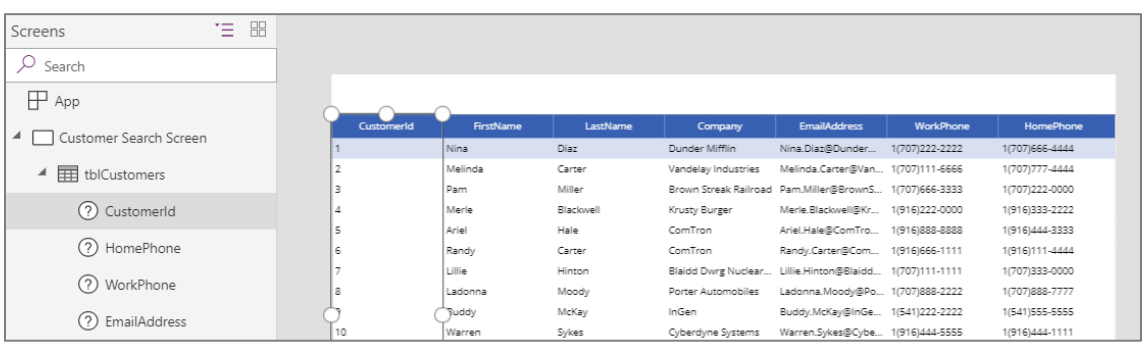
p) Move the top of the Data table down leaving a small amount of empty space at the top as shown in the following screenshot.



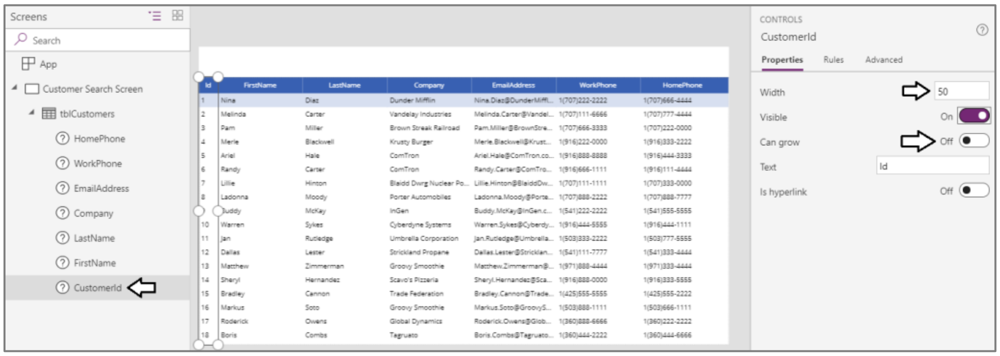
q) Rename the Data table control to **tblCustomers**.



r) Select the **CustomerId** column and then look at this selection in the property pane on the right.

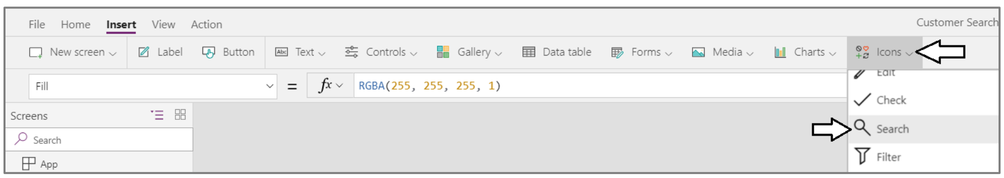


s) Set the **Width** property of the **CustomerId** column to **50** and set the **Can grow** property to **Off**.

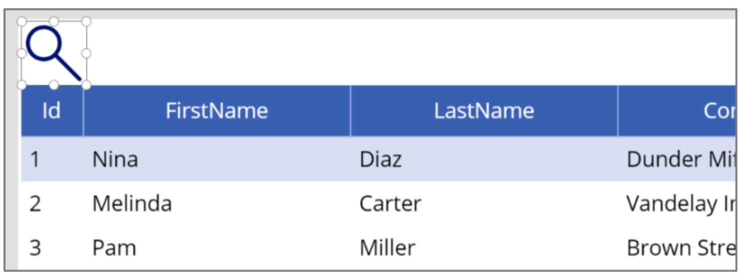


7. Add a search box

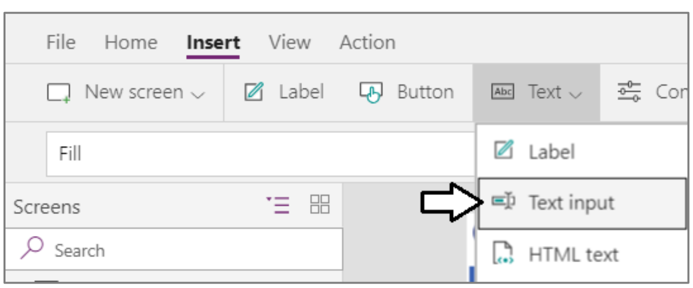
a) Add a search icon onto the **Customer Search Screen**. and rename it to **icoSearch**.



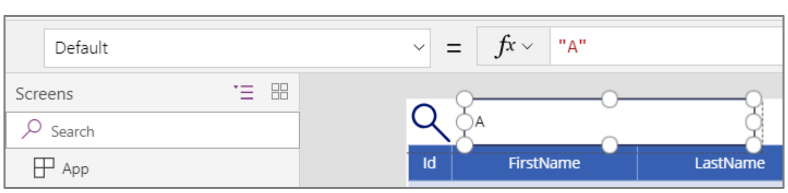
b) Position **icoSearch** in the upper, left as shown in the following screenshot.



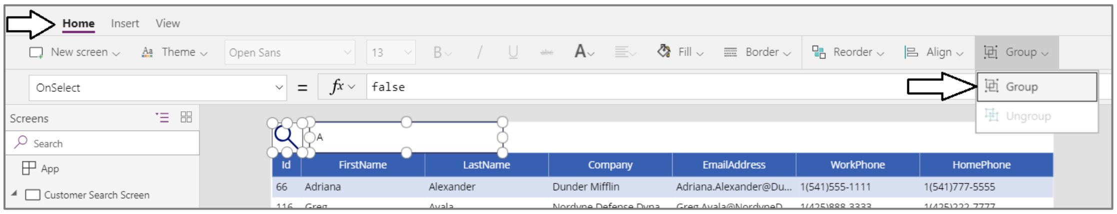
c) Add a **Text input** control to the **Customer Search Screen** and rename it to **txtSearchInput**.



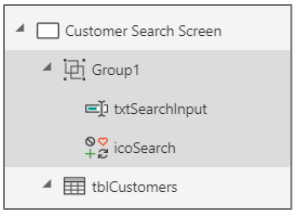
d) Set the **Default** property of **txtSearchInput** to **"A"**.



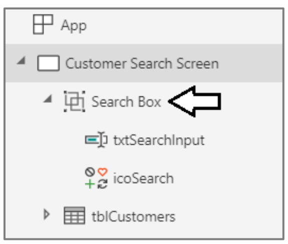
e) Select **icoSearch** and **txtSearchInput** together at the same time and group them using the **Group > Group** command.



f) You should have created a new group named **Group1**.

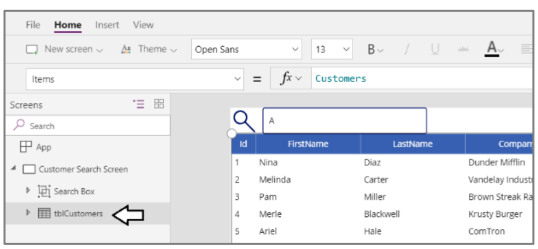


g) Rename **Group1** to **Search Box**.



8. Add filtering and sorting behavior.

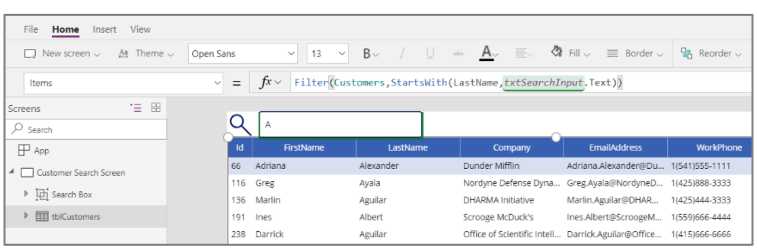
a) Inspect the **Items** property of **tblCustomers** which should currently have a value of **Customers**.



b) Modify the value for the **Items** property of **tblCustomers** using the following expression to add filtering behavior.

```
Filter( Customers, StartsWith(LastName, txtSearchInput.Text))
```

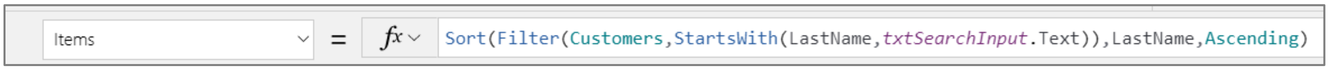
c) The items displayed by **tblCustomers** should now only include customers whose last name starts with "A".



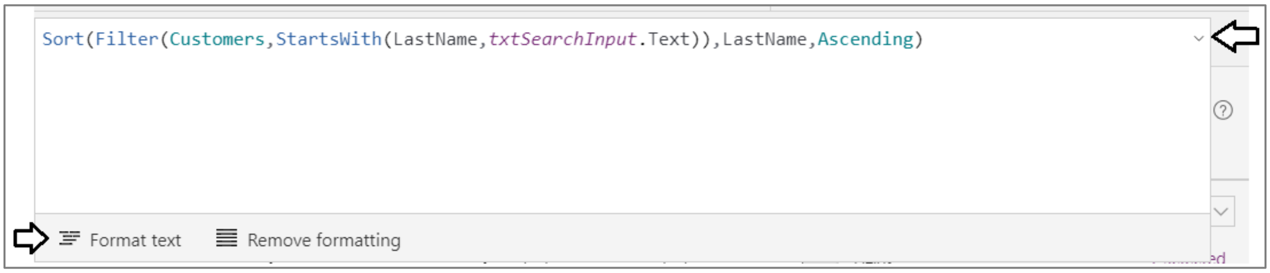
d) Modify the value for the **Items** property of **tblCustomers** using the following expression to add sorting behavior.

```
Sort(Filter(Customers,StartsWith(LastName,txtSearchInput.Text)),LastName,Ascending)
```

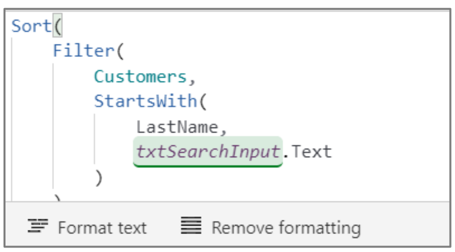
e) Your formula bar should match the following screenshot.



f) Experiment with formula formatting by dropping down the formula bar vertically and clicking the **Format text** button.

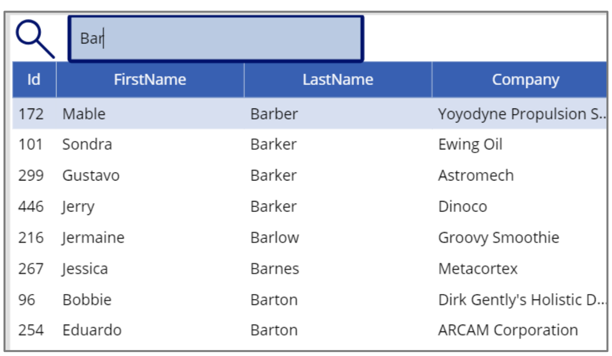


g) You should see that PowerApps Studio is able to format expressions to make them more readable.



9. Test out the filter functionality

a) Start the app and try running a search using a search input string of "Bar". You should see the following results.

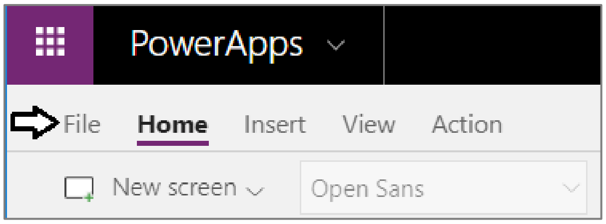


b) Search for "Barr" to find customers with the last name Barrera. Note that you cannot find any customers with this last name.

You are only searching through the first 500 records because of the way delegation works in PowerApps. You will never find any records that exist after the first 500. The key point is that you can get into trouble if you don't understand how delegation works.

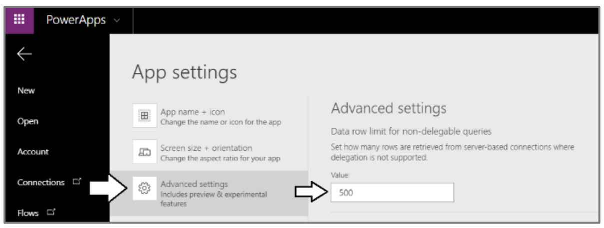
10. Configure the **Customer Search** app to discover records beyond the first 500 record limitation.

a) Navigate to Backstage area in PowerApps Studio by clicking the **File** menu.

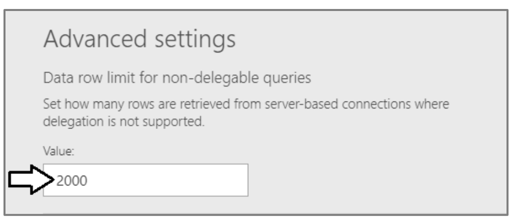


b) Click **App settings** in the left navigations and then click **Advanced settings**.

c) The **Data row limit for non-delegable queries** setting should have the default value of **500**.



d) Modify the value for the **Data row limit for non-delegable queries** setting to the maximum value of **2000**.



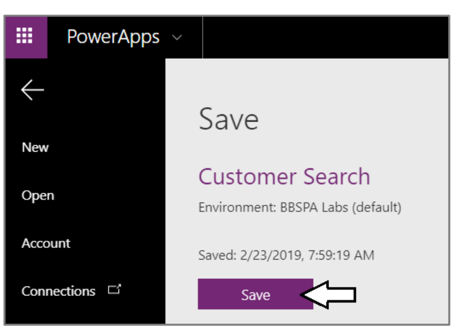
e) Click File to leave the Backstage area.

f) Start up the app and run a search for **Barrera**.

g) You should now find **Barrera** because you are looking through all the records in the underlying Excel table.

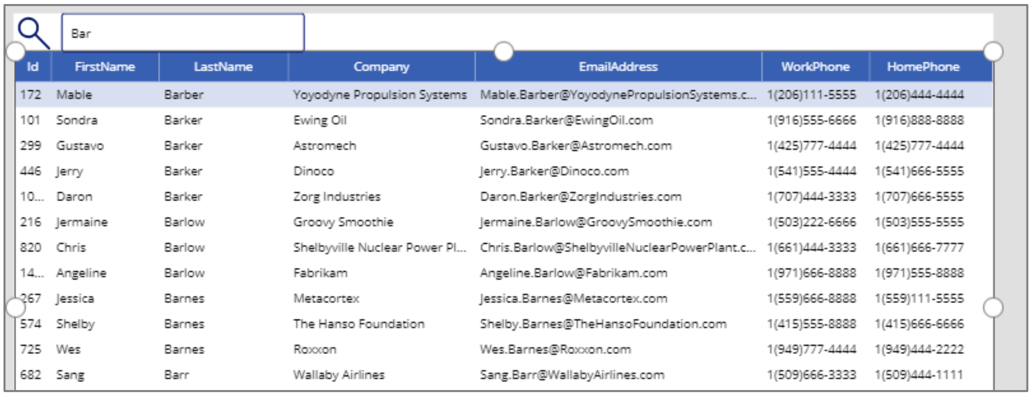
Id	FirstName	LastName	Company	EmailAddress	WorkPhone	HomePhone
502	Arron	Barrera	Groovy Smoothie	Arron.Barrera@Groovy...	1(408)555-2222	1(408)222-8888
655	Irene	Barrera	Trioptimum Corporation	Irene.Barrera@Triopti...	1(949)111-1111	1(949)111-0000
919	Amado	Barrera	Prescott Pharmaceutic...	Amado.Barrera@Presc...	1(323)444-2222	1(323)888-0000
938	Shaun	Barrera	The Hanso Foundation	Shaun.Barrera@TheHa...	1(360)555-8888	1(360)888-2222

h) Quit the app from running and then save your changes to the app.



11. Student challenge (if you have time)

    a) Resize the columns in the Data table to make the data more readable.



Bar

Id	FirstName	LastName	Company	EmailAddress	WorkPhone	HomePhone
172	Mable	Barber	Yoyodyne Propulsion Systems	Mable.Barber@YoyodynePropulsionSystems.c...	1(206)111-5555	1(206)444-4444
101	Sondra	Barker	Ewing Oil	Sondra.Barker@EwingOil.com	1(916)555-6666	1(916)888-8888
299	Gustavo	Barker	Astromech	Gustavo.Barker@Astromech.com	1(425)777-4444	1(425)777-4444
446	Jerry	Barker	Dinoco	Jerry.Barker@Dinoco.com	1(541)555-4444	1(541)666-5555
10...	Daron	Barker	Zorg Industries	Daron.Barker@ZorgIndustries.com	1(707)444-3333	1(707)666-5555
216	Jermaine	Barlow	Groovy Smoothie	Jermaine.Barlow@GroovySmoothie.com	1(503)222-6666	1(503)555-5555
820	Chris	Barlow	Shelbyville Nuclear Power Pl...	Chris.Barlow@ShelbyvilleNuclearPowerPlant.c...	1(661)444-3333	1(661)666-7777
14...	Angeline	Barlow	Fabrikam	Angeline.Barlow@Fabrikam.com	1(971)666-8888	1(971)555-8888
267	Jessica	Barnes	Metacortex	Jessica.Barnes@Metacortex.com	1(559)666-8888	1(559)111-5555
574	Shelby	Barnes	The Hanso Foundation	Shelby.Barnes@TheHansoFoundation.com	1(415)555-8888	1(415)666-6666
725	Wes	Barnes	Roxxon	Wes.Barnes@Roxxon.com	1(949)777-4444	1(949)444-2222
682	Sang	Barr	Wallaby Airlines	Sang.Barr@WallabyAirlines.com	1(509)666-3333	1(509)444-1111

Congratulations. You have now completed this lab.