

Power Platform App in a Day

Module 3: Power Apps Model-driven App Hands-on Lab Step-by-Step

August 2022

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Power Apps Model-driven App

Lab Prerequisites

This is the third lab in a series covering Power Apps canvas apps, Microsoft Dataverse, Power Apps model-driven apps, and Power Automate. The assumption is that you have successfully completed the first two modules, or at least the initial part of setting up an environment as described in the overview – "00-AppInADay Lab Overview.pdf".

If you have not completed the previous two modules, you can use the partially completed version of the lab package in the "\Completed\Module2" folder. Follow the instructions in the document "Importing Module 2 Completed" before proceeding with this module, which will provision the app, and the Microsoft Dataverse table into your environment.

Model-driven Apps – A brief introduction

Model-driven app design is an approach that focuses on adding components such as forms, views, and charts and dashboards to tables using an app designer tool. Additionally, relationships connect tables together in a way that permits navigation between them and ensures that data is not repeated unnecessarily.

Using the app designer with little or no code, you can build apps that are simple or very complex.

Model-driven apps are especially well suited to process driven apps that are data dense and make it easy for users to move between related records. For example, if you are building an app to manage a complex process, such as onboarding new employees, managing a sales process, or member relationships in an organization such as a bank, a model-driven app is a great choice.

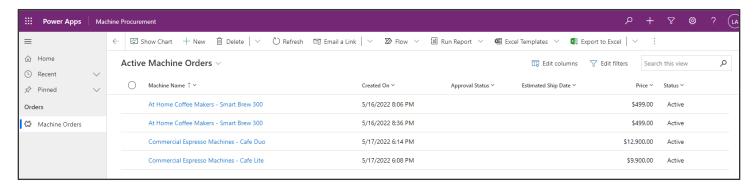
While they're called model-driven apps, it is often easier to think of them as data model driven apps. This is because, without a data model housed within Microsoft Dataverse, you can't create a model-driven app.

- App Designer specifies the sitemap, global dashboards, business processes flows, and tables forms, views, and dashboards <u>learn more</u>
- Sitemap Designer provides the application navigation that is always available <u>learn more</u>
- Business Process Designer provides stages and steps to guide users consistently through common business processes within a form learn more
- Table Designer defines the Columns, relationships, and metadata for a table learn more
- Business Rule Designer provides no-low business logic for a table <u>learn more</u>
- View Designer specifies Columns and filter conditions for a Row list <u>learn more</u>
- Form Designer specifies the Columns and controls along with layout for a single Row learn more
- Dashboard Designer summaries one or more tables using charts, lists, etc. <u>learn more</u>

Scenario for building a Model-driven app

In the first lab module, you built a Power Apps Canvas application for an organization where every few years the employees go through a coffee machine replacement cycle. The application let employees place a request for a machine using the Power Apps app that you built. In the second lab module, using a custom table you created in the Microsoft Dataverse lab, you stored that request for processing.

From the requesting employee's point of view, after they place the order, the new coffee machine just magically shows up. But there is a back-office process that needs to happen to manage the procurement, setup of the device, and distribution of the machine to that requesting employee. In this lab you will be building a Power Apps Model-driven app that will be used by the two or three back-office staff that manage fulfilling machine requests. Using the Model-driven app style, you can take advantage of the Business Process feature of Model-driven apps to keep the back-office staff on track for each machine request.



Model-driven apps are a type of application you can build directly from PowerApps.com. Model-driven apps make it easy to build forms over data applications quickly. This style of application brings together forms, views, dashboards, and charts quickly to provide a productive user experience for working with related data. These components can quickly be customized to show only the data that is relevant for the scenario.

Table views: Views are what users see when they look at a list of Rows from the Microsoft Dataverse. Views define the columns that are visible as well as the criteria for inclusion of the Rows in the display.

Table forms: Forms are used when users drill down into a Row from a table View. Forms are created using a visual dragand-drop designer to place Columns into the form that is structured into tabs and sections.

Business process flows: These flows are interactive visual guides to help the user through a business process. Business process flows use the concept of stages that contain steps. Stages are milestones in the process that need to be completed and the steps highlight to the user either data to collect or tasks to complete the stage to progress. Flows are created using a visual designer using drag and drop to compose the flow and establish any branching conditions (different paths in the business process) that must be handled.

For more details on Model-driven apps and the differences between Canvas apps and Model-driven apps, see the product announcement at <u>Announcement</u>.

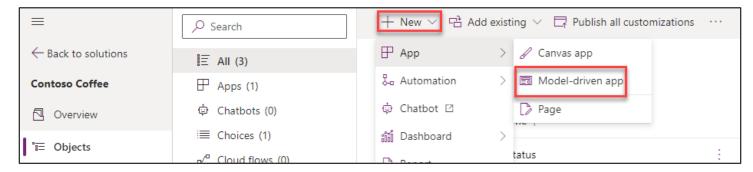
Exercise 1: Create Application and add Columns to the Machine Order Table

In this exercise, you will be creating a standalone Model-driven application that will leverage the same Machine Order table you created in the Microsoft Dataverse in Lab 2.

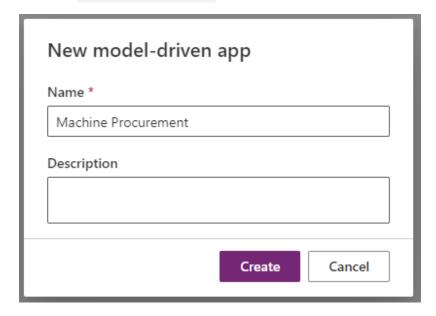
Task 1: Create an application

The first thing you will do is create a Model-driven application. This application will serve as a container to identify all the components that make up the application. It will also include a sitemap that defines the custom navigation users will use to navigate between the components (table views, dashboards, and other visual components).

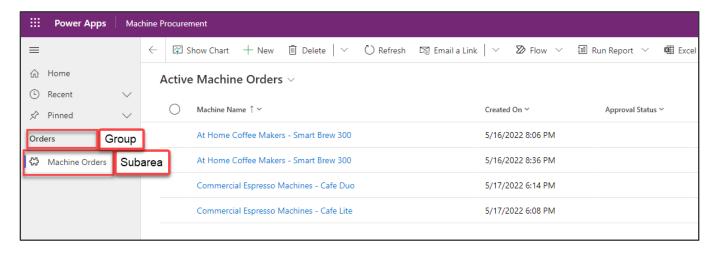
- 1. Navigate to Make Power Apps, and select the environment you created.
- 2. Select **Solutions** and click to open the **Contoso Coffee** solution.
- 3. Click + New and select App | Model-driven app.



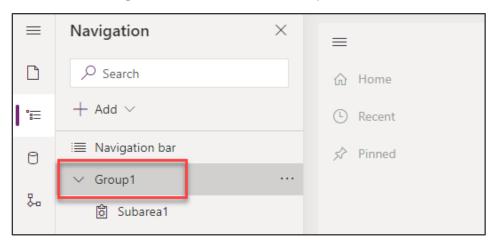
4. Enter Machine Procurement for Name and click Create.



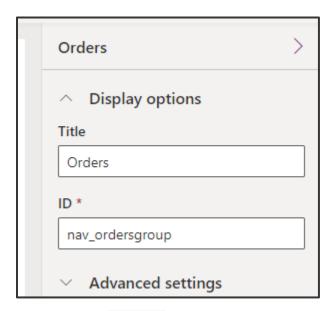
Next, you will build a Site Map for the application, the completed Site Map will look like the image below.



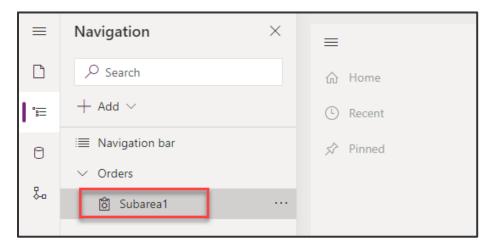
5. Select the **Navigation** tab and then select **Group1**.



Go to the Display options pane, enter Orders for Title, and nav_ordersgroup for ID.
 Note: The properties panel on the right will only show if you click on the New Group on the left.

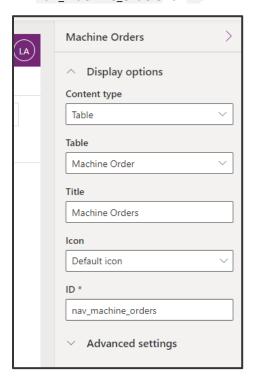


7. Select the **Subarea1**.

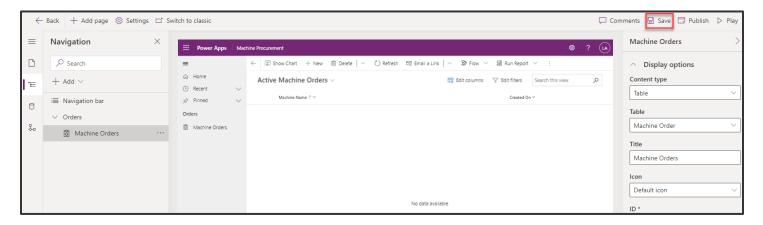


Note: The properties panel on the right will only show if you click on the Subarea1 on the left.

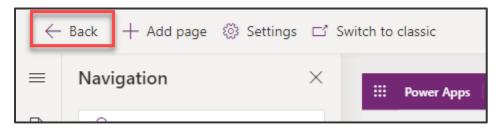
8. Set the **Table** for **Content type**, select **Machine Order** for **Table**, enter **Machine Orders** for **Title**, and enter **nav machine orders** for **ID**.



9. The application should now look like the image below. Click Save.



- 10. **Publish** the application.
- 11. Click on the ← Back button.



Task 2: Add procurement columns to the Machine Orders

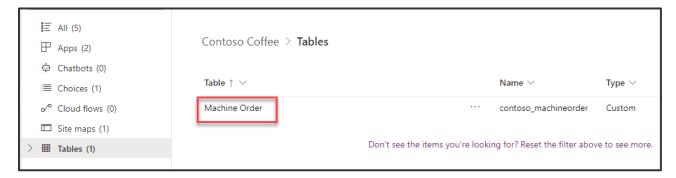
In this task, you will add new columns to the Machine Order table. The columns you are going to add here are columns that support the Business Process Flow, which we are going to build in the next exercise. When you use a Business Process, it consists of Stages which you can think of as major milestones in completing the work. Each Stage has one or more Steps. Steps help users keep track of what they need to do before advancing to the next Stage. Steps are just columns on the table. To make it quicker when we create the Business Process in this task, we are going to first create the columns that we need.

To support our scenario, we are going to add the following columns to the table:

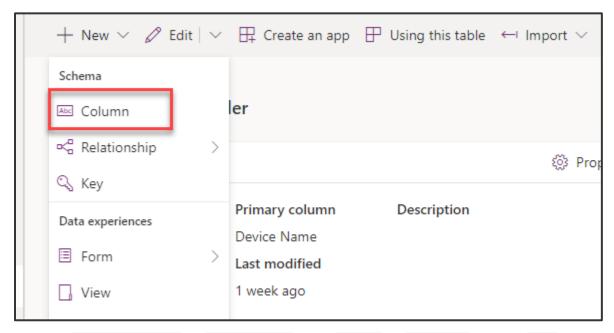
Capital Approved: This column will be used in the flow to capture that the machine order has received capital approval.

Send Survey: This column will be used in the final stage. Right now, the team plans on manually sending a survey to see how the user's ordering experience was, and will manually check this once they send it, but they have a desire in a future update to automate sending a survey in a future release.

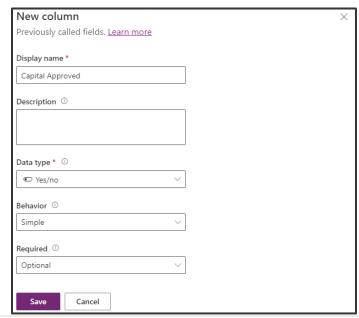
- 1. Navigate to Make Power Apps
- 2. Select **Solutions** and click to open the **Contoso Coffee** solution.
- 3. Select **Tables** and click to open the **Machine Order** table.



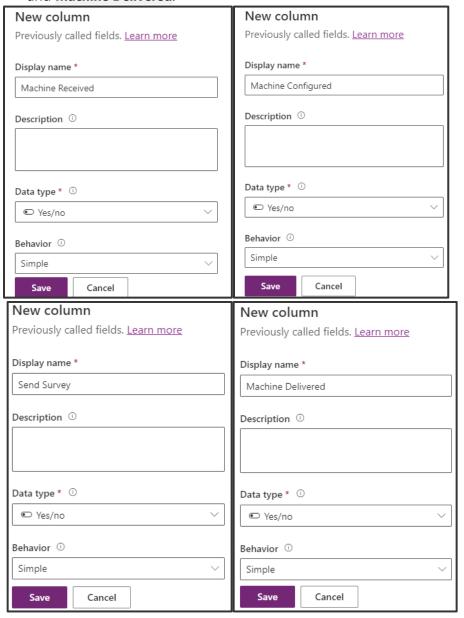
4. Click + New and select Column.



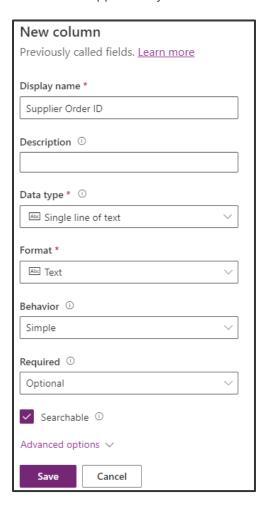
5. Enter **Capital Approved** for **Display Name**, select **Yes/No** for **Data Type** and click **Save**. We are using a Yes/No data type here because when we use it as a Step in the Business Process, we want to be able to simply mark it completed. Yes/No are a true or false Column.



6. Create 4 more Yes/No Columns and name them Machine Received, Machine Configured, Send Survey, and Machine Delivered.



7. Add another Column, with the name **Supplier Order ID**, select **Single line of text** for **Data Type**, select **Text** for Format, and click **Save**. Notice we are not asking you to make this Column required here, but we will make it a required Column in the Business Process later in the lab.



Exercise 2: Business Process Flow

In this exercise, we are going to add a Business Process Flow to the Machine Order to help guide the back-office worker through the task of managing the procurement of the requested device.

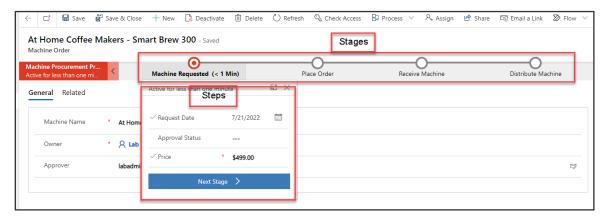
In discovery meetings with the back-office workers, we learned that a machine request goes through the following tasks as they perform the magic to get the requestor their machine.

- **Machine Requested** Today this is an e-mail sent to them with the machine request. Going forward in the new Power Apps world this will be a machine Order Row in the Microsoft Dataverse.
- Place Order Once they receive the request, they will place an order with a supplier and get an order ID.
- **Receive Machine** This occurs when the machine is received, and they send it to the technician to be configured with the standard configuration.
- **Distribute Machine** Once configured it needs to get to the employee that requested it, and they need to survey the employee to make sure they are happy.

Each of these represents a milestone and will become our Stages in the Business Process Flow. In a more complex scenario, you would likely end up compressing or even possibly re-imagining the business process to make it more optimal than the current process the staff performs with their existing process.

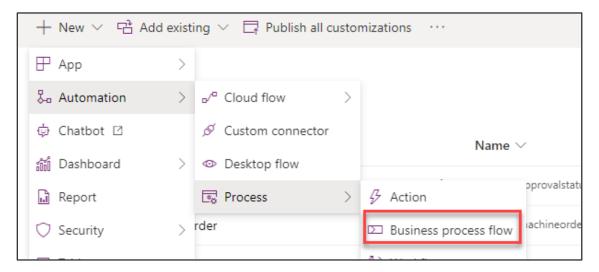
For this lab, the *Receive Machine and Distribute Machine stages are marked optional*. While these stages would need to be created for a full implementation of the scenario, to save time you may skip them or do them as a take home exercise.

The completed Business Process Flow will look like the image below.

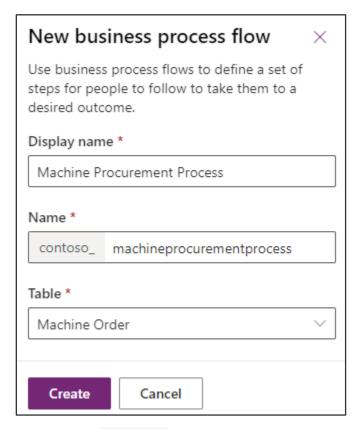


Task 1: Create business process flow

- 1. Select **Solutions** and click to open the **Contoso Coffee** solution.
- 2. Click + New and select Automation | Process | Business process flow.



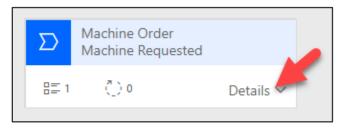
3. Enter Machine Procurement Process for Display Name, select Machine Order for table, and click Create. When you create the Business Process Flow behind the scenes it creates another table with the same name as the Business Process Flow to track the progress of each business process on the row. Because of this, choose your name carefully, for example, you wouldn't want to use the same name as your table e.g. Machine Order. Here we choose Machine Procurement Process. Note: After you click OK, a new window will be loaded with the designer. If you have popup blockers enabled, this might be blocked. The window might also not immediately have focus and you might have to manually bring it into focus.



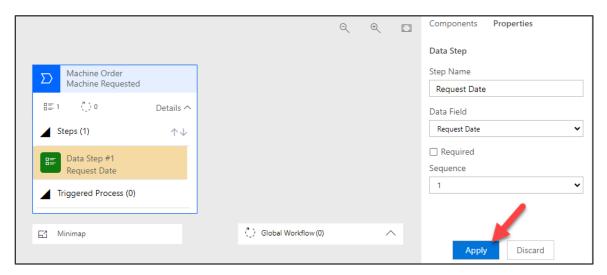
4. Select the **New Stage** and change the Display Name to **Machine Requested** and click **Apply**.



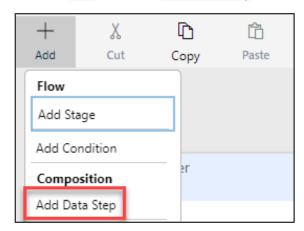
5. Click **Details.**



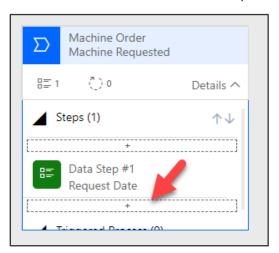
6. Select the **Data Step**, select **Request Date** for Data Field and click **Apply**. The Step Name will auto-filled for you.



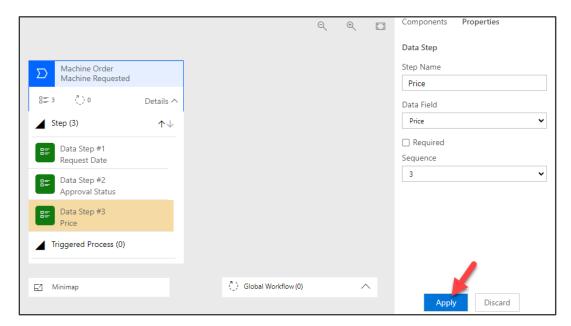
7. Click **Add** and select **Add Data Step**.



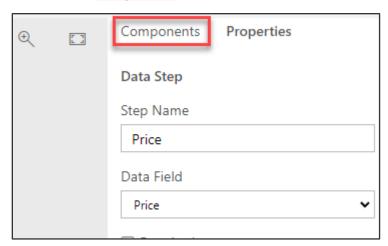
8. Click on the small + under Data Step #1.



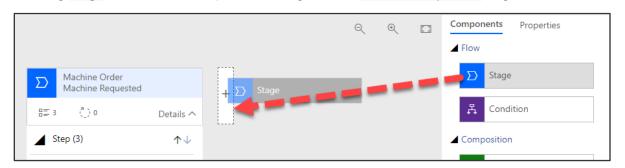
- 9. Select **Approval Status** for Data Field and click **Apply**.
- 10. Add another Data Step, select **Price** for Data Field and click **Apply**.



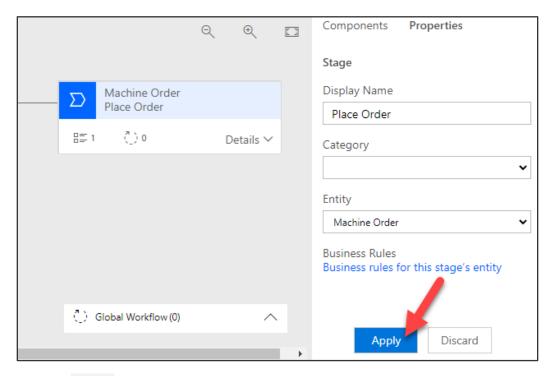
11. Select the **Components** tab.



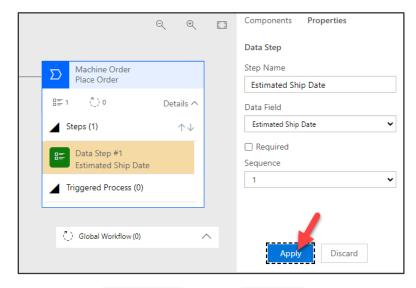
12. Drag Stage to the canvas and place to the right of the Machine Requested stage.



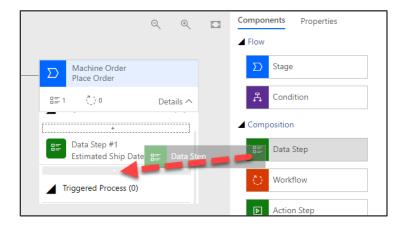
13. Select the new stage, change the Display Name to Place Order and click Apply.



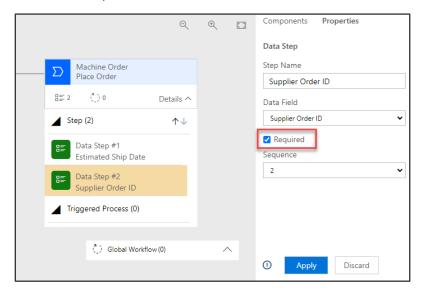
- 14. Click **Details**.
- 15. Select the existing Data Step, select **Estimated Ship Date** for Data Field, and click **Apply**.



16. Select the **Components** tab, drag **Data Step** to the canvas and place is under the **Estimated Ship Date** step.

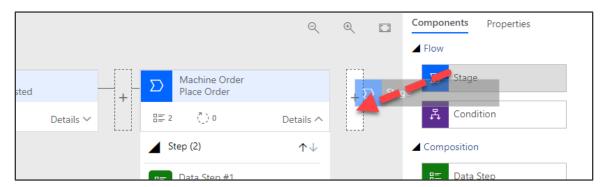


17. Select **Supplier Order ID** for Data Column, check the **Required** field and click **Apply**. Remember from before this Column isn't required, but by checking this here, we will require it to be filled out before they can advance to the next stage. It won't, however, block saving the row if there isn't a data value populated like it would if it was marked required on the Column definition.

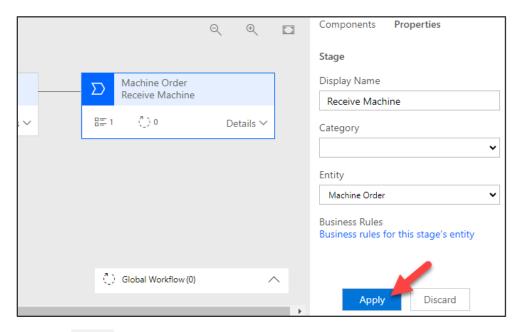


<u>NOTE:</u> All steps from here onwards until you reach Task 2 are OPTIONAL. These steps add two more stages to the business process using the same technique you learned above. You may skip ahead to Task 2 to add a branch condition.

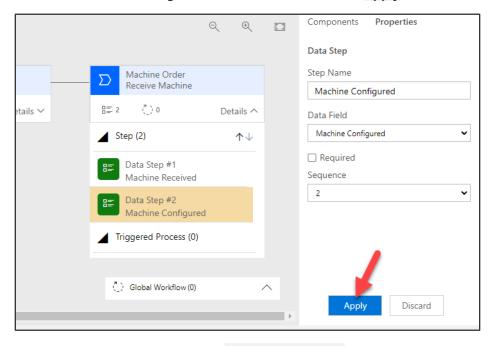
18. Select the **Components** tab and drag **Stage** to the right side of the **Place Order** stage.



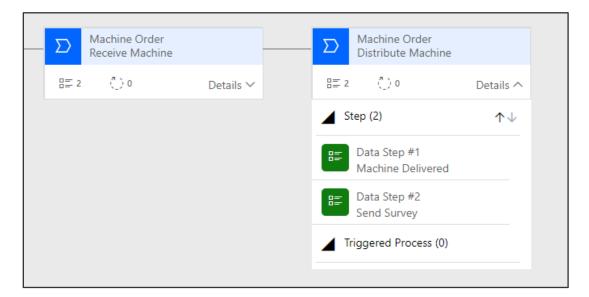
19. Select the new stage, change the Display name to **Receive Machine** and click **Apply**.



- 20. Click Details.
- 21. Select the existing Data Step and select Machine Received for Data Column and click Apply.
- 22. Select the **Components** tab, drag **Data Step** to the **Receive Machine** stage and place it under the **Machine Received** step.
- 23. Select Machine Configured for Data Column and click Apply.



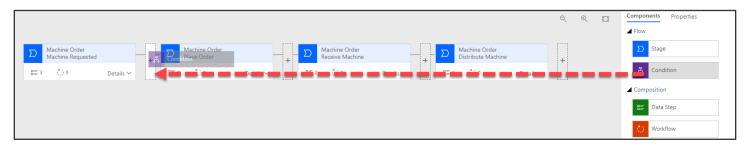
- 24. Add another stage and name it Distribute Machine.
- 25. Add two data steps Machine Delivered and Send Survey.



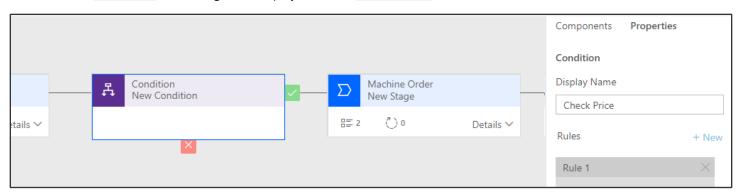
Task 2: Add a branch condition

In this task, we are going to add a conditional branch to our Business Process Flow. When we did the discovery, we learned that if the price was greater than \$10K there were additional steps in place to get capital approval prior to placing the order. In this task, you will see how we can modify the flow we built to accommodate this.

1. Select the Components tab, drag Condition and place it between Machine Requested and Place Order.



2. Select the Condition and change the Display Name to Check Price.



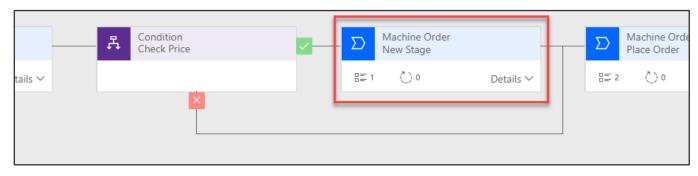
3. In the **Rule 1** section, select **Price** for Column, **is greater than** for Operator, **Value** for Type, **10000** for Value, and click **Apply**. It's important to note that Columns you use in the rules on the condition must be in the prior Stages steps. That is one of the reasons we put the price in there previously.



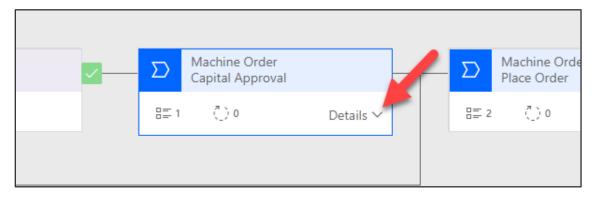
4. Click Save.



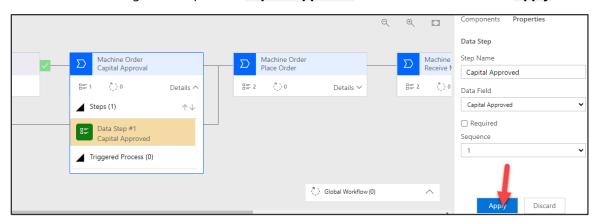
5. A new stage will be added.



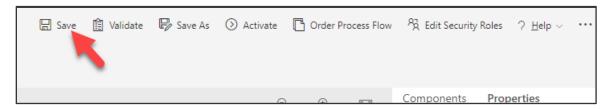
- 6. Select the new stage, change the Display Name to Capital Approval and click Apply.
- 7. Click **Details**.



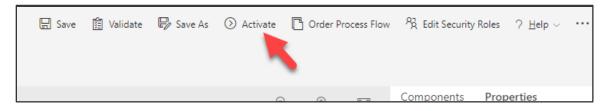
8. Select the existing Data Step, select Capital Approved for Data Column and click Apply.



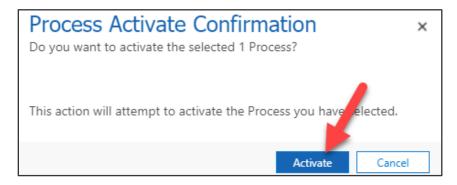
9. Click Save.



10. Click Activate.



11. Confirm the activation.



12. Close the process editor.

Exercise 3: Form and View Modification

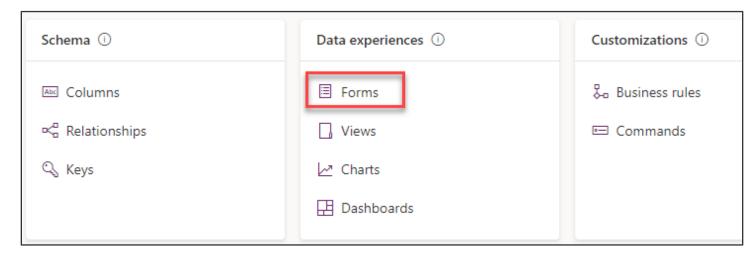
In this exercise, we are going to modify the Machine Order form to add additional columns. When you create a table in Microsoft Dataverse, it also creates a main Form for that table with a few basic columns on it. In addition to the form, views are created for the table. Views are used in a Model-Driven app any time a list of the table rows are displayed. You would modify the view to add additional Columns or change the placement. You can also create additional views, for example, you might provide a view to show all machine requests that are waiting to be received.

Task 1: Modify the form

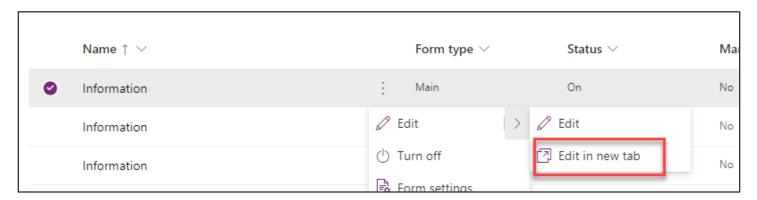
- 1. Select **Solutions** and click to open the **Contoso Coffee** solution.
- 2. Select **Tables** and click to open the **Machine Order** table.



3. Go to the **Data experience** section and select **Forms**.

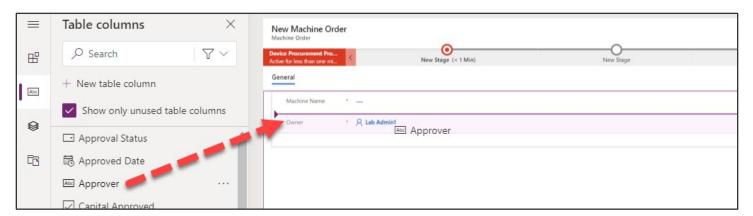


4. Select the **Information Main** form and click **Edit** > **Edit in new tab.**

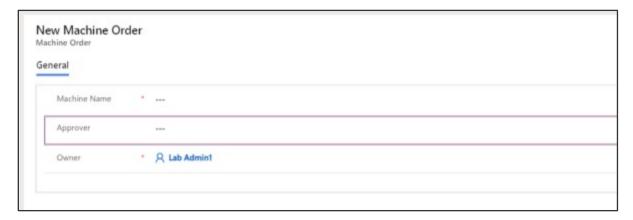


Note: The form designer is being modernized, you can read more here <u>Overview of the model-driven form designer</u>.

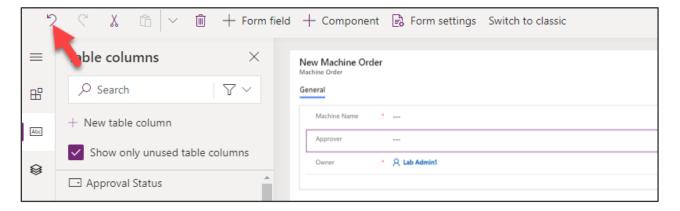
- 5. If you are required to sign in again, do so.
- 6. Search for **Approver** column and drag it to the form.
- 7. Place the **Approver** Column above the Machine Name column.



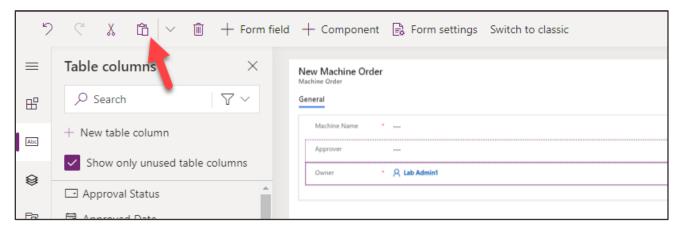
8. The new form designer will let you reposition Columns. Drag the **Approver** column and place it between the Machine Name and Owner columns.



9. The new form designer will let you cut and paste columns. Select the **Approver** column and click on the **Cut** button.



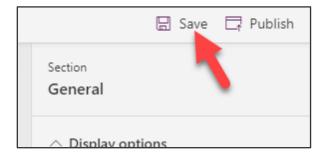
10. Select the **Owner** column and click **Paste**.



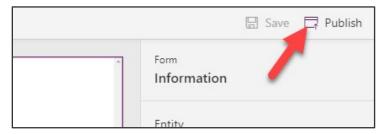
11. The **Approval** column will be moved to the bottom.



12. Click Save.



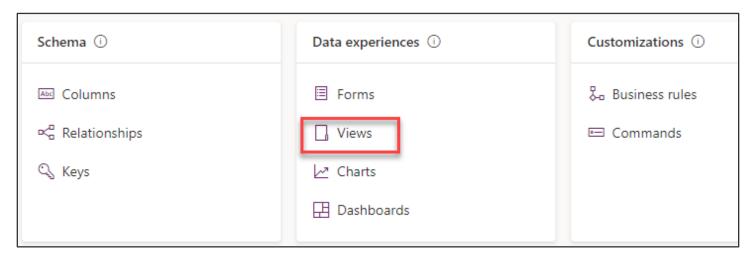
13. Click Publish.



- 14. Close the **Form Designer** tab.
- 15. Click Done.

Task 2: Modify the view

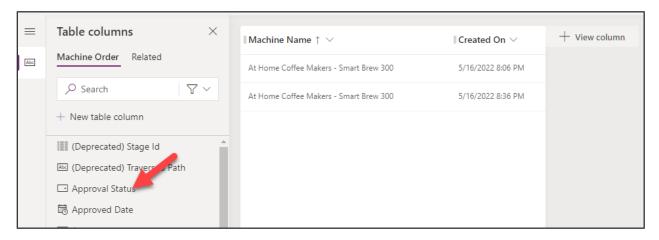
- 1. Select **Solutions** and click to open the **Contoso Coffee** solution.
- 2. Select **Tables** and click to open the **Machine Order** table.
- 3. Go to the **Data experience** section and select **Views**.



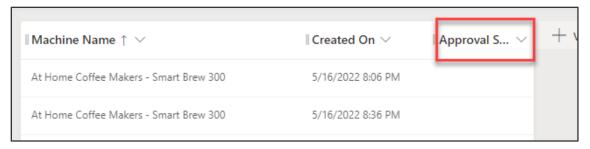
1. Click to open the Active Machine Orders.



2. Click the **Approval Status** column once (you do not need to double click).



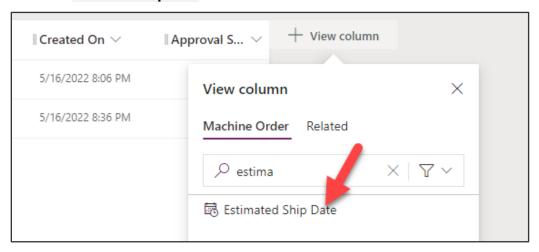
3. The new column will be added to the view.



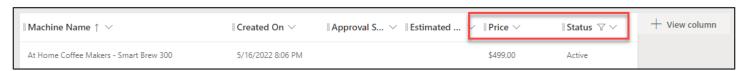
4. Click on the + View Column button.



5. Select Estimated Ship Date.

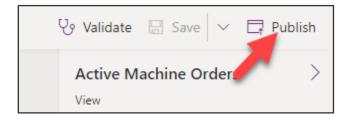


6. Add Price and Status to the View.

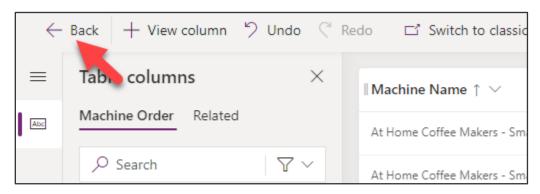


7. Click Save.

8. **Publish** the View.



9. Click on the back button.

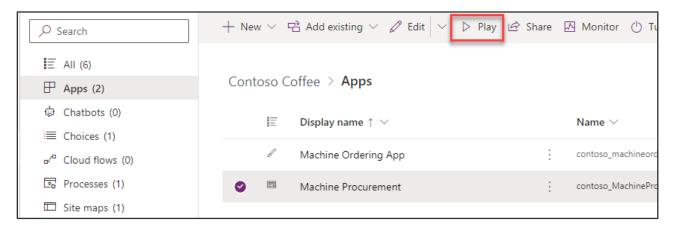


Exercise 4: Test the application

In this exercise, we are going to test the application you just built.

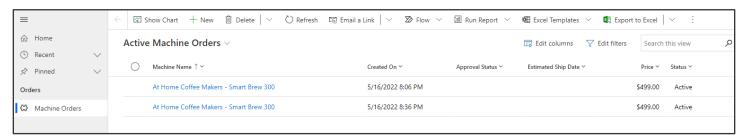
Task 1: Test the application

1. Select **Apps**, select the **Machine Procurement** application and click **Play**.

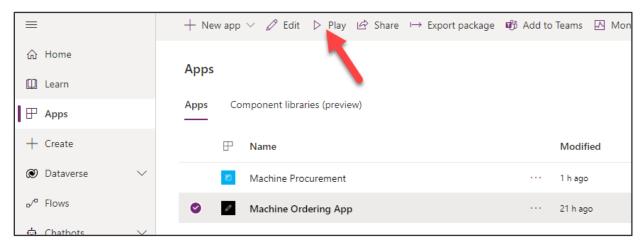


2. The application should start. The **Active Machine Orders** view should load.

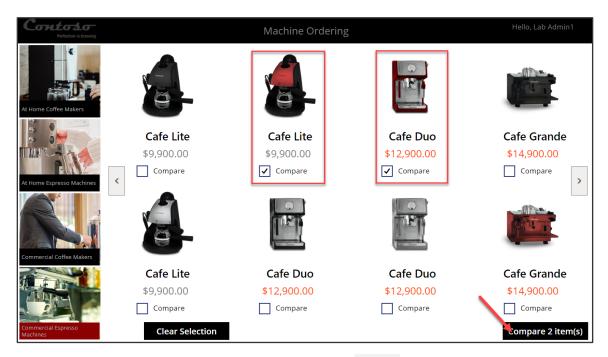
Note: If you don't show any data in the list, run the Machine Ordering canvas app you built and submit some orders.



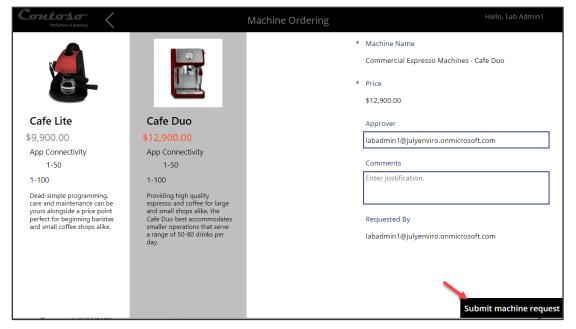
- 3. Start a new web browser instance and navigate to Make Power Apps. Do not close the Model-driven application.
- Select Apps, select the Machine Ordering application you created in module 2, and click Play.



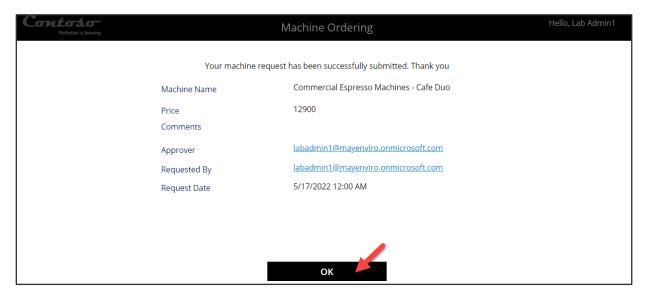
5. Select two machines, make sure one of the machines is priced over \$10,000 and click **Compare**.



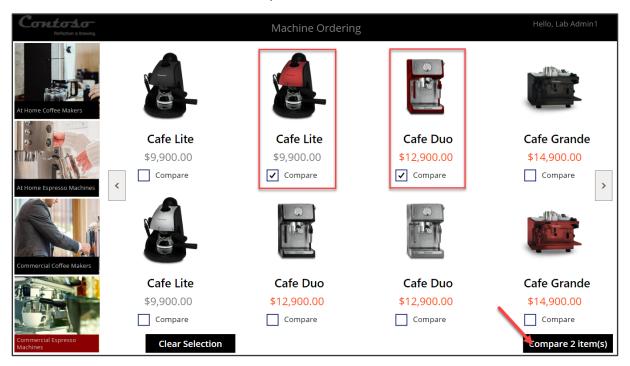
6. Select the machine with the price over \$10k and click **Submit**.



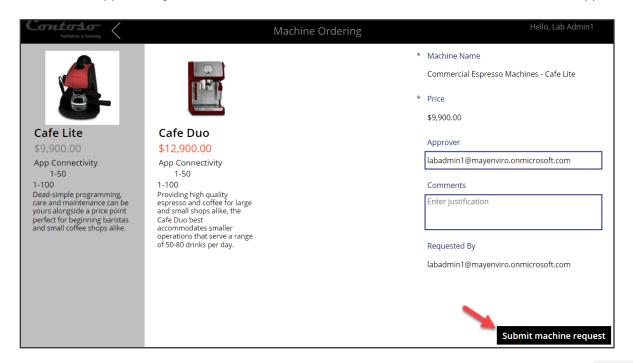
7. Click **OK**. Note that if you did not choose to create the submission success screen in a previous module that this option will not exist. You will need complete steps 3 and 4 (above) in order to continue.



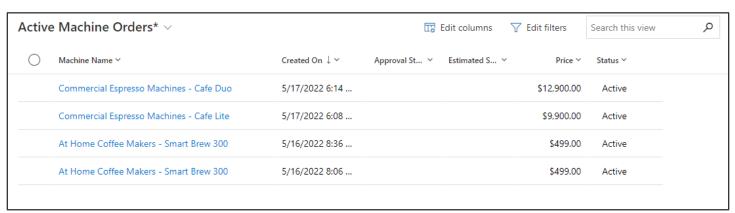
8. Select two more machine and click Compare.



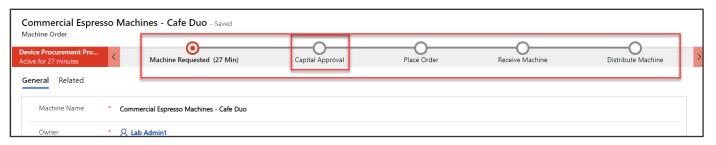
9. Select a machine with a price under \$10k, provide approver email (or leave in the auto-populated manager email) and click **Submit**.



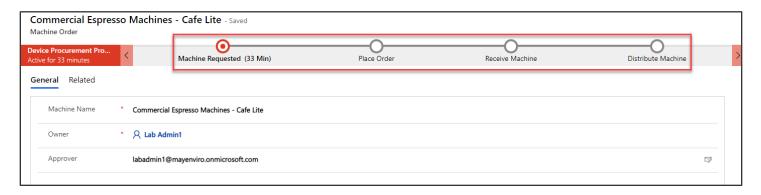
10. Go back to the Model-driven application you created and refresh the view. Sort the orders by **Created On** column, and you should see the two machines you ordered using the Power Apps Canvas App.



- 11. Open the one priced over \$10k.
- 12. The **Business Process Flow** should now have **5** stages. This is because this order costs more than \$10k and needs **Capital Approval**.



- 13. Select Machine Orders.
- 14. Click on the other order you created.
- 15. The **Business Process Flow** for this order should have **4** stages; this is because this order does not require **Capital Approval**.



References

App in a Day introduces some of the key functionalities available in Power Apps, Power Automate, Power BI and the Microsoft Dataverse. For an up to date list of learning references, see Power Apps Resources and Power Automate Resources.

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