Challenge 2: Load Sample Data and Databricks Notebooks

Duration: 60 minutes

In this exercise, you will implement a classification experiment. You will load the training data from your local machine into a dataset. Then, you will explore the data to identify the primary components you should use for prediction and use two different algorithms for predicting the classification. You will then evaluate the performance of both algorithms and choose the algorithm that performs best. The model selected will be exposed as a web service integrated with the optional sample web app at the end.

Task 1: Upload the Sample Datasets

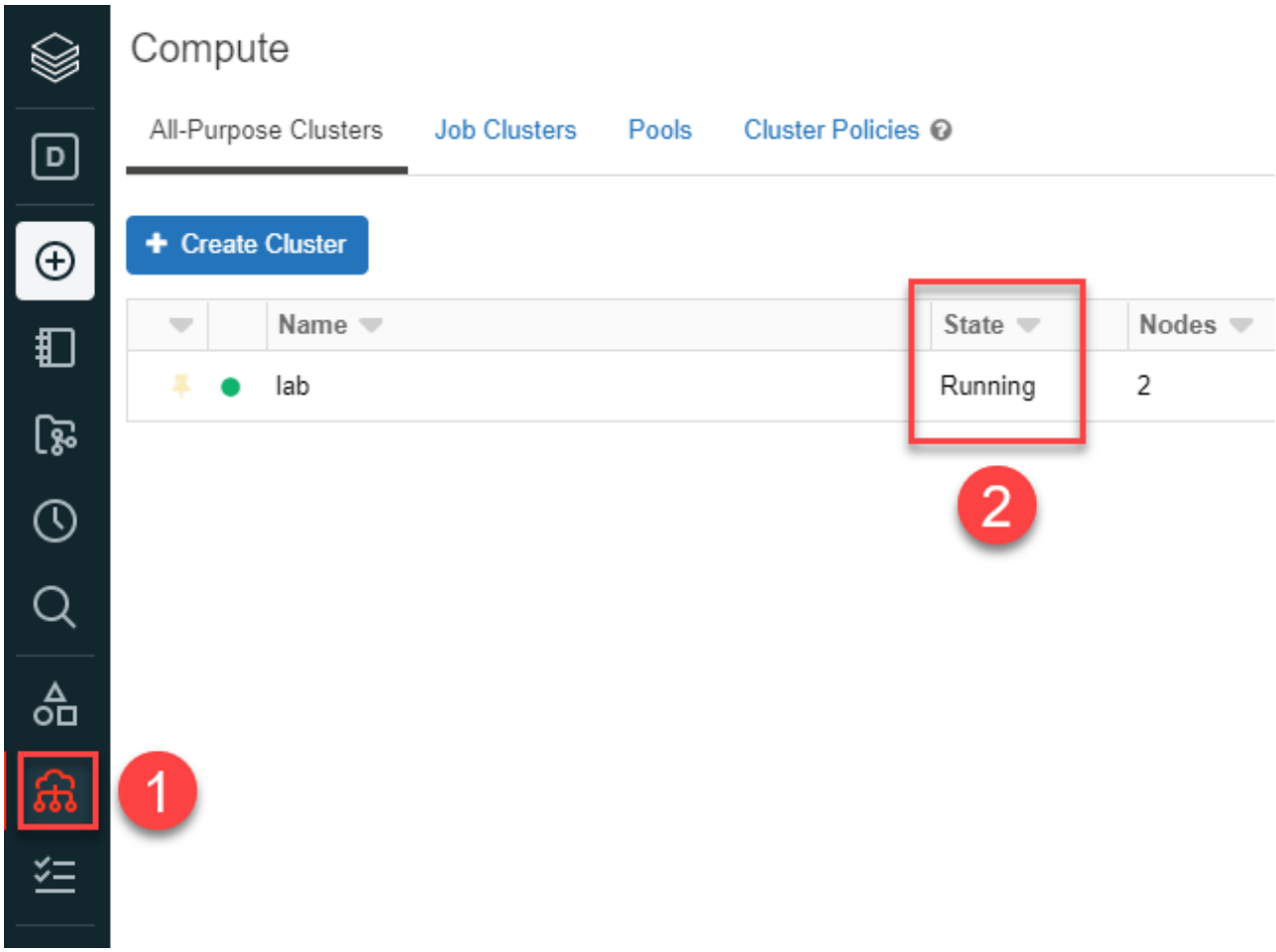
1. Before you begin working with machine learning services, there are three datasets you need to load.

2. Download the three CSV sample datasets from here: http://bit.ly/2wGAqrl (If you get an error, or the page won't open, try pasting the URL into a new browser window and verify the case sensitive URL is exactly as shown). If you are still having trouble, a zip file called AdventureWorksTravelDatasets.zip is included in the lab-files folders.

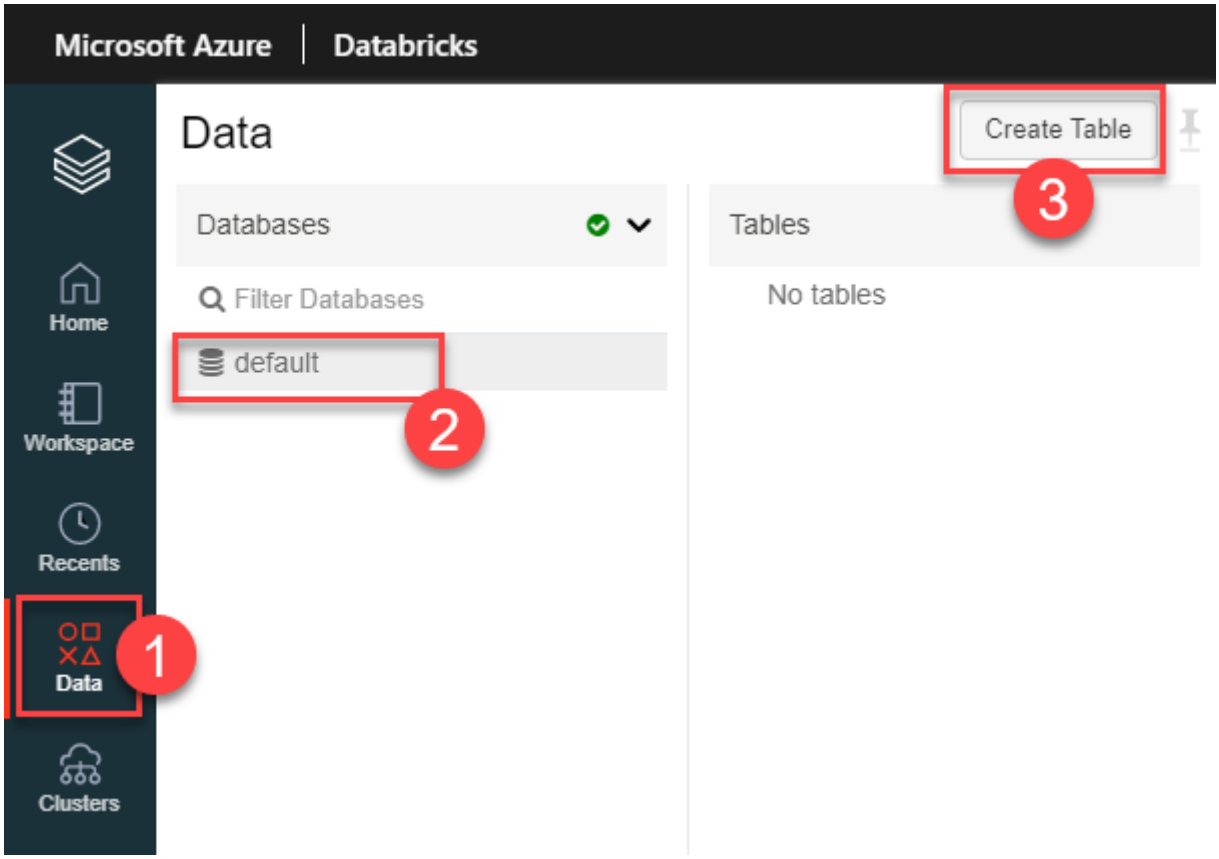
3. Extract the ZIP and verify you have the following files:

    - FlightDelaysWithAirportCodes.csv
    - FlightWeatherWithAirportCode.csv
    - AirportCodeLocationLookupClean.csv

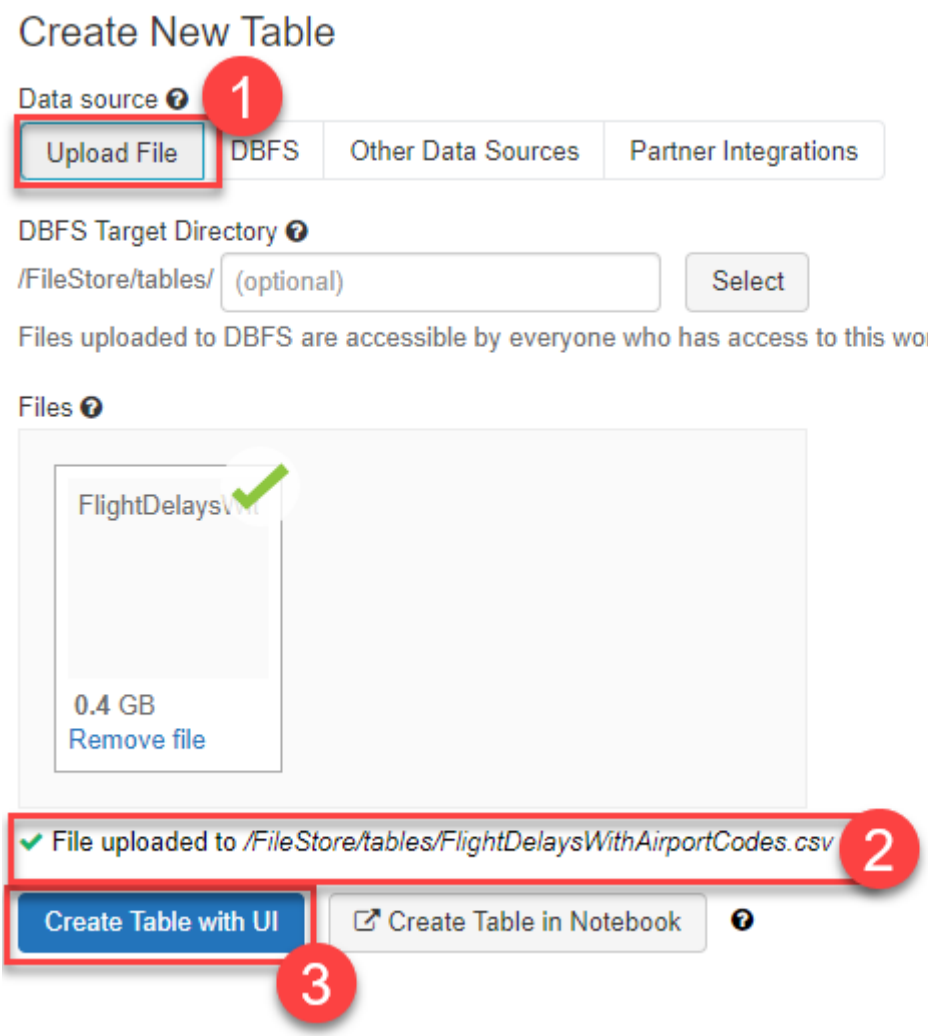
4. Open your Azure Databricks workspace. Before continuing to the next step, verify that your new cluster is running. Do this by navigating to **Compute (1)** on the left-hand menu and ensuring that the state of your cluster is **Running (2)**.



5. Select **Data (1)** from the menu. Next, select **default (2)** under Databases (if this does not appear, start your cluster). Finally, select **Create Table (3)** above the Tables header.

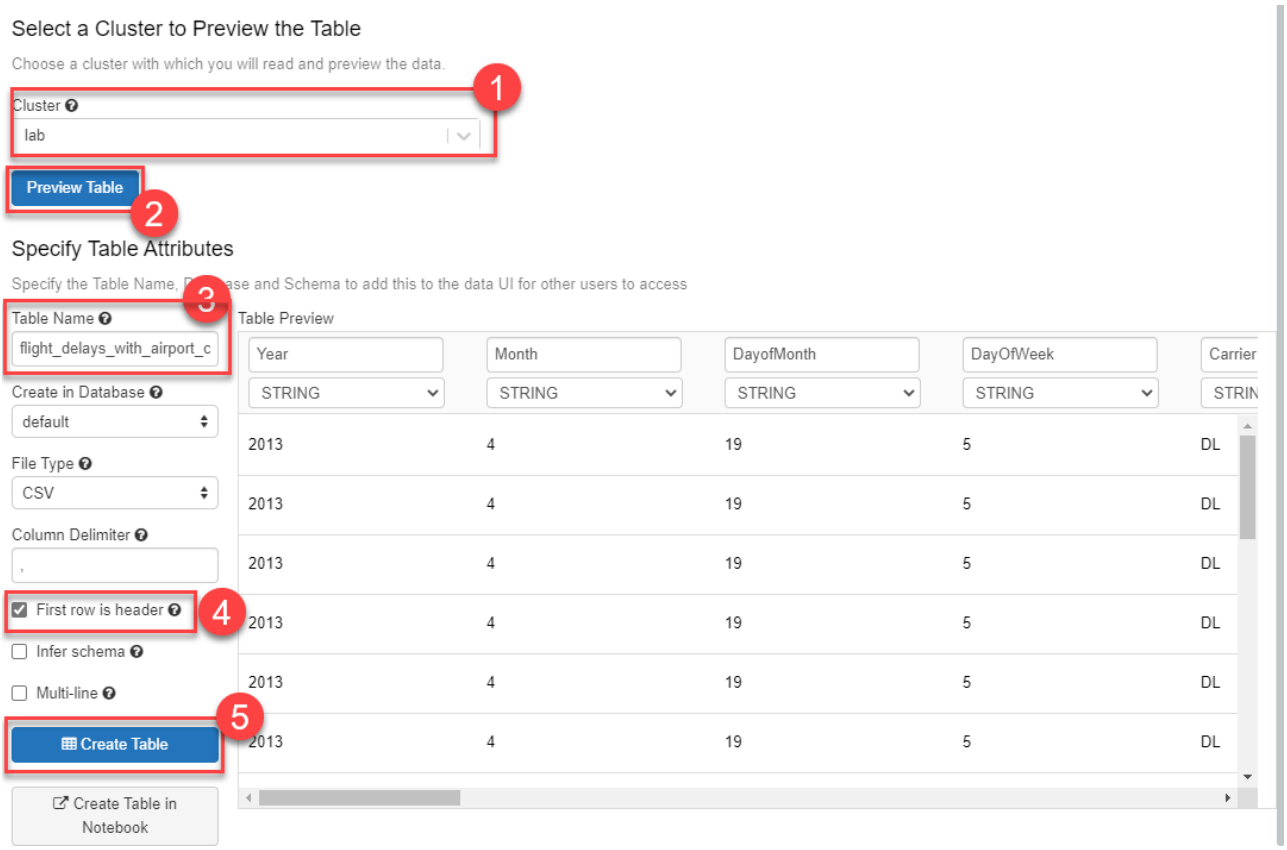


6. Select **Upload File (1)** under Create New Table, and then select either select or drag-and-drop the FlightDelaysWithAirportCodes.csv file into the file area **(2)**. Select **Create Table with UI (3)**.



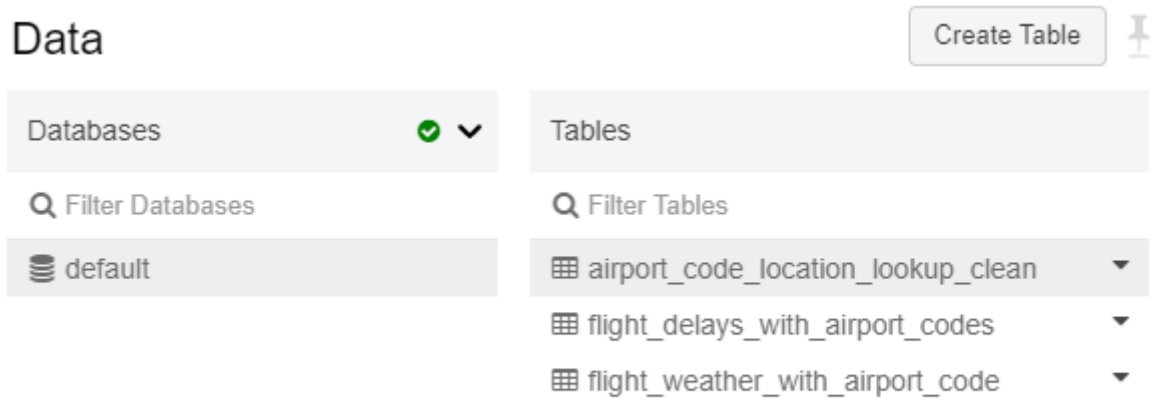
7. Select your cluster **(1)** to preview the table, then select **Preview Table (2)**.

8. Change the Table Name to `flight_delays_with_airport_codes` **(3)** and select the checkmark for **First row is header (4)**. Select **Create Table (5)**.



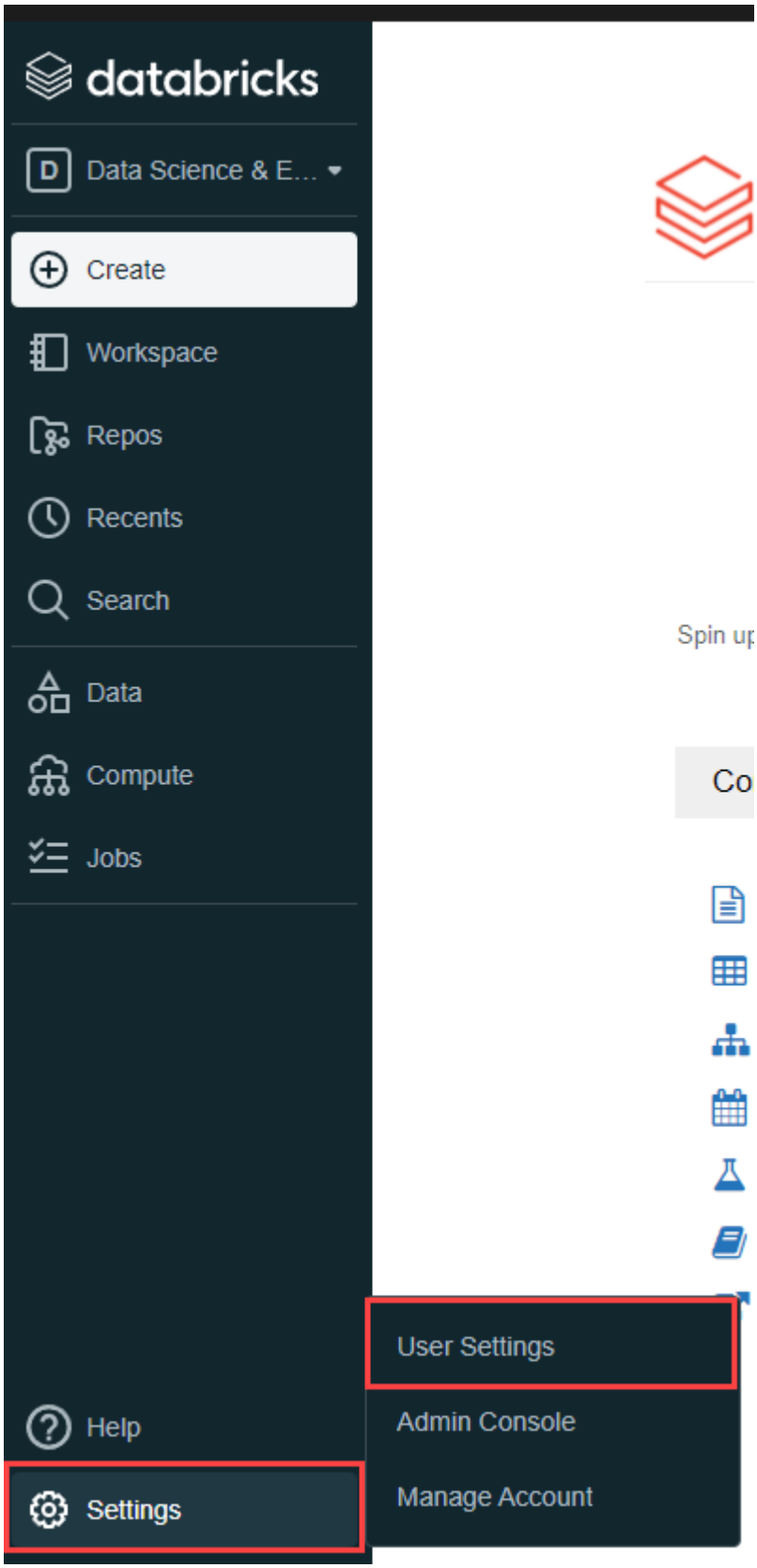
9. Repeat steps 5 through 8 for the FlightWeatherWithAirportCode.csv and AirportCodeLocationLookupClean.csv files, setting the name for each dataset in a similar fashion:

    - flightweatherwithairportcode_csv renamed to **flight_weather_with_airport_code**
    - airportcodelocationlookupclean_csv renamed to **airport_code_location_lookup_clean**

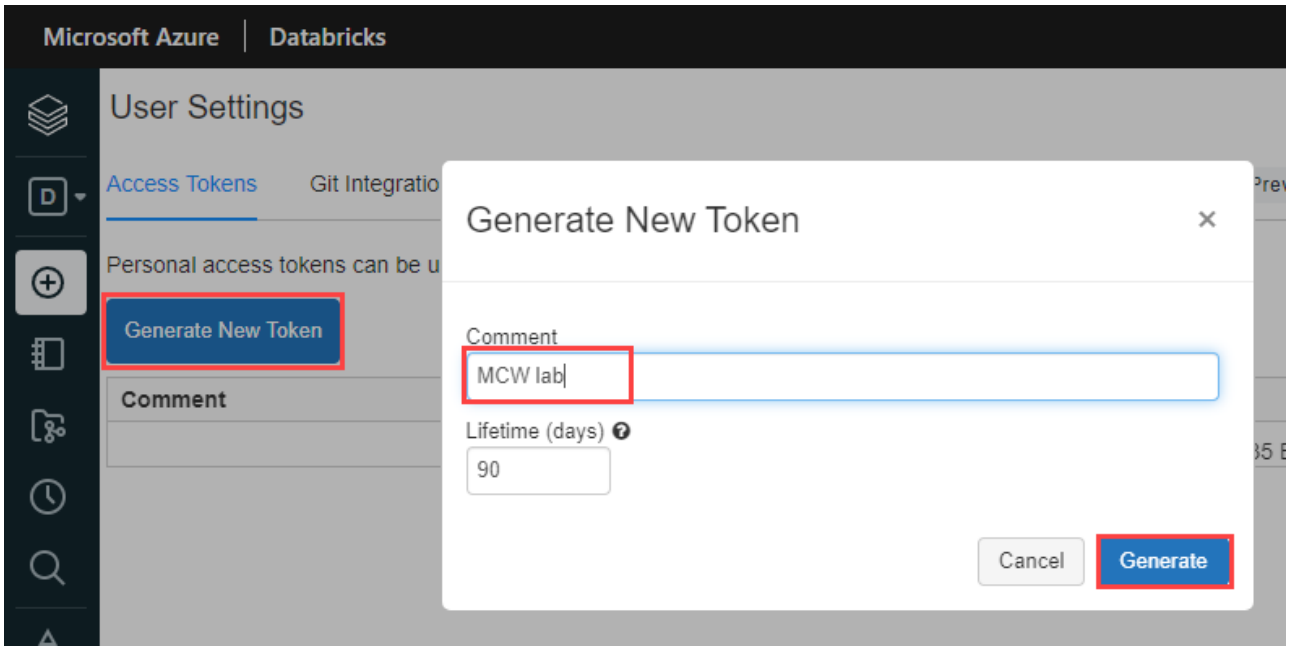


Task 2: Open Azure Databricks and complete lab notebooks

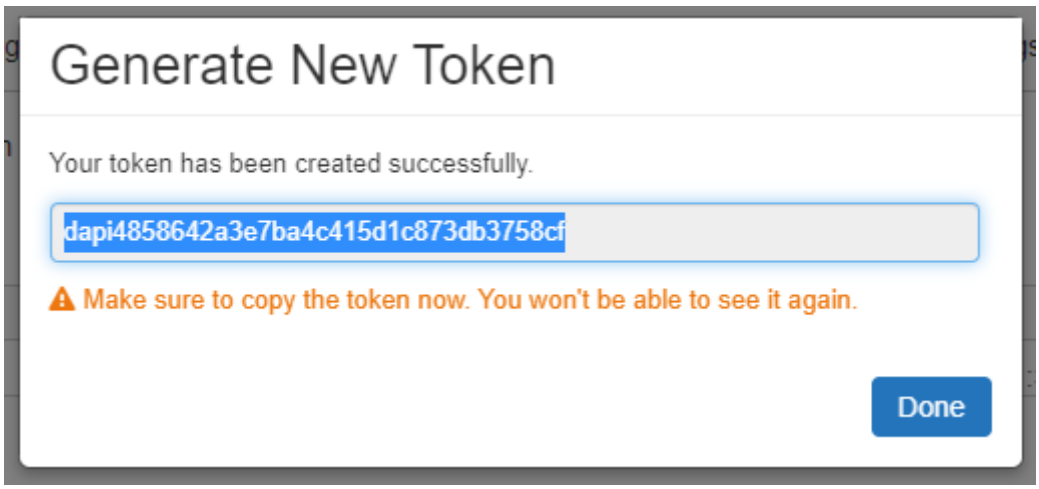
1. In Azure Databricks, select the **Settings** menu in the bottom left corner of the window, then select **User Settings**.



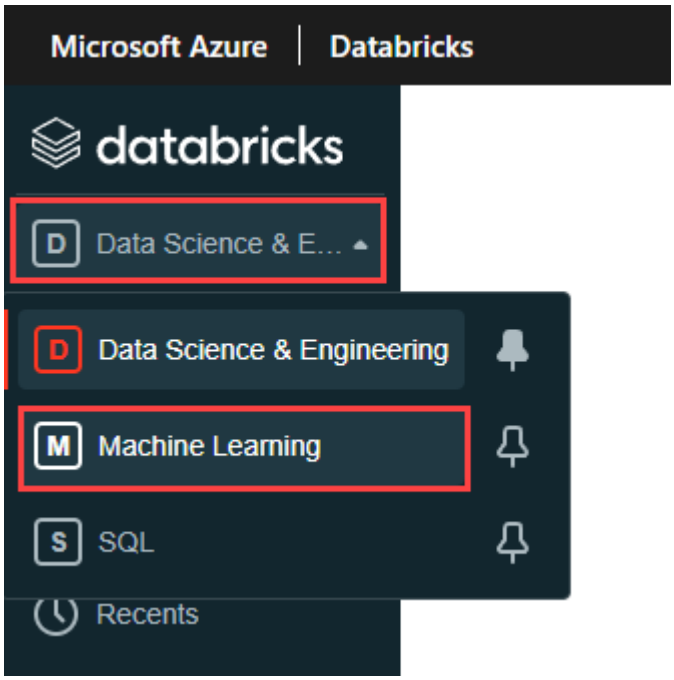
2. Select **Generate New Token** under the Access Tokens tab. Enter **MCW lab** for the comment and leave the lifetime at 90 days. Select **Generate** to generate a Personal Access Token, or PAT.



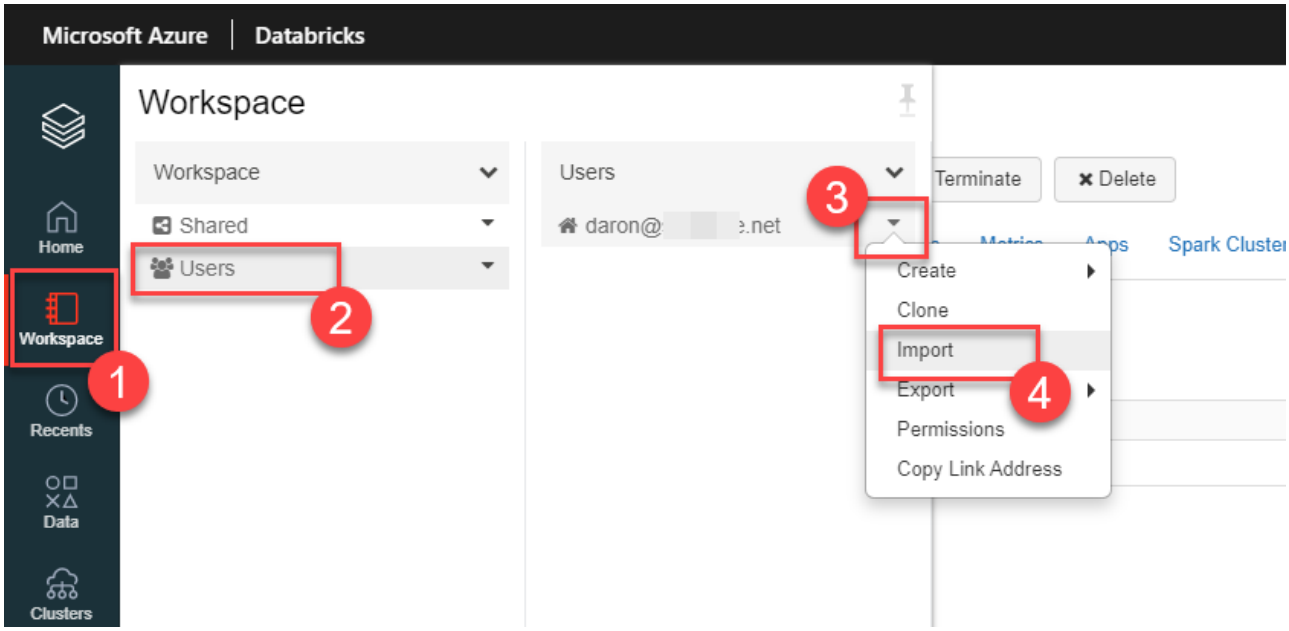
3. **Copy** the generated token and **paste it into a text editor** such as Notepad for use later in this exercise as well as in future exercises. Select **Done** once you are finished.



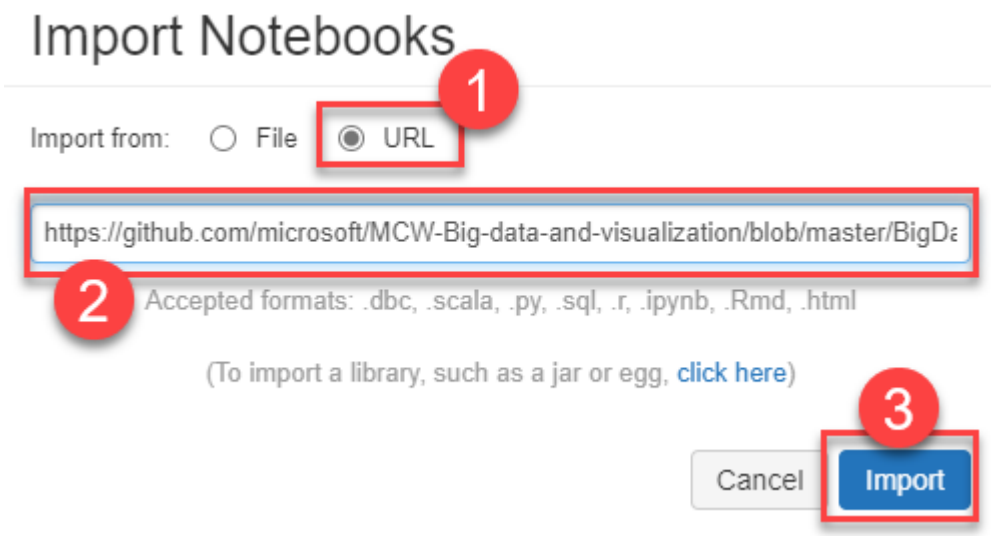
4. Within Azure Databricks, select **Data Science & Engineering** and choose **Machine Learning** from the list. You will need to be in this view before completing one of the notebooks later in this exercise.



5. Within Azure Databricks, select **Workspace (1)** on the menu, then **Users (2)**, then select the down arrow next to your username **(3)**. Select **Import (4)**.

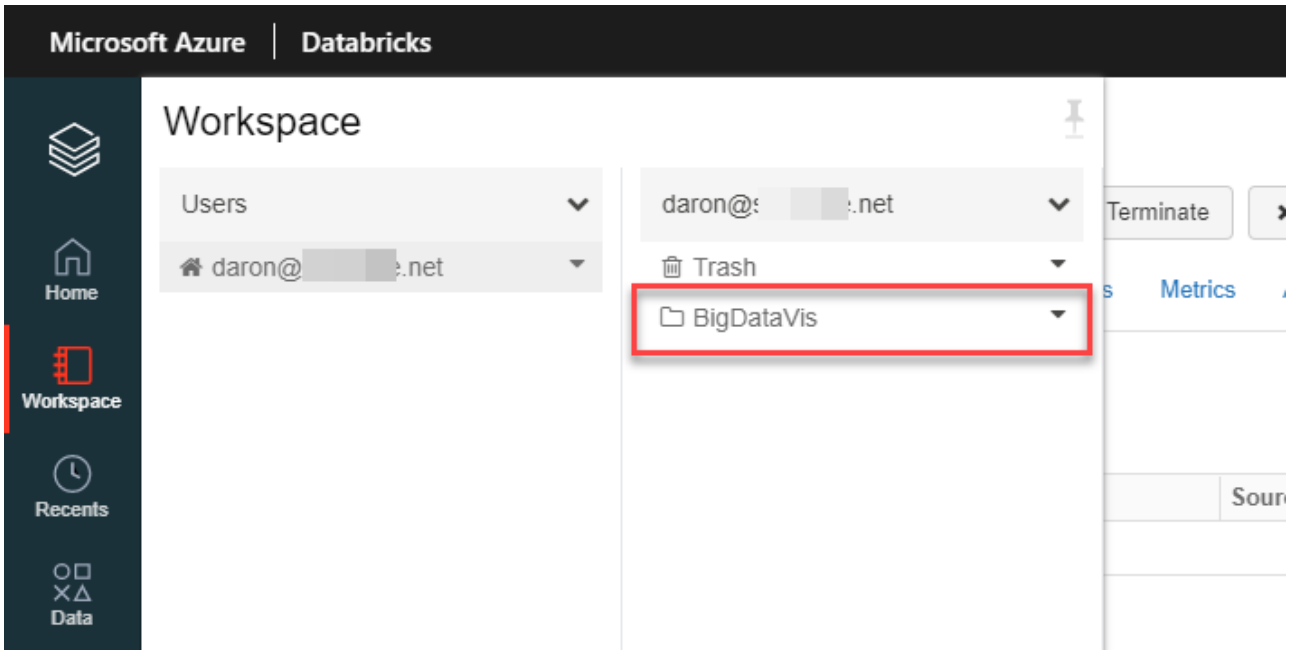


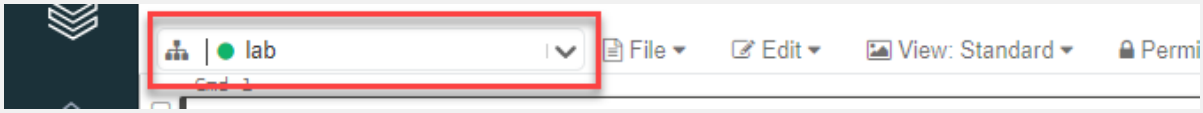
6. Within the Import Notebooks dialog, select Import from: **URL (1)**, then paste the following into the URL textbox **(2)**: `https://github.com/microsoft/MCW-Big-data-analytics-and-visualization/blob/main/Hands-on%20lab/lab-files/BigDataVis.dbc?raw=true`. Select **Import (3)** to continue.



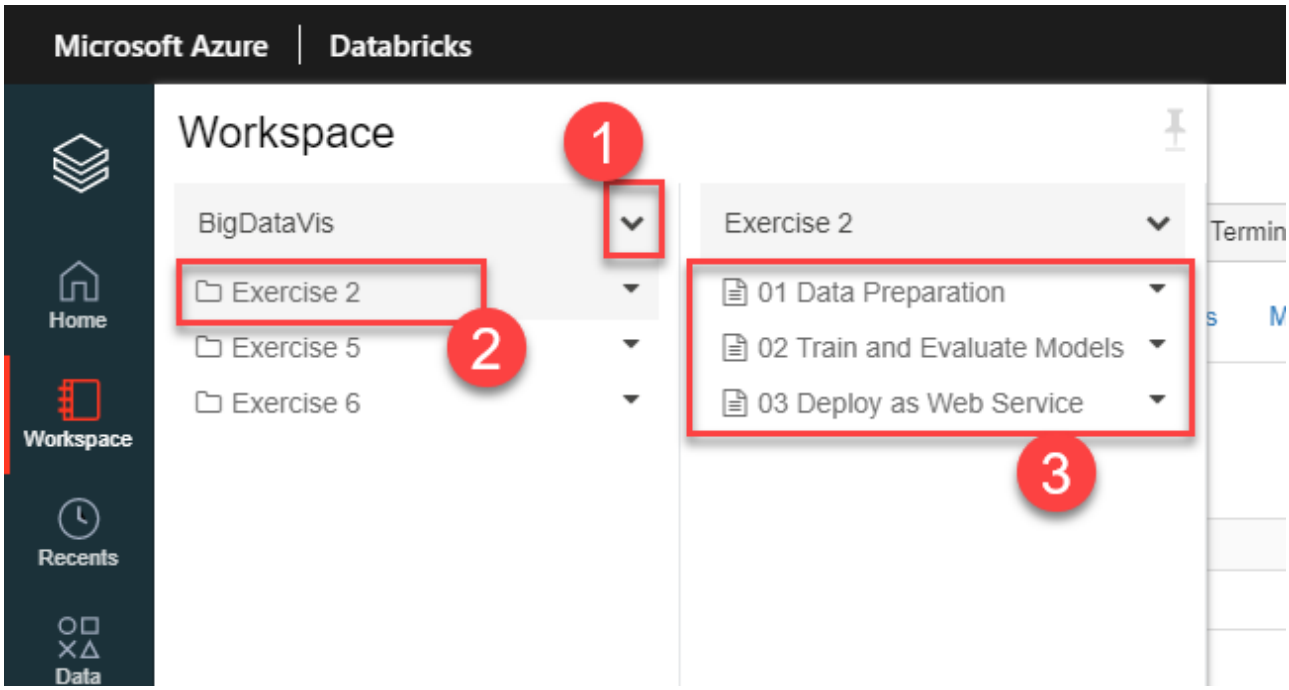
> **Note:** This Databricks archive is available within the `Hands-on lab\lab-files` directory of this repository. In the `BigDataVis` subfolder, you can also see the individual notebooks as separate files in .ipynb format.

7. After importing, expand the new **BigDataVis** folder.



> **WARNING:** When you open a notebook, make sure you attach your cluster to the notebook using the **Attach to cluster** dropdown. You will need to do this for each notebook you open.
>
> 
>

8. Run each cell (except `Clean up` section in Notebook 3) of the notebooks located in the **Exercise 2** folder (01, 02 and 03) individually by selecting within the cell, then entering **Ctrl+Enter** on your keyboard. Pay close attention to the instructions within the notebook, so you understand each step of the data preparation process.



9. Do NOT run any notebooks within the Exercise 5 or 6 folders. They will be discussed later in the lab.