Image Classification with a Linear Model

2 hoursFree

Rate Lab

Overview

Duration is 1 min

In this lab, you will define a simple linear image model on MNIST using the tf.keras API.

What you learn

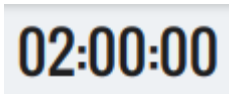
In this lab, you will learn how to:

- Import the training dataset of MNIST handwritten images
- Reshape and preprocess the image data
- Setup your linear classifier model with 10 classes (one for each possible digit 0 through 9)

- Define and create your EstimatorSpec in tensorflow to create your custom estimator
- Define and run your train_and_evaluate function to train against the input dataset of 60,000 images and evaluate your model's performance

Setup

For each lab, you get a new Google Cloud project and set of resources for a fixed time at no cost.

1. Make sure you signed into Qwiklabs using an **incognito window**.
2. Note the lab's access time (for example, 

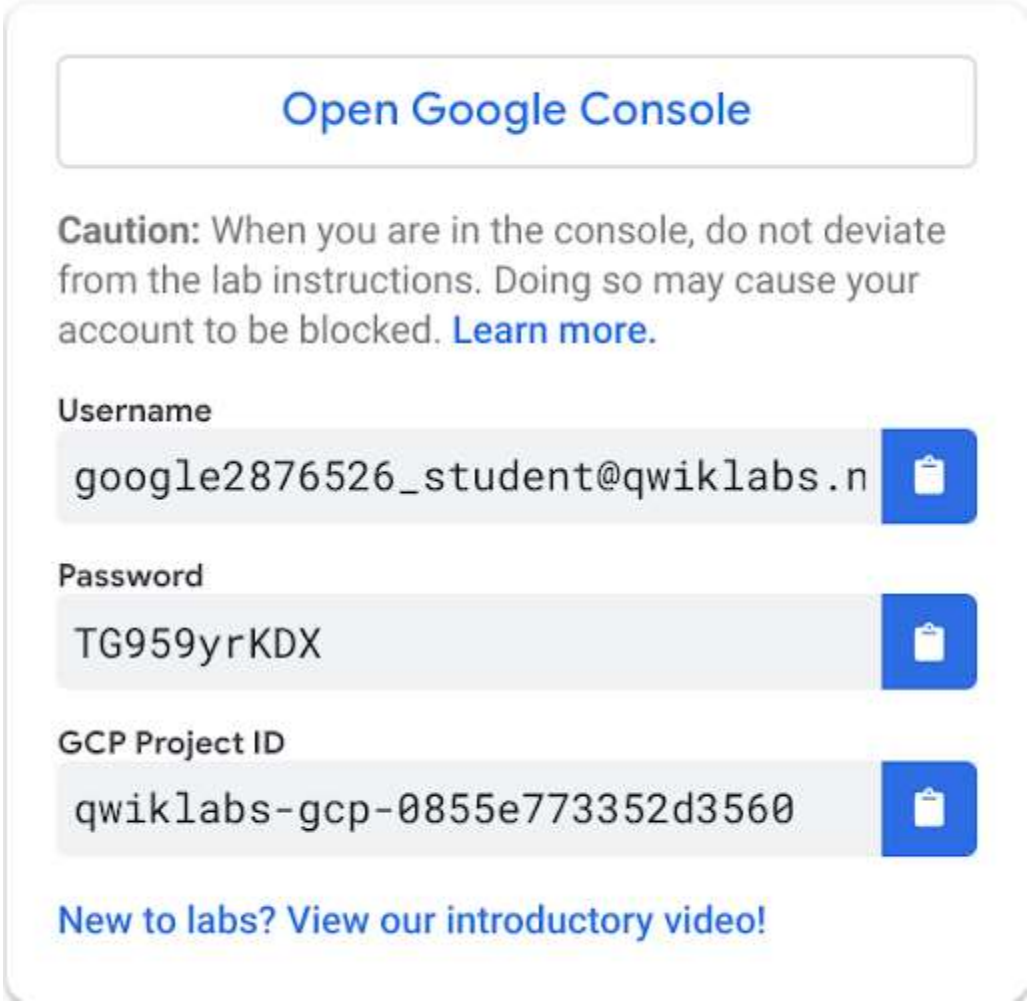
and make sure you can finish in that time block.

There is no pause feature. You can restart if needed, but you have to start at the beginning.

3. When ready, click 

.
4. Note your lab credentials. You will use them to sign in to the Google Cloud

Console.



5. Click **Open Google Console**.

6. Click **Use another account** and copy/paste credentials for **this** lab into the prompts.

If you use other credentials, you'll get errors or **incur charges**.

7. Accept the terms and skip the recovery resource page.

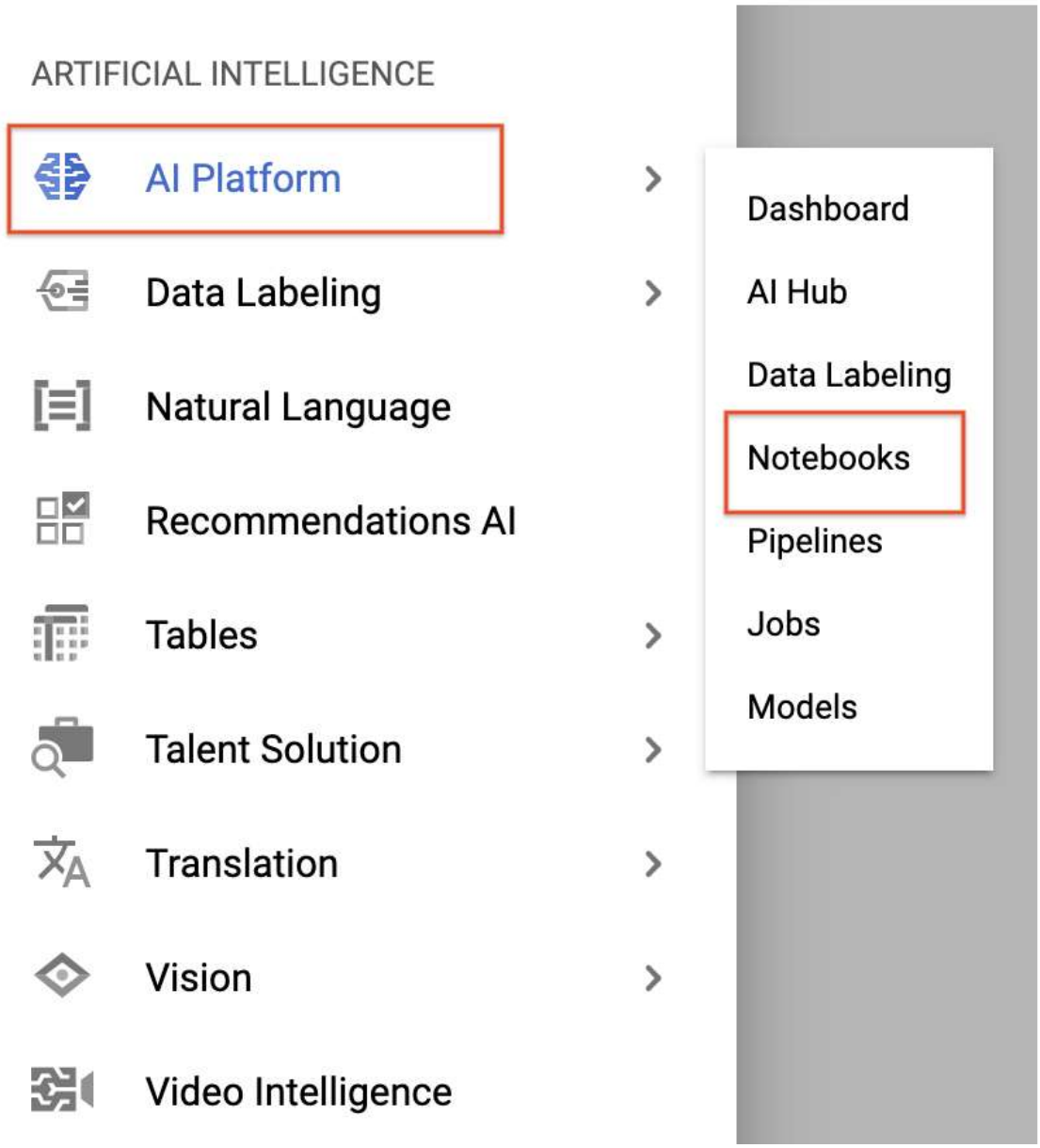
Do not click **End Lab** unless you are finished with the lab or want to restart it. This clears your work and removes the project.

Launch AI Platform Notebooks

To launch AI Platform Notebooks:

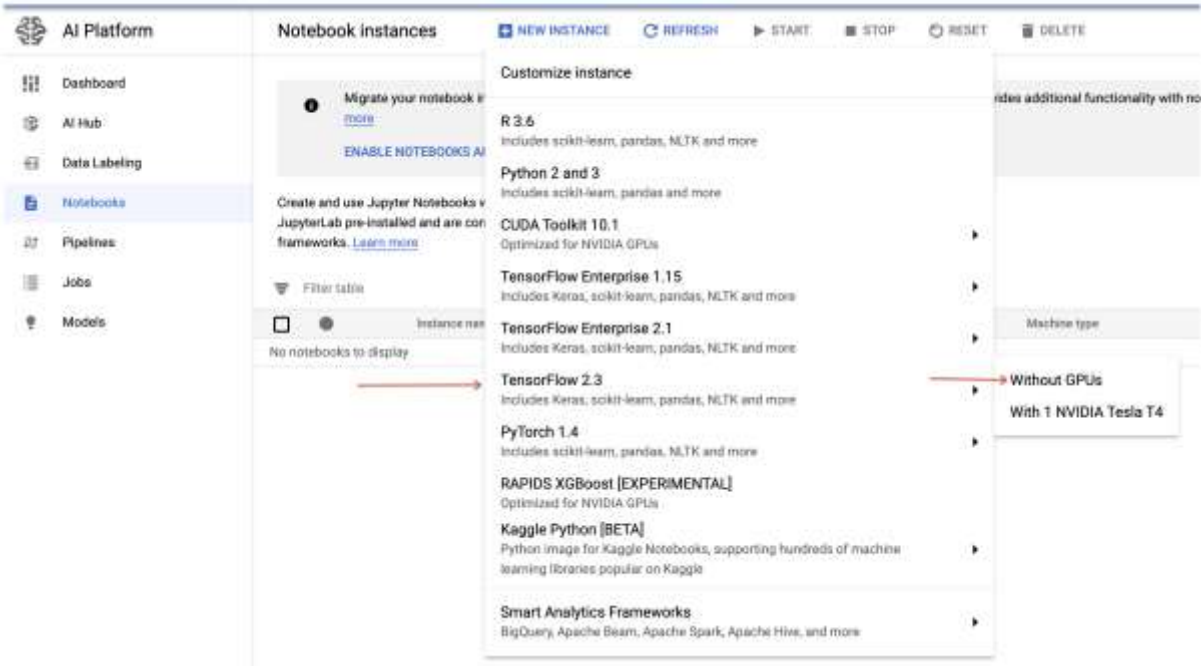
Step 1

Click on the **Navigation Menu**. Navigate to **AI Platform**, then to **Notebooks**.

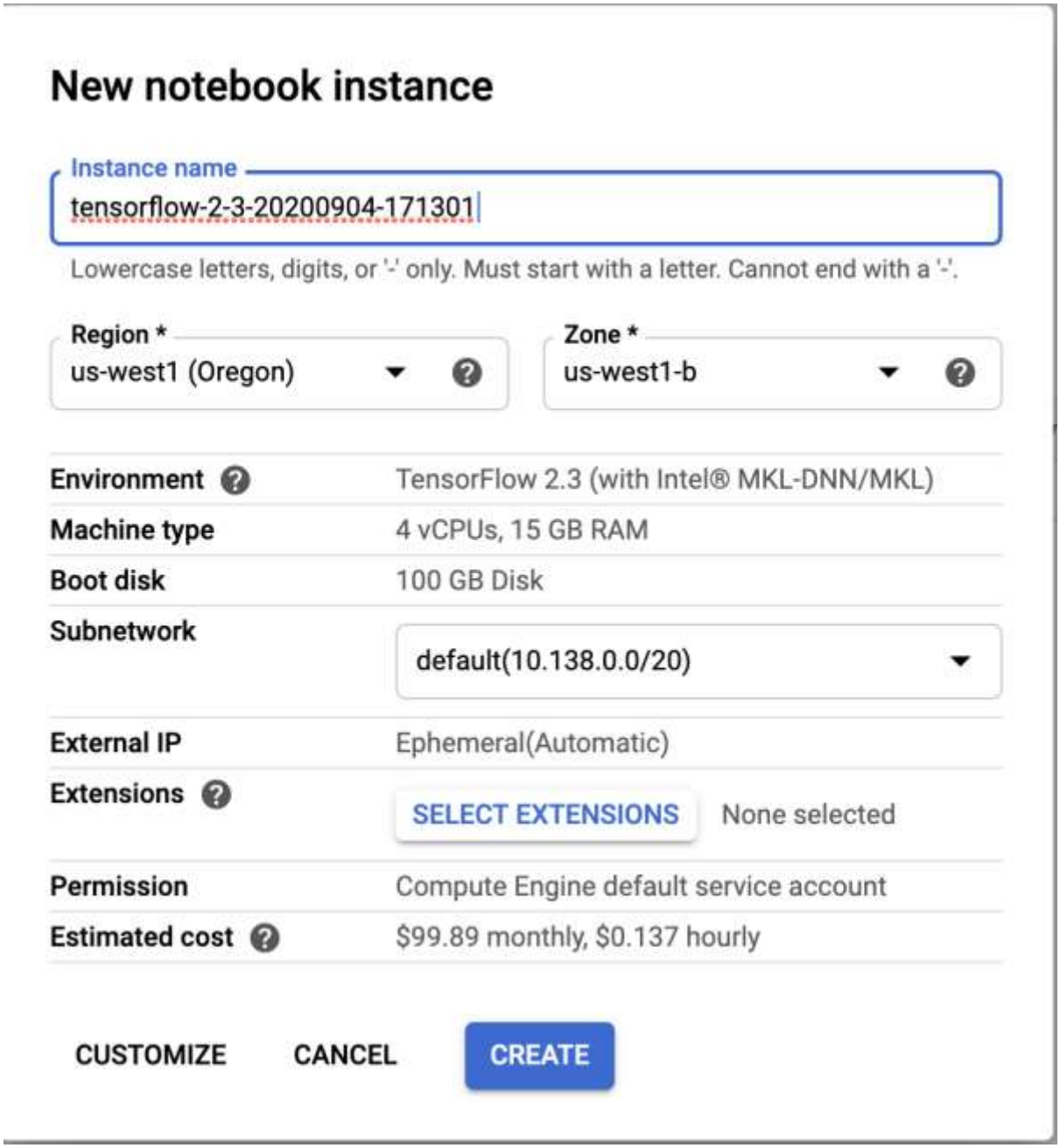


Step 2

On the Notebook instances page, click + NEW INSTANCE. Select the latest version of TensorFlow `2.x` *without GPUs*.



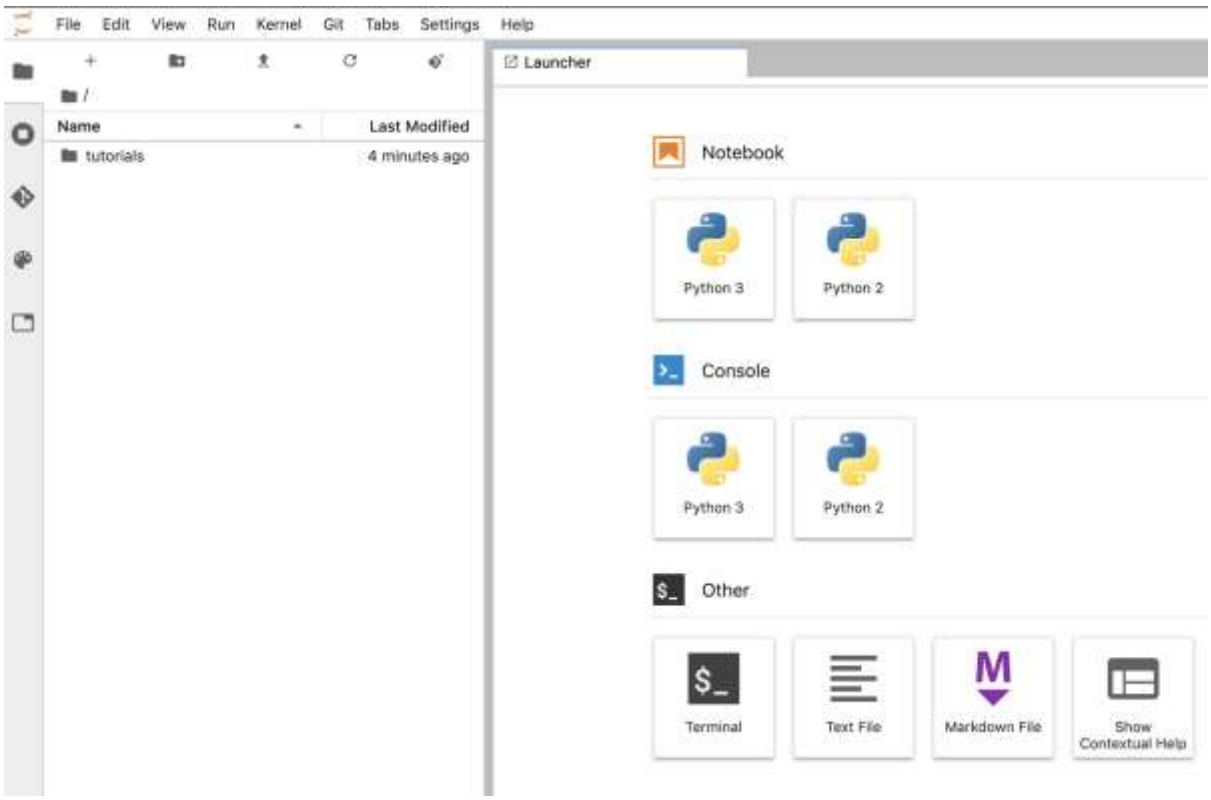
In the pop-up, confirm the name of the deep learning VM, move to the bottom of the window and click **Create**.



The new VM will take 2-3 minutes to start.

Step 3

Click **Open JupyterLab**. A JupyterLab window will open in a new tab.

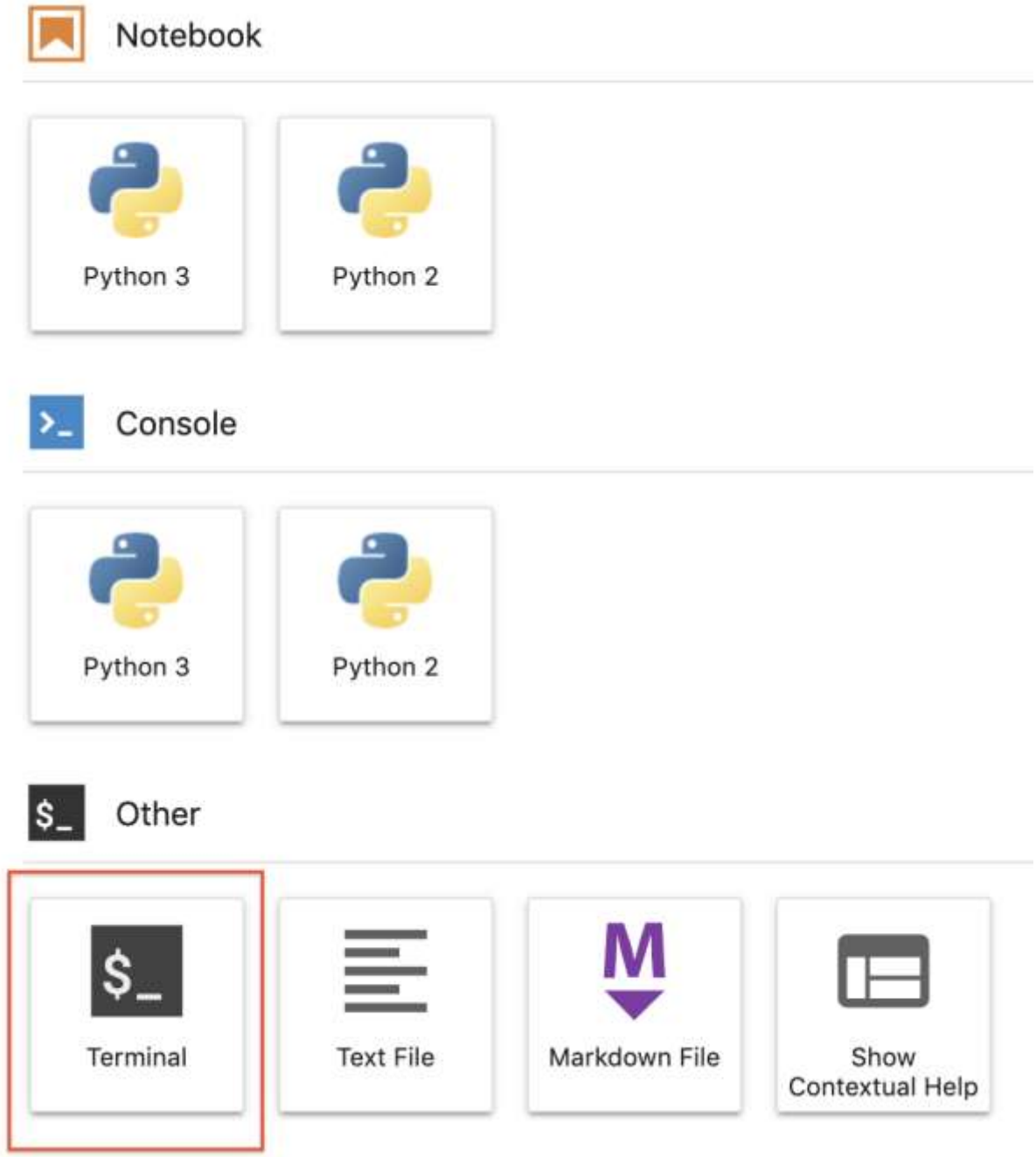


Clone course repo within your AI Platform Notebooks instance

To clone the `training-data-analyst` notebook in your JupyterLab instance:

Step 1

In JupyterLab, click the **Terminal** icon to open a new terminal.



Step 2

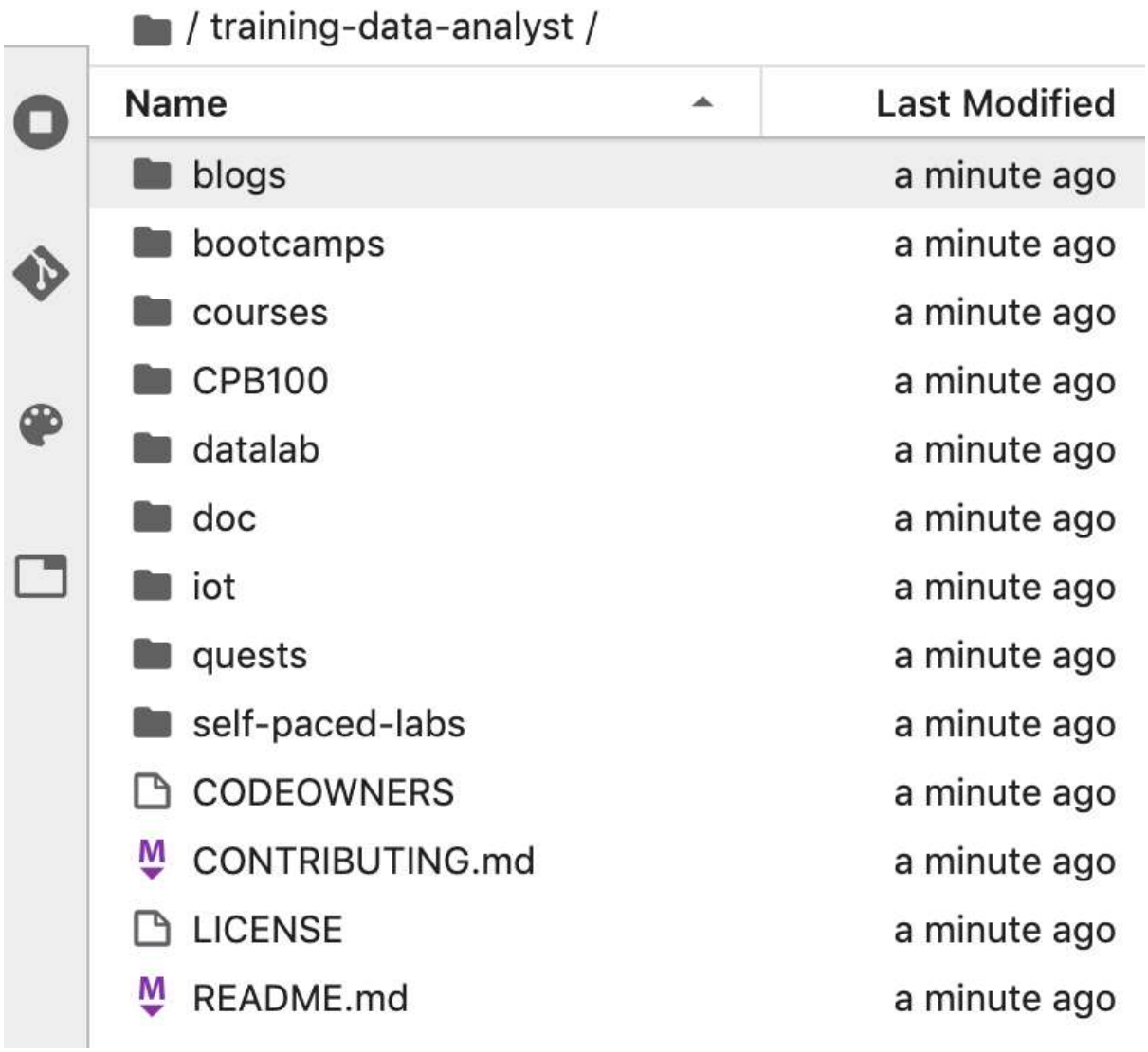
At the command-line prompt, type in the following command and press **Enter**.

```
git clone https://github.com/GoogleCloudPlatform/training-data-analystcontent_copy
```

Step 3

Confirm that you have cloned the repository by double clicking on the `training-data-analyst` directory and ensuring that you can see its

contents. The files for all the Jupyter notebook-based labs throughout this course are available in this directory.



MNIST Image Classification using a linear model

Duration is 15 min

Step 1

In the notebook interface, navigate to **training-data-analyst > courses > machine_learning > deepdive > 08_image** and open **mnist_linear.ipynb**.

Step 2

In the notebook interface, click on **Edit > Clear All Outputs** (click on Edit, then in the drop-down menu, select Clear All Outputs).

Now read the narrative and execute each cell in turn.

End your lab

When you have completed your lab, click **End Lab**. Qwiklabs removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied
  You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.