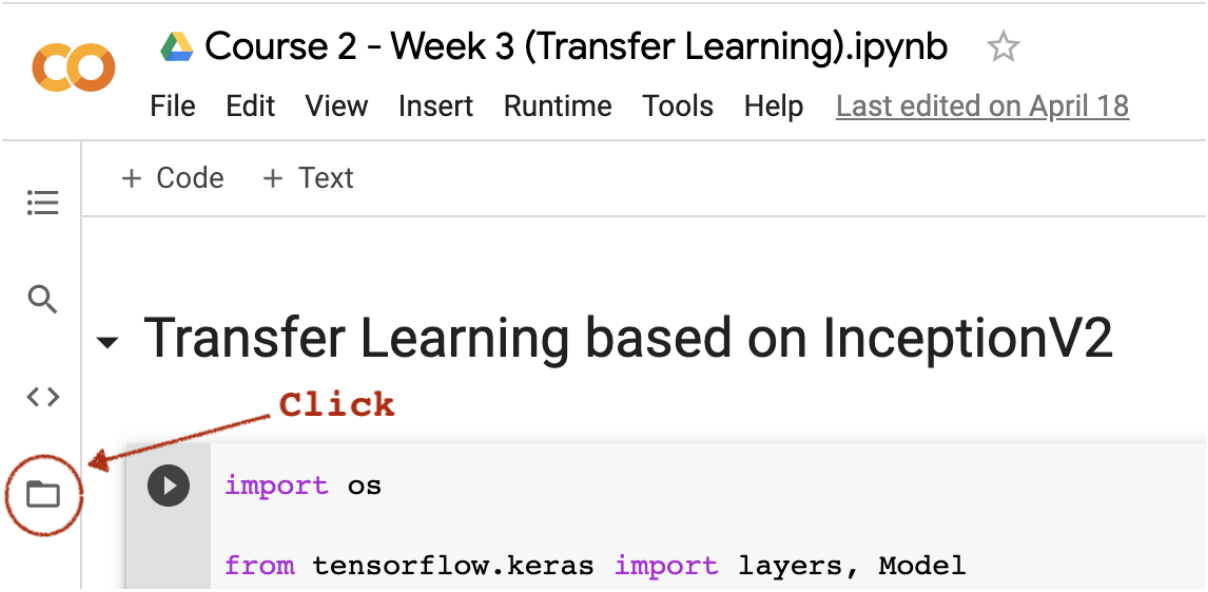
Load External Data into Google Colab

1. Uploading file through Files explorer

You can use the upload option at the top of the Files explorer to upload any file(s) from your local machine to Google Colab.

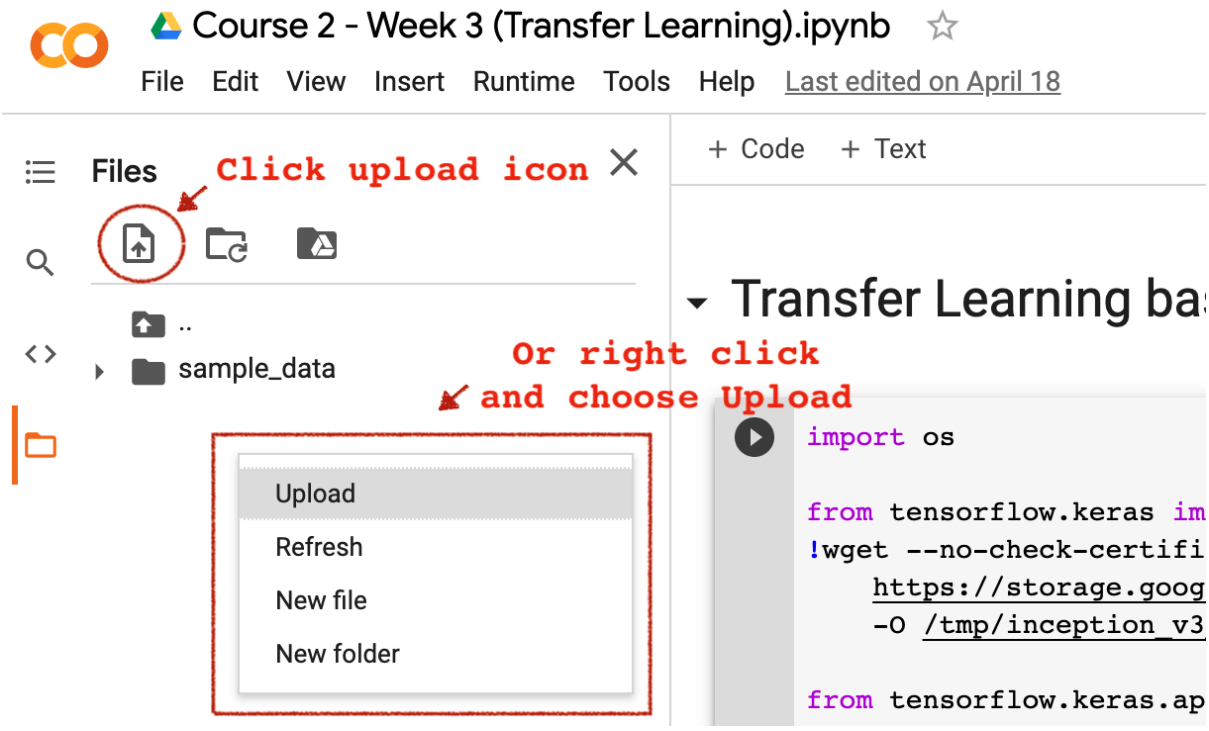
Here is what you need to do:

Step 1: Click the **Files** icon to open the “Files explorer” pane



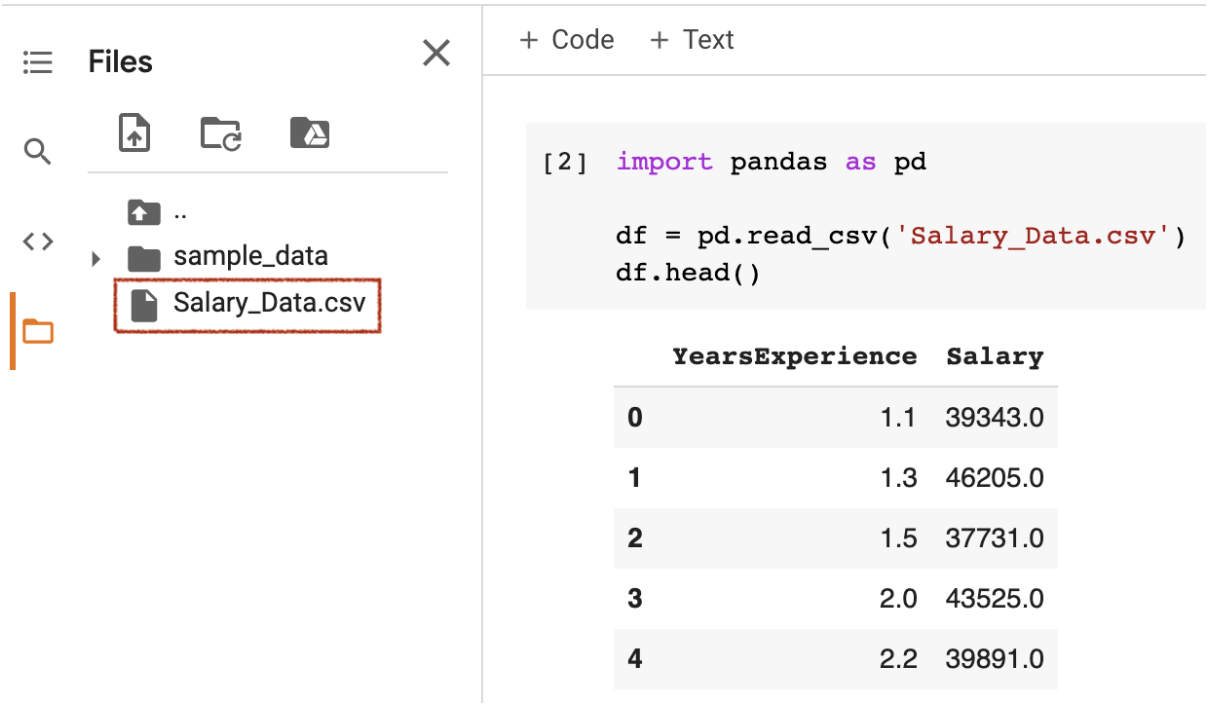
Click Files icon (Image by author)

Step 2: Click the **upload icon** and select the file(s) you wish to upload from the "File Upload" dialog window.



(Image by author)

Step 3: Once the upload is complete, you can read the file as you would normally. For instance, `pd.read_csv('Salary_Data.csv')`

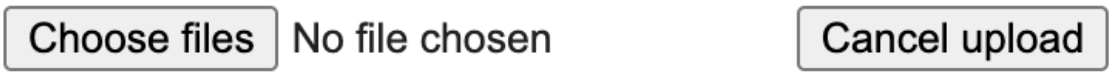


(Image by author)

2. Uploading file using Colab `files` module

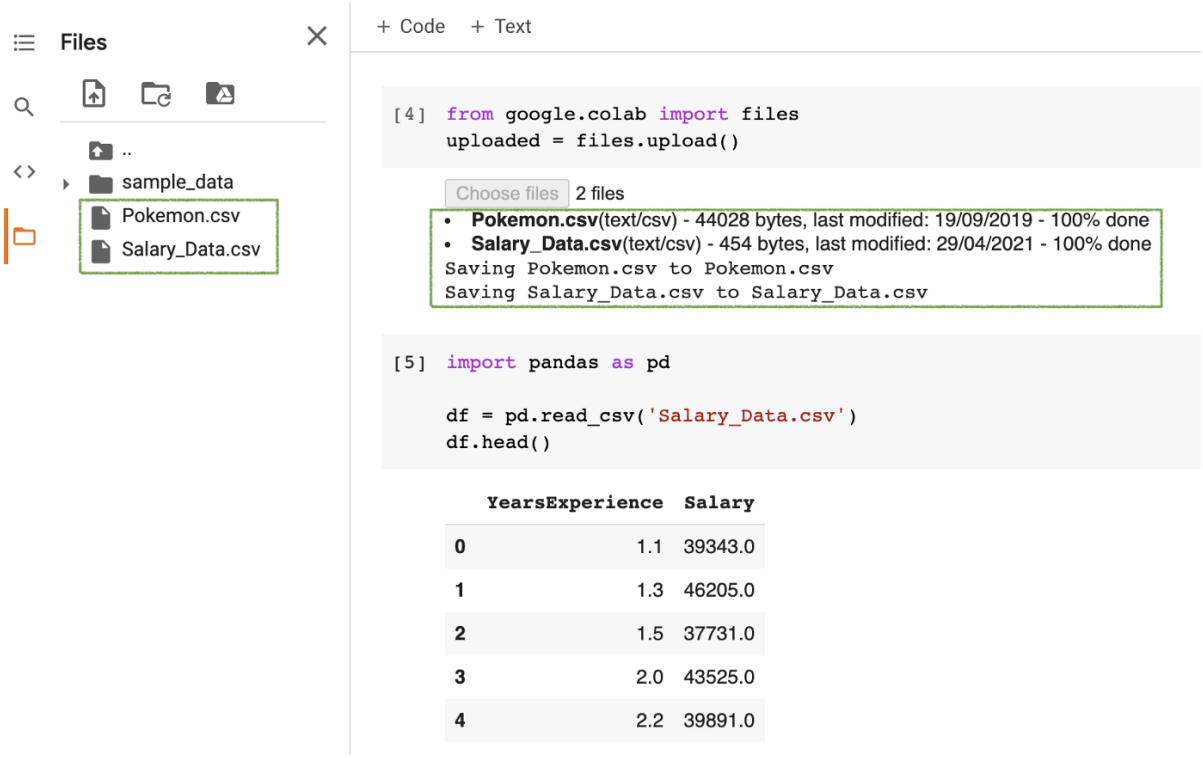
Instead of clicking the GUI, you can also use Python code to upload files. You can import `files` module from `google.colab`. Then call `upload()` to launch a "File Upload" dialog and select the file(s) you wish to upload.

```
from google.colab import files
uploaded = files.upload()
```



File Upload dialog

Once the upload is complete, your file(s) should appear in "Files explorer" and you can read the file as you would normally.



	YearsExperience	Salary
0	1.1	39343.0
1	1.3	46205.0
2	1.5	37731.0
3	2.0	43525.0
4	2.2	39891.0

(Image by author)

3. Reading file from Github

One of the easiest ways to read data is through Github. Click on the dataset in the Github repository, then click the "**Raw**" button.

(Image by author)

Copy the raw data link and pass it to the function that can take a URL. For instance, pass a raw CSV URL to Pandas `read_csv()`:

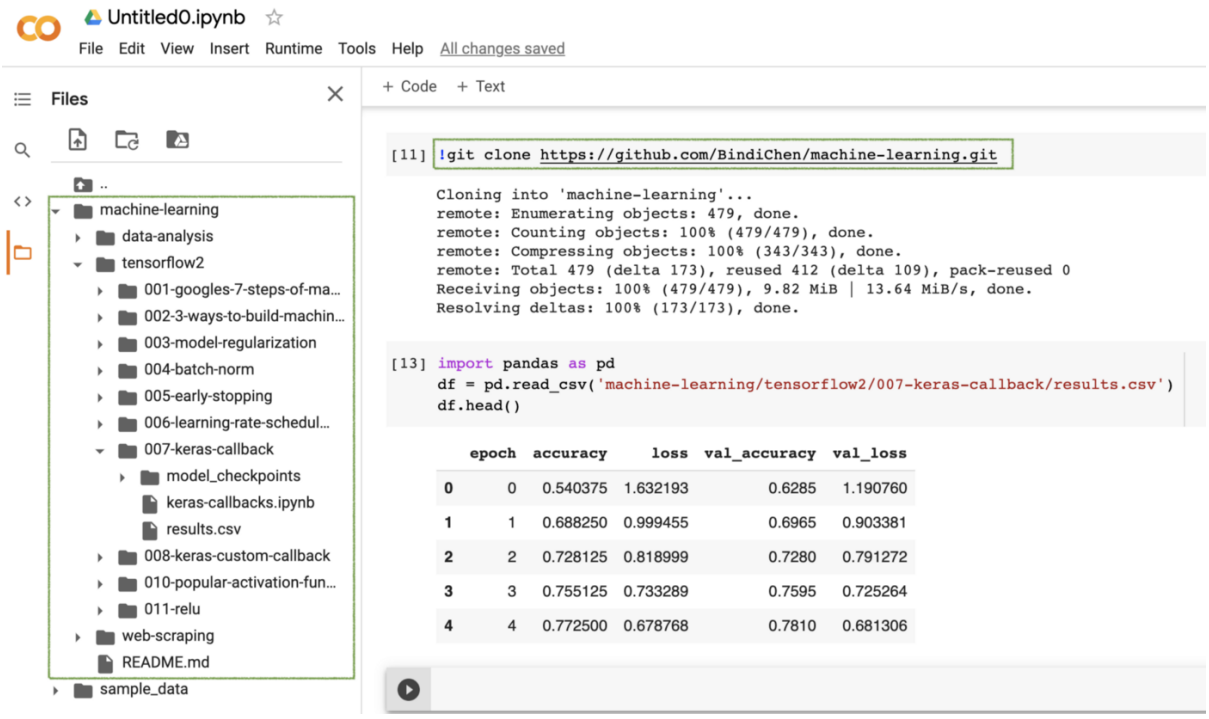
```
import pandas as pddf = pd.read_csv('https://raw.githubusercontent.com/BindiChen/machine-learning/master/data-analysis/001-pandad-pipe-function/data/train.csv')
```

4. Cloning a Github repository

You can also clone a Github repository into your Colab environment in the same way as you would in your local machine, using `git clone`.

```
!git clonehttps://github.com/BindiChen/machine-learning.git
```

Once the repository is cloned, you should be able to see its contents in “Files explorer” and you can simply read the file as you would normally.



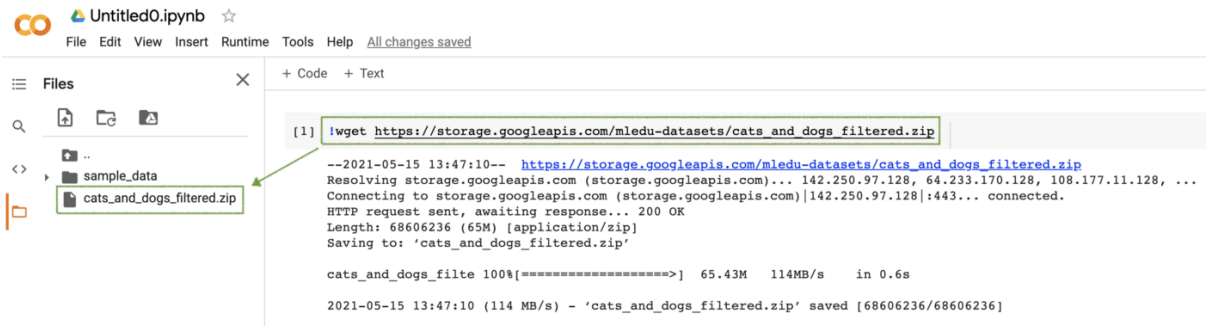
git clone and read the file in Colab (Image by author)

5. Downloading files from the web using Linux `wget` command

Since Google Colab lets you do everything which you can in a locally hosted Jupyter Notebook, you can also use Linux shell command like `ls`, `dir`, `pwd`, `cd` etc using `!`.

Among those available Linux commands, the `wget` allows you to download files using **HTTP**, **HTTPS**, and **FTP** protocols.

In its simplest form, when used without any option, `wget` will download the resource specified in the URL to the current directory, for instance:



wget in Colab (Image by author)

Rename file

Sometimes, you may want to save the downloaded file under a different name. To do that, simply pass the `-O` option followed by the new name:

```
!wget https://example.com/cats_and_dogs_filtered.zip \
-O new_cats_and_dogs_filtered.zip
```

Save file to a specific location

By default, `wget` will save files in the current working directory. To save the file to a specific location, use the `-P` option:

```
!wget https://example.com/cats_and_dogs_filtered.zip \
-P /tmp/
```

Invalid HTTPS SSL certificate

If you want to download a file over HTTPS from a host that has an invalid SSL certificate, you can pass the `--no-check-certificate` option:

```
!wget https://example.com/cats_and_dogs_filtered.zip \
--no-check-certificate
```

Multiple files at once

If you want to download multiple files at once, use the `-i` option followed by the path to a file containing a list of the URLs to be downloaded. Each URL needs to be on a separate line.

```
!wget-i dataset-urls.txt
```

The following is an example shows **dataset-urls.txt**:

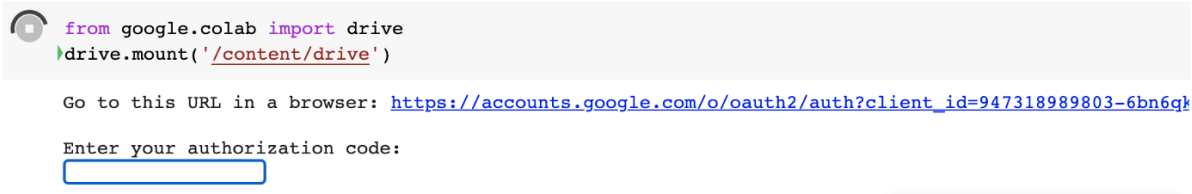
```
http://example-1.com/dataset.zip
https://example-2.com/train.csv
http://example-3.com/test.csv
```

6. Accessing Google Drive by mounting it locally

You can use the `drive` module from `google.colab` to mount your Google Drive to Colab.

```
from google.colab import drive
drive.mount('/content/drive')
```

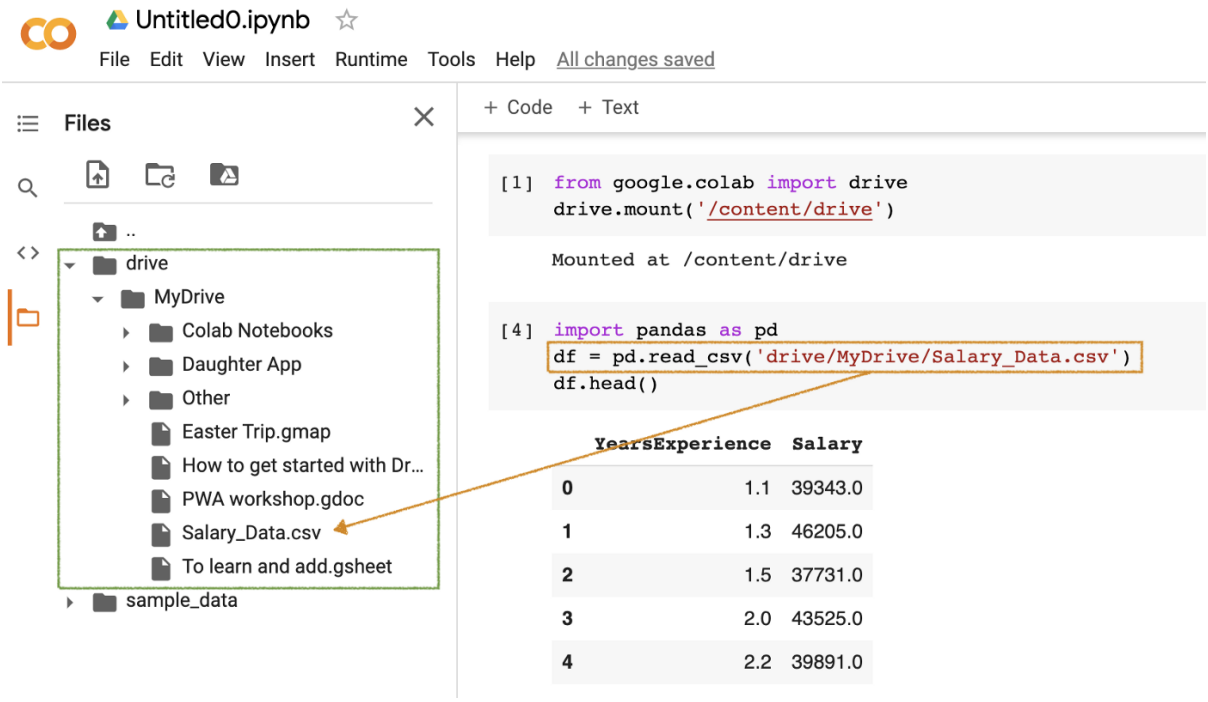
Executing the above statement, you will be provided an authentication link and a text box to enter your authorization code.



Click the authentication link and follow the steps to generate your authorization code. Copy the code displayed and paste it into the text box as shown above. Once it is mounted, you should get a message like:

```
Mounted at /content/drive
```

After that, you should be able to explore the contents via “Files explorer” and read the data as you would normally.



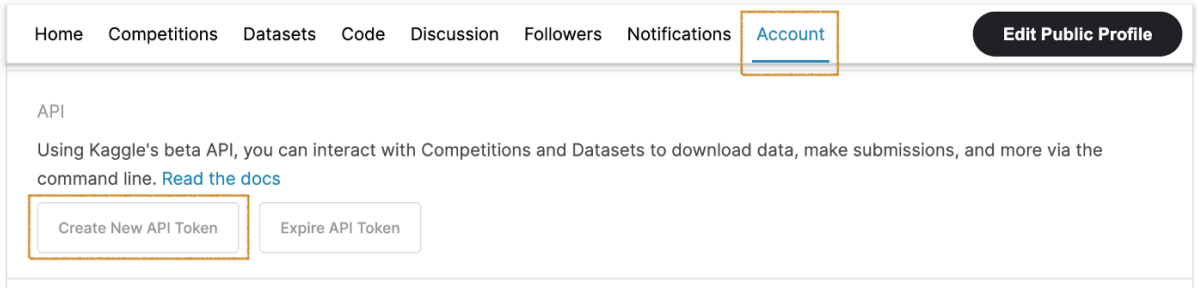
Finally, to unmount your Google Drive:

```
drive.flush_and_unmount()
```

7. Loading Kaggle datasets

It is possible to download any dataset seamlessly from Kaggle into your Google Colab. Here is what you need to do:

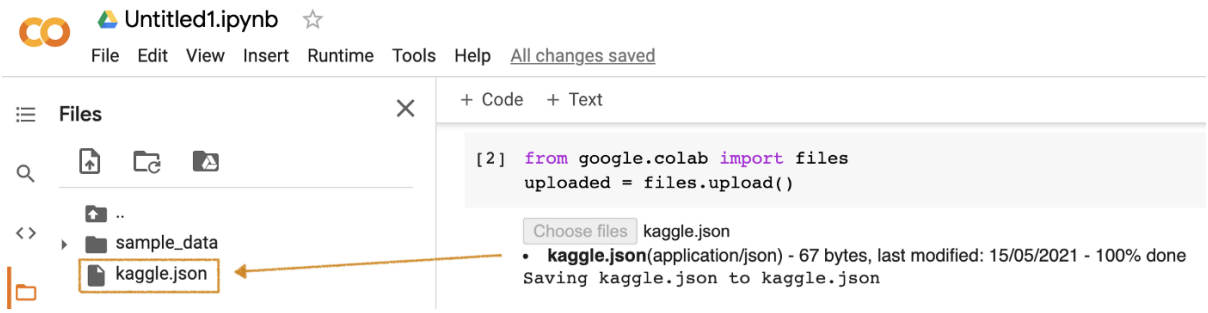
Step 1: Download your Kaggle API Token: Go to Account and scroll down to the **API** section.



Generate Kaggle API token (Image by author)

By clicking “Create New API Token”, a **kaggle.json** file will be generated and downloaded to your local machine.

Step 2: Upload **kaggle.json** to your Colab project: for instance, you can import `files` module from `google.colab`, and call `upload()` to launch a File Upload dialog and select the kaggle.json from your local machine.



Upload kaggle.json (Image by author)

Step 3: Update `KAGGLE_CONFIG_DIR` path to the current working directory. You can run `!pwd` to get the current working directory and assign the value to `os.environ['KAGGLE_CONFIG_DIR']` :

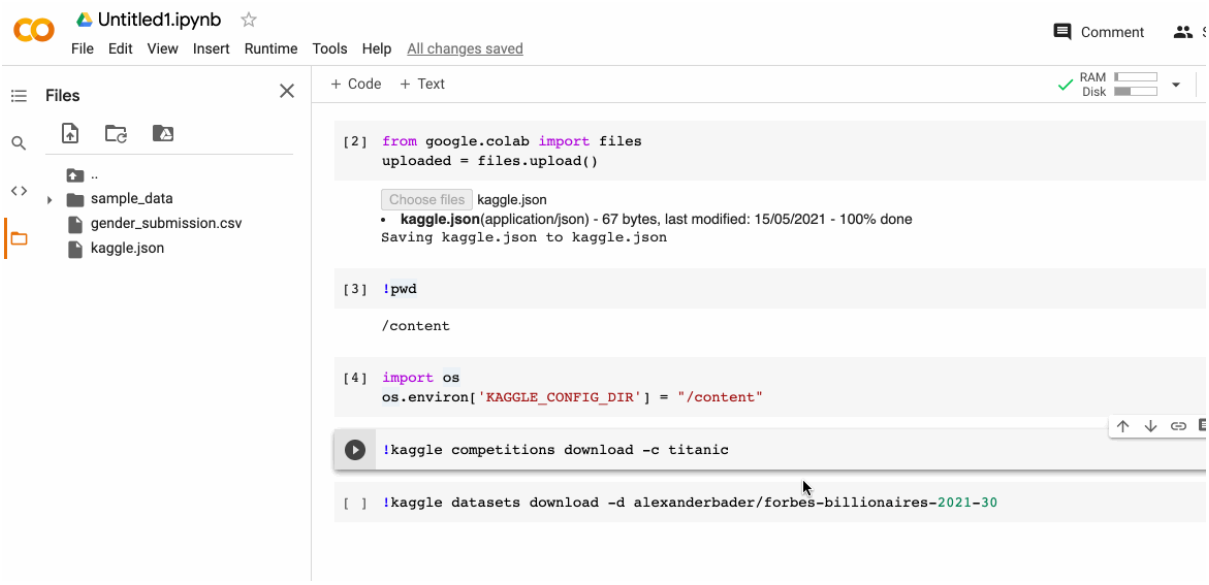
```
[3] !pwd

    /content
```

```
[4] import os
    os.environ['KAGGLE_CONFIG_DIR'] = "/content"
```

Configure KAGGLE_CONFIG_DIR (Image by author)

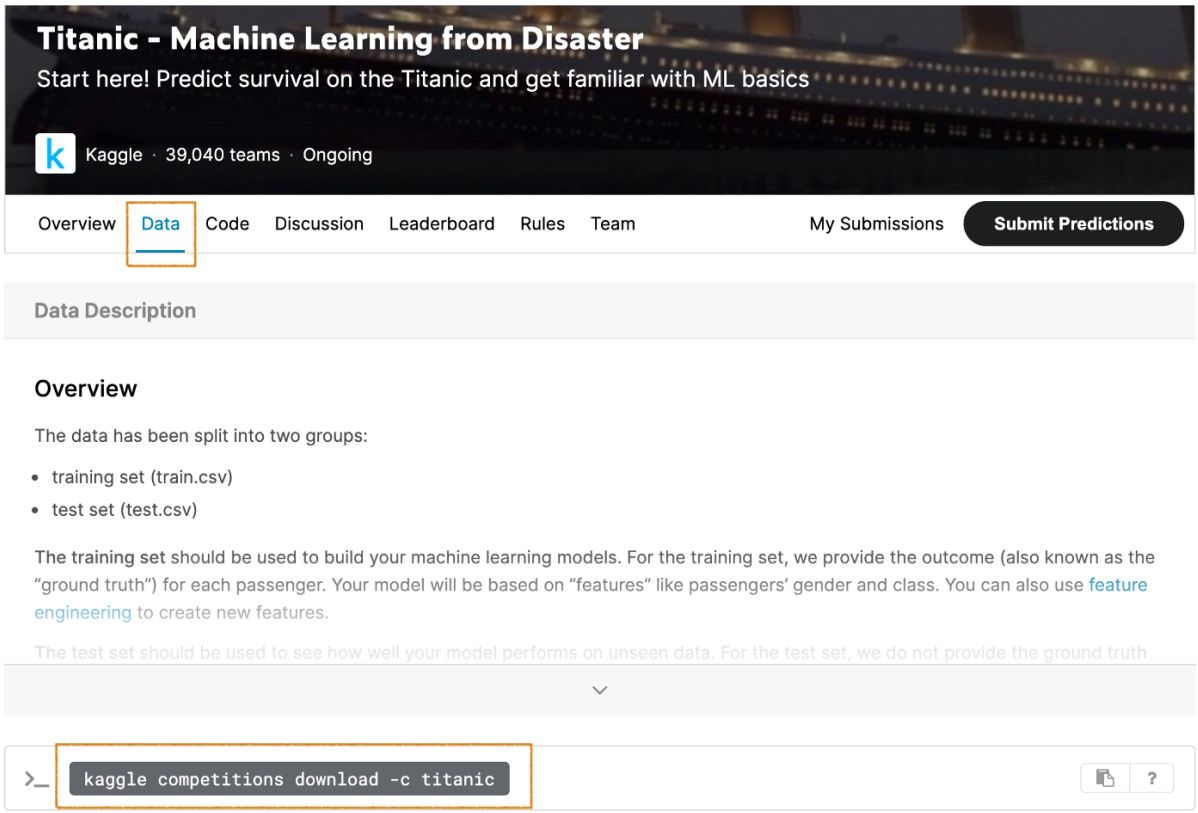
Step 4: Finally, you should be able to run the following Kaggle API to download datasets:

```
!kaggle competitions download -c titanic!kaggle datasets download -d alexanderbader/forbes-billionaires-2021-30
```



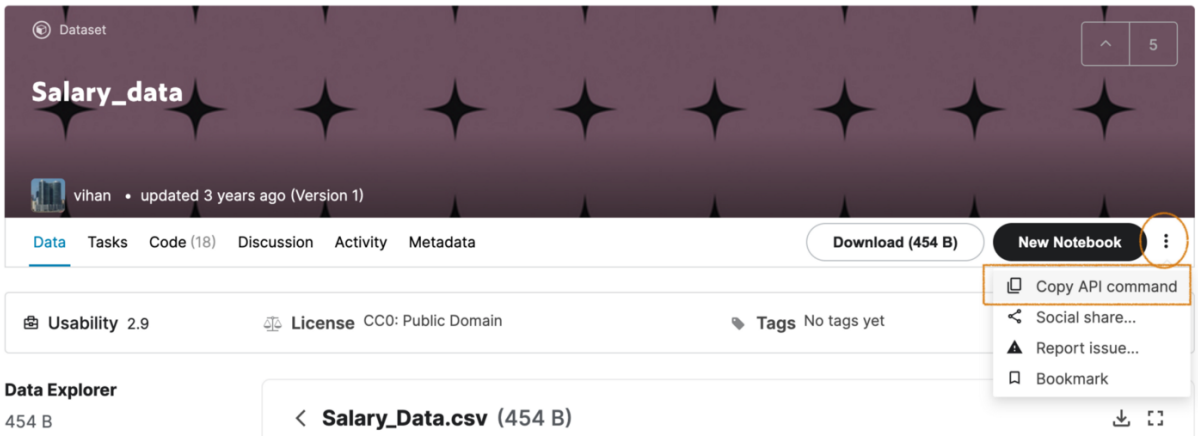
Download Kaggle Dataset (Image by author)

Note for the competition dataset, the Kaggle API should be available under the Data tab



Retrieve Kaggle API from competition dataset (Image by author)

For the general dataset, the Kaggle API can be accessed as follows:



Retrieve Kaggle API from a general dataset (Image by author)

Conclusion

Google Colab is a great tool for individuals who want to take advantage of the capabilities of high-end computing resources (like GPUs, TPUs) without being restricted by their price.

In this article, we have gone through most of the ways you can improve your Google Colab experience by loading external data into Google Colab. I hope this article will help you to save time in learning Colab and Data Analysis.

Thanks for reading. Stay tuned if you are interested in the practical aspect of machine learning.