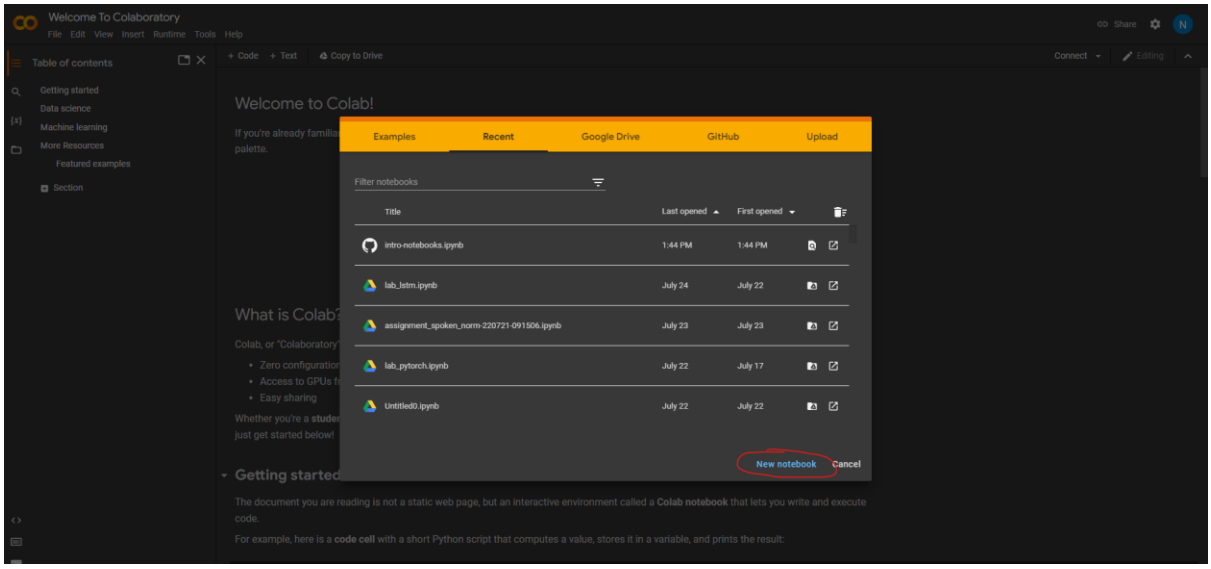
COS30018 – Intelligent Systems

In this document, we will look at:

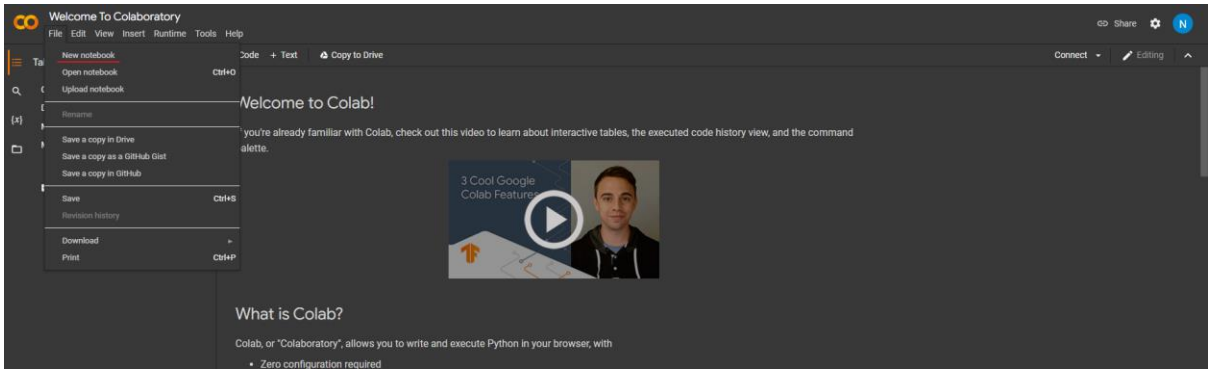
- How to start a new notebook on Google Colab.
- Basic functions in Google Colab.
- Runtime Environment in Google Colab.
- Install Python packages & clone GitHub repos.
- File hierarchy & upload files to Google Colab.

Starting a new notebook:

In order to create a new document, access Google Colab at https://colab.research.google.com/. Once here, you can begin a new document, or "notebook", in one of two ways. Upon visiting the site, a box with your recently visited Colab documents will appear. Select "New Notebook" to begin a new document.



Alternatively, to create a new document from any screen, select "File" in the top left corner, then select "New Notebook" from the dropdown box.



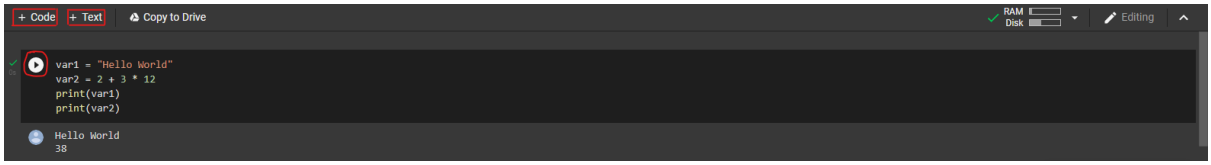
Basic functions:

After you have created a new notebook, you will see an empty code cell. Python code can be entered into these code cells and executed at any time by either clicking the **Play button** to the left of the code cell or by pressing **Command/Ctrl+Enter** on your keyboard.

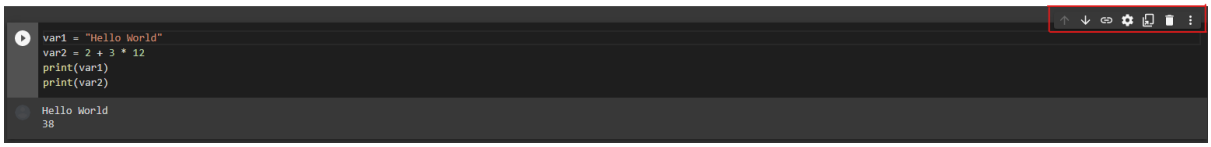
At the top of your notebook, you will find two buttons: **+Code** and **+Text.**

Add a new code cell by clicking the **"+ Code"** button in the top left corner of the document.

Add a text cell by clicking the **"+ Text"** button in the top left corner of the document.

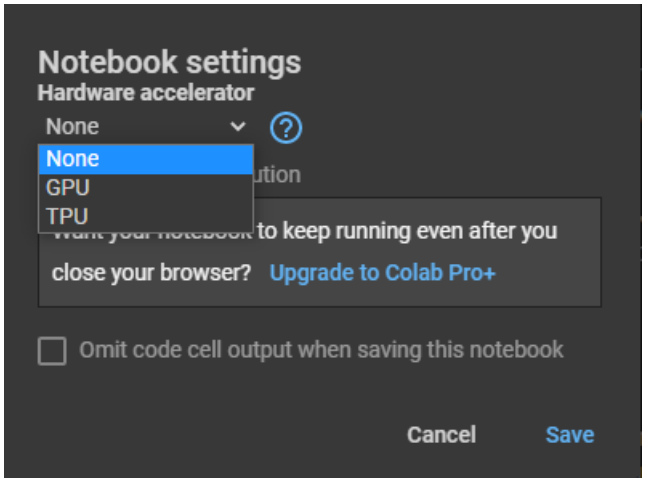


When a cell is selected, a toolbar will appear in the top right corner of the cell. This toolbar contains functions specific to that cell. Options include moving the cell up and down, adding comments, and deleting the cell.



Runtime Environment:

We can configure the runtime environment to use GPU/TPU for our current Google Colab notebook. Click the **"Runtime"** dropdown menu. Select **"Change runtime type"**. Now select anything (GPU, TPU, None) you want in the **"Hardware accelerator"** dropdown menu.



Note: You only have limited time access to the GPU/TPU on your free account.

To verify if a GPU is selected and running, we use `tf.test.gpu_device_name()`:

```
import tensorflow as tf
tf.test.gpu_device_name()
```

If a GPU is connected, it will output the following:

```
'/device:GPU:0'
```

Otherwise, it will output nothing.

To verify if a TPU is connected, we do the following:

```
import os

if 'COLAB_TPU_ADDR' not in os.environ:
  print('Not connected to TPU')
else:
  print("Connected to TPU")
```

If a TPU is connected it will output following:

```
Connected to TPU
```

Otherwise, it will output:

```
Not connected to TPU
```

Install Python packages:

Although Google Colab has all the common and necessary packages/libraries implemented for you, you can still install other packages if you need via **"!pip install"**:

```
! pip install pandas
```

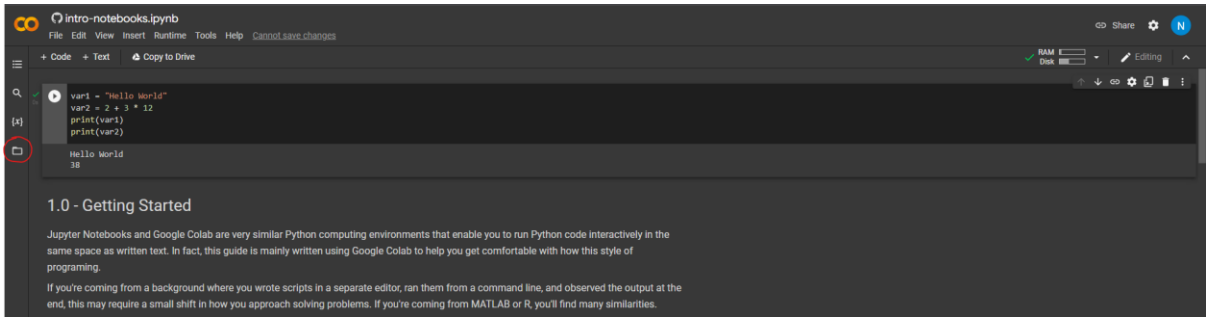
Clone a GitHub repos:

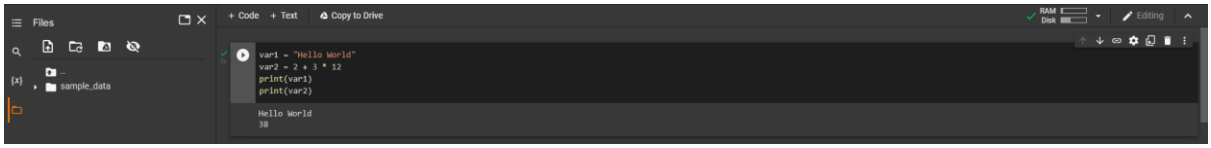
You can clone a GitHub repo and work with it directly on Google Colab by using **"!git clone":**

```
! git clone https://github.com/souvik3333/Testing-and-Debugging-Tools
```

File hierarchy:

You can see the file hierarchy by clicking on the file icon on the left-hand side menu of the notebook:





To upload file, we can choose the **“upload to session storage”** button in the **“File”** menu to upload a file from your computer, or you can mount a folder in your Google Drive by clicking **“Mount Drive”** button: