

How to Use *Colab*

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Colab is an abbreviation for Colaboratory, developed by *Google*. It is a free, online, and web-based cloud computing tool for you to easily implement Python codes and even more. The *Colab* platform is based on *Jupyter Notebook*. Therefore, it is straightforward to use if you are already skilled at using *Jupyter Notebook*.

To use *Colab*, you need to register a *Google* account, which is easy to do in Hong Kong. The second thing you need to know is that the *Colab* need the assistant from *Google Drive*, which is a powerful cloud storage tool. To the best of the author's knowledge, *Google* provides quite an amount of storage quota for each user. You are therefore not required to pay for anything.

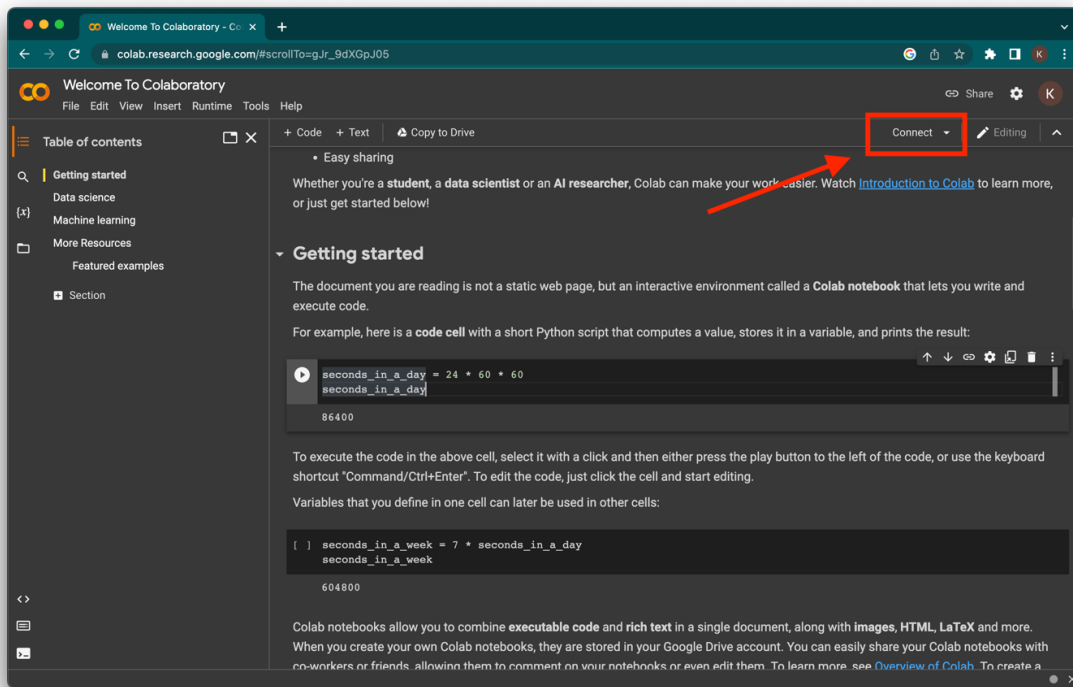
One of the major advantages of using *Colab* is that you do not need to buy a powerful but probably unaffordable computer. Training a machine learning or deep learning model normally requires a huge amount of computation power, and your personal laptop normally is not powerful enough to do so (except for some portable workstations or gaming laptops). If you do not want to purchase another computer, you can use *Colab*, because you can use its GPU for free. Just note that the free version of *Colab* only provides limited use of GPU, but it is absolutely sufficient for this course. If you still cannot train your model efficiently with free version of *Colab*, you may need to consider change a new model, or upgrade to premium version (we do not encourage you to upgrade because you need to pay for that, which is not necessary).

There is tremendous amount of resource for learning how to use *Colab*. In this document, I will provide you some useful ones. You are also encouraged to explore more. I will also provide some useful codes for easier use of *Colab*.

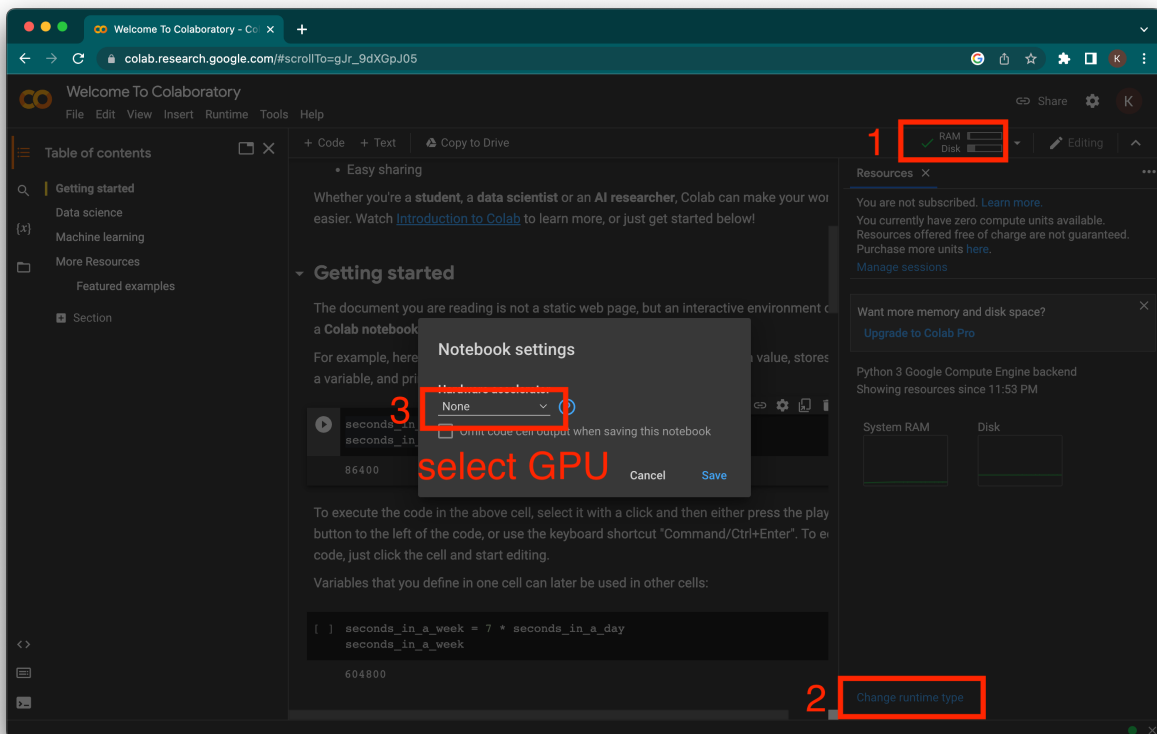
ONLINE RESOURCE

- Frequently asked questions and answers provided by *Google*
<https://research.google.com/colaboratory/faq.html>
- Enter this link (<https://colab.research.google.com/>) and click “Cancel”. An instructional *Jupyter Notebook* titled “Welcome To Colaboratory” will be shown. You are highly encouraged to read this content before using *Colab*.

To complete this introductory *Jupyter Notebook*, just simply treat it as a normal *Jupyter Notebook* by type “**Shift**” and “**Enter**” (or “**Ctrl**” and “**Enter**” for Windows, “**Command**” and “**Enter**” for macOS) to run the code. The platform will connect to the computation power automatically. You can also click “Connect” on the top right of the window as shown in figure on top of the next page to manually connect to the computing power.



You can change the computing power to GPU by the following steps.

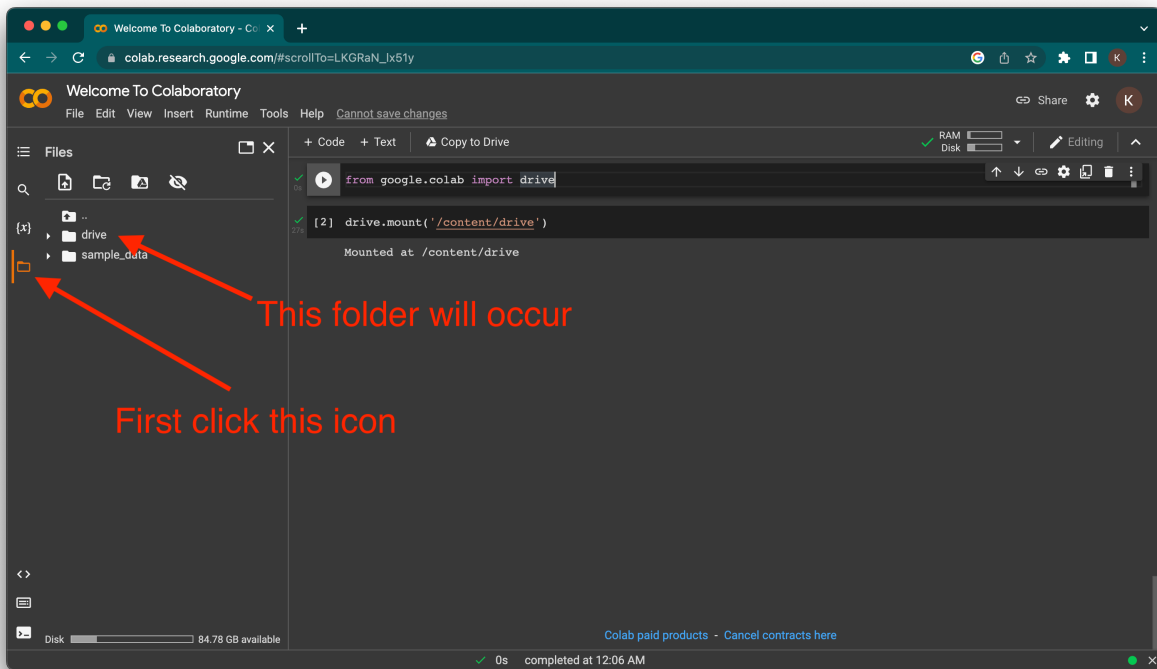


USEFUL CODES

As aforementioned, *Colab* may require assistance from *Google Drive*, especially when you are using your own data. Before training the model, you may need to load data from *Google Drive* instead of manually uploading that data onto *Colab* each time. This section provides code for mounting your *Google Drive* to *Colab Jupyter Notebook*.

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

After executing these two lines, a folder titled “drive” will occur, as shown below.



Then, you can find all your files from *Google Drive* at “drive/MyDrive”!

(Optional):

We recommend you learn how to use *Github* and *Git* commands. *Github* can also connect to *Colab*. However, if you just want to have a taste of machine learning in via this course instead of keep working on coding in the future, this is not necessary because it does take some time to become skillful on them. The instructions for using *Github* is not provided in this document.