

Colab Notebooks

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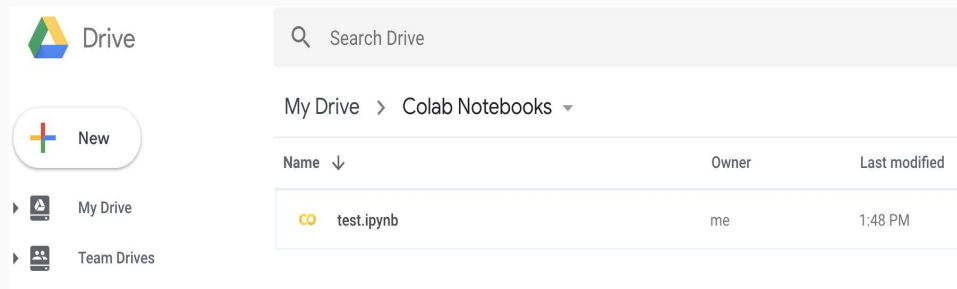
2019/01/12



Introduction

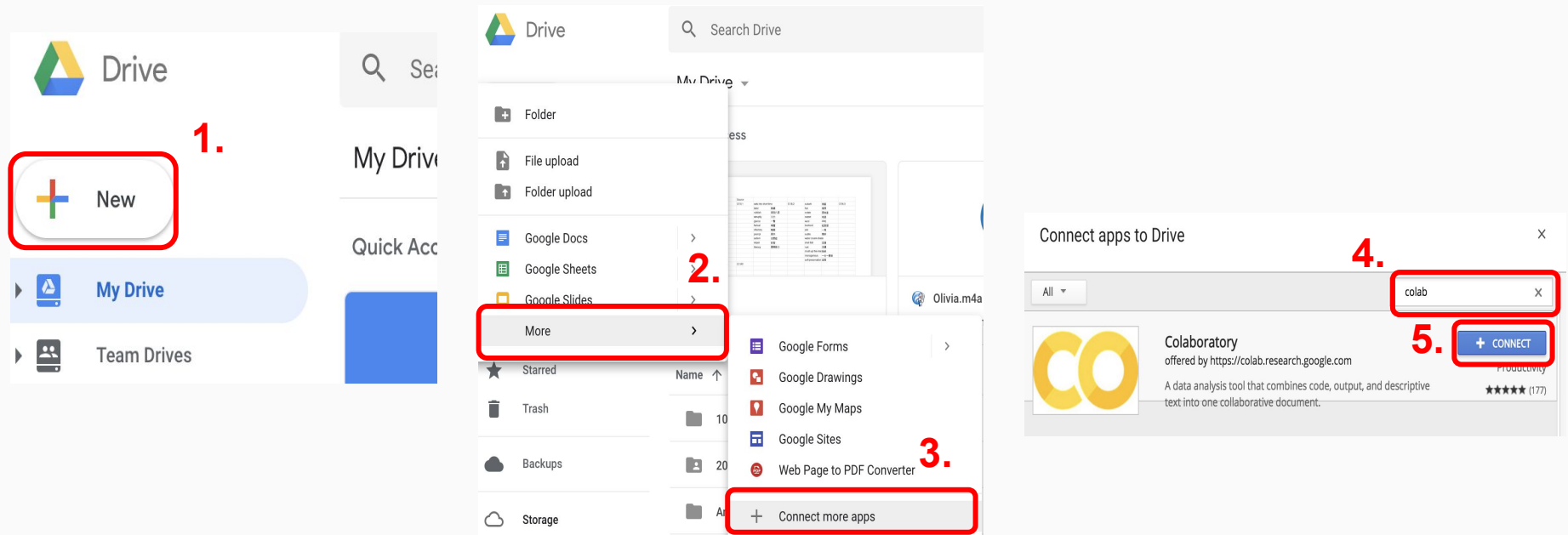
- 類似Jupyter Notebook，互動式介面，及時輸出結果
- 儲存在Google Drive 上，可以共同編輯
- 背後有VM 在運作
- 可連續使用免費的 Tesla K80 GPU 12小時(每次)
- 許多套件已事先安裝，例如：TensorFlow, Scikit-learn, Matplotlib等

→ Text Note: goo.gl/vmJGJ4



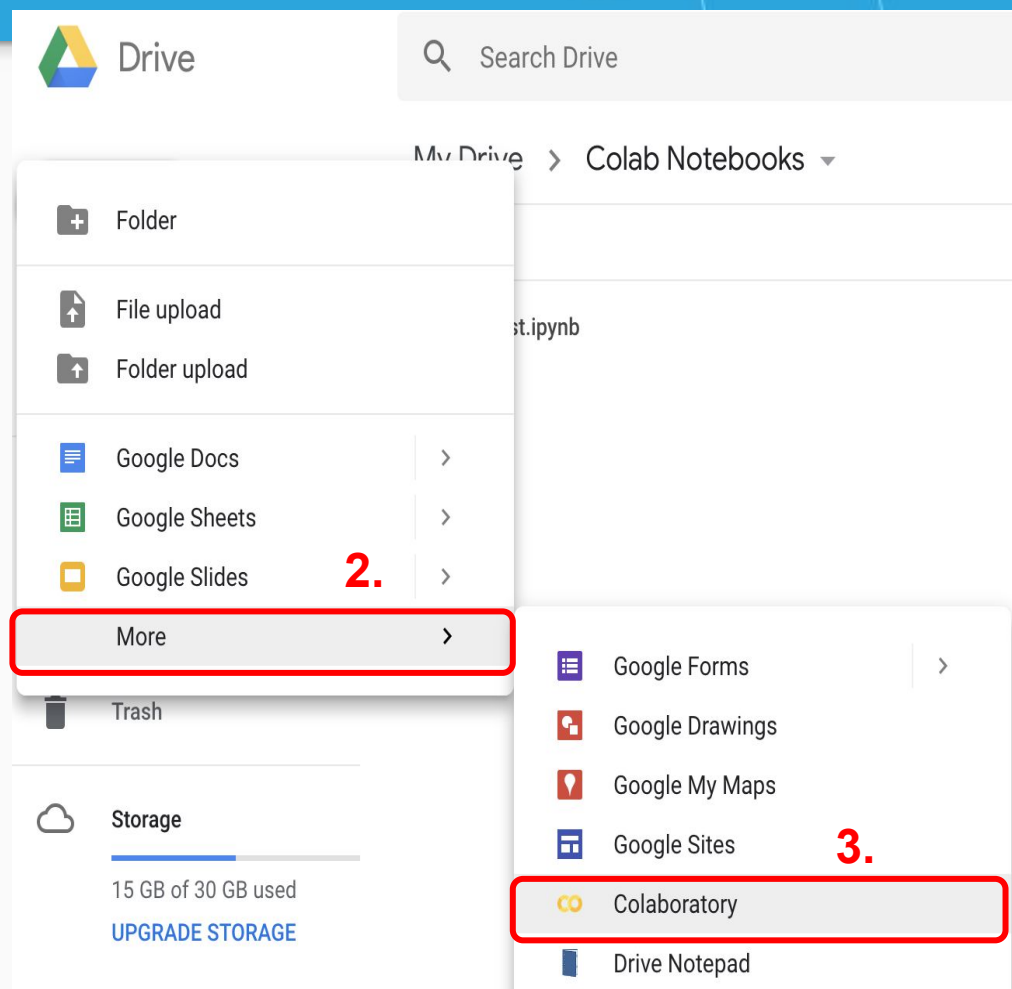
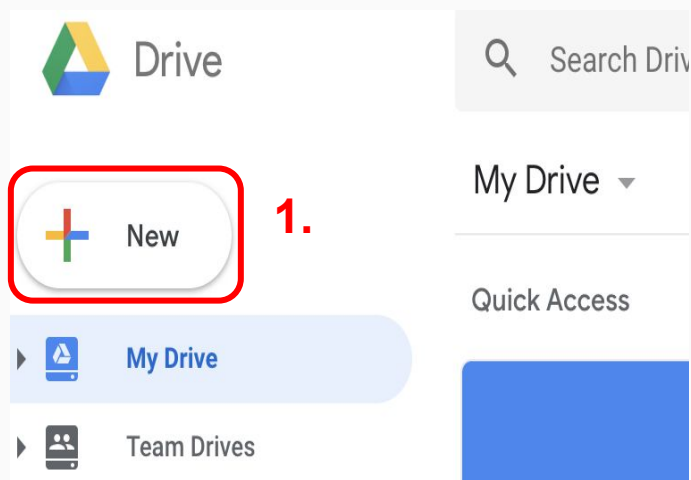
Setup

- 進入Google Drive 連接到Colaboratory

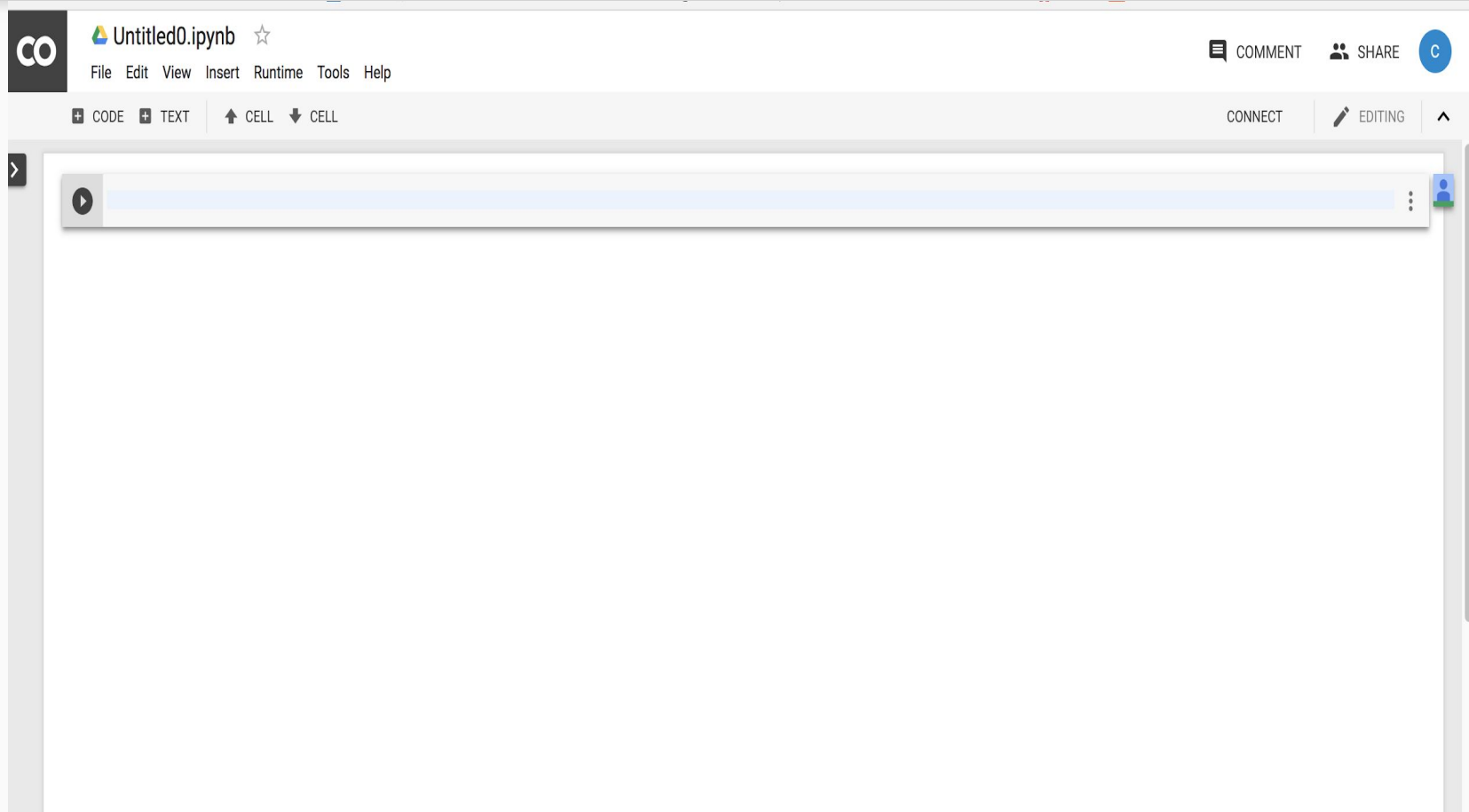


Setup

- 建立一個新的Colaboratory



建立完成



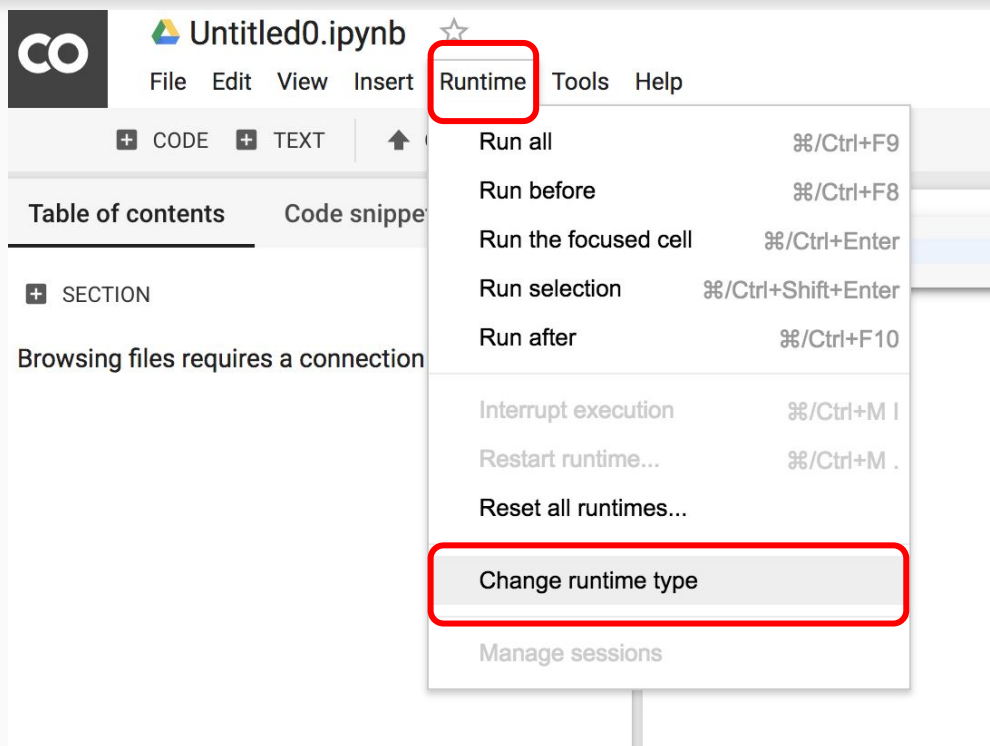
修改名稱

The screenshot shows the JupyterLab interface for a file named 'Untitled0.ipynb'. The top bar features the 'co' logo and a menu bar with options: File, Edit, View, Insert, Runtime, Tools, and Help. Below the menu bar is a toolbar with buttons for adding code (+ CODE), text (+ TEXT), and cells (up arrow CELL, down arrow CELL). A sidebar on the left contains a 'Table of contents' section with a '+ SECTION' button and a 'Code snippets' section. The main workspace displays a single code cell with a play button icon.

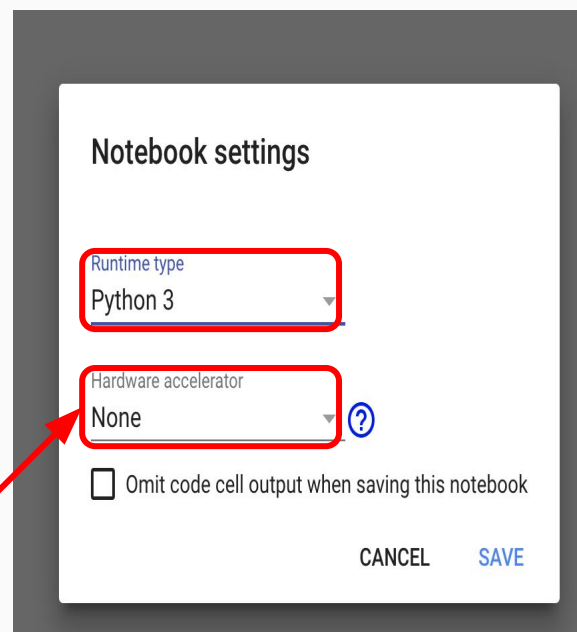
查看檔案

The screenshot shows the Google Colab interface for a file named 'Untitled0.ipynb'. The top navigation bar includes 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. On the right, there are buttons for 'COMMENT', 'SHARE', and a user profile icon. Below the navigation bar, a toolbar contains '+ CODE', '+ TEXT', '↑ CELL', and '↓ CELL'. A sidebar on the left is titled 'Table of contents' (highlighted with a red box), 'Code snippets', and 'Files' with a close button. Under 'Table of contents', there is a '+ SECTION' button and a message: 'Browsing files requires a connection to a runtime.' The main workspace area is empty, with a play button icon in the top left corner of the workspace.

修改Runtime

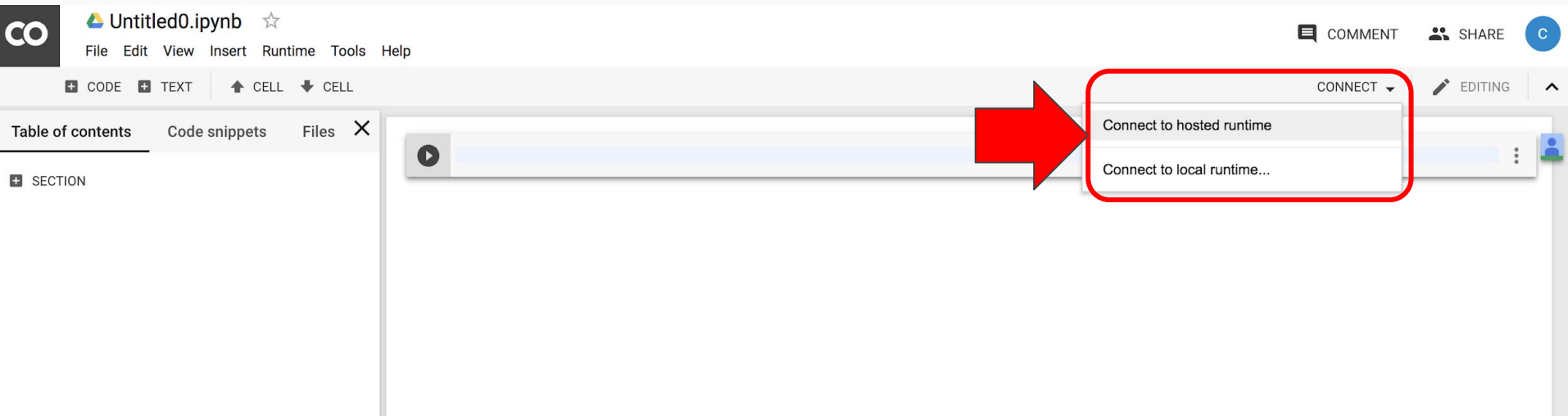


● 使用 Python 3



可選GPU

連接VM



The screenshot displays the JupyterLab web interface. At the top, the title bar shows 'Untitled0.ipynb' with a star icon. Below it, a menu bar includes 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. A secondary bar contains '+ CODE', '+ TEXT', '↑ CELL', and '↓ CELL'. On the left, a sidebar shows 'Table of contents', 'Code snippets', and 'Files'. The main area features a code editor with a play button icon. A red arrow points from the code editor to a 'CONNECT' dropdown menu, which is highlighted with a red rectangle. The dropdown menu lists two options: 'Connect to hosted runtime' and 'Connect to local runtime...'. In the top right corner, there are links for 'COMMENT', 'SHARE', and a user profile icon.

co Untitled0.ipynb ☆

File Edit View Insert Runtime Tools Help

+ CODE + TEXT ↑ CELL ↓ CELL

Table of contents Code snippets Files X

+ SECTION

CONNECT

- Connect to hosted runtime
- Connect to local runtime...

COMMENT SHARE C

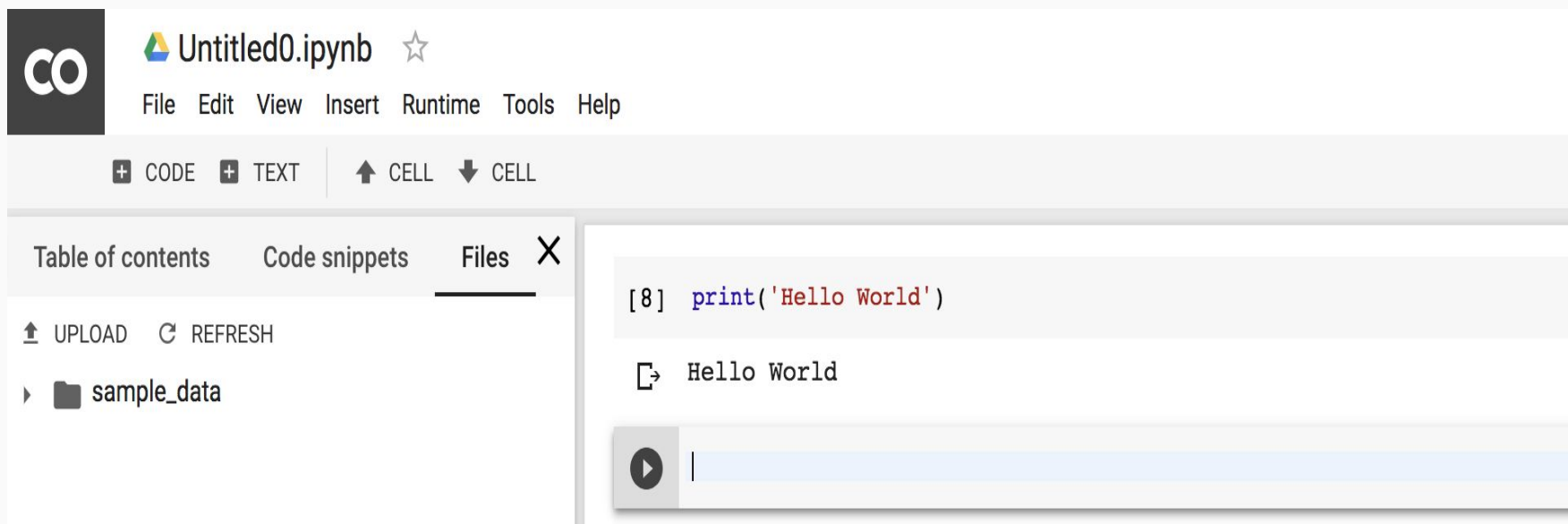
EDITING ^

連接完成

The screenshot displays a Jupyter Notebook environment. At the top, the title bar shows 'Untitled0.ipynb' with a star icon. Below it is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. On the right side of the title bar, there are buttons for 'COMMENT', 'SHARE', and a user profile icon. Below the title bar, a toolbar contains tabs for '+ CODE', '+ TEXT', '↑ CELL', and '↓ CELL'. To the right of the toolbar, there are status indicators: a green checkmark with 'CONNECTED', a pencil icon with 'EDITING', and an upward arrow icon. The main interface is divided into two panels. The left panel, titled 'Files', shows a file browser with a tree view. It includes an 'UPLOAD' button and a 'REFRESH' button. The file tree shows a folder named 'sample_data' which contains several files: 'README.md', 'anscombe.json', 'california_housing_test.csv', 'california_housing_train.csv', 'mnist_test.csv', and 'mnist_train_small.csv'. The right panel is a large code editor area, currently empty, with a play button icon in the top left corner. A user profile icon is visible in the top right corner of the code editor area.

基本語法 - Python

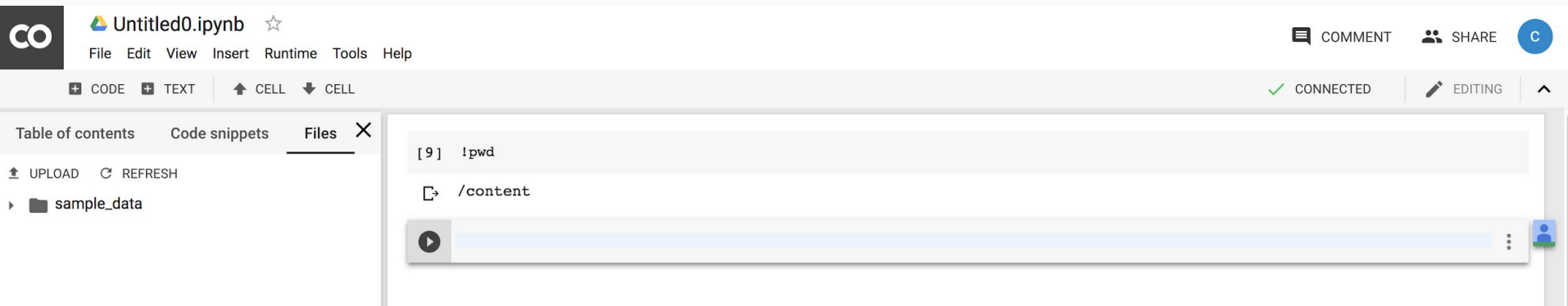
- 輸入 python 程式碼，點擊「Run」或是「Ctrl + Enter」執行程式碼區塊。



The screenshot displays a Jupyter Notebook interface. At the top, the title bar shows 'Untitled0.ipynb' with a star icon. Below it is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. A toolbar contains icons for '+ CODE', '+ TEXT', '↑ CELL', and '↓ CELL'. On the left, a sidebar with a 'Table of contents' and 'Code snippets' tab shows a 'Files' section with an 'UPLOAD' button, a 'REFRESH' button, and a folder icon labeled 'sample_data'. The main area features a code cell with the input '[8] print('Hello World')' and the output 'Hello World' displayed below it. At the bottom of the code cell is a play button icon and a horizontal progress bar.

基本語法 - Shell

- 前面加上！



The screenshot displays a Jupyter Notebook interface. At the top, the title bar shows 'Untitled0.ipynb' with a star icon. Below it is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. To the right of the menu bar are buttons for 'COMMENT', 'SHARE', and a user profile icon. Below the menu bar is a toolbar with '+ CODE', '+ TEXT', '↑ CELL', and '↓ CELL'. On the right side of the toolbar, there is a green checkmark and the text 'CONNECTED', followed by a pencil icon and the text 'EDITING', and an upward arrow icon. On the left side, there is a sidebar with 'Table of contents', 'Code snippets', and 'Files'. Under 'Files', there is a folder icon and the text 'sample_data'. The main area of the notebook shows a code cell with the following content:

```
[9] !pwd
```

```
/content
```

 Below the code cell is a play button icon and a blue progress bar. On the far right of the play button bar is a user profile icon.

特殊語法 - 查看

- 在function 前面加上? 或是用help()可以查看documentation

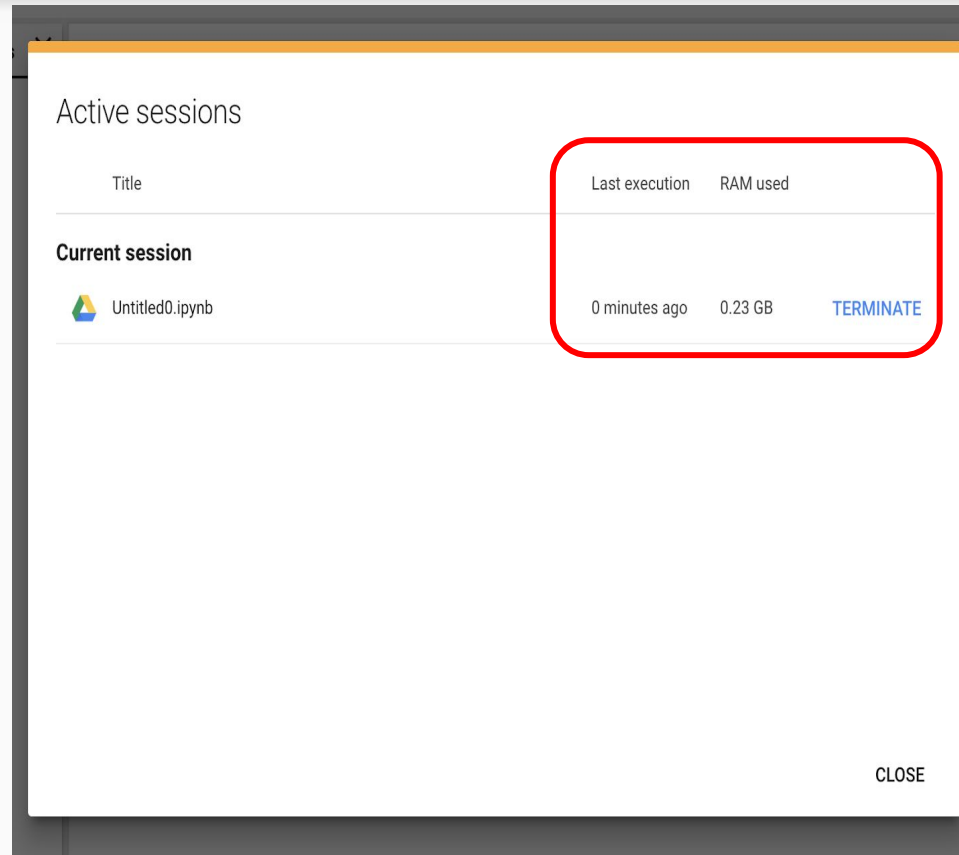
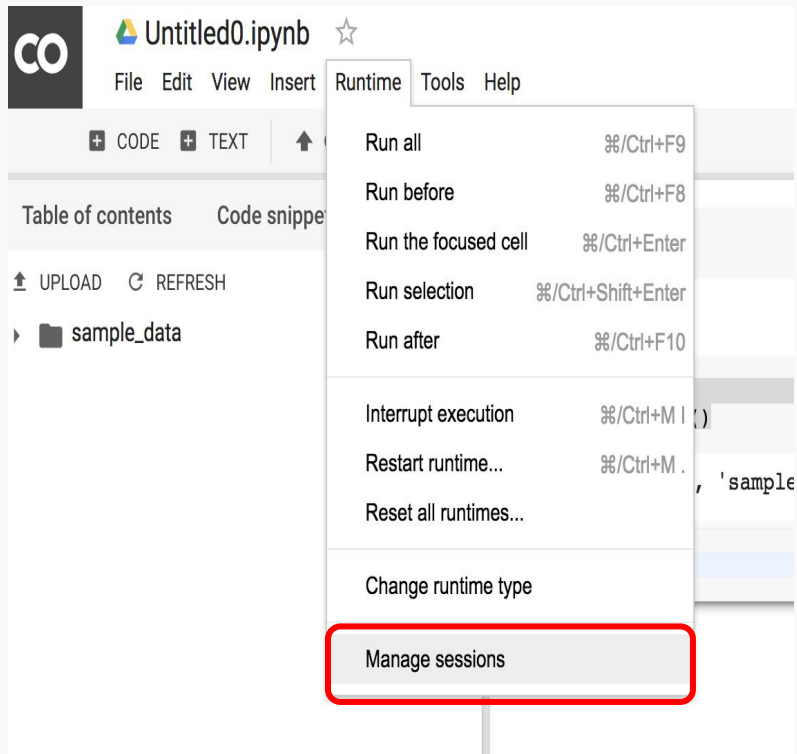
The screenshot shows a Jupyter Notebook interface with a code cell containing the following code:

```
[1] import numpy as np  
  
np.asarray?  
# help(np.asarray)
```

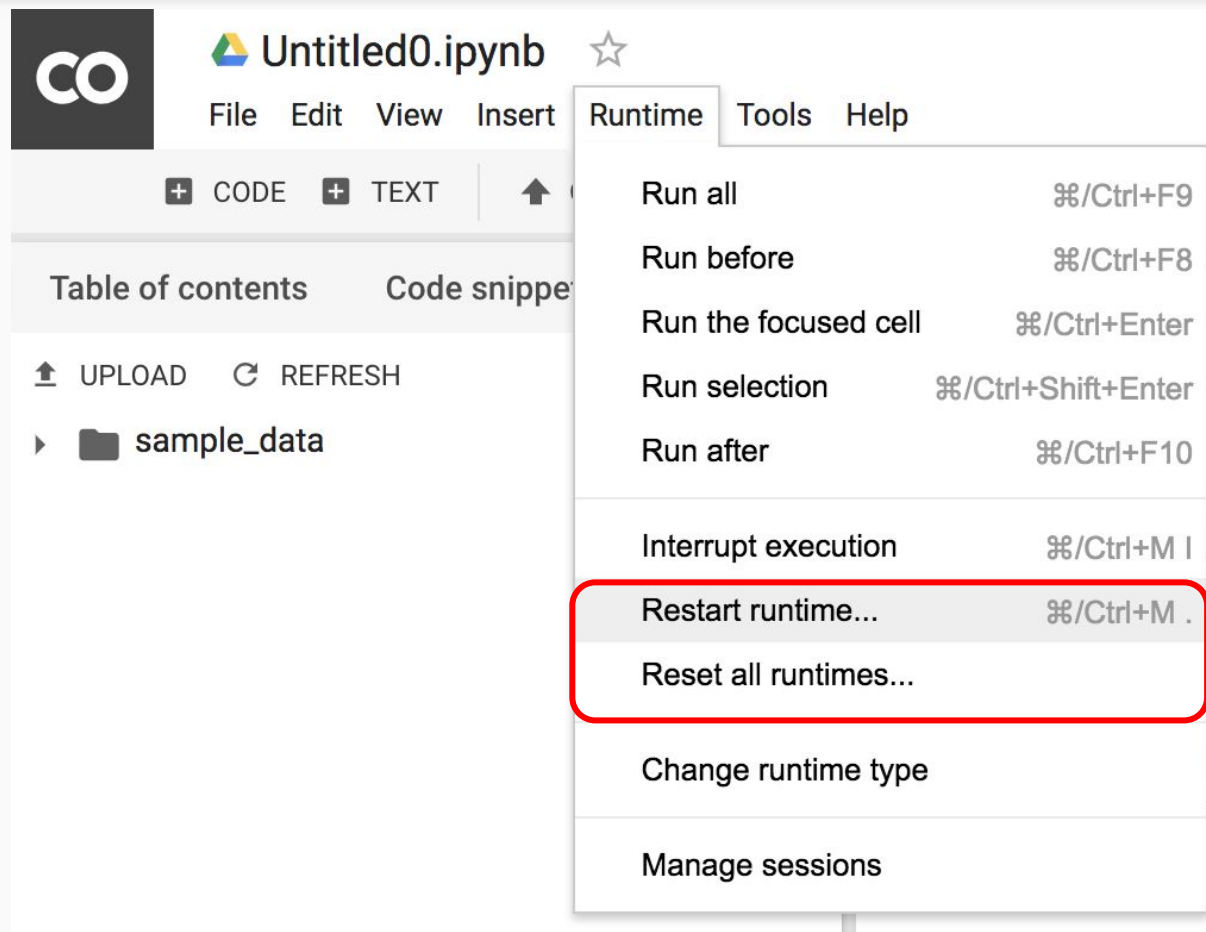
The help documentation for `np.asarray` is displayed below the code cell:

```
Signature: np.asarray(a, dtype=None, order=None)  
Docstring:  
Convert the input to an array.  
  
Parameters  
-----  
a : array_like  
    Input data, in any form that can be converted to an array. This  
    includes lists, lists of tuples, tuples, tuples of tuples, tuples  
    of lists and ndarrays.
```

管理Session



Restart runtime/ Reset runtime



Lab 1: Memory-Based CF

→ Note: goo.gl/vmJGJ4

Colab Links

1.

Lab 1: Memory base CF
[reco_memory_base.ipynb](#)

Lab 2: DNN practice:
[tutorial_dnn_practice.ipynb](#)
[lab_tutorial_dnn_practice.ipynb](#)

Lab 3: Basic MF
[reco_model_mf.ipynb](#)
[lab_reco_model_mf.ipynb](#)

Lab 4: MF with user histories
[reco_model_mf_with_history.ipynb](#)
[lab_reco_model_mf_with_history.ipynb](#)

Lab 5: MF with DNN
[reco_model_mf_dnn.ipynb](#)
[lab_reco_model_mf_dnn.ipynb](#)

reco_memory_base.ipynb

File Edit View Insert Runtime Tools Help

CODE TEXT CELL COPY TO DRIVE

```
1 # Clear
2 !rm -fr data model utils recomm
3
4 # Clone source code from git
5 !git clone https://github.com/CloudMile/recommendation_engine_course recomm
6
7 # Move data and utils to parent folder that notebook could access
8 !mv recomm/data .
9 !mv recomm/utils .
10 # Copy the model checkpoints (optional)
11 !mv recomm/model .
12 !rm -fr recomm
```

Cloning into 'recomm'...

```
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 354 (delta 0), reused 1 (delta 0), pack-reused 351
Receiving objects: 100% (354/354), 55.62 MiB | 9.59 MiB/s, done.
Resolving deltas: 100% (185/185), done.
```

```
1 """
2 Import some required packages.
3 """
4
5 # from __future__ import division, print_function, with_statement, absolute_import, unicode_literals
```

2.

Reference

- https://colab.research.google.com/drive/1jt6Dk2MoUaBZu0nUuQpNAzVfMpm08Vps?authuser=1#scrollTo=zmVS_blsW2Cq
- <https://research.google.com/colaboratory/faq.html#gpu-availability>
- <https://research.google.com/colaboratory/local-runtimes.html>