



Windows系統 Anaconda+ Jupyter Notebook環境建置

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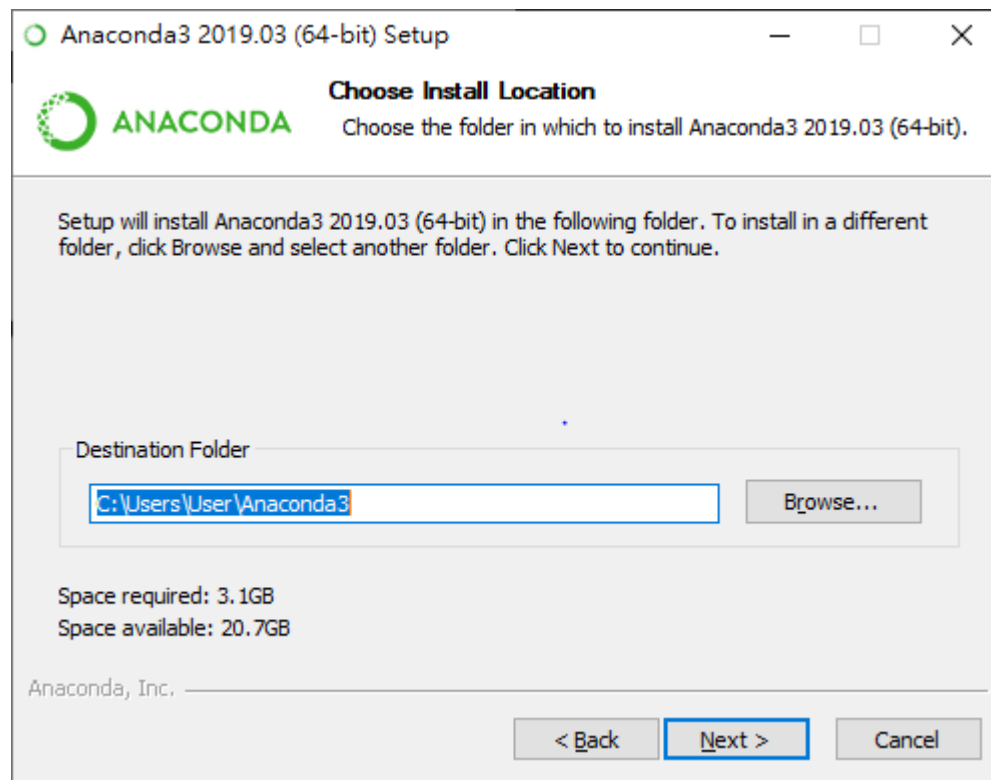
2022 Spring

介紹

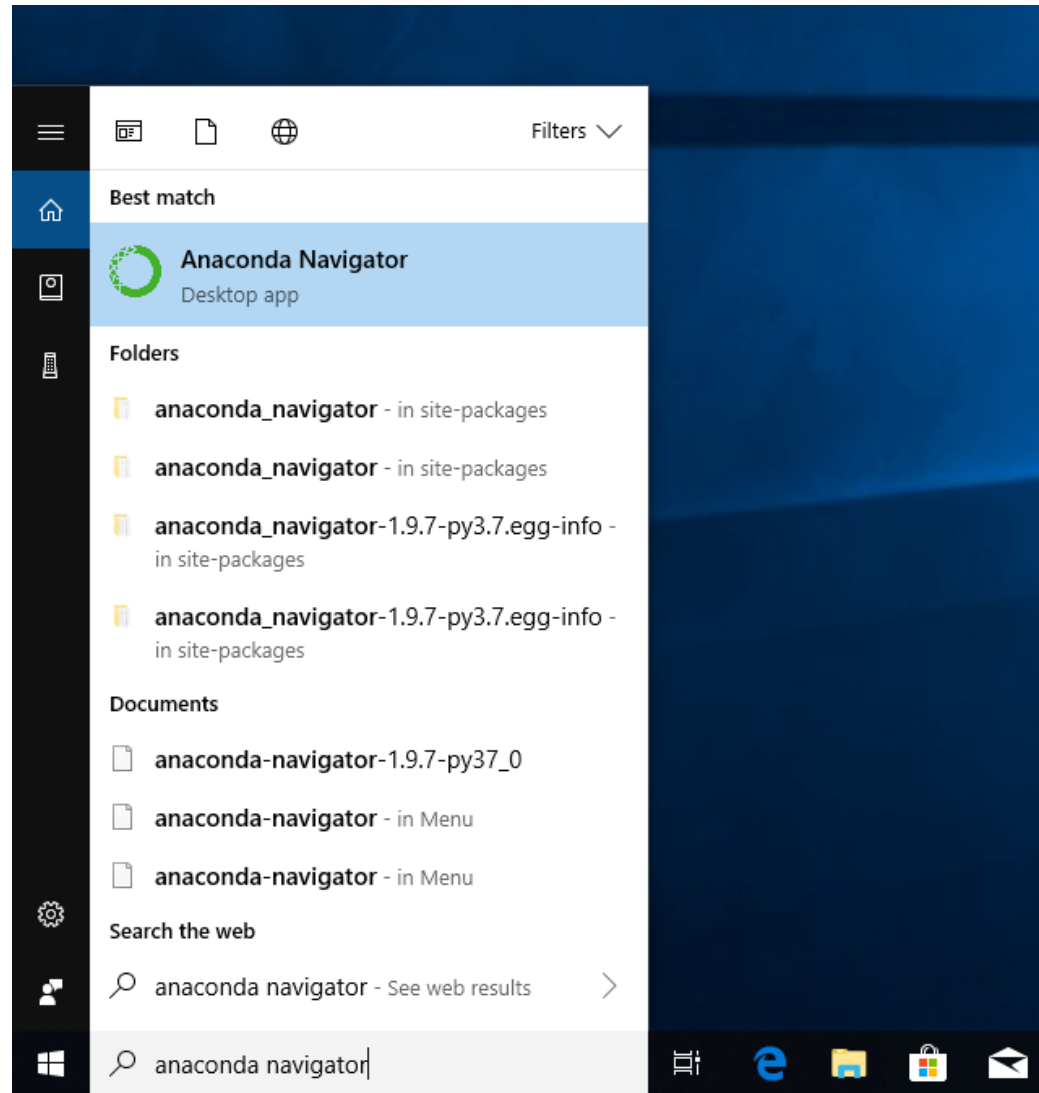
- Python：具跨平台特點，可在Linux、MacOS及Windows系統中使用
- Anaconda：基於Python的資料處理平臺，擁有超過1400個軟體包，可適用各大作業系統
- Anaconda Navigator：包含在Anaconda中的圖形用戶界面，在不使用命令行的情況下管理軟體包、創建虛擬環境和路徑管理
- Jupyter Notebook：介於編輯器及IDE之間的應用環境，編寫程式時有直譯式的特性，達到高互動執行結果，並幫助呈現資料視覺化

安裝

- <https://www.anaconda.com/distribution/>



啟動 Anaconda Navigator





Python 虛擬環境

建置流程

- 有兩個管道
 - Anaconda navigator
 - Anaconda Prompt
- Hint: 選擇其中一種方式即可



建置流程

- 有兩個管道
 - Anaconda navigator
 - Anaconda Prompt

配置python虛擬環境

Anaconda Navigator
File Help

ANACONDA NAVIGATOR

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Search Environments

base (root)



Create



Clone



Import



Remove

Installed

Channels

Update index...

Search Packages

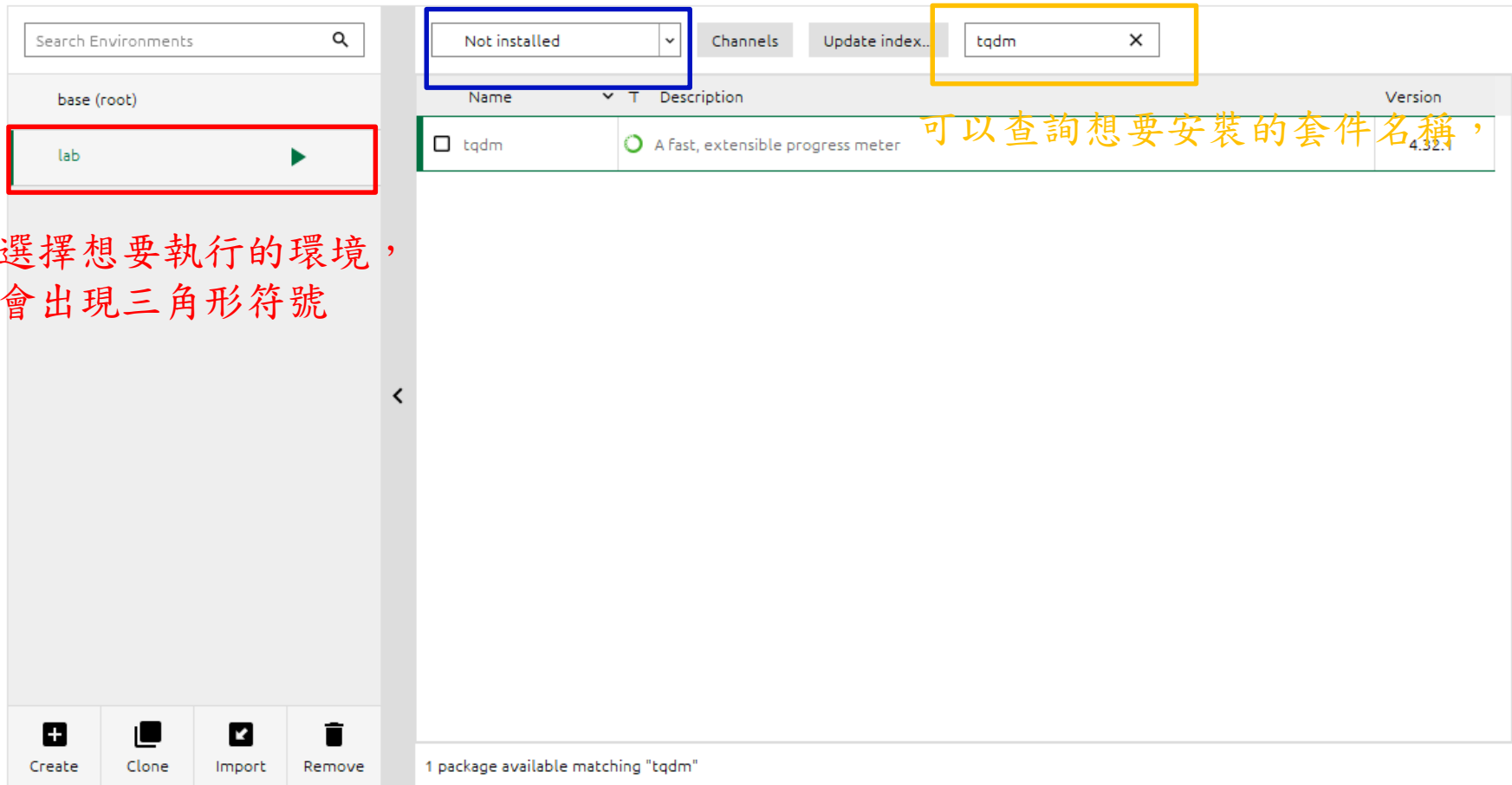
Name	Description	Version
✓ _ipyw_jlab_nb_ex...	A configuration metapackage for enabling anaconda-bundled jupyter extensions	0.1.0
✓ alabaster	Configurable, python 2+3 compatible sphinx theme.	0.7.12
✓ anaconda	Simplifies package management and deployment of anaconda	2019.03
✓ anaconda-client	Anaconda.org command line client library	1.7.2
✓ anaconda-project	Tool for encapsulating, running, and reproducing data science projects	0.8.2
✓ asn1crypto	Python asn.1 library with a focus on performance and a pythonic api	0.24.0
✓ astroid	A abstract syntax tree for python with inference support.	2.2.5
✓ astropy	Community-developed python library for astronomy	3.1.2
✓ atomicwrites	Atomic file writes.	1.3.0
✓ attrs	Attrs is the python package that will bring back the joy of writing classes by relieving you from the drudgery of implementing object protocols (aka dunder methods).	19.1.0
✓ babel	Utilities to internationalize and localize python applications	2.6.0

當前環境所含全部科學軟體包

可根據自身需求，搭建虛擬環境，預設為base(root)

安裝套件

選擇 Not installed，會列出尚未安裝的所有套件



Search Environments

base (root)

lab

Not installed

Channels

Update index...

tqdm

Name Description Version

<input type="checkbox"/> tqdm	A fast, extensible progress meter	4.32.1
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1 package available matching "tqdm"

可以查詢想要安裝的套件名稱，

選擇想要執行的環境，
會出現三角形符號

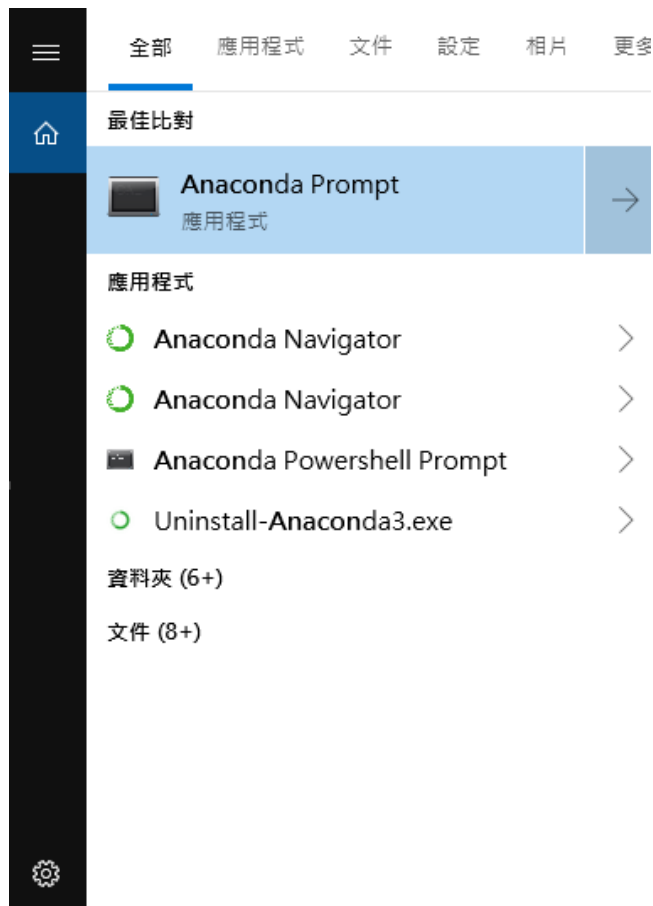


建置流程

- 有兩個管道
 - Anaconda navigator
 - Anaconda Prompt

流程(1)

點開工具列->搜尋anaconda
->選Anaconda Prompt



Anaconda Prompt - conda install numpy - conda install pand

C:\Users\User>

流程(2)

- 建置環境
 - conda create --name “環境名稱” python=3.8 (可以輸入你想要的版本)
 - *conda create --name py38 python=3.8*
- 查看環境
 - conda env list
- 啟動環境
 - activate *py38*
- 安裝套件
 - conda install “套件名稱”

```
(base) C:\Users\sallylin>conda env list
# conda environments:
#
base                  * C:\Users\sallylin\Anaconda3
lab                   C:\Users\sallylin\Anaconda3\envs\lab
lab2                  C:\Users\sallylin\Anaconda3\envs\lab2
py38                  C:\Users\sallylin\Anaconda3\envs\py38

(base) C:\Users\sallylin>conda activate py38
(py38) C:\Users\sallylin>
```



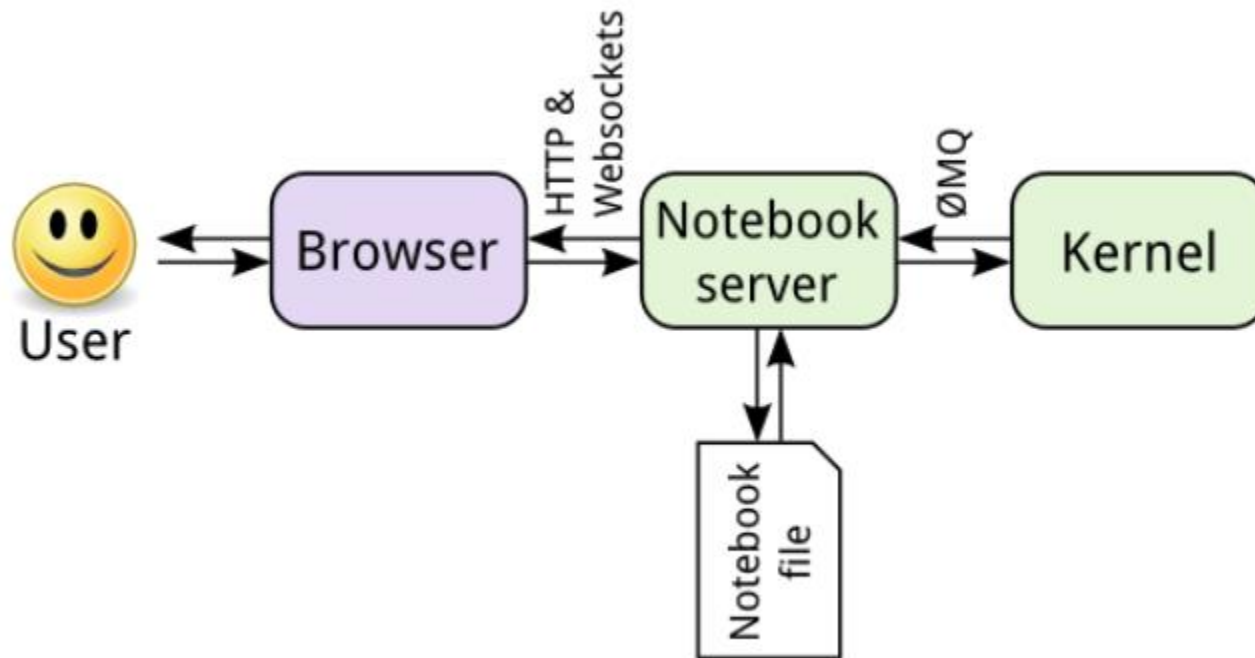
Jupyter Notebook

Jupyter Notebook (1/3)

- Notebook是將console-based的方式，延伸到一個可互動式計算的新方向，並且提供一個web-based的方式來處理整個計算過程，包括開發、編輯、文件化及執行程式，並且可立即傳遞結果。
- IPython是一個提供互動式運算架構的系統，具有強大的交互式shell及數據運算視覺化的特點，可方便且彈性的整合不同編輯器，擁有高效能及容易使用的平行運算功能，同時也是Jupyter Notebook其中的一個kernel。
- Jupyter則是從IPython發展演變而來的，後來持續發展成多語言不再只支援Python。
- Jupyter這個名字主要是由**Julia**、**Python**及**R**所構成，當然除了Julia、的Python及R之外，還有提供許多的kernels(例如Java、C#、Go、Ruby、JavaScript等超過50多種Jupyter kernels)

Jupyter Notebook (2/3)

- Jupyter是由Notebook Frontend、Jupyter Server及Protocol這三部分所建立，下圖可以看到其基本運作的過程



Jupyter Notebook (3/3)

- Jupyter Notebook您可以把它想像成是上述所講的**IPython + Notebook**整合架構，它是一個介於編輯器(例如Atom)及IDE(Spider、PyCharm、Vim)之間的應用環境，可讓您編寫程式時利用其直譯式的特性，達到高互動執行結果，並且很容易呈現資料視覺化的執行。

安裝Jupyter

- 在你新創立的環境下安裝Jupyter
- *conda install jupyter*

```
(py38) C:\Users\sallylin>conda install jupyter
```

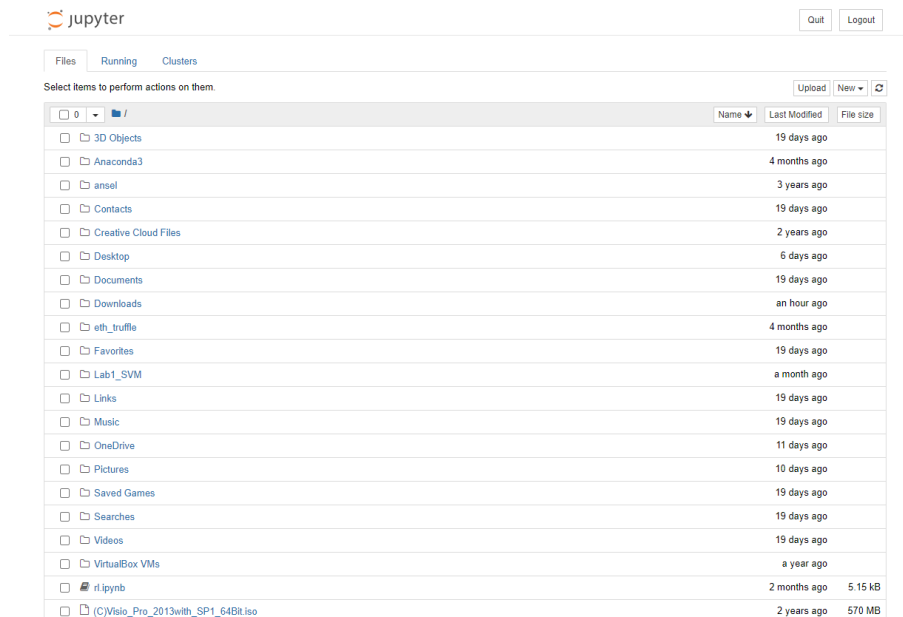
```
\ DEBUG menuinst_win32:__init__(196): Menu: name: 'Anaconda${PY_VER} ${PLATFORM}', prefix: 'C:\Users\sallylin\Anaconda3\envs\py38', env_name: 'py38', mode: 'user', used_mode: 'user'  
DEBUG menuinst_win32:create(320): Shortcut cmd is C:\Users\sallylin\Anaconda3\python.exe, args are ['C:\\Users\\sallylin\\Anaconda3\\cwp.py', 'C:\\Users\\sallylin\\Anaconda3\\envs\\py38', 'C:\\Users\\sallylin\\Anaconda3\\envs\\py38\\python.exe', 'C:\\Users\\sallylin\\Anaconda3\\envs\\py38\\Scripts\\jupyter-notebook-script.py', \"%USERPROFILE%\"]  
done
```

啟動Jupyter

- 在你新創立的環境下啟動Jupyter
- *jupyter notebook*

```
(py38) C:\Users\sallylin>jupyter notebook
```

- 啟動後瀏覽器會跳出Jupyter的畫面



從Anaconda啟動Jupyter Notebook

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Applications on base (root)

Channels

Refresh

JupyterLab 0.35.4
An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.
Launch

Jupyter Notebook 5.7.8
Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.
Launch

IPy 4.4.3
PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.
Launch

Spyder 3.3.3
Scientific Python Development Environment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features.
Launch

Glueviz 0.13.3
Multidimensional data visualization across files. Explore relationships within and among related datasets.
Launch

Orange 3 3.19.0
Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows.
Launch

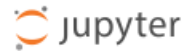
RStudio 1.1.456
A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.
Launch

VS Code 1.36.0
Streamlined code editor with support for development operations like debugging, task running and version control.
Launch

新環境的話會顯示install
等安裝完再執行即可



Jupyter Notebook



Logout

Files Running Clusters

Select items to perform actions on them.

0 / LAB2

..

The notebook list is empty.

Upload New

Notebook:
Python 3

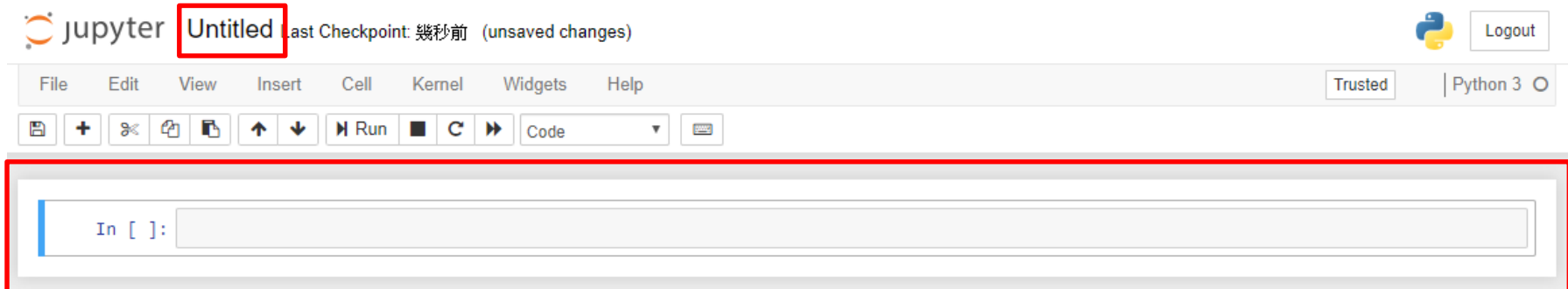
Other:
Text File
Folder
Terminal

當前工作目錄

建立新的py檔

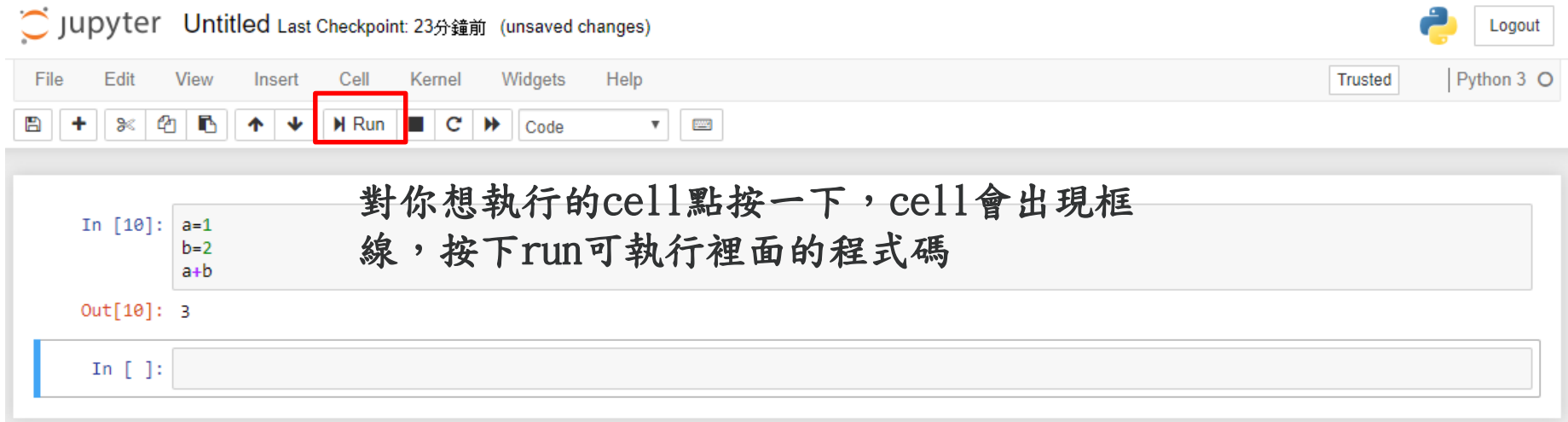
創建py檔後的畫面

可以改成你想要的檔名



撰寫程式的地方

執行範例



The screenshot shows the Jupyter Notebook interface. At the top, the title bar says "jupyter Untitled Last Checkpoint: 23分鐘前 (unsaved changes)". The menu bar includes File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. The toolbar contains icons for saving, adding cells, and running. The "Run" button, represented by a play icon, is highlighted with a red rectangle. Below the toolbar, a code cell is shown with the input "In [10]: a=1, b=2, a+b" and the output "Out[10]: 3". To the right of the code cell, there is a text box containing the instruction: "對你想執行的cell點按一下，cell會出現框線，按下run可執行裡面的程式碼". Below the code cell, there is an empty input field labeled "In []:".

在cell旁邊為藍色時

- 按下 **x** : 刪除當前選擇的cell
- 按下 **a** : 在當前選擇的上方新增一個cell
- 按下 **b** : 在當前選擇的下方新增一個cell
- 按下 **Shift-Enter** : 執行當前的cell並且選到下一個cell
- 按下 **Ctrl-Enter** : 執行當前cell
- 按下 **M** : 轉成markdown模式，可以看到紅色框框內容從code變成markdown