

Computer programming and Data Science

William Hsu

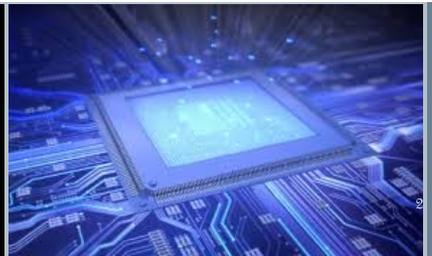
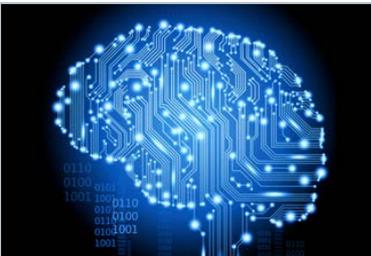
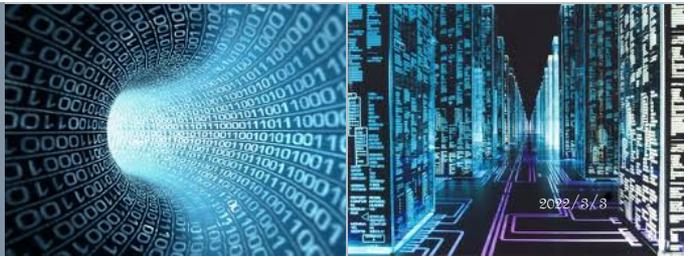
Advanced Computation Laboratory

Department of Computer Science and Engineering

Department of Environmental Biology and Fisheries Science

National Taiwan Ocean University

Anaconda



Anaconda 整合環境



Anaconda

- › Anaconda中文是森蚺，一種非常肥大的蟒蛇。
 - 簡單來說你可以把Anaconda當作是Python的**懶人包**。
 - 除了Python本身(python2, **3**)還包含了Python常用的資料分析、機器學習、視覺化的套件。
- › <https://www.anaconda.com/>

Anaconda

NOW PLAY WITH THE WORLD'S MOST AWESOME DATA SCIENCE PACKAGES

Packages included in Anaconda 4+, or get with "conda install PACKAGENAME"

1. NumPy | numpy.org

N-dimensional array for numerical computation

2. SciPy | scipy.org

Collection of numerical algorithms and toolboxes, including signal processing and optimization

3. Matplotlib | matplotlib.org

Plotting library for Python

4. Pandas | pandas.pydata.org

Powerful Python data analysis toolkit

5. Seaborn | stanford.edu/~mwaskom/software/seaborn/

Statistical data visualization

6. Bokeh | bokeh.pydata.org

Interactive web visualization library

7. SciKit-Learn | scikit-learn.org/stable

Python modules for machine learning and data mining

8. NLTK | nltk.org

Natural language toolkit

9. Notebook | jupyter.org

Web-based interactive computational environment combines code execution, rich text, mathematics, plots and rich media

10. R essentials | conda.pydata.org/docs/r-with-conda.html

R with 80+ of the most used R packages for data science
"conda install -c r r-essentials"

Anaconda

› 當中比較重要的:

- **Numpy**: Python做多維陣列 (矩陣) 運算時的必備套件，比起Python內建的list，Numpy的array有極快的運算速度優勢
- **Pandas**: 有了Pandas可以讓Python很容易做到幾乎所有Excel的功能了，像是樞紐分析表、小記、欄位加總、篩選
- **Matplotlib**: 基本的視覺化工具，可以畫長條圖、折線圖等等...
- **SciKit-Learn**: Python 關於機器學習的model基本上都在這個套件，像是SVM, Random Forest...

Anaconda

- › **Notebook(Jupyter notebook)**: 一個輕量級web-base 寫Python的工具，在資料分析這個領域很熱門。
 - 功能沒有比Pycharm, Spyder這些專業的IDE強大，但只要code小於500行、用Jupyter寫非常方便。
 - Jupyter也開始慢慢支援一些Multi cursor的功能了，可以讓你一次改許多的變數名稱。

Anaconda

- › 優點：
 - 省時：一鍵安裝完90%一般人這一輩子會用到的Python套件，剩下的再用pip install個別去安裝即可
- › 缺點：
 - 占空間：包含了一堆用不到的Python的套件(可安裝另一種miniconda)
- › 安裝完Anaconda之後會獲得一個叫conda的指令可以用，可以用conda管理不同Python的版本以及套件。
 - 但是我們偏愛用pip來管理套件。

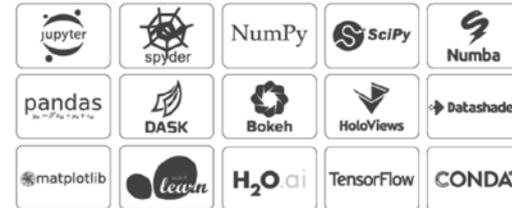
Anaconda 安裝

› Anaconda 下載連結 (要注意作業系統):

<https://www.anaconda.com/download/>

The open-source **Anaconda Distribution** is the easiest way to perform Python/R data science and machine learning on Linux, Windows, and Mac OS X. With over 11 million users worldwide, it is the industry standard for developing, testing, and training on a single machine, enabling *individual data scientists* to:

- Quickly download 1,500+ Python/R data science packages
- Manage libraries, dependencies, and environments with **Conda**
- Develop and train machine learning and deep learning models with **scikit-learn**, **TensorFlow**, and **Theano**
- Analyze data with scalability and performance with **Dask**, **NumPy**, **pandas**, and **Numba**
- Visualize results with **Matplotlib**, **Bokeh**, **Datashader**, and **Holoviews**



我們用這系統

Windows | macOS | Linux

Anaconda 2018.12 for Windows Installer

Python 3.7 version

Download

64-Bit Graphical Installer (614.3 MB)
32-Bit Graphical Installer (509.7 MB)

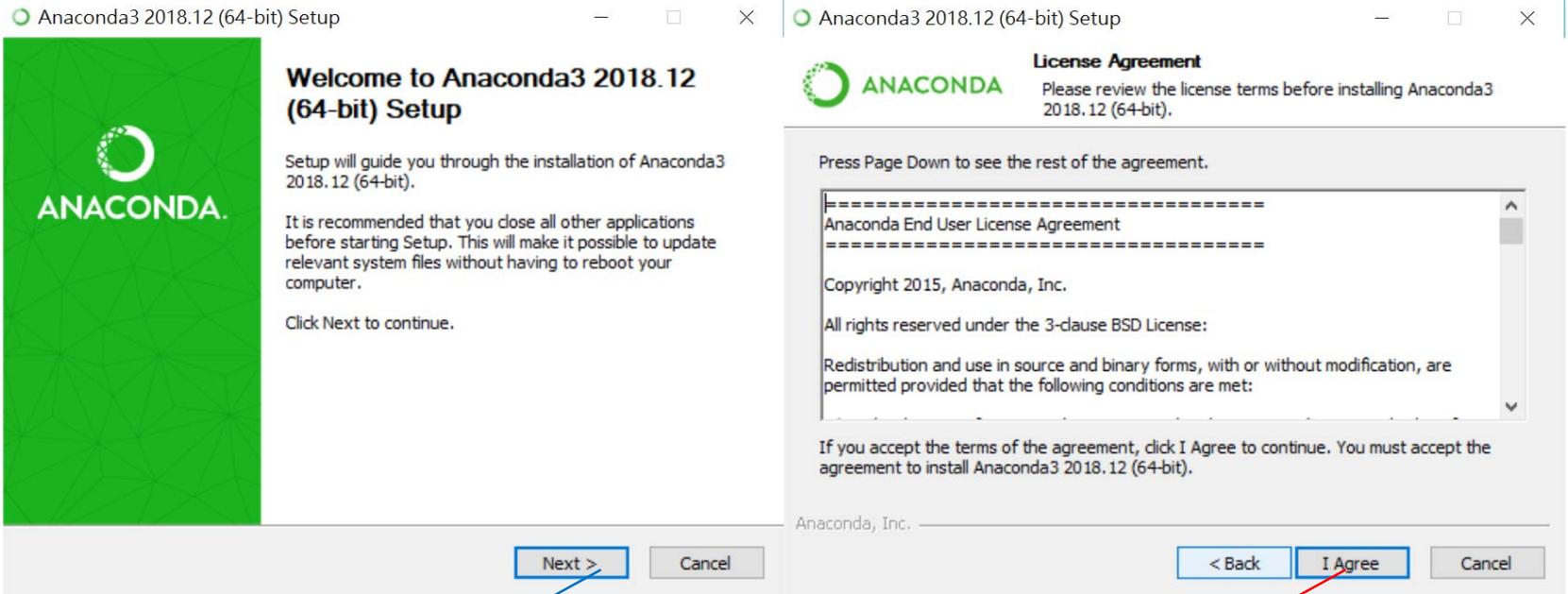
Python 2.7 version

Download

64-Bit Graphical Installer (560.6 MB)
32-Bit Graphical Installer (458.6 MB)

我們用這版本

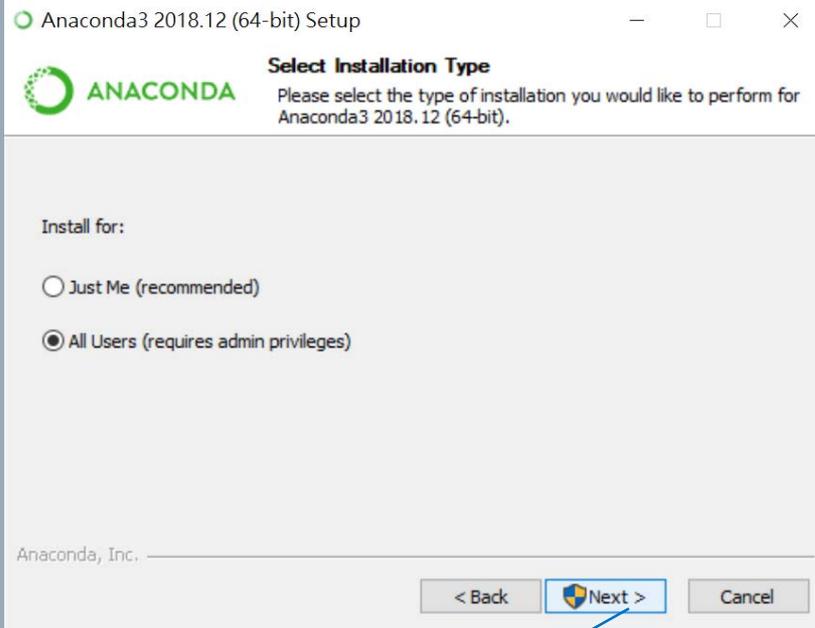
Anaconda 安裝



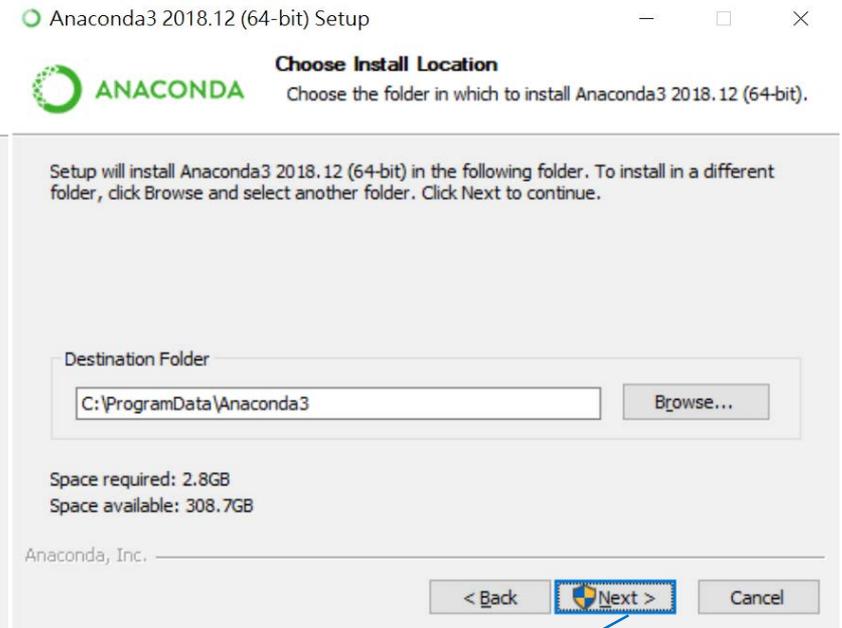
下一步

你沒有選擇

Anaconda 安裝



沒差、反正你的機器只有你一人用



下一步

Anaconda 安裝

據說勾起來比較好
反安裝(?)

Anaconda3 2018.12 (64-bit) Setup — □ × **Anaconda3 2018.12 (64-bit) Setup** — □ ×

ANACONDA **Advanced Installation Options** Customize how Anaconda integrates with Windows

ANACONDA **Installing** Please wait while Anaconda3 2018.12 (64-bit) is being installed.

Advanced Options

- Add Anaconda to the system PATH environment variable
Not recommended. Instead, open Anaconda with the Windows Start menu and select "Anaconda (64-bit)". This "add to PATH" option makes Anaconda get found before previously installed software, but may cause problems requiring you to uninstall and reinstall Anaconda.
- Register Anaconda as the system Python 3.7
This will allow other programs, such as Python Tools for Visual Studio, PyCharm, Wing IDE, PyDev, and MSI binary packages, to automatically detect Anaconda as the primary Python 3.7 on the system.

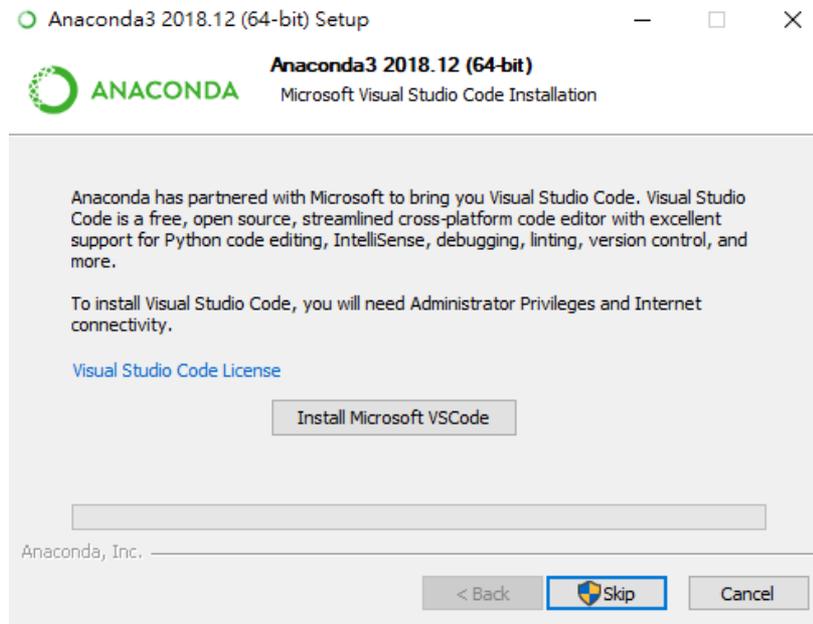
Extract: python-3.7.1-h8c8aaf0_6.tar.bz2

```
Writing Lib/ctypes/test/test_structures.py
Writing Lib/distutils/command/build_py.py
Writing Lib/email/_parseaddr.py
Writing Lib/idlelib/run.py
Writing Lib/msilib/__init__.py
Writing Lib/html/parser.py
Writing Lib/distutils/fancy_getopt.py
Writing Lib/distutils/cmd.py
Writing Lib/wave.py
...
```

Anaconda, Inc. — Anaconda, Inc.

< Back **Install** Cancel < Back **Next >** Cancel

VSCode 還不錯用



Anaconda 安裝

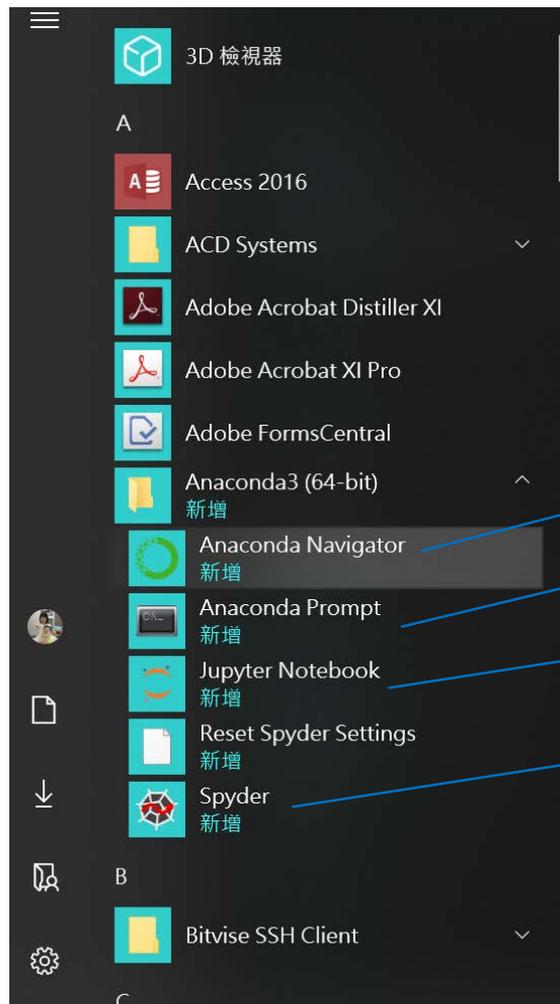
- › 接著安裝完打開Command line輸入python

成功了

```
C:\Users\wwyhs>python
Python 3.7.1 (default, Dec 10 2018, 22:54:23) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> quit
Use quit() or Ctrl-Z plus Return to exit
>>> ^Z

C:\Users\wwyhs>
```

使用 Anaconda



從這邊開始進入整合環境

命令提示列, 套件管理

IPython 筆記本

高級python發展環境

Anaconda 環境

Anaconda Navigator

File Help



Sign in to Anaconda Cloud

Home

Environments

Learning

Community

Documentation

Developer Blog



Applications on

base (root)

Channels

Refresh



JupyterLab

0.35.3

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

Launch



Notebook

5.7.4

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

Launch



Qt Console

4.4.3

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

Launch



Spyder

3.3.2

Scientific PYTHON Development EnviRnment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features

Launch



VS Code

1.20.1

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

Launch



Glueviz

0.13.3

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

Install



Orange 3

3.17.0

Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.

Install



RStudio

1.1.456

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

Install

使用Jupyter Notebook

會連到本地機器的python直譯核心

The screenshot shows a web browser window displaying the Jupyter Notebook interface. The address bar shows 'localhost:8888/tree'. The Jupyter logo is visible at the top. Below the logo are tabs for 'Files', 'Running', and 'Clusters'. The main area shows a file explorer with a list of folders and files. The 'Untitled.ipynb' file is highlighted at the bottom.

Name	Last Modified	File size
3D Objects	2 個月前	
Contacts	2 個月前	
Desktop	1 天前	
Documents	2 個月前	
Downloads	40 分鐘前	
Favorites	1 個月前	
Links	2 個月前	
Music	2 個月前	
OneDrive	4 天前	
OpenVPN	1 年前	
Pictures	9 個月前	
Qsync	35 分鐘前	
Saved Games	2 個月前	
Searches	2 個月前	
Videos	2 個月前	
圖片	1 年前	
Untitled.ipynb	1 天前	1.1 kB

開啟舊檔案

可以直接開啟ipynb檔案

The screenshot shows the Jupyter web interface at localhost:8888. The breadcrumb path is / Qsync / Course / Computational Thinking / 2019. The file list includes:

Name	Last Modified	File size
..	幾秒前	
IPython Interactive Computing and Visualization Cookbook	3 小時前	
Lab 1	2 小時前	
Hello world.ipynb	1 分鐘前	2.33 kB
hello.ipynb	3 年前	2.2 kB
IPython-Notebook-HelloWorld.ipynb	Running 7 分鐘前	3.44 kB
4161421-194cde37254612c5e5a5176e9644e2c681156aed.zip	9 分鐘前	1.39 kB
Chapter 1.pptx	4 個月前	7.21 MB
Lab 1 - Anaconda.pptx	10 分鐘前	2.58 MB
Lab 1 - Infrastructure.pptx	2 小時前	8.34 MB
Lecture 1.pptx	2 小時前	55.8 MB
Lecture 2 - Data storage.pptx	2 小時前	10.8 MB
Lecture 3 - Data manipulation Distribute.pptx	4 個月前	6.03 MB

互動式python環境

jupyter hello (unsaved changes)  Logout

File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3

📄 + 🔍 📄 ⬆️ ⬆️ ▶️ Run 🛑 ↺ ▶️ Markdown 🗨️

Hello World

The first thing a beginner writes in a new programming language is traditionally called "Hello World"

In the example below, try changing 'Hello world' to something else, then hit SHIFT+ENTER or the play button above.

In [2]: `print('Hello world!')`
Hello world!

once again, with feeling

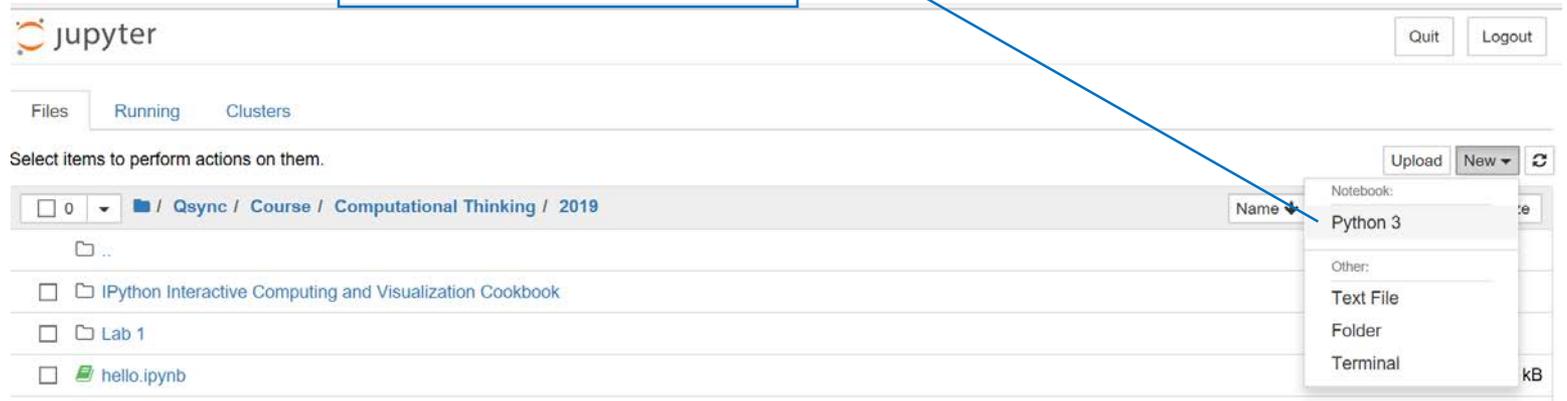
In [12]: `for i in range(0, 10):
 print("Hi!")`
Hi!
Hi!
Hi!
Hi!
Hi!
Hi!
Hi!
Hi!
Hi!
Hi!

In [10]: `for i in range(0, 10):
 print("Hi!"),`
Hi! Hi! Hi! Hi! Hi! Hi! Hi! Hi! Hi! Hi!

In []:

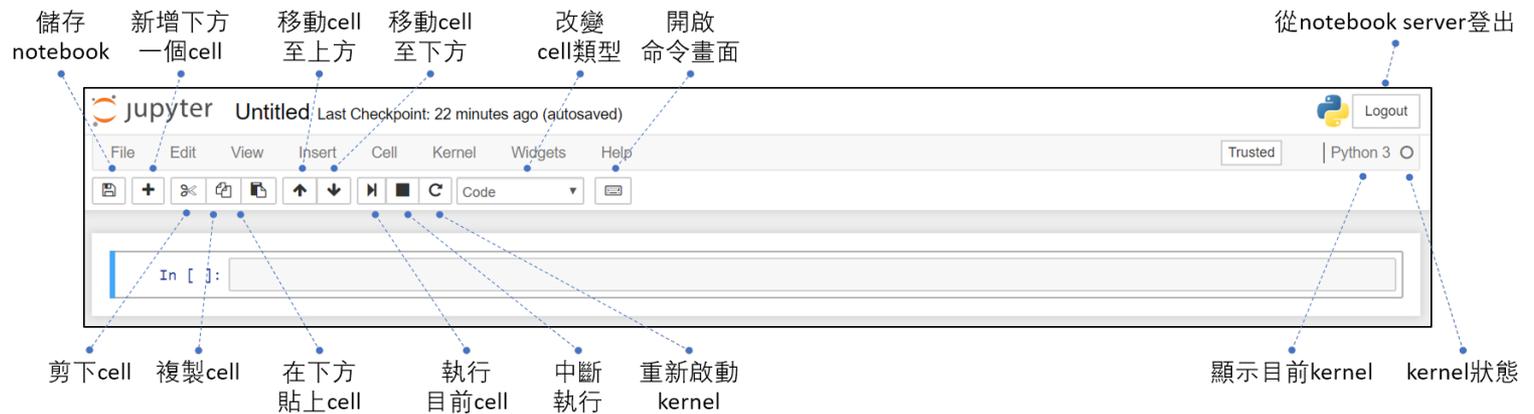
創立新檔案

New->選擇Python 3 檔案



The screenshot shows the JupyterLab interface. At the top left is the 'jupyter' logo. On the right are 'Quit' and 'Logout' buttons. Below the logo are tabs for 'Files', 'Running', and 'Clusters'. A message says 'Select items to perform actions on them.' Below this is a file browser showing a path: '0 / Qsync / Course / Computational Thinking / 2019'. A 'Name' dropdown menu is open, showing options: 'Notebook: Python 3', 'Other: Text File', 'Folder', and 'Terminal'. The 'Python 3' option is highlighted. At the bottom right of the file browser are 'Upload', 'New', and a refresh icon. The file 'hello.ipynb' is visible in the list.

命令模式(Command Mode)



編輯模式(Edit Mode)



儲存及載入(Saving/Loading)

The image shows a screenshot of the 'File' menu in a Jupyter Notebook interface. The menu items are: New Notebook, Open..., Make a Copy..., Rename..., Save and Checkpoint, Revert to Checkpoint, Print Preview, Download as, Trusted Notebook, and Close and Halt. Blue dashed lines connect each menu item to a corresponding Chinese annotation. The annotations are: '建立一個新的notebook' (Create a new notebook) for 'New Notebook'; '開啟一個已經存在的notebook' (Open an existing notebook) for 'Open...'; '複製目前notebook成一個新的notebook' (Copy current notebook to a new one) for 'Make a Copy...'; 'notebook重新命名' (Rename notebook) for 'Rename...'; '儲存目前notebook並記錄checkpoint' (Save current notebook and record checkpoint) for 'Save and Checkpoint'; '將notebook還原至之前checkpoint' (Restore notebook to previous checkpoint) for 'Revert to Checkpoint'; '預覽列印' (Preview print) for 'Print Preview'; '下載notebook並存成各類型文件' (Download notebook and save as various file types) for 'Download as', with a list of file types: IPython notebook (.ipynb), Python (.py), HTML (.html), Markdown (.md), reST (.rst), LaTeX (.tex), and PDF (.pdf); and '關閉notebook並停止執行script' (Close notebook and stop script execution) for 'Close and Halt'.

建立一個新的notebook

複製目前notebook成一個新的notebook

儲存目前notebook並記錄checkpoint

下載notebook並存成各類型文件

- IPython notebook (.ipynb)
- Python (.py)
- HTML (.html)
- Markdown (.md)
- reST (.rst)
- LaTeX (.tex)
- PDF (.pdf)

File Edit View

New Notebook

Open...

Make a Copy...

Rename...

Save and Checkpoint

Revert to Checkpoint

Print Preview

Download as

Trusted Notebook

Close and Halt

開啟一個已經存在的notebook

notebook重新命名

將notebook還原至之前checkpoint

預覽列印

關閉notebook並停止執行script

程式碼及文本撰寫功能

- › 程式碼和文本是由3種基本cells類型所包裝起來：
Markdown cells、**Code cells**及**Raw NBConvert cells**。

The image shows a screenshot of the 'Edit' menu in a Jupyter Notebook interface. The menu items are listed in a central column, with Chinese annotations on either side connected by dotted lines. The menu items are: Cut Cells, Copy Cells, Paste Cells Above, Paste Cells Below, Paste Cells & Replace, Delete Cells, Undo Delete Cells, Split Cell, Merge Cell Above, Merge Cell Below, Move Cell Up, Move Cell Down, Edit Notebook Metadata, Find and Replace, Cut Cell Attachments, Copy Cell Attachments, Paste Cell Attachments, and Insert Image.

Annotation (Left)	Menu Item	Annotation (Right)
將Cells剪下至剪貼簿	Cut Cells	將Cells複製至剪貼簿
在目前Cell位置上方貼上複製的Cells	Paste Cells Above	在目前Cell位置下方貼上複製的Cells
將目前Cell置換為複製的Cells	Paste Cells & Replace	刪除目前的Cells
恢復刪除的Cells	Undo Delete Cells	在目前游標位置將Cell分開
將目前Cell和上方Cell做合併	Merge Cell Above	將目前Cell和下方Cell做合併
將目前的Cell往上移動	Move Cell Up	將目前的Cell往下移動
編輯notebook的metadata	Edit Notebook Metadata	在選定的Cells當中尋找並替換
移除Cell的附件	Cut Cell Attachments	複製目前Cell的附件
貼上目前Cell的附件	Paste Cell Attachments	在選定的Cells當中插入圖片
	Insert Image	

Insert

在目前Cell上方
插入一個新Cell



在目前Cell下方
插入一個新Cell

Executing

The image shows a screenshot of the 'Cell' menu in a Jupyter Notebook interface. The menu is divided into three sections: 'Run', 'Cell Type', and 'Current Outputs'. Each option in the menu is connected to a Chinese annotation by a dashed blue line.

Cell	Kernel	Widgets
• Run Cells		
• Run Cells and Select Below		
• Run Cells and Insert Below		
• Run All		
• Run All Above		
• Run All Below		
• Cell Type		▶
• Current Outputs		▶
• All Output		▶

執行選定的Cell(s)

執行目前Cell(s)並且在下方插入一個新的Cell

執行目前Cell上方所有的Cells

更改目前Cell的類型

- Code
- Markdown
- Raw NBConvert

對所有Cell輸出做下列動作

- Toggle(隱藏/顯示切換)
- Toggle Scrolling(上下切換)
- Clear(清除)

執行目前Cell(s)並且移動至下方Cell

執行全部的Cells

執行目前Cell下方所有的Cells

對目前Cell輸出做下列動作

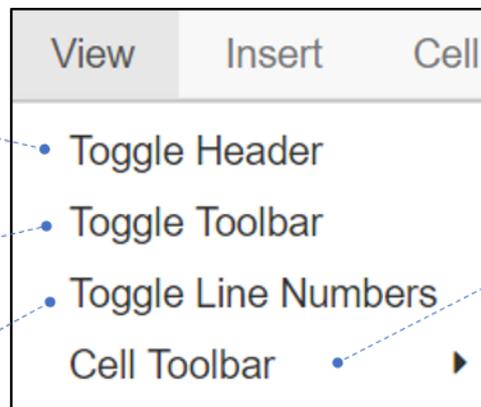
- Toggle(隱藏/顯示切換)
- Toggle Scrolling(上下切換)
- Clear(清除)

View

切換(隱藏/顯示) Jupyter notebook的logo和檔名

切換(隱藏/顯示) Jupyter notebook的工具列

在Cell裡顯示行號



切換Cell動作顯示

- None
- Edit Metadata
- Raw Cell Format
- Slideshow
- Attachments
- Tags

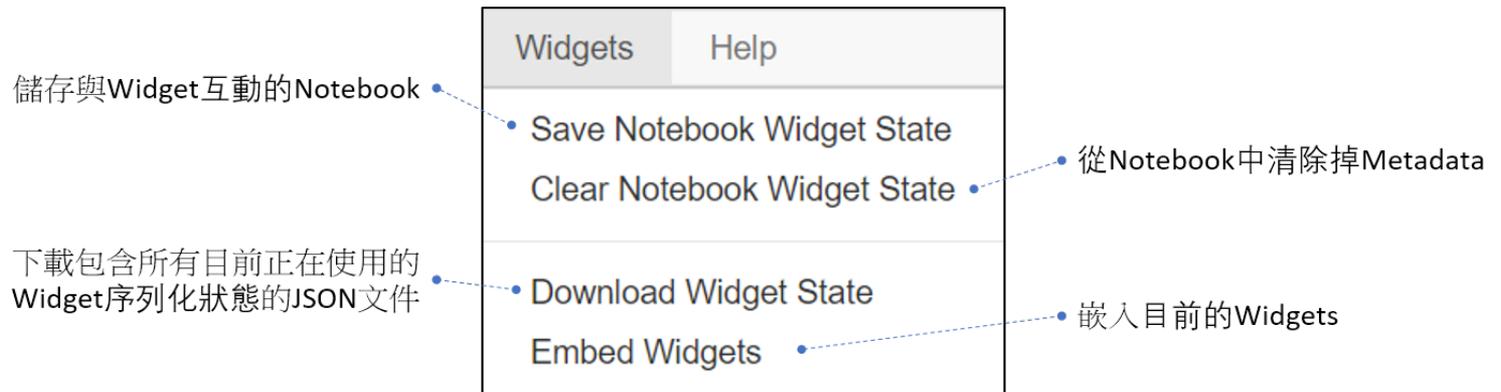
使用指南(Help)

The image shows a screenshot of the 'Help' menu in a Jupyter Notebook interface. The menu items are listed in a vertical column, with Chinese annotations pointing to specific items. The annotations are as follows:

- UI瀏覽 (UI Navigation) points to 'User Interface Tour'.
- 編輯內建快捷鍵 (Edit Built-in Shortcuts) points to 'Edit Keyboard Shortcuts'.
- 內建快捷鍵列表 (Built-in Shortcuts List) points to 'Keyboard Shortcuts'.
- Notebook使用指南 (Notebook User Guide) points to 'Notebook Help'.
- 在notebook中可用的markdown敘述 (Markdown descriptions available in notebook) points to 'Markdown'.
- Python使用指南 (Python User Guide) points to 'Python'.
- IPython使用指南 (IPython User Guide) points to 'IPython'.
- NumPy使用指南 (NumPy User Guide) points to 'NumPy'.
- SciPy使用指南 (SciPy User Guide) points to 'SciPy'.
- Matplotlib使用指南 (Matplotlib User Guide) points to 'Matplotlib'.
- SymPy使用指南 (SymPy User Guide) points to 'SymPy'.
- pandas使用指南 (pandas User Guide) points to 'pandas'.
- 關於Jupyter Notebook (About Jupyter Notebook) points to 'About'.

Annotation (Chinese)	Menu Item
UI瀏覽	User Interface Tour
內建快捷鍵列表	Keyboard Shortcuts
編輯內建快捷鍵	Edit Keyboard Shortcuts
Notebook使用指南	Notebook Help
在notebook中可用的markdown敘述	Markdown
Python使用指南	Python
IPython使用指南	IPython
NumPy使用指南	NumPy
SciPy使用指南	SciPy
Matplotlib使用指南	Matplotlib
SymPy使用指南	SymPy
pandas使用指南	pandas
關於Jupyter Notebook	About

小工具(Widgets)



與不同的程式語言溝通

- › Kernel主要提供與前端(front-end)介面間的計算及通信，其中有三個主要的Kernels如下

The logo for IPython, featuring the letters 'IP' in black and '[y]:' in blue, all enclosed in a thin black rectangular border.

IPython



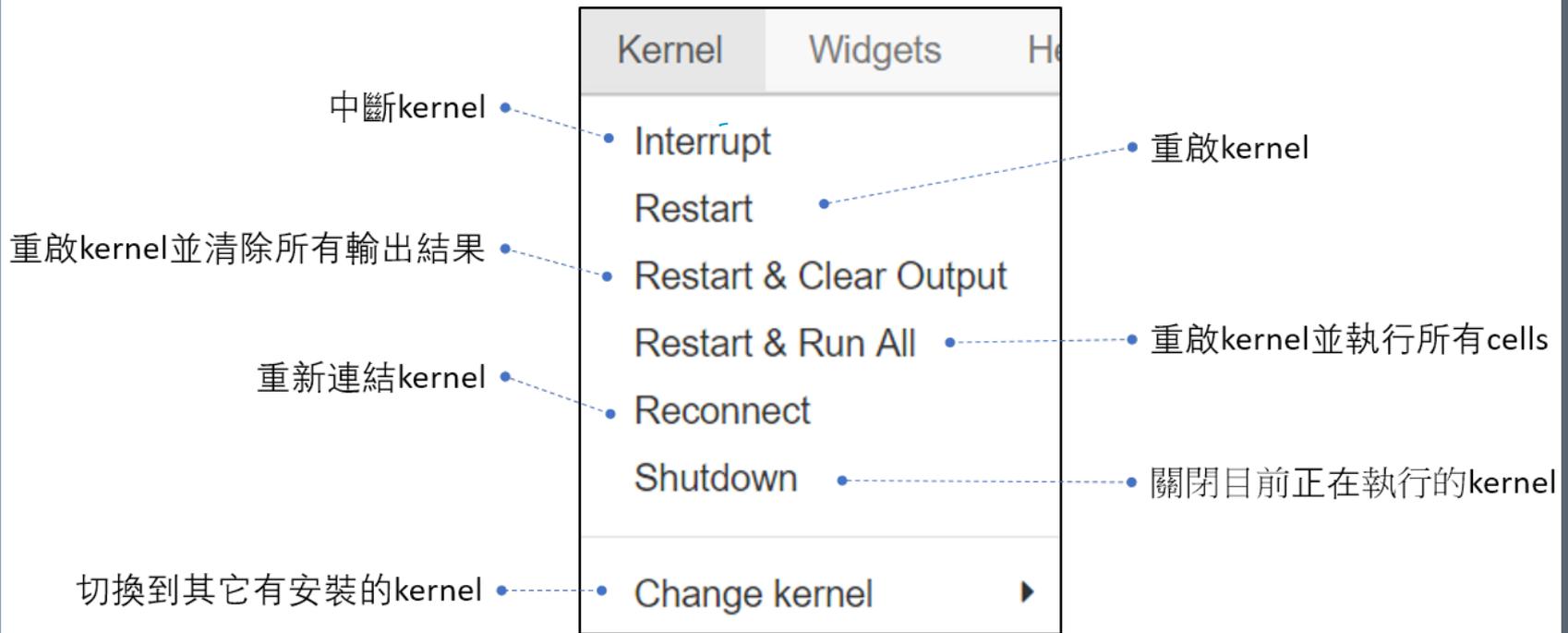
IRkernel



IJulia

與不同的程式語言溝通

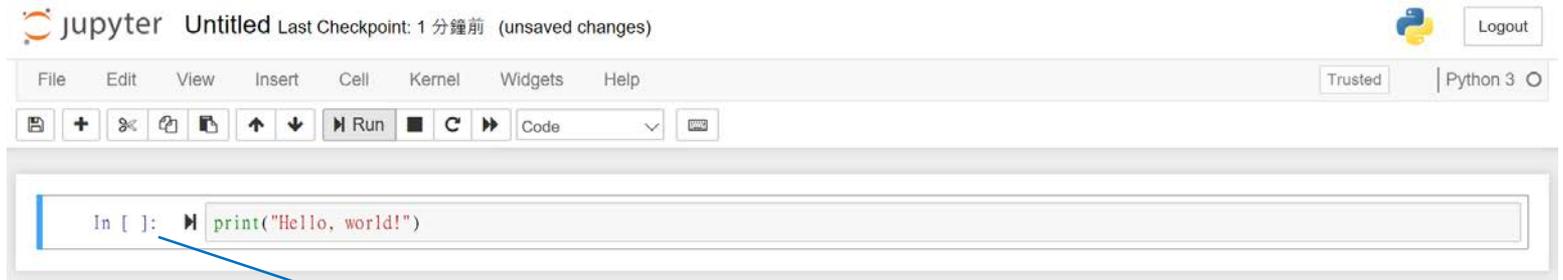
- › 安裝Jupyter Notebook時將會自動安裝IPython kernel。其它介面功能介紹如下圖



Jupyter notebook 常用快捷鍵

- › 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
- › 更多文件說明
 - <https://jupyter.readthedocs.io/en/latest/>

程式設計的第一個作業

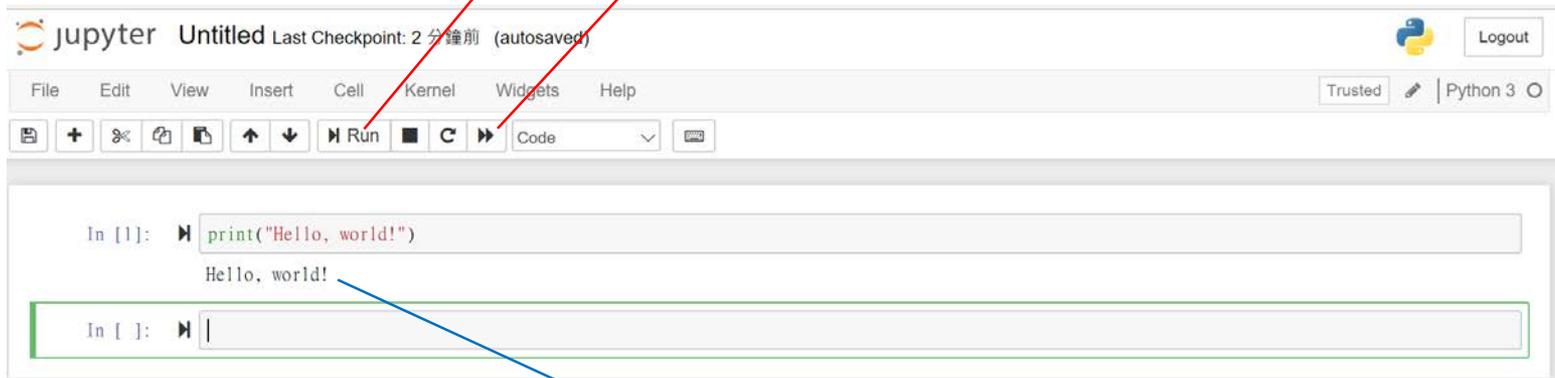


將程式碼打入In[*] 格子內

如何執行程式

按下 Run, 會執行目前格子內的程式

按下這個會整個文件重新執行



The screenshot shows the Jupyter Notebook interface. At the top, it says "jupyter Untitled Last Checkpoint: 2 分鐘前 (autosaved)" and has a "Logout" button. Below that is a menu bar with "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". A toolbar contains icons for file operations, a "Run" button (a play icon), a "Code" dropdown menu, and a "Trust" button. The main area shows two code cells. The first cell contains the code `print("Hello, world!")` and has the output "Hello, world!" displayed below it. The second cell is empty and is highlighted with a green border. A blue arrow points from the "Run" button in the toolbar to the first code cell. A red arrow points from the "Run" button to the second code cell. A blue arrow points from the output "Hello, world!" to the text box below.

輸出結果就會在這邊

Visual studio code (VSCode)

VSCode是什麼

- › **Visual Studio Code** (簡稱 **VS Code**) 是一個由微軟開發的，同時支援Windows、Linux和macOS作業系統且開放原始碼的文字編輯器，它支援偵錯，並內建了Git 版本控制功能，同時也具有開發環境功能，例如程式碼補全 (類似於 IntelliSense)、程式碼片段和程式碼重構等，該編輯器支援用戶自訂組態，例如改變主題顏色、鍵盤捷徑等各種屬性和參數，還在編輯器中內建了擴充程式管理的功能。

下載地點

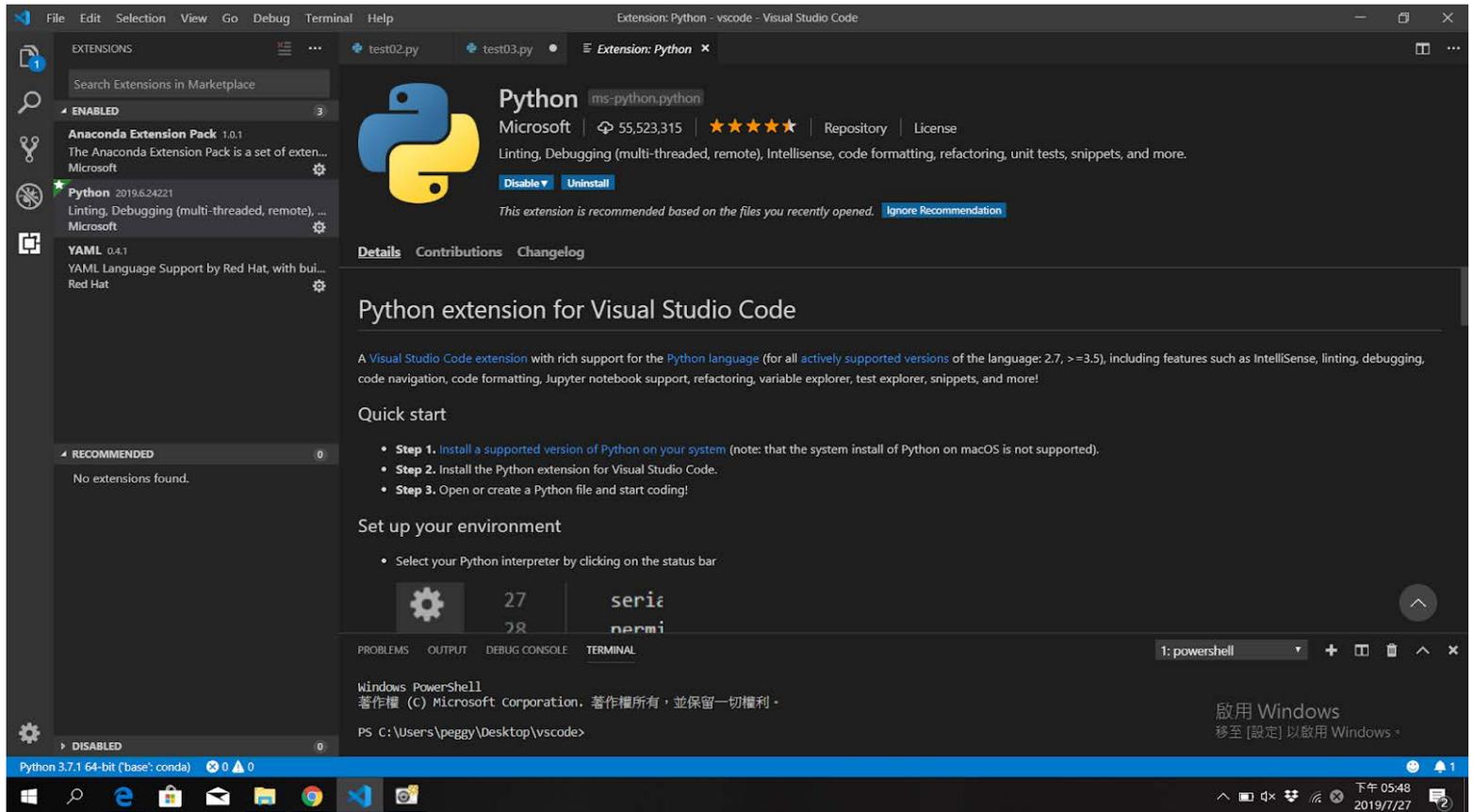
› <https://code.visualstudio.com/>

The screenshot shows the Visual Studio Code website with the headline "Code editing. Redefined." and a navigation menu. A dropdown menu is open under "Download for Windows", showing options for macOS, Windows x64, and Linux x64. The macOS and Windows x64 options are highlighted with a red box. The Windows x64 option is specifically labeled "User Installer".

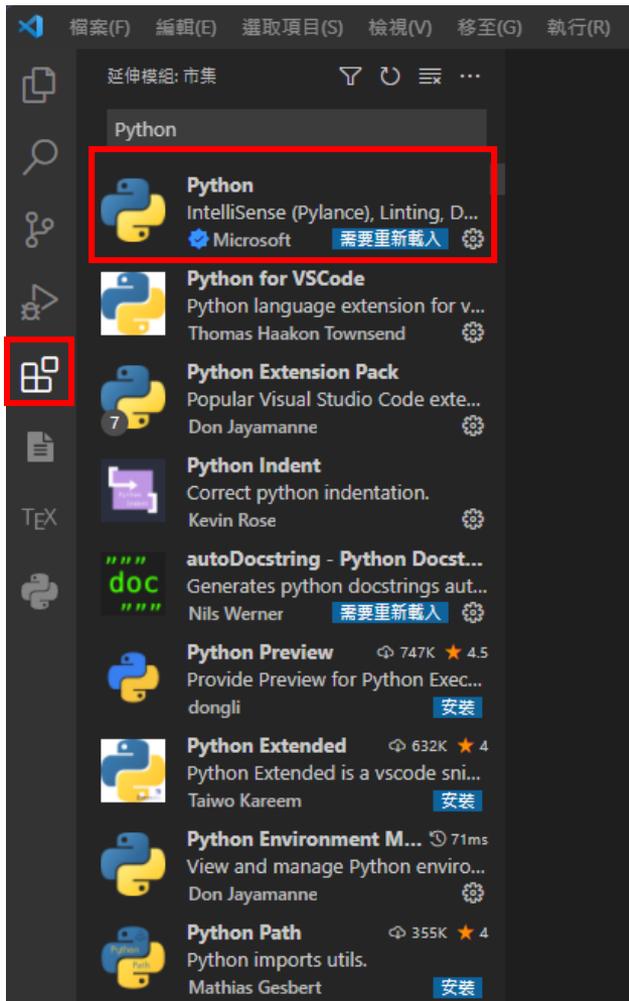
		Stable	Insiders
macOS	Universal	↓	↓
Windows x64	User Installer	↓	↓
Linux x64	.deb .rpm	↓ ↓	↓ ↓

Other downloads

主畫面

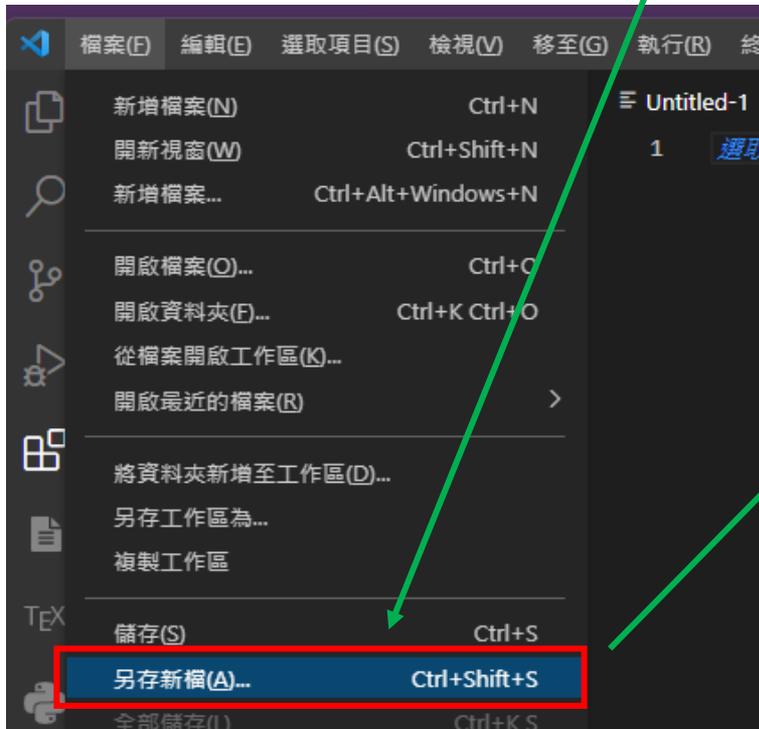
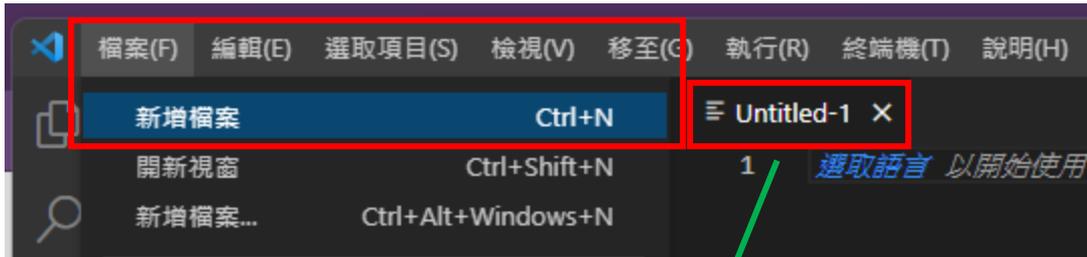


設定VSCode

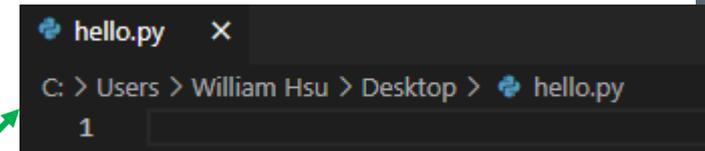


- › VSCode只是個編輯器，需要配合擴充套件才能處理各種語言
- › 安裝python擴充套件

第一個程式



存成某個檔名，副檔名用.py



執行他

- › 把第一個程式打進去
- › 未來記得隨時儲存自己的程式



電子化評測

電子化評測

- › 本課程90%作業與考試都由電腦自動化批改
 - 由你們上傳程式碼
 - 電腦會自動編譯然後將隱藏測資拿來驗證你的程式正確性
 - › 有可能是設定好的, 也有可能是另一隻老師寫的程式產生的
 - 會根據各種判斷來檢測程式的正確性
 - › 拿到滿分不一定是滿分 (因為通常所有可能性不可能測試到, 只是我們準備的測試你都通過了)
 - › 拿不到滿分一定代表你踩了某個坑了

電子化評測

> <http://judge.aclab.cool/>

PROBLEMS SUBMISSIONS USERS CONTESTS ABOUT 登錄 註冊

新聞

110年度第一學期科技大學「程式實作測驗」練習題上線

★ posted 4 months ago 0

110年度第一學期科技大學「程式實作測驗」練習題上線囉!!

- **C/C++** 練習區: <http://judge.aclab.cool/contest/11001practicecc>
- **C#**練習區: <http://judge.aclab.cool/contest/11001practicecsharp>
- **Java**練習區: <http://judge.aclab.cool/contest/11001practicejava>
- **Python**練習區: <http://judge.aclab.cool/contest/11001practicepython>
- 學期別: **110-1學期**
- 開始時間: **2021/09/01 上午9時**
- 結束時間: **2021/12/31 下午6時**

注意事項:

- 學生註冊建議以學號為帳號, 以利於老師辨認同學身分。

110年度科技大學「程式實作測驗」

Comment stream

U1098233 → 將陣列中的0移到尾邊
B09090000 → 109-2 程式實作測驗_測試區
jordan123789456 → Almost-perfect Number
jordan123789456 → Almost-perfect Number
108111224 → For Loop 1
doublerate → 109-1 題目練習區(c/c++)

RSS / Atom

New problems

Fish nets
Mars mission
Parity
Friends
Digits
TEX Quotes
將陣列中的0移到尾邊

RSS / Atom

註冊一個帳號

Register

使用者名稱

電子郵件

密碼 (?)

密碼² (again, for confirmation)

時區 (select your closest major city)

[或 pick from map, detect](#)

Default language

Affiliated organizations

By registering, you agree to our [Terms & Conditions](#).

Register!

註冊帳號

- › 註冊完嘗試登入，助教會協助
- › 登入後加入組織“2022

The screenshot shows a website interface with a navigation menu at the top. The menu items are PROBLEMS, SUBMISSIONS, USERS, CONTESTS, and ABOUT. The ORGANIZATIONS menu item is highlighted with a red box. Below the navigation menu, there is a section titled 新聞. Below the 新聞 section, there is a table with the following content:

2022程式設計與資料處理	0
---------------	---

The text '2022程式設計與資料處理' is highlighted with a red box. Below the table, there is a 'Join organization' button, which is also highlighted with a red box. Below the button, there are three links: Edit organization, Admin organization, and View members.

查看習題

PROBLEMS SUBMISSIONS USERS **CONTESTS** ABOUT

ORGANIZATIONS

Contests 清單 Calendar 管理員

Upcoming Contests

競賽

第0週練習 🔒 2022程式設計與資料處理 被評分 practice
Starting in 1 天 12:15:36.
二月 24, 2022, 12:00
4 天 05:00 long

Past Contests

進入題組

當時間到時候就會出現 'Join'，即可加入

第0週練習

資料和信息

統計數據

Rankings

Participation

MOSS

編輯

複製

Spectate contest

Starting in 1 天 12:14:24

4 天 05:00 long starting on 二月 24, 2022, 12:00 CST

第0週上機練習.

- 建立帳號
- 上傳程式

問題

題目	分數	AC率	用戶
現在放棄	100	0.0%	0
創造三角形 (II)	100p	100.0%	1

評論

There are no comments at the moment.

New comment

B *I* x^2 *f*         

閱讀題目與解題

上傳解答按這邊

現在放棄 🔒 2020程式設計與資料處理

當你不想上課時候，應該怎麼做呢？
那就寫一個程式，印出 `現在放棄暑假就開始了!`

輸入
沒有任何輸入資料

輸出
`現在放棄暑假就開始了!`

評論
There are no comments at the moment.

New comment

B *I* x^2 *f*

Submit solution

[View as PDF](#)

- 全部的提交紀錄
- Best submissions
- Manage tickets
- Edit problem
- Edit test data
- Manage submissions
- Clone problem

✓ 分數：100
⌚ 時間限制：1.0s
📦 記憶體限制：129M

👤 作者：
wwyhsu

➤ 題目類型

✓ 允許的語言
C, C++, Python, ZIG

🖨 裁判伺服器：
[DeepSea](#), [FarSea](#),
[NearSea](#), [OverSea](#),
[RoughSea](#), [SmoothSea](#),
[UnderSea](#)

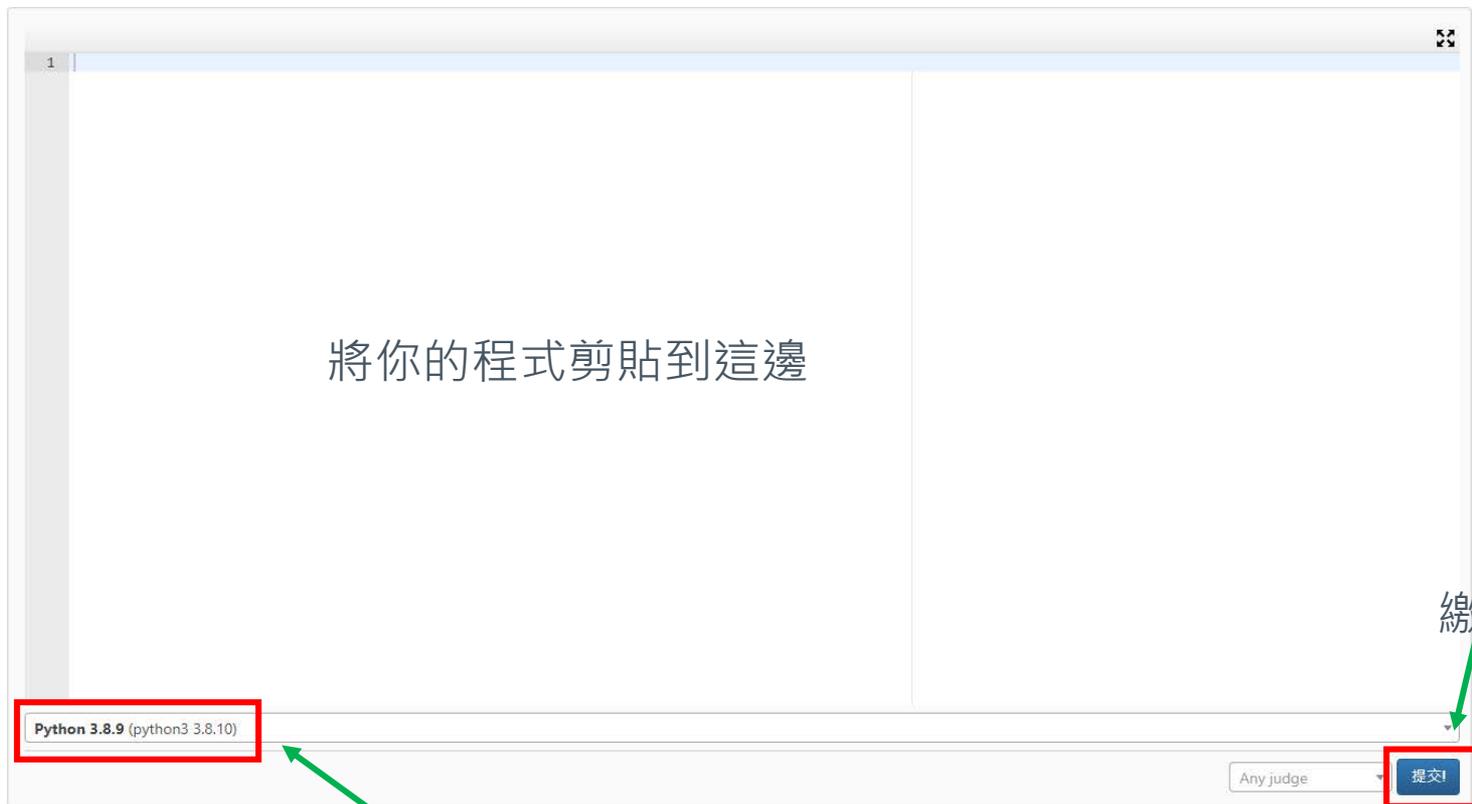
[Report an issue](#)

題目說明，包含故事，目的，
以及範例輸入資料和輸出資料
供參考測試

電子評測的格式要求很嚴謹，
要一模一樣才會通過

上傳題解

Submit to [現在放棄](#)



The screenshot shows a code submission interface. At the top, it says "Submit to [現在放棄](#)". Below this is a large text area for pasting code, with the text "將你的程式剪貼到這邊" (Paste your code here) in the center. At the bottom left, there is a dropdown menu for selecting the programming language, currently set to "Python 3.8.9 (python3 3.8.10)". At the bottom right, there is a "提交!" (Submit!) button. A green arrow points from the text "繳交" (Submit) to the "提交!" button. Another green arrow points from the text "記得選對語言" (Remember to select the correct language) to the language dropdown menu.

將你的程式剪貼到這邊

繳交

Python 3.8.9 (python3 3.8.10)

Any judge

提交!

記得選對語言

觀察評測結果

Submission of 現在放棄 by wwyhsu

[View source](#)
[重新提交](#)
[重新評分](#)

Execution Results



Test case #1: AC [0.043s,9.14 MB] (100/100)

Resources: 0.043s, 9.14 MB

Maximum runtime on single test case: 0.043s

Final score: 100/100 (100.0/100 points)

- › 大家想看到的就是AC
 - AC: 正確
 - WA: 答案錯誤
 - IR: 語法有誤
 - › 程式執行碰到錯誤
 - TLE: 程式執行超過時間限制
 - MLE: 程式執行超過記憶體限制
 - CE: 編譯/直譯錯誤