Python

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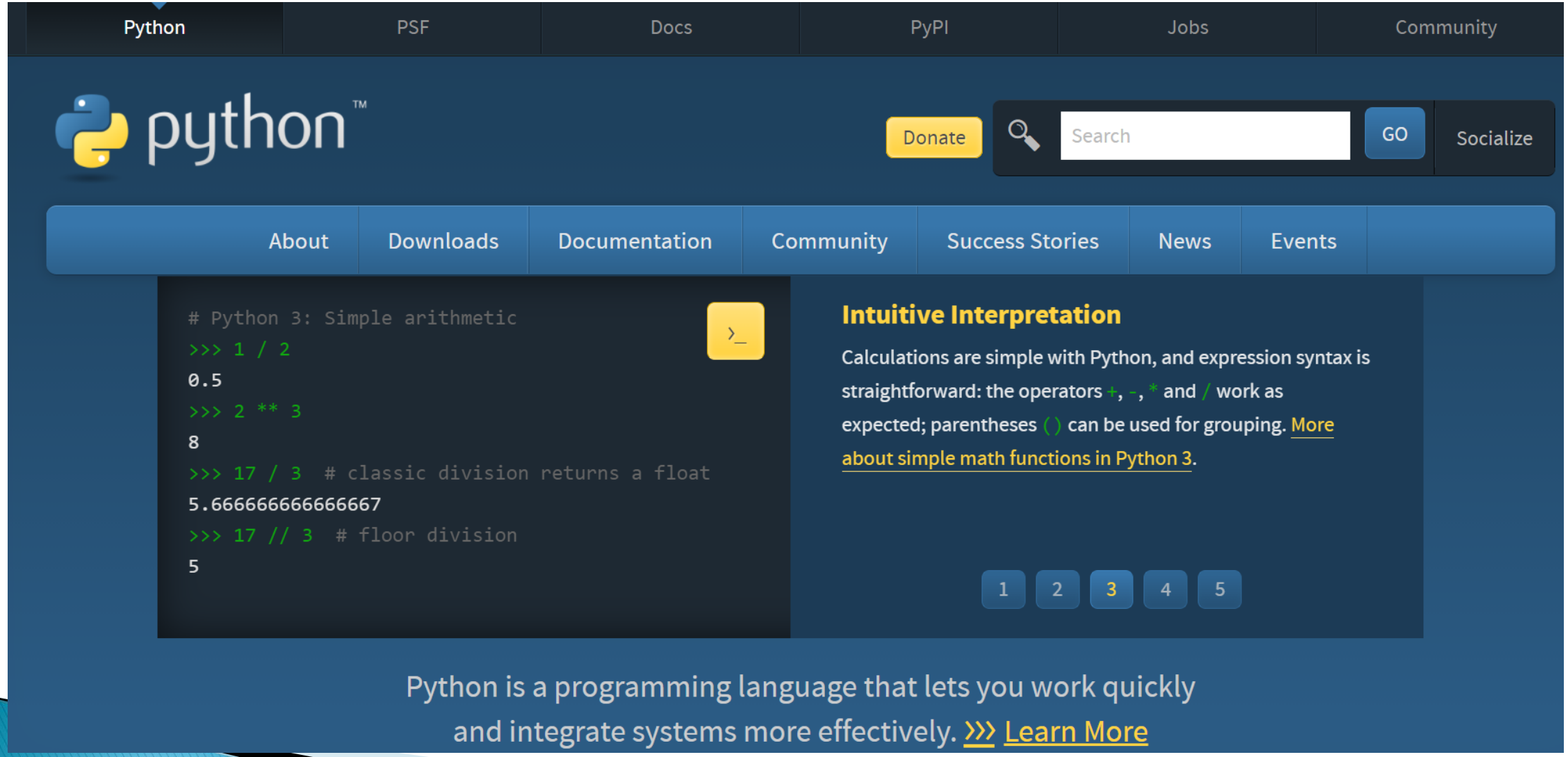
- Python安裝
- Python環境
- Python註解與基礎運算值
- Python常見套件
- 自學網站

下載Python https://www.python.org/



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# Python 3: Fib
>>> def fib(n):
>>> a, b =
>>> while a
>>> pri
>>> a,
>>> print()
>>> fib(1000)
0 1 1 2 3 5 8 1
All releases
Source code
Windows
Mac OS X
Other Platforms
License
Alternative Implementations
Download for Windows
Python 3.9.2
Note that Python 3.9+ cannot be used on Windows 7 or earlier.
Not the OS you are looking for? Python can be used on many operating systems and environments.
View the full list of downloads.
ng functions.
ments, keyword
s. More about

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Python ››› Downloads ››› Windows

Python Releases for Windows

- Latest Python 3 Release - Python 3.9.2
- Latest Python 2 Release - Python 2.7.18

Stable Releases

- Python 3.9.2 - Feb. 19, 2021

  Note that Python 3.9.2 *cannot* be used on Windows 7 or earlier.

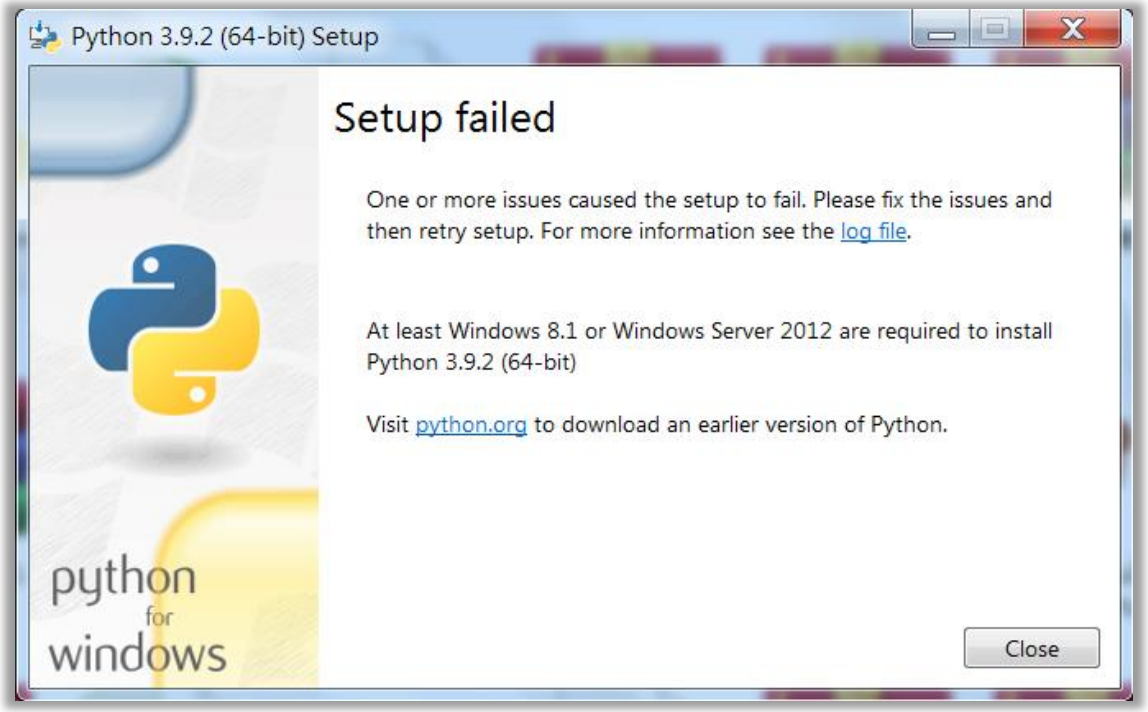
  - Download Windows embeddable package (32-bit)
  - Download Windows embeddable package (64-bit)
  - Download Windows help file

Pre-releases

- Python 3.10.0a6 - March 1, 2021
  - Download Windows embeddable package (32-bit)
  - Download Windows embeddable package (64-bit)
  - Download Windows help file
  - Download Windows installer (32-bit)

安裝Python

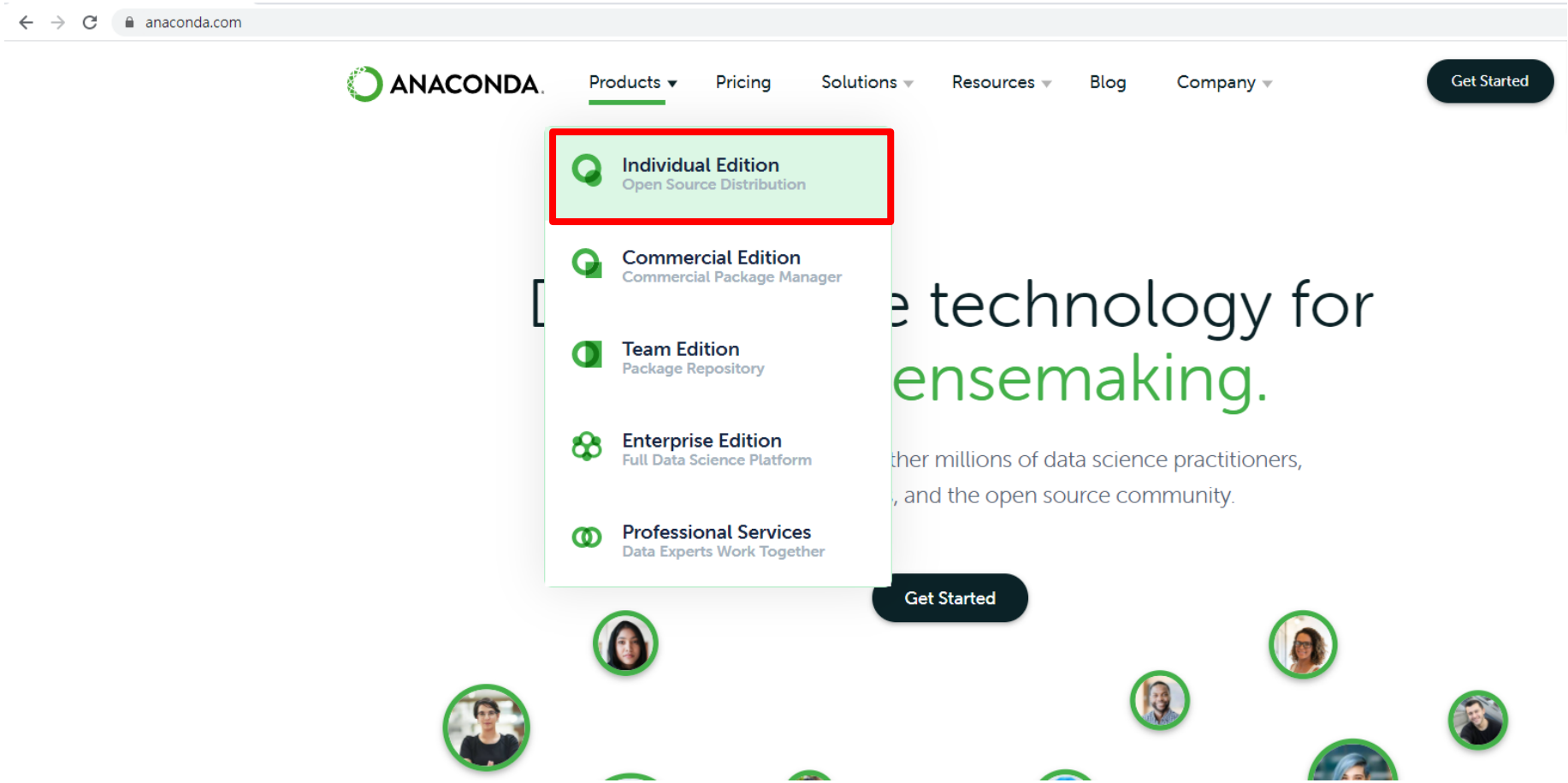

開啟檔案 - 安全性警告
是否要執行這個檔案?
名稱: F:\Downloads\python-3.9.2-amd64.exe
發行者: Python Software Foundation
類型: 應用程式
從: F:\Downloads\python-3.9.2-amd64.exe
執行(R)
取消
開啟這個檔案前一定要先詢問(W)
雖然來自網際網路的檔案可能是有用的，但是這個檔案類型有可能會傷害您的電腦。請只執行來自您所信任發行者的軟體。有什麼樣的風險?


Python 3.9.2 (64-bit) Setup
Setup failed
One or more issues caused the setup to fail. Please fix the issues and then retry setup. For more information see the log file.
At least Windows 8.1 or Windows Server 2012 are required to install Python 3.9.2 (64-bit)
Visit python.org to download an earlier version of Python.
python for windows
Close

Python環境

https://www.anaconda.com/

ANACONDA安裝過程



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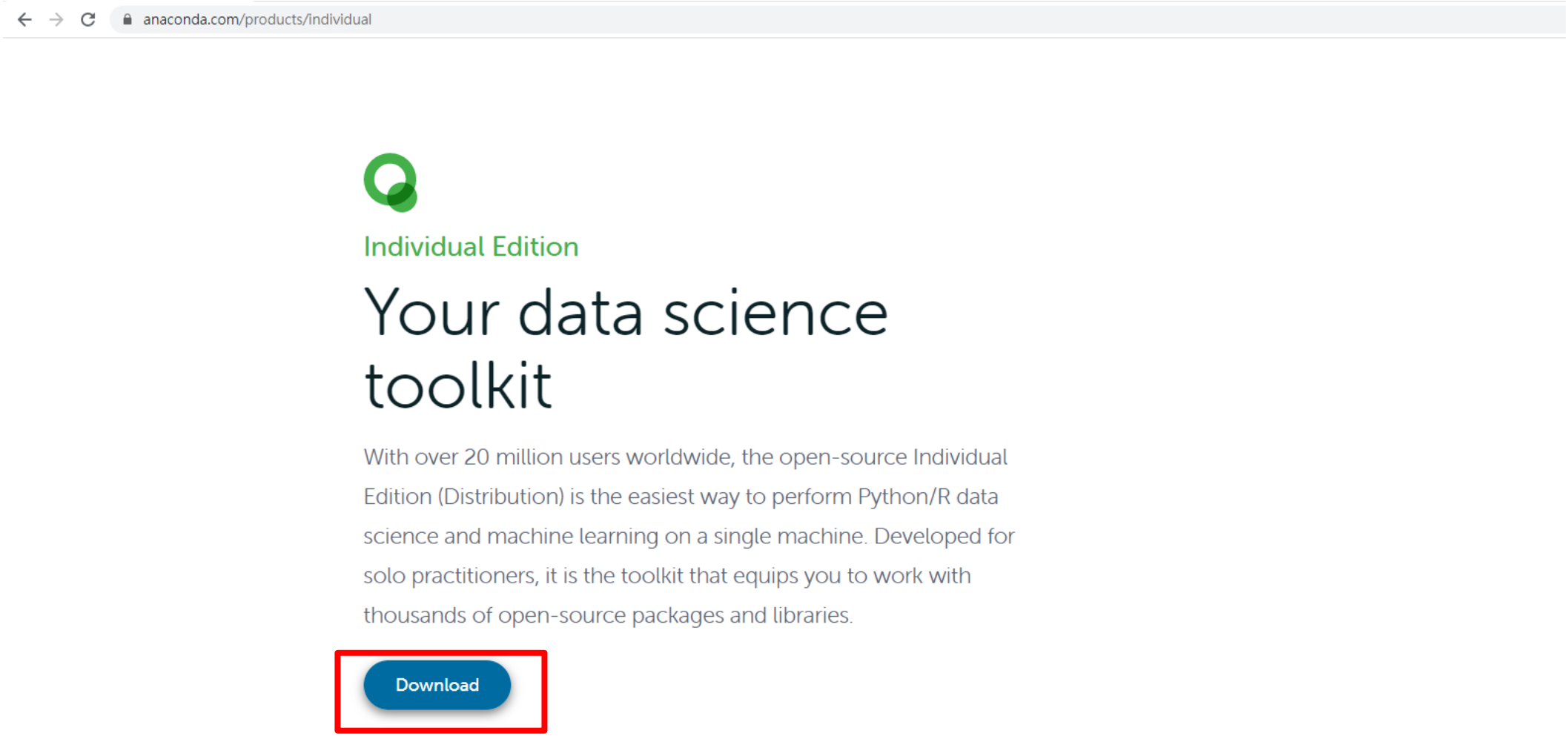
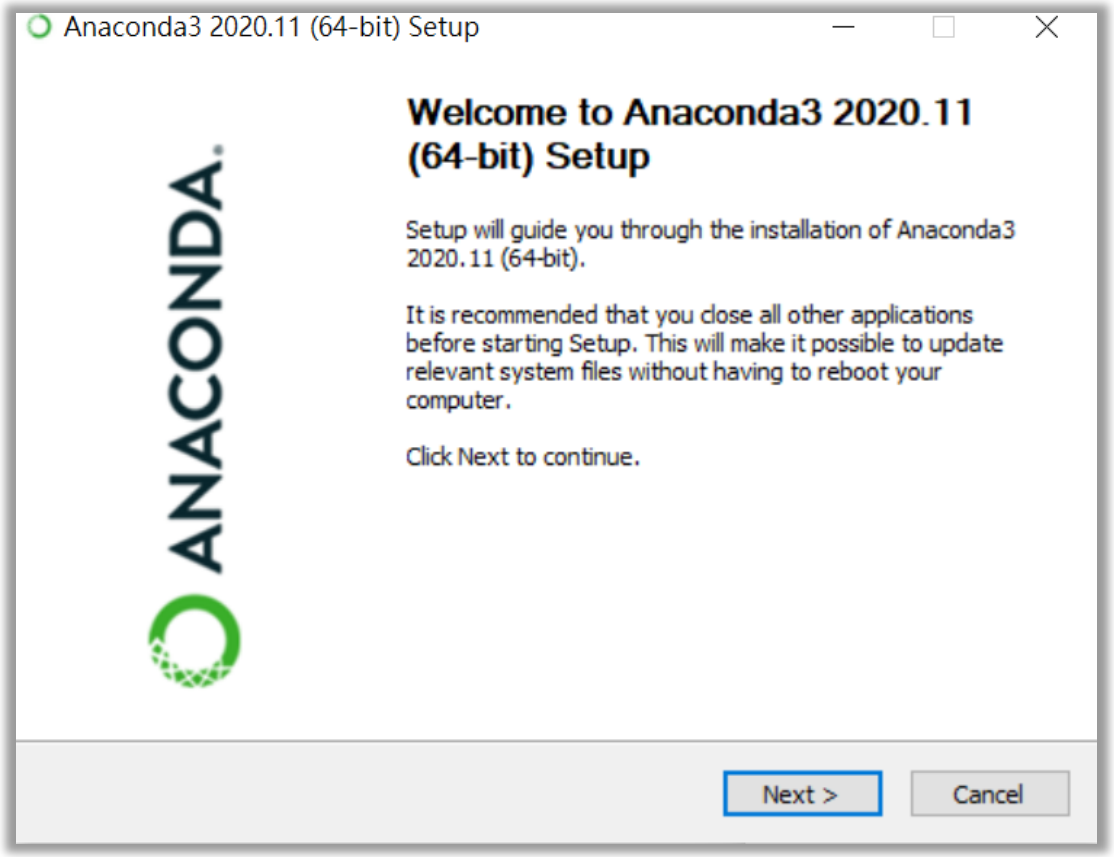
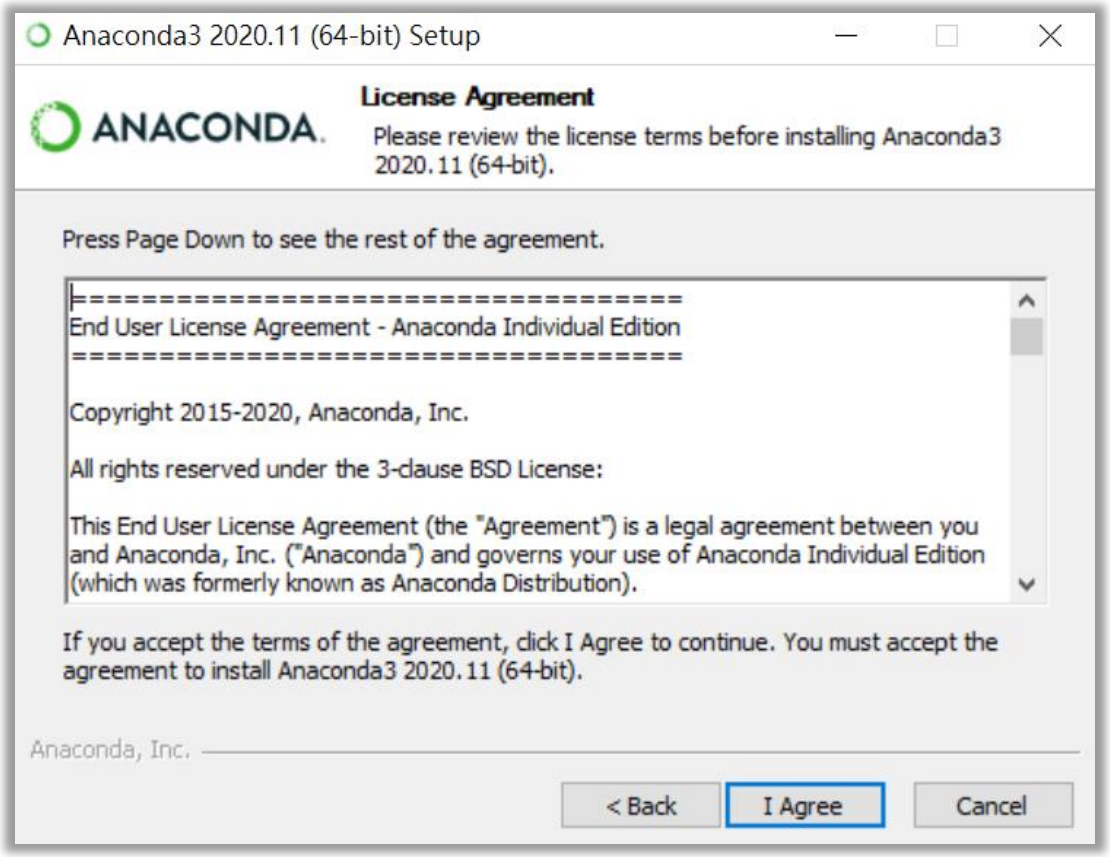


ANACONDA安裝過程

ANACONDA安裝過程





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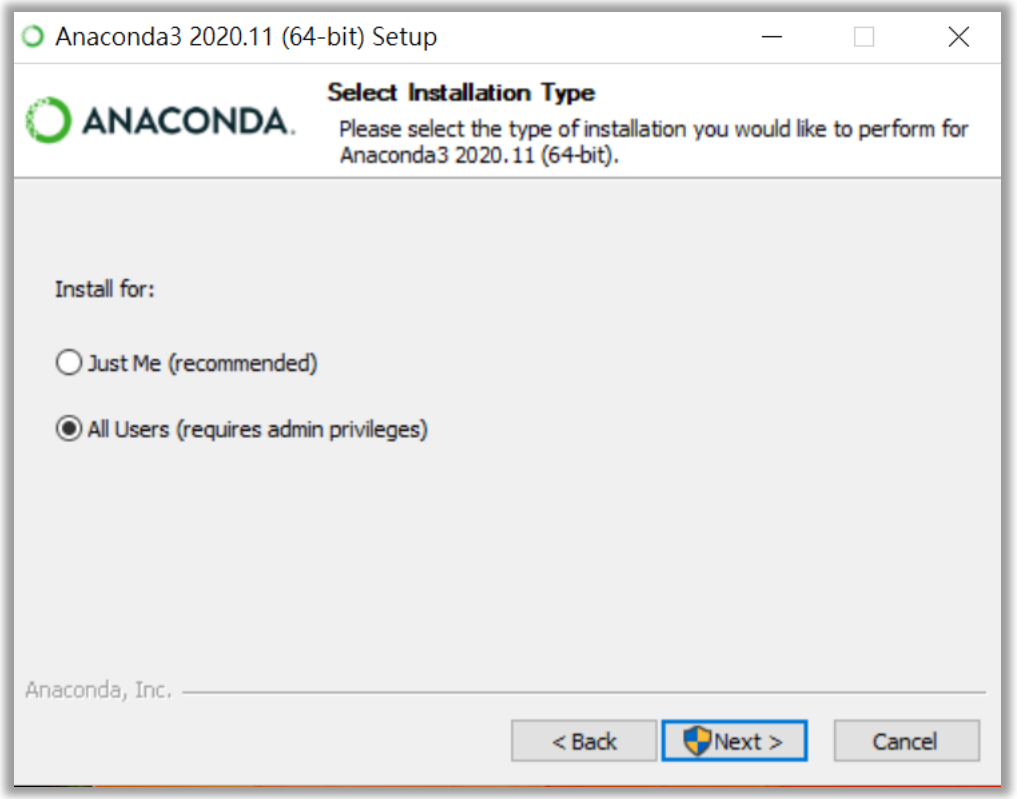

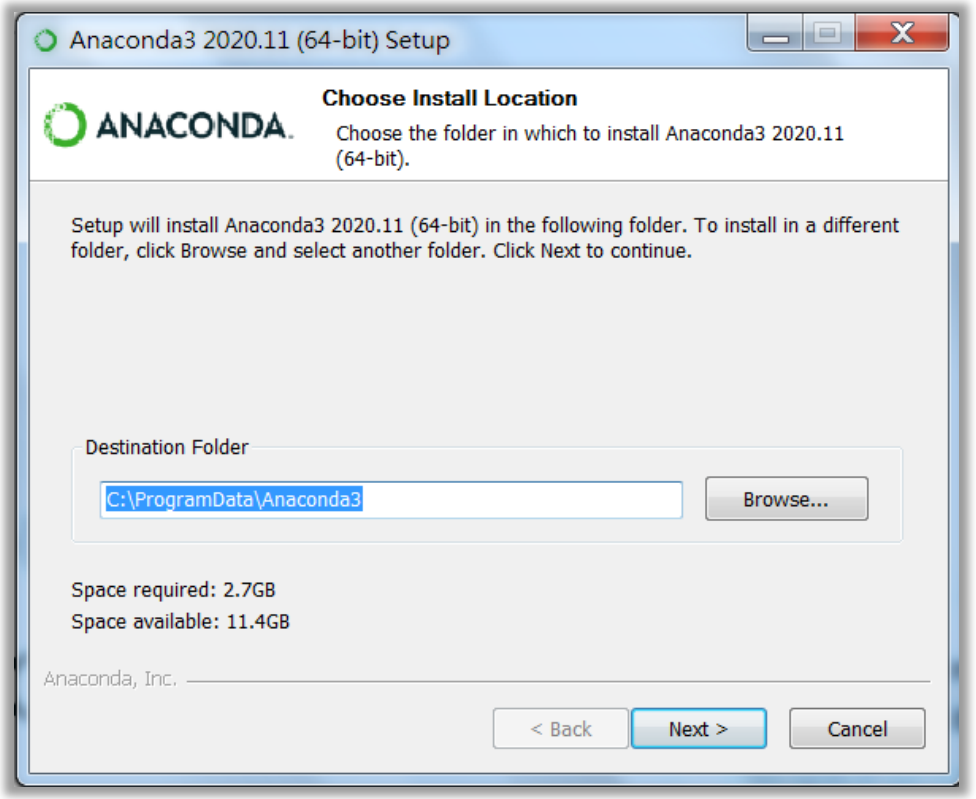

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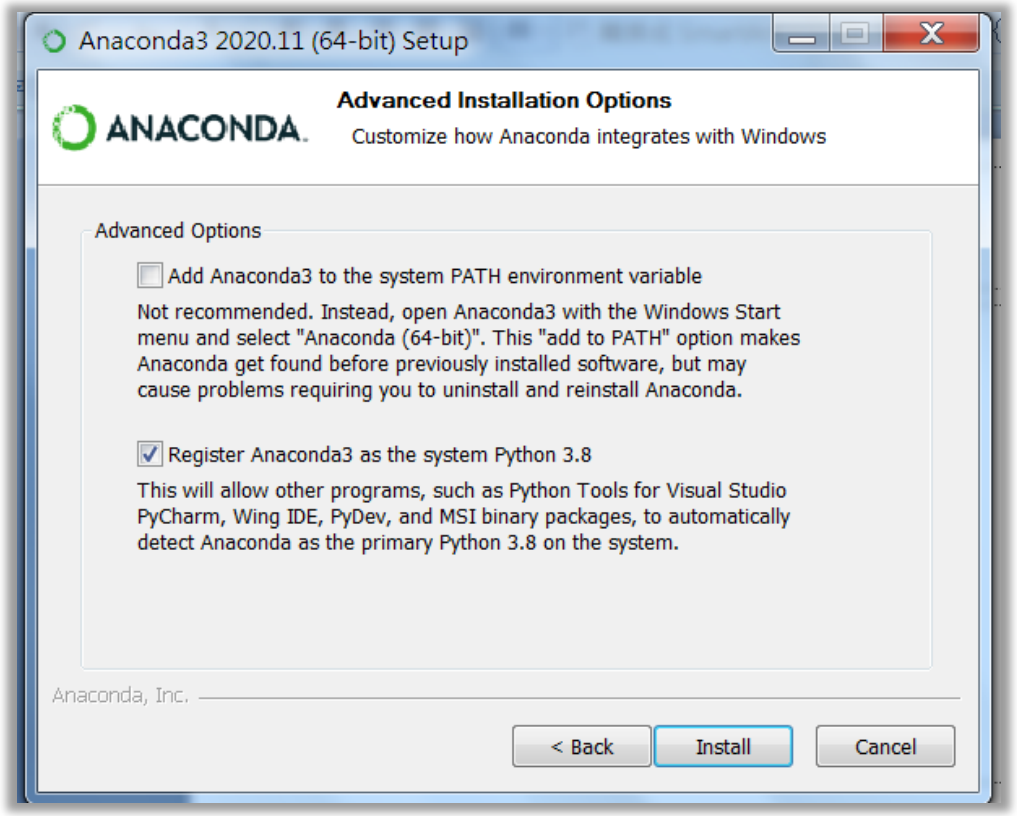

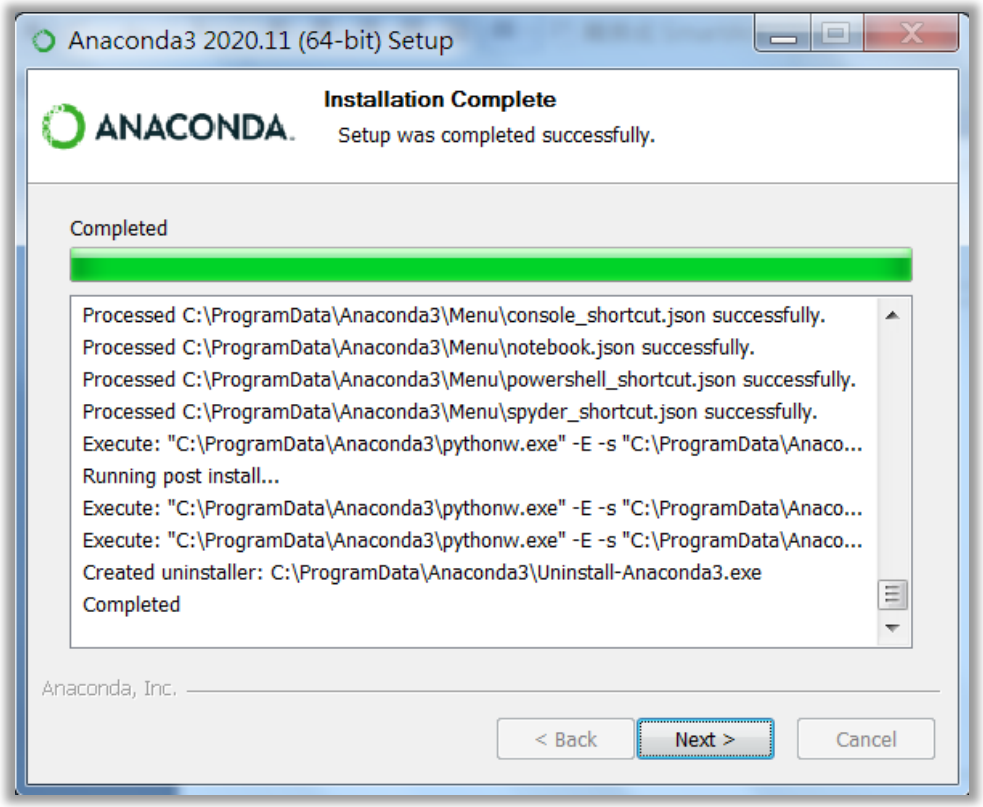

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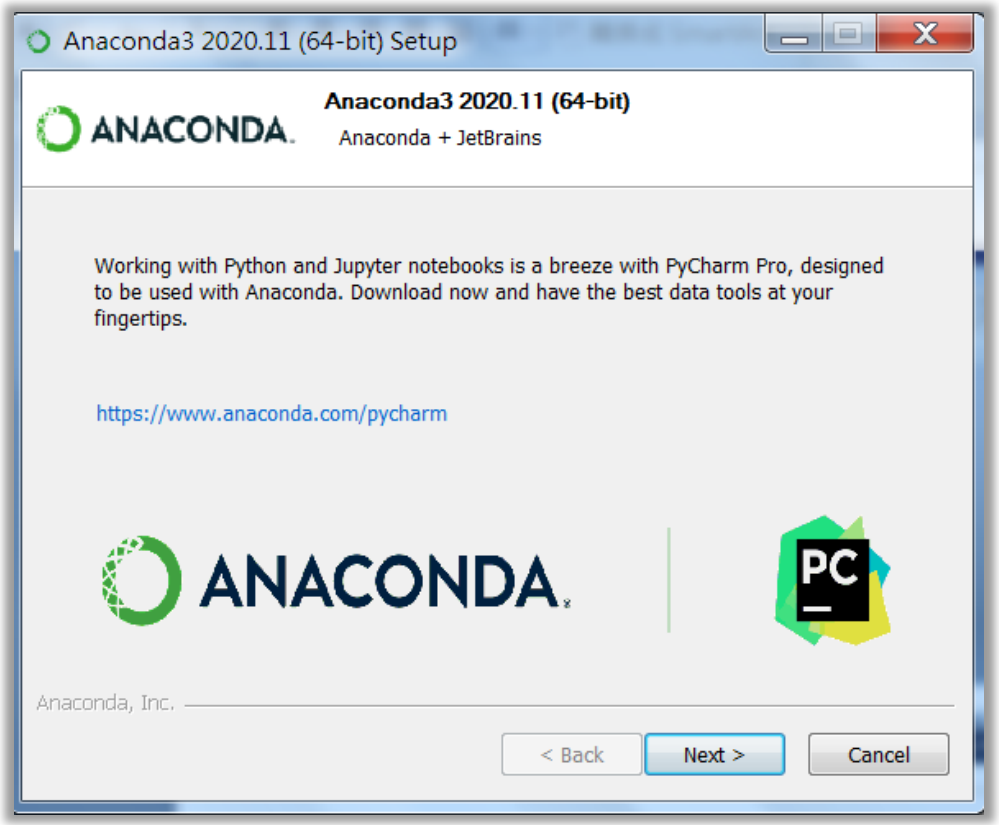

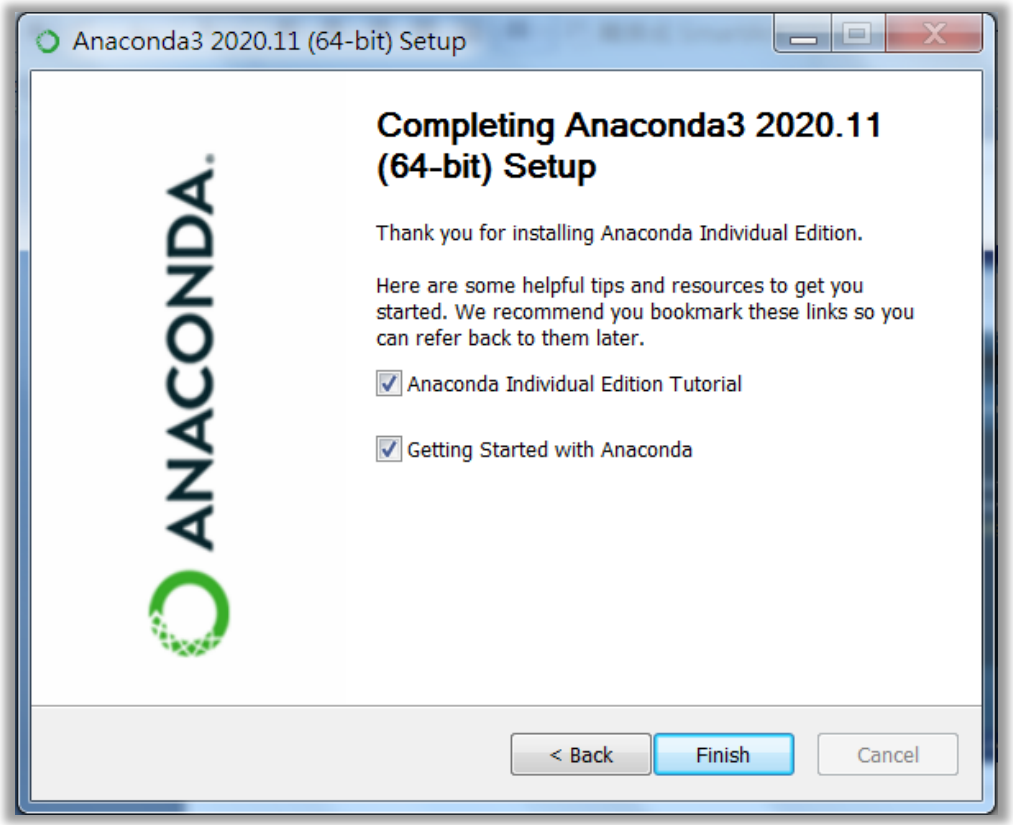

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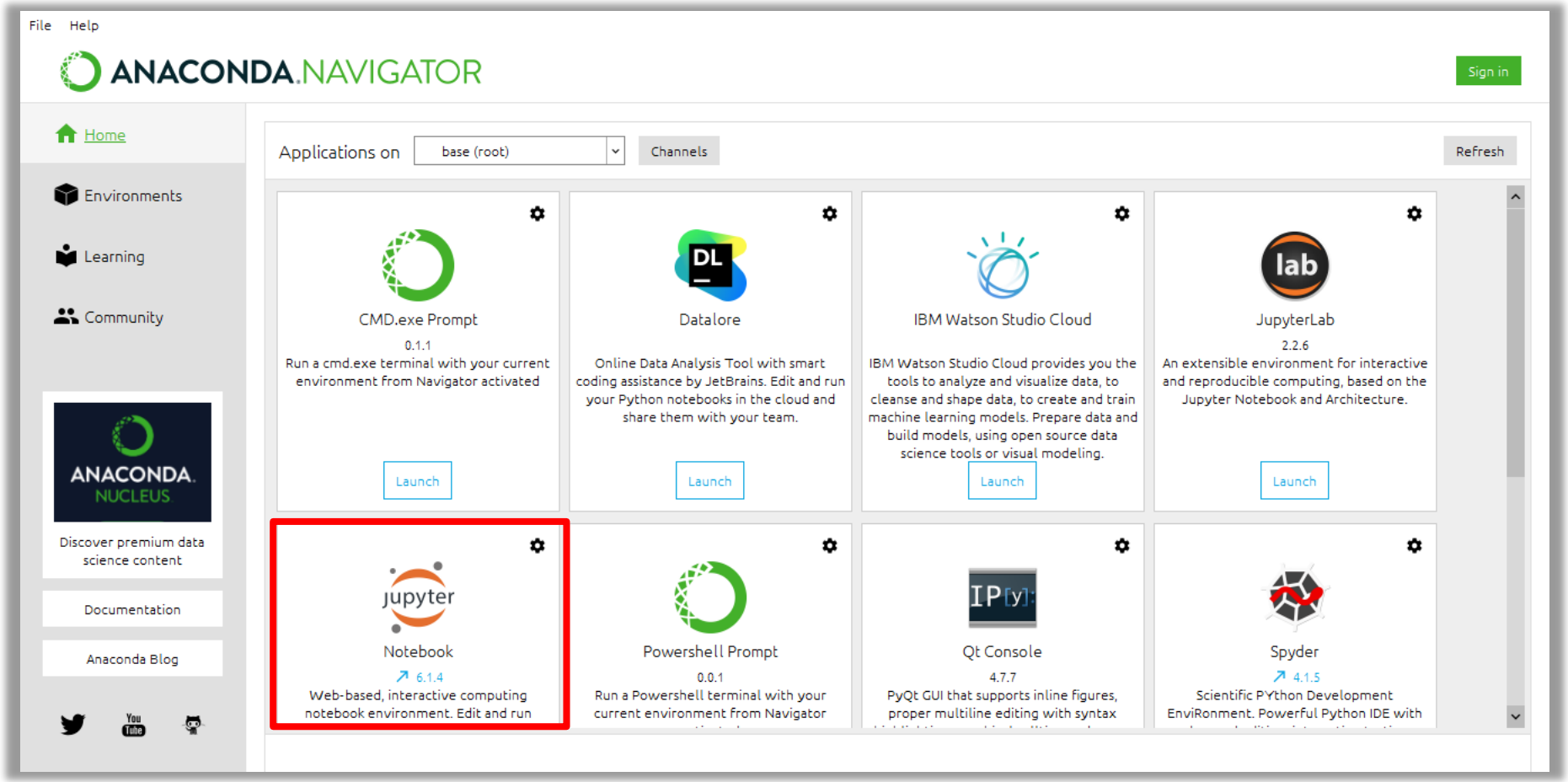
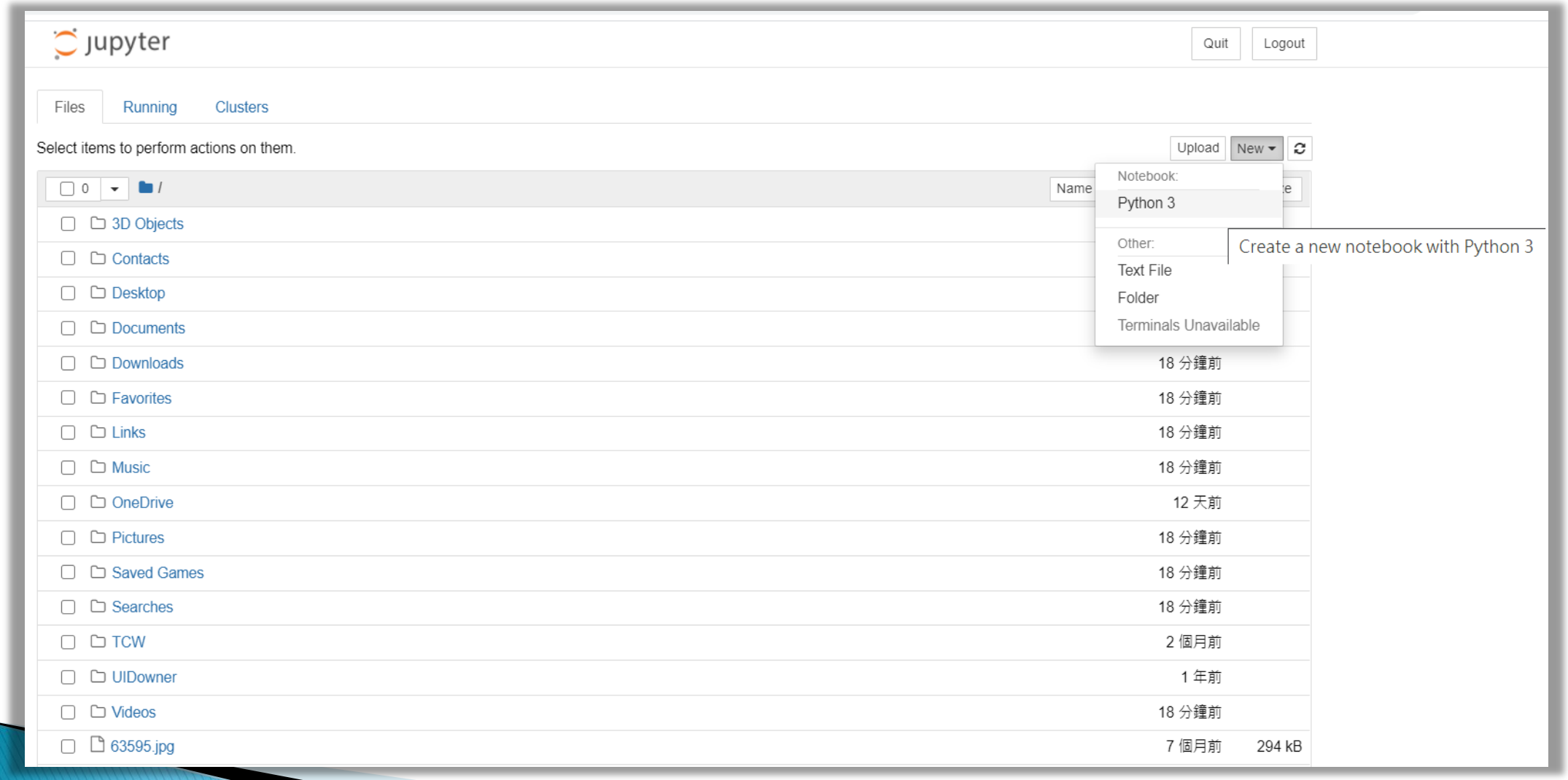
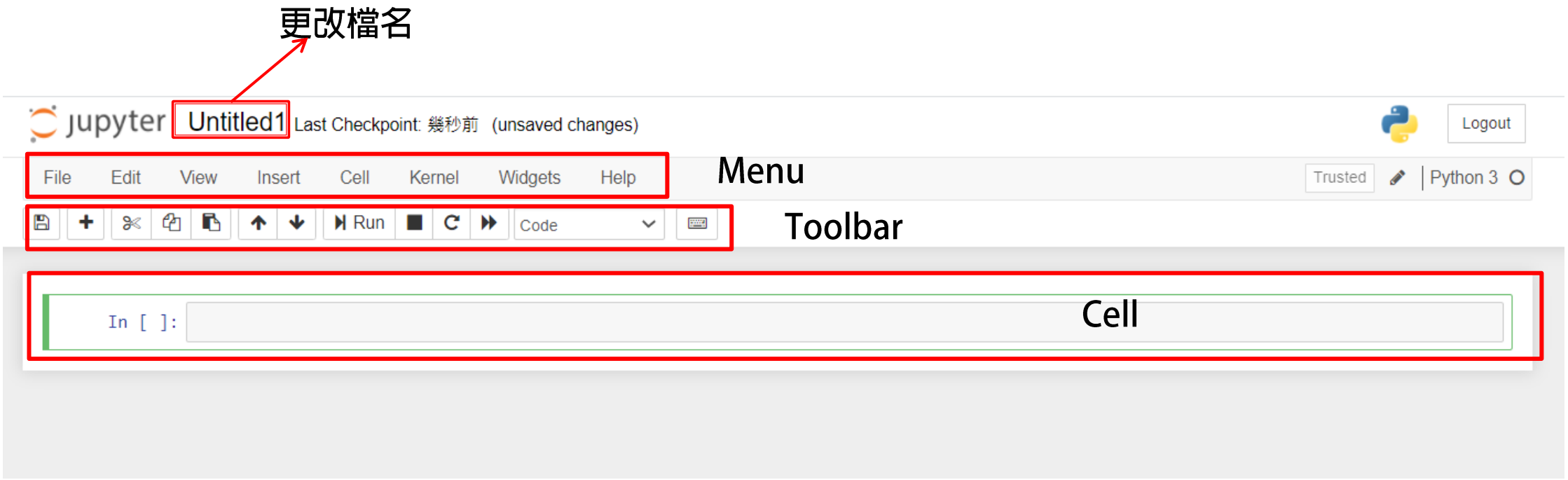


Python編輯器–Jupyter

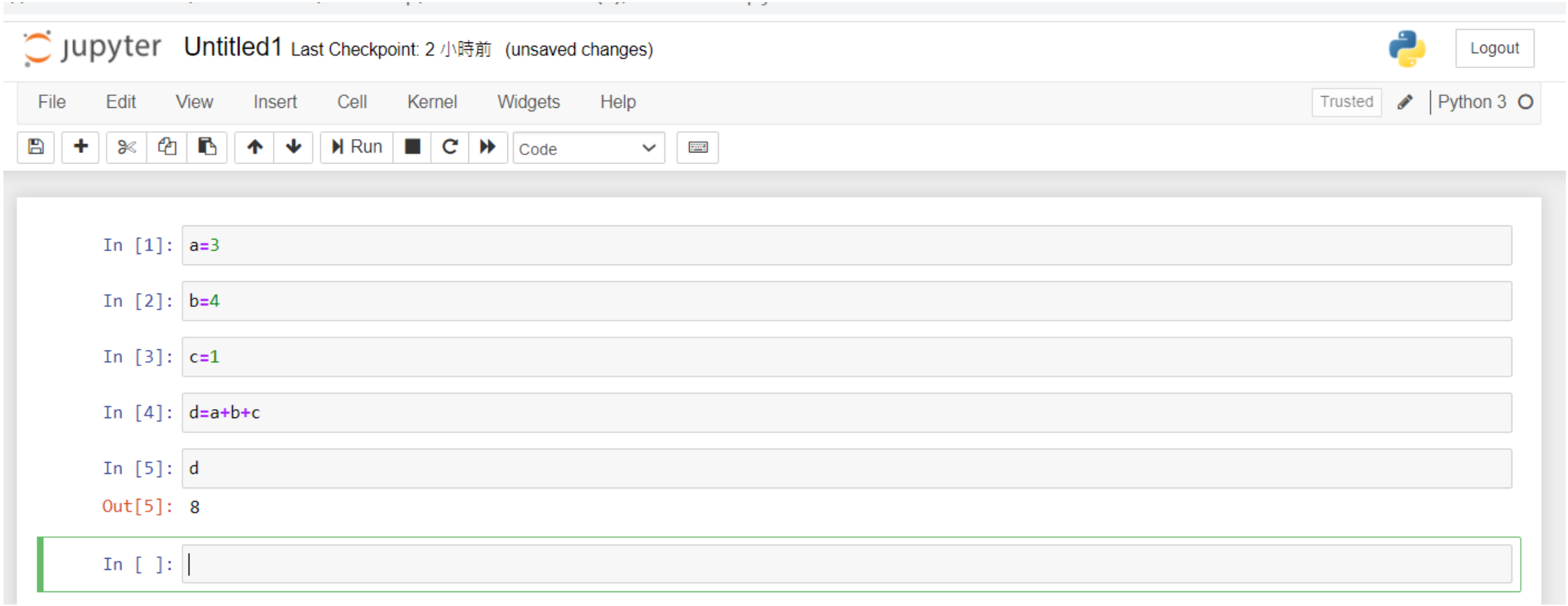
Python編輯器–Jupyter–新增Notebook



Jupyter notebook介面



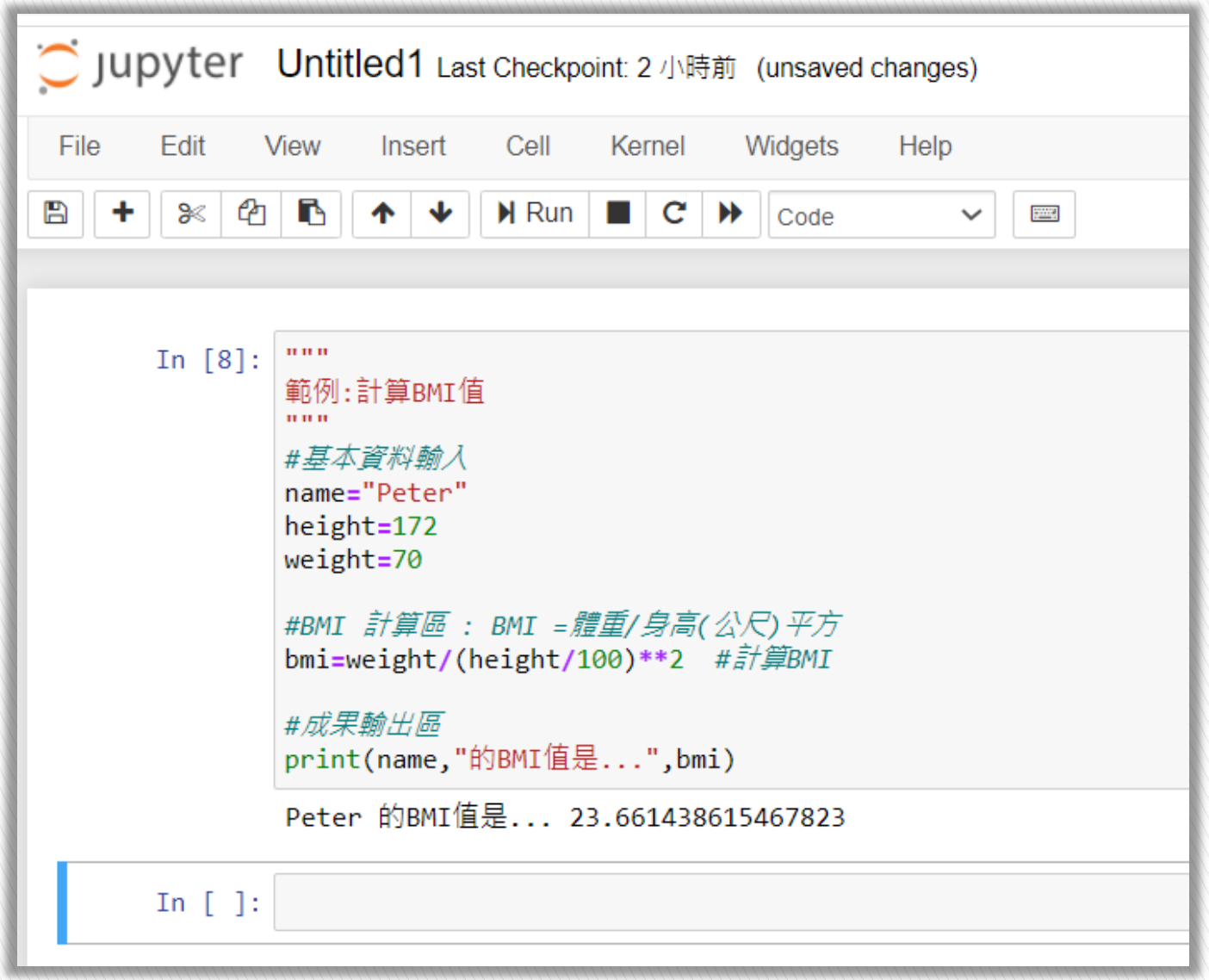
輸入運算值，執行Shift+Enter



Python註解與基礎運算值

Python註解

- 註解:解釋程式碼的設計
- 兩種不同註解標示方法
  - 插入#符號，此時同一行在#右邊的所有文字通通是註解
  - 用一對連續三個雙引號(或連續三個單引號)，把說明文字前後包起來，此一整段文字變成註解



Python基礎運算值

運算子	運算式範例	說明
+	c = a + b	加法
-	c = a – b	減法
	c = -b	加上負號，即 (-1)*b 之意
*	c = a * b	乘法
/	c = a / b	若a,b為整數且無法整除，c為浮點數。b不可為0
//	c = a // b	**整數除法運算子**，除以b，取小於商的**整數值**
%	c = a % b	除以b，取**餘數**
**	c = a ** b	**指數運算子**，a的b次方，a^b

Python基礎運算值

運算子	運算式範例	對應原始寫法
+=	a += b	a = a + b
-=	a -= b	a = a − b
*=	a *= b	a = a * b
/=	a /= b	a = a / b
//=	a //= b	a = a // b
%=	a %= b	a = a % b
**=	a **= b	a = a ** b

Python常見套件

安裝套件語法

- 開始cmd 命令提示字元
- 安裝套件，語法輸入pip install xxx
  ex. 安裝Pandas套件，則輸入pip install pandas

Python常見套件

- 數量分析
  - NumPy
  - SciPy
- 統計計量
  - Statmodels
  - Arch
- 資料庫
  - Pandas
- 繪圖
  - Matplotlib

數量分析_NumPy

- NumPy用來存儲和處理大型矩陣，比Python自身嵌套列表結構要高效的多。
- 快速有效率的多維陣列物件ndarray
- 陣列元素計算功能或陣列間數值計算

- 官網：http://www.numpy.org/

```
>>> a = np.array([2, 5, 7])
>>> b = np.array([(0, 1), (2, 3)])
>>> a.sum()                          # Array-wise sum
14
>>> a.max()                          # Array-wise maximum value
7
>>> a.min()                          # Array-wise minimum value
2
>>> b.max(axis=0)                    # Maximum value of an array row
array([2, 3])
>>> b.max(axis=1)                    # Maximum value of an array row
array([1, 3])
>>> np.median(a)                     # Median
5.0
>>> np.mean(a)                       # Mean
4.666666666666667
>>> np.std(a)                        # Standard deviation
2.0548046676563256
```

數量分析_SciPy

- SciPy包含的模組有最佳化、線性代數、積分、插值、特殊函數、快速傅立葉變換、訊號處理和圖像處理、常微分方程式求解和其他科學與工程中常用的計算。
- 官網：https://scipy.org/scipylib/

- SciPy常用套件介紹
- scipy.intergrate
  - 數值積分函式及微分方程求解
- scipy.linalg
  - Numpy.linalg中未提的線性代數與矩陣分解
- scipy.special
  - 實作許多常用數學函式，如gamma函式
- scipy.stats
  - 標準連續及離散機率分布(密度函式、取樣器、連續分布函式)，多種統計檢驗和更多描述性統計

統計計量_Statmodels

- 包含古典統計和計量經濟學用的演算法
- 偏重統計推斷，接受不確定估計值和p-value當作參數
- 包含
  - 迴歸模型:線性迴歸、廣義線性模型、穩健線性模型、線性混和效果模型等
  - 變異數分析(ANOVA)
  - 時間序列分析:AR、ARMA、ARIMA、VAR以及其他模型
  - 非參數方法:核密度估計、核心迴歸

  - 官網：http://www.statsmodels.org/devel/

統計計量_Arch

- **Module Contents**
  - Univariate ARCH Models
  - Unit Root Tests
  - Cointegration Testing and Analysis
  - Bootstrapping
  - Multiple Comparison Tests
  - Long-run Covariance Estimation

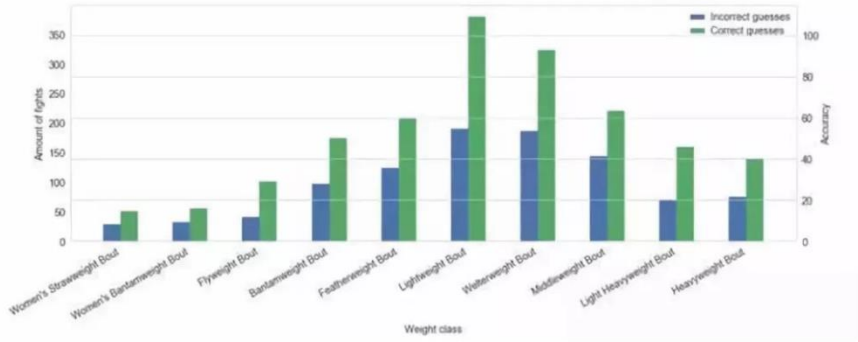
  - 官網： https://pypi.org/project/arch/

資料庫_Pandas

- Pandas包含許多用於分組、過濾和組合資料的內建方法，以及時間序列功能。
- 數據結構
  - Series:一維數據
  - Time-Series:以時間為索引的Series
  - DataFrame:二維的表格型數據結構
  - Panel:三維的數據

  - 官網：https://pandas.pydata.org/

繪圖_Matplotlib



- 繪圖系統
- 功能
  - 散佈圖、折線圖、條形圖、直方圖、餅狀圖、箱形圖等繪製
  - 官網：https://matplotlib.org/index.html

	Matplotlib	Seaborn	Plotly
優點	● 歷史悠久，有許多參考資料 ● 畫圖功能最齊全	● 畫圖指令非常簡單 ● 圖案漂亮	● 漂亮的各種視覺化圖表 ● 互動化的介面 ● 功能齊全，可建立Dashboard ● 可以即時套用別人做好的視覺化圖案
缺點	● 圖表不好看 ● 畫圖指令複雜	● 雖然99%的使用上都沒問題，但有些進階的圖案很難畫或是沒辦法畫（可與matplotlib互補）	● 使用起來稍微有點複雜 ● 非完全Opensource ● 比較吃電腦資源

自學網站

- Jupyter Notebook 使用小技巧
- PYTHON 程式設計投影片
- 成為python數據分析達人的第一課 GitHub
- Programming for Business Computing in Python (1)
- Programming for Business Computing in Python (2)
- Programming for Business Computing in Python (3)