



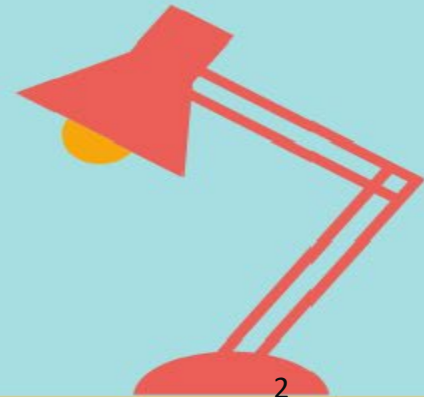
113-1基礎程式設計(1)

亞大資工系

課程大綱

- W1-Python簡介及程式工具
- W2
- W3-變數和運算
- W4-迴圈和格式化輸出
- W5-判斷式和容器
- W6-字串處理和輸出入
- W7-字典容器
- W8-檔案處理
- **W9-期中測驗**

- W10-函數
- W11-進階流程控制
- W12-進階運算和生成器
- W13-進階函數
- W14-類別
- W15-進階類別
- W16-模組和套件
- W17-進階設計
- W18-M3測驗



課程大綱

- Essential-基本的
 - 啟思博的概念(Kissipo Learning)
 - KISS Principle: Colab + Github的使用
 - Anaconda 和Jupyter notebook
 - Hello World程式
 - IPO model: input-process-output (輸入-處理-輸出)
 - Input: input()函數
 - Process: 指定敘述(assignment)
 - Process:內建基本函數的使用(help, type)
 - Output: print()函數
- Advanced-進階的
 - 關於Python 程式語言
 - Python編輯器:IDLE, Spyder, Visual Studio Code, PyCharm
 - Python程式的執行 (Run)
 - Python程式的偵錯 (Debug)

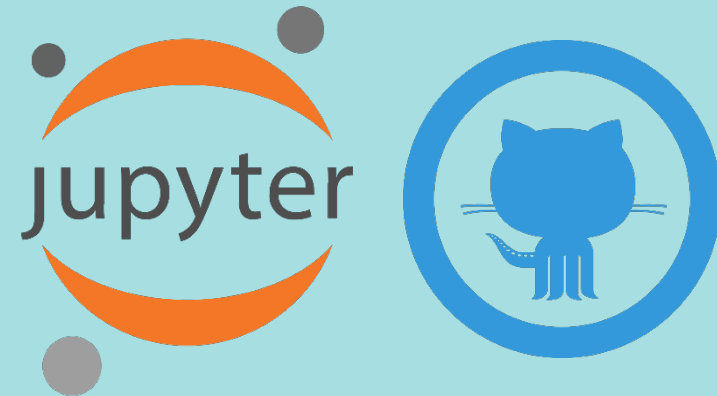


(A) ESSENTIAL-基本的



啟思博教學法

Kissipo = KISS principle + IPO model



啟思博Kissipo 學習法

Kissipo = KISS principle + IPO model

KISS principle

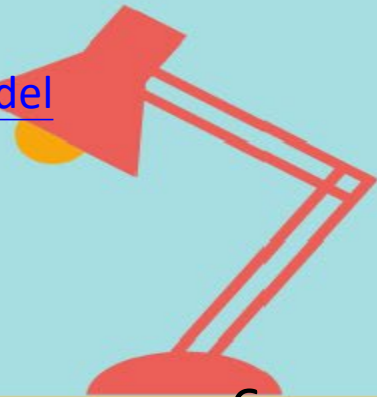
"keep it simple, stupid" or "keep it stupid simple", is a design principle noted by the U.S. Navy in 1960.

https://en.wikipedia.org/wiki/KISS_principle

IPO model

The input–process–output (IPO) model is a widely used approach in systems analysis and software engineering for describing the structure of an information processing program or other process.

https://en.wikipedia.org/wiki/IPO_model



Kissipo Learning for Programming with Python(PWP)

Courseware: Notebook+ Github

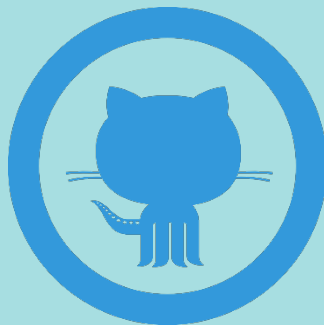
- (1) 使用Notebook(Google Colab)教學。
- (2) 使用Github建立教案

Keep:

Variables and assignment
operator and expression
left-hand side and right-hand side
unpacking

S&S:

help(), type(), len(), size()



IPO-I: input

input()
int(), float(), str()
split(), map()

IPO-P: Process

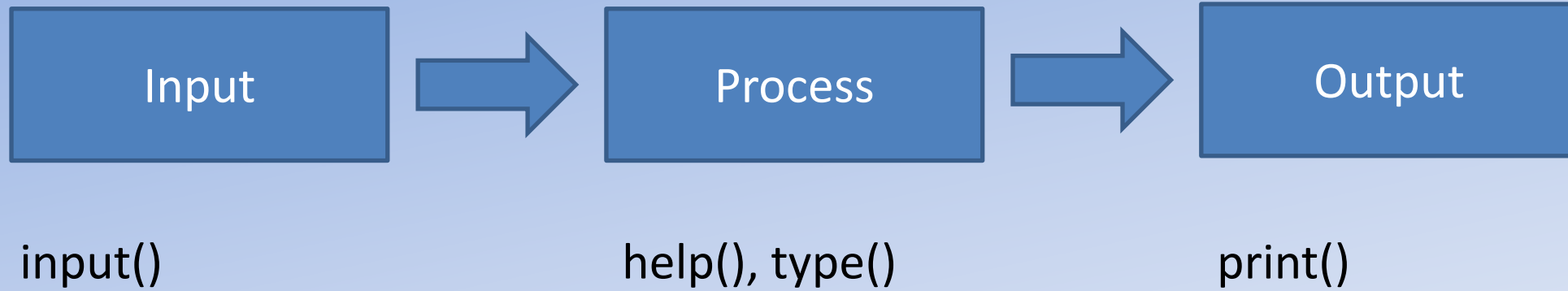
變數宣告, 資料容器
for-loop/while-loop
if, elif, else
range()

IPO-O: output

print()
open(), write()



IPO Model



本章基本觀念是同學要知道：
輸入用(), 輸出用print()
help()可以查看函數或類別的說明
type()可以查看變數的型別



使用Notebook(Google Colab)教學


 Welcome To Colaboratory
PRO File Edit View Insert Runtime Tools Help

Table of contents

Getting started

Data science

Machine learning

More Resources


Machine Learning Examples

Section

+ Code + Text

Copy to Drive

+ Code + Text

 What is Colaboratory?

Colaboratory, or "Colab" for short, allows you to write and execute Python in your browser, with

- Zero configuration required
- Free access to GPUs
- Easy sharing

Whether you're a **student**, a **data scientist** or an **AI researcher**, Colab can make your work easier. Watch [Introduction to Colab](#) to learn more, or just get started below!

▼ Getting started

The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

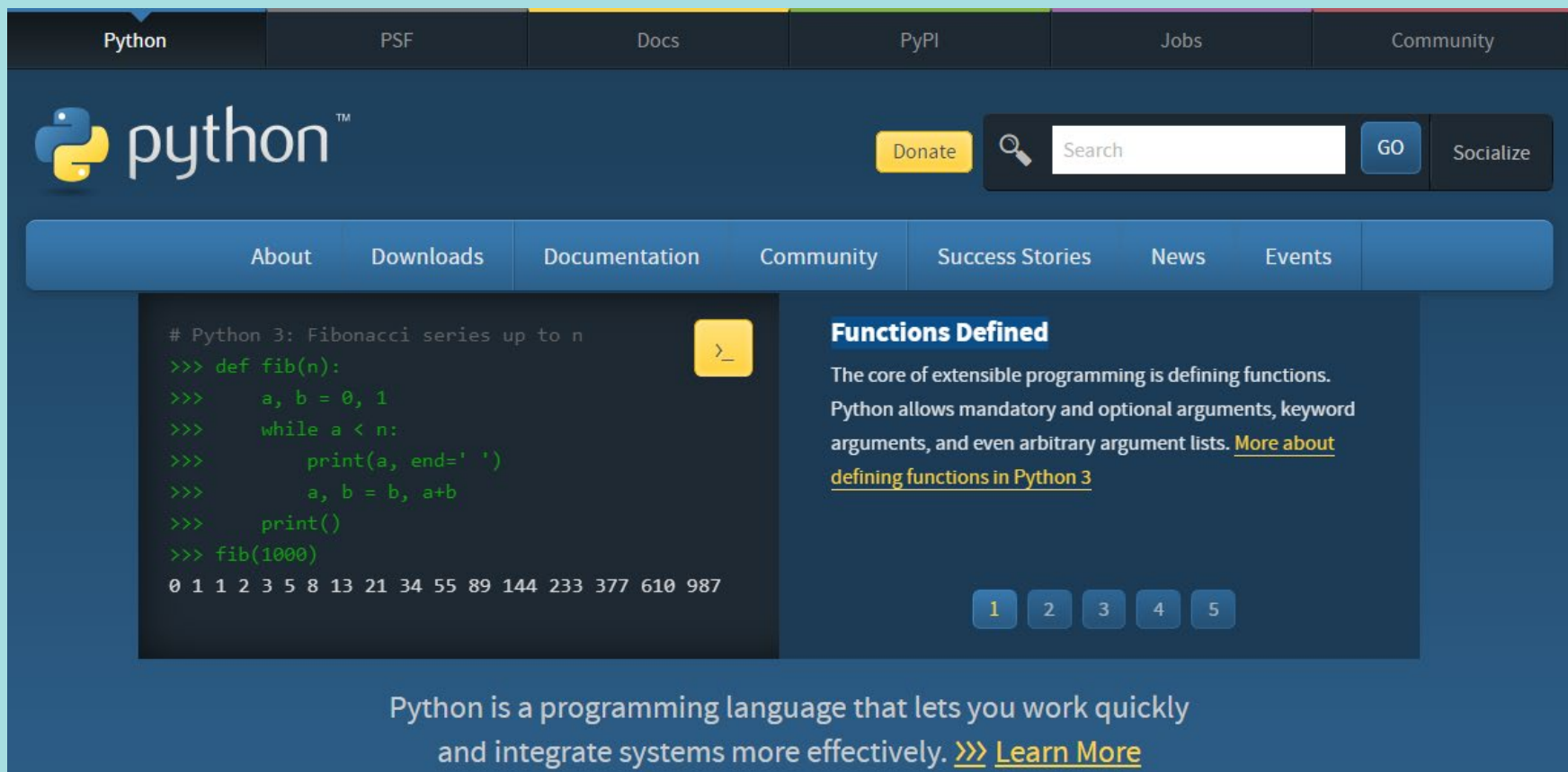
For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

Jupyter Notebooks



- Jupyter是一個非營利組織，旨在「為數十種程式語言的互動式計算開發開源軟件，開放標準和服務」。
- 2014年由Fernando Pérez從IPython中衍生出來，Jupyter支援幾十種語言的執行環境。
- Jupyter Project的名稱是對Jupyter支援的三種核心程式語言的引用，這三種語言是Julia、Python和R。
- 也是對伽利略記錄發現木星的衛星的筆記本的致敬。
- Jupyter專案開發Jupyter Notebook、JupyterHub和JupyterLab，這是Jupyter Notebook的下一代版本。

Python官網的介紹



The image is a screenshot of the Python.org homepage. At the top, there is a dark blue navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a lighter blue header section featuring the Python logo and the word 'python' in a large, white, sans-serif font. To the right of the logo is a yellow 'Donate' button, a search bar with a magnifying glass icon, a 'GO' button, and a 'Socialize' button. Below the header is a row of blue buttons for 'About', 'Downloads', 'Documentation', 'Community', 'Success Stories', 'News', and 'Events'. The main content area is divided into two columns. The left column contains a code editor with a dark background and yellow text, showing a Python 3 script for calculating the Fibonacci series up to n. The right column has a section titled 'Functions Defined' in bold blue text, followed by a paragraph explaining that the core of extensible programming is defining functions, and that Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. A link 'More about defining functions in Python 3' is provided. Below the text are five blue buttons numbered 1 through 5. At the bottom of the page, a white text box contains the statement: 'Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)'.

Python

PSF

Docs

PyPI

Jobs

Community

python™

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```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

Functions Defined

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

1 2 3 4 5

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

Python的版本

- 目前版本~~Python 2.7.x~~和Python 3.8.x
- `print` 函数
- Unicode
- 除法运算 //



Sunsetting Python 2



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Tweets by @ThePSF



CUDA in Your Python: Effective Parallel Programming on the GPU by William Horton. Learn how to speed up your Python programs using Nvidia's CUDA platform. pyvideo.org/pycolorado-201...

Sunsetting Python 2

We are volunteers who make and take care of the Python programming language. We have decided that **January 1, 2020**, was the day that we sunset Python 2. That means that we will not improve it anymore after that day, even if someone finds a security problem in it. You should upgrade to Python 3 as soon as you can.

(B) ADVANCED-進階的

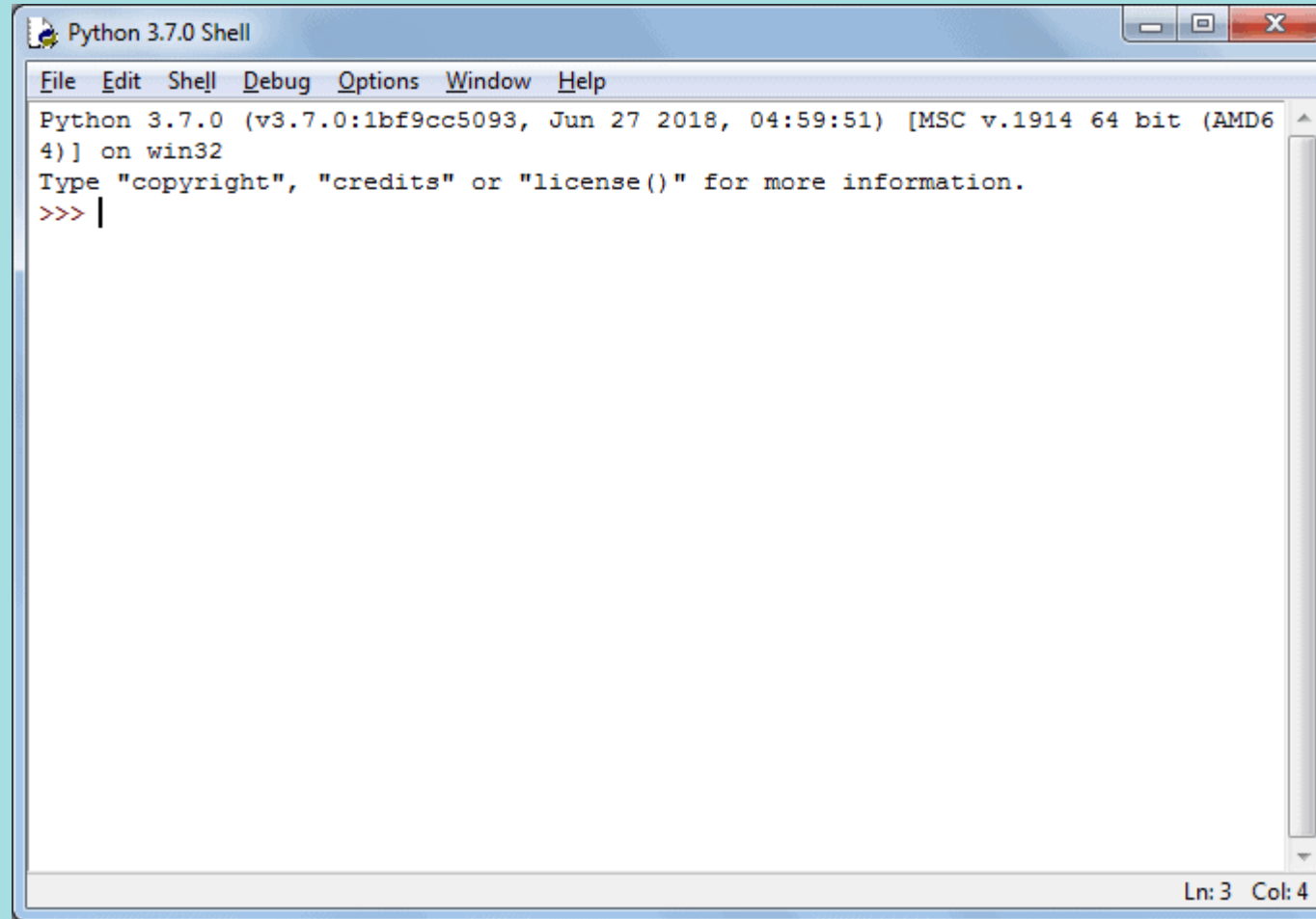


Python程式的編輯工具

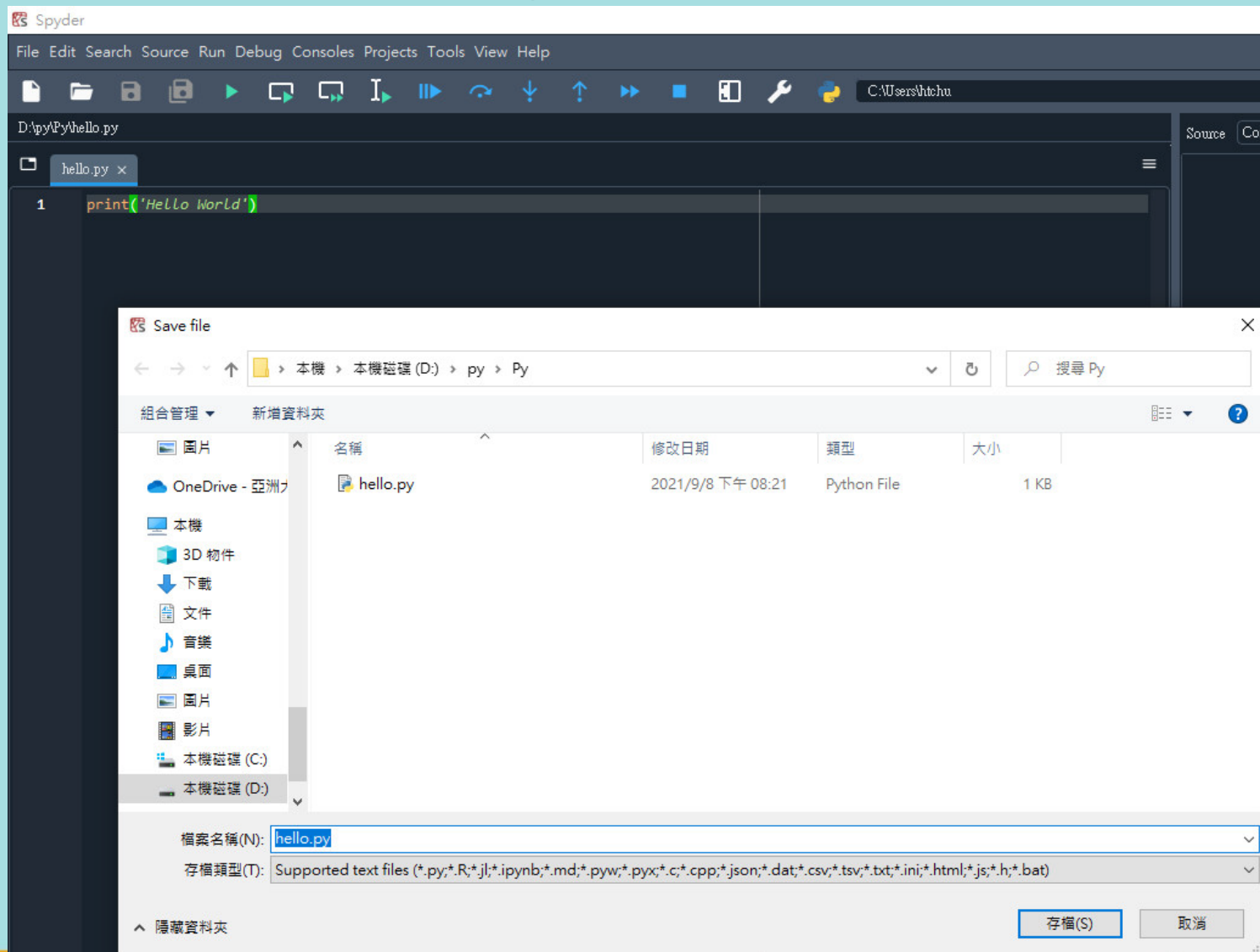
- Python IDLE工具
- Spyder
- Visual Studio Code
- PyCharm
- Colab



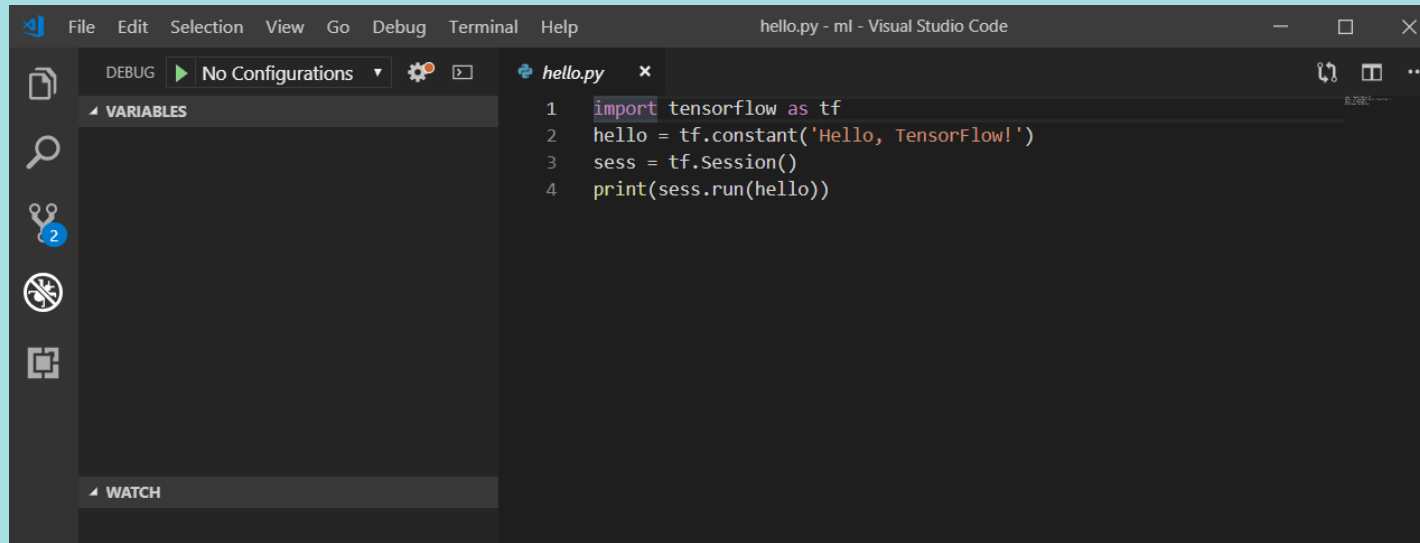
Python IDLE



Spyder



Visual Studio Code



JetBrains Product Pack for Students

The screenshot shows the JetBrains account page at `account.jetbrains.com/licenses`. The user is Hsueh-Ting Chu. A green notification banner states: "Two-factor authentication is available! To enable an extra layer of security for your JetBrains account, turn on two-factor auth." The page title is "1 License". A blue button "Buy new license" is in the top right. The license details for "JetBrains Product Pack for Students" are shown, including the license ID "4AK9G...M" (partially obscured by a red box), the user name "Hsueh-Ting Chu", and the restriction "For educational use only". The license is valid through April 08, 2021. A list of included products is provided:

| Following products included: | | | | |
|------------------------------|---------------------------------|--|----------------------------|-----------------------------|
| • AppCode | • CLion | • DataGrip | • dotCover | • dotMemory |
| • dotTrace | • GoLand | • IntelliJ IDEA Ultimate | • PhpStorm | • PyCharm |
| • ReSharper | • ReSharper C++ | • Rider | • RubyMine | • WebStorm |



Thanks!

Q&A

