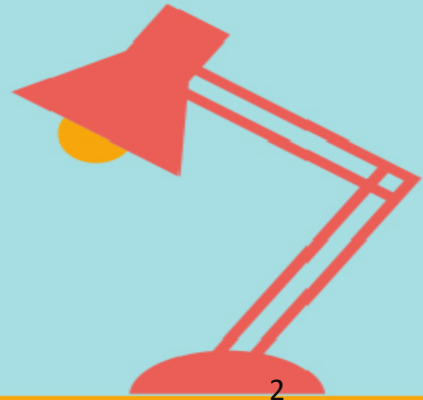
110-1基礎程式設計(1)

亞大資工系

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

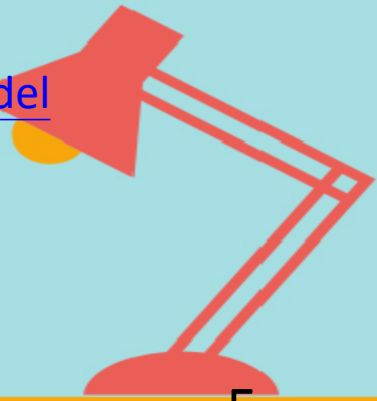
Kissipo = KISS principle + IPO model

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



KISS principle

KISS, an acronym for keep it simple, stupid,
is a design principle noted by the U.S. Navy in 1960.

The KISS principle states that most systems work best if they are kept simple rather than made complicated;

therefore, simplicity should be a key goal in design, and unnecessary complexity should be avoided.

Input-Process-Output Model

The input–process–output (IPO) model, or input-process-output pattern, is a widely used approach in systems analysis and software engineering for describing the structure of an information processing program or other process. Many introductory programming and systems analysis texts introduce this as the most basic structure for describing a process.

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


```
inFile = open('in.txt','r')
inFile.read(...)
inFile.close()
```

```
if score>60:
    count += 1
```

```
outFile = open('out.txt','w')
outFile.write(...)
outFile.close()
```

Kissipo Learning for Programming with Python(PWP)

Courseware: Notebook+ Github

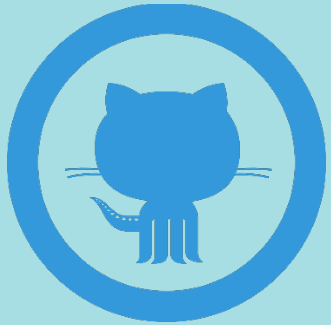
(1) 使用Notebook(Google Colab)教學。
(2) 使用Github建立教案

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()

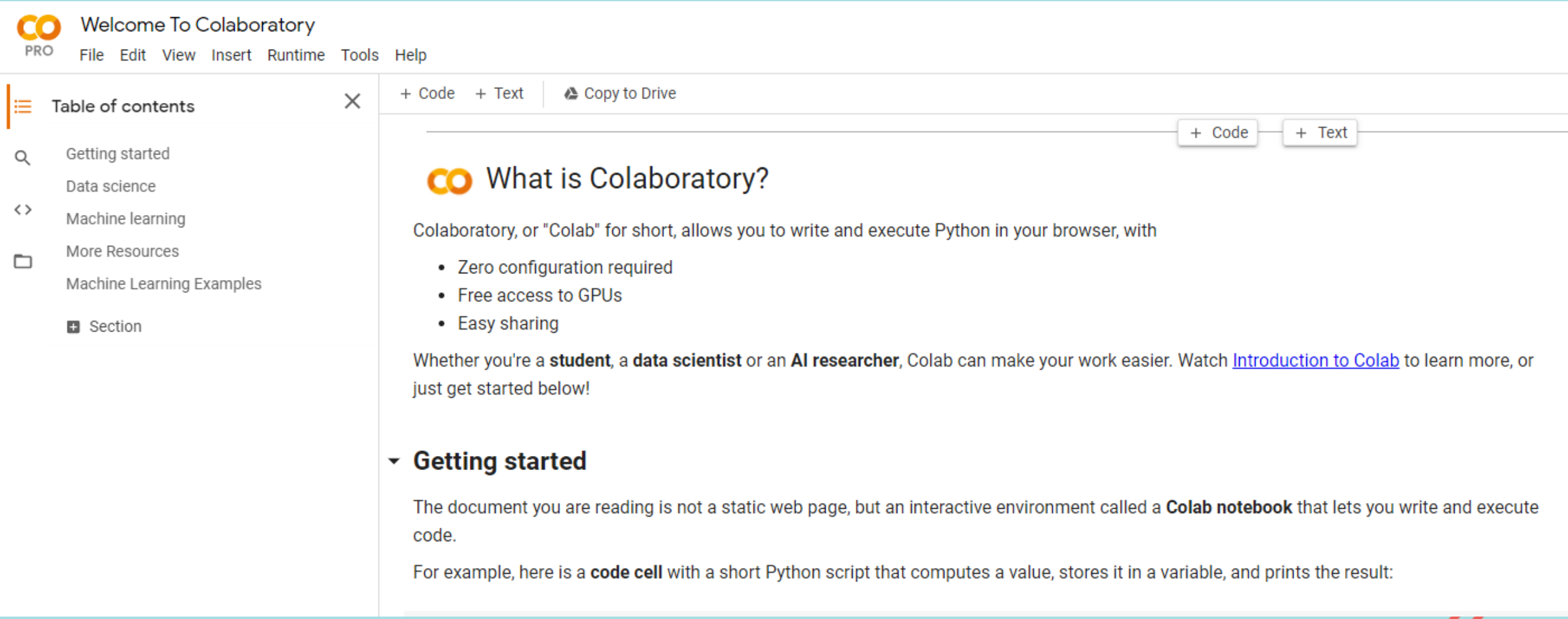
IPO-P: Process

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

IPO-O: output

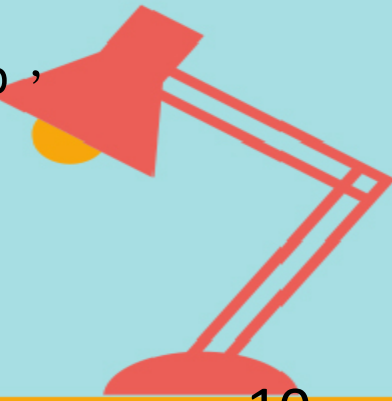
print()
open(), write()

使用Notebook(Google Colab)教學



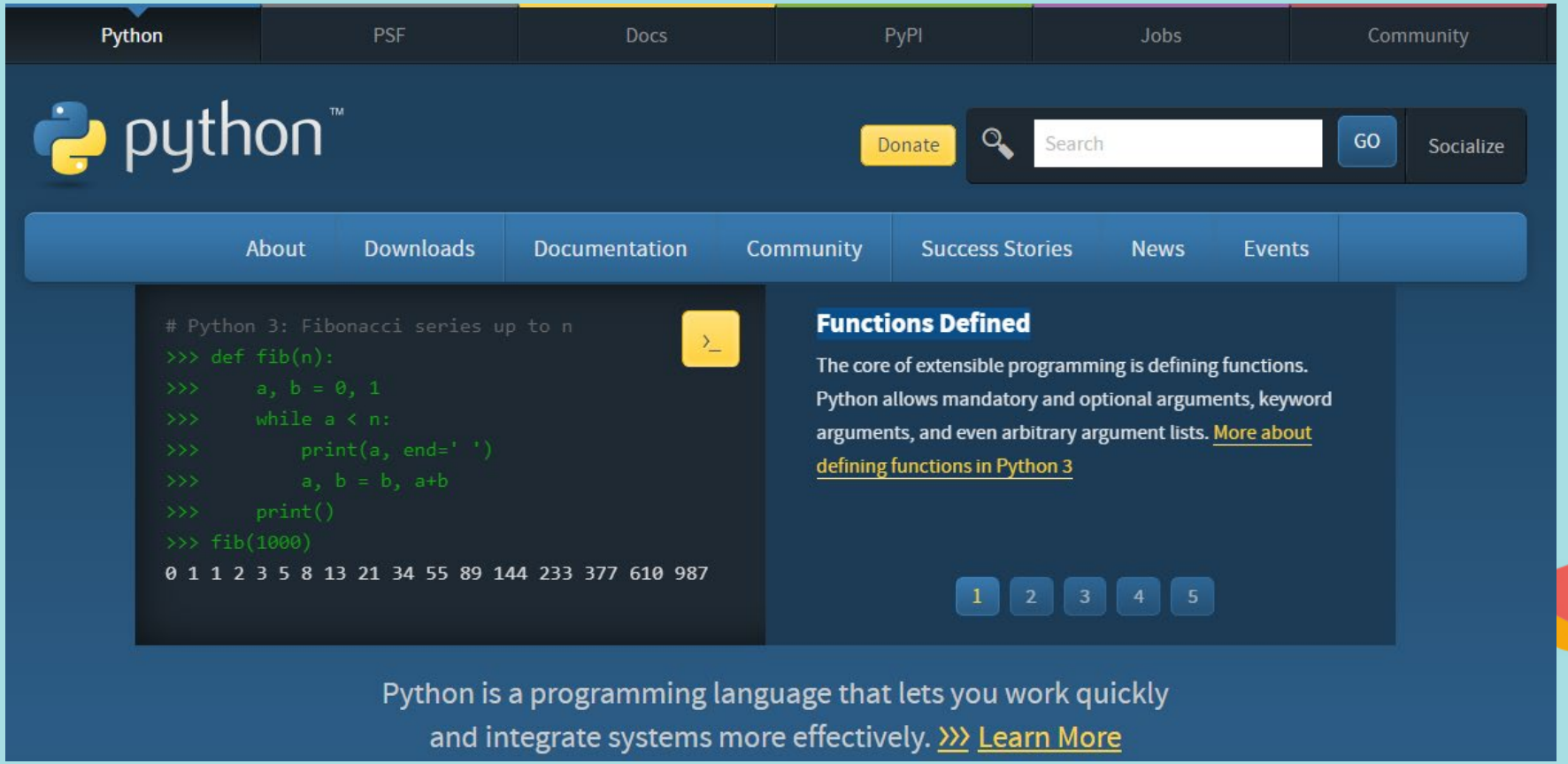
Jupyter Notebooks

- 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。



https://zh.wikipedia.org/wiki/Jupyter

Python官網的介紹



Python的版本

- 目前版本~~Python 2.7.x~~和Python 3.8.x
- **print 函数**
- **Unicode**
- **除法運算 //**

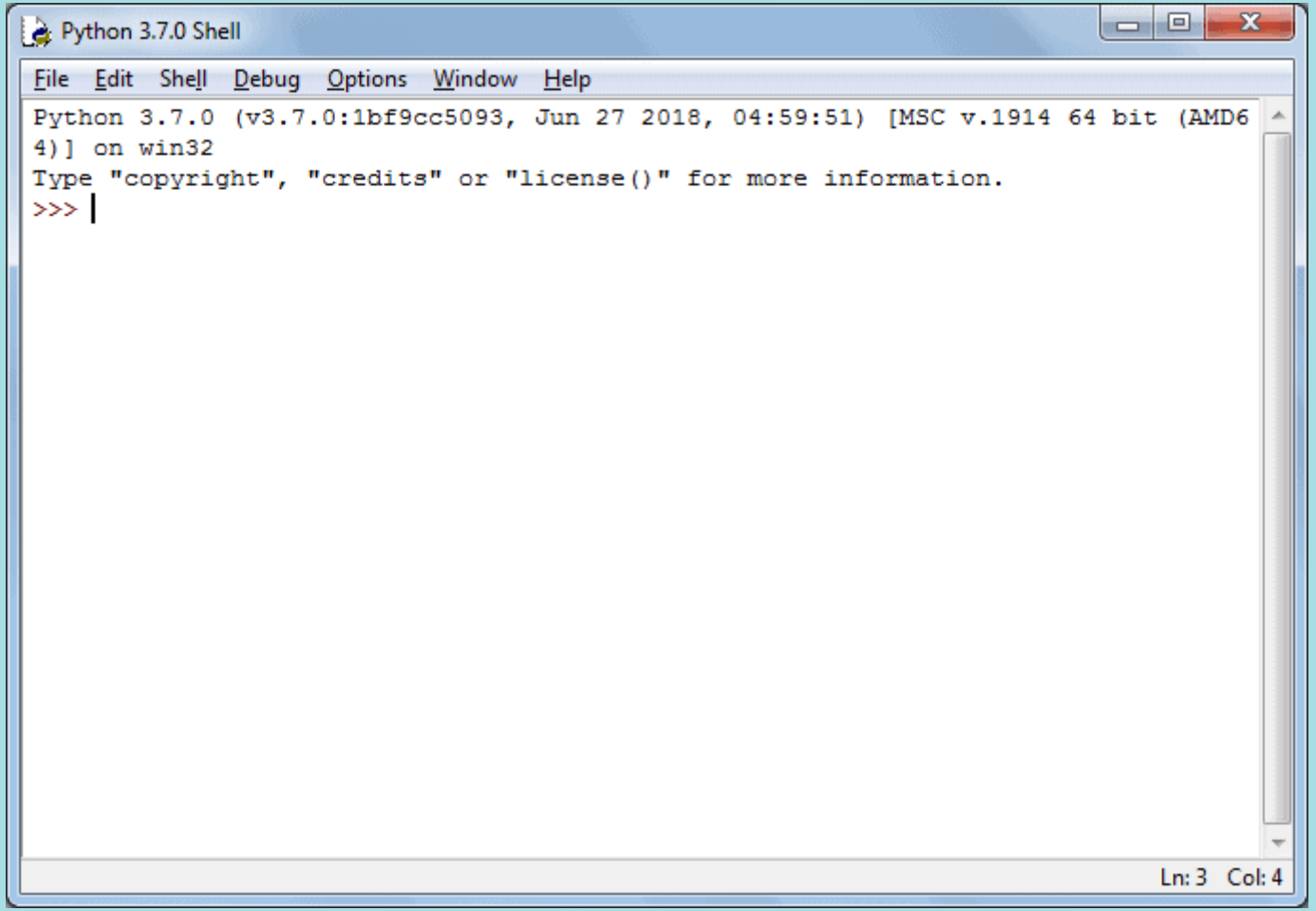
Sunsetting Python 2

(B) ADVANCED-進階的

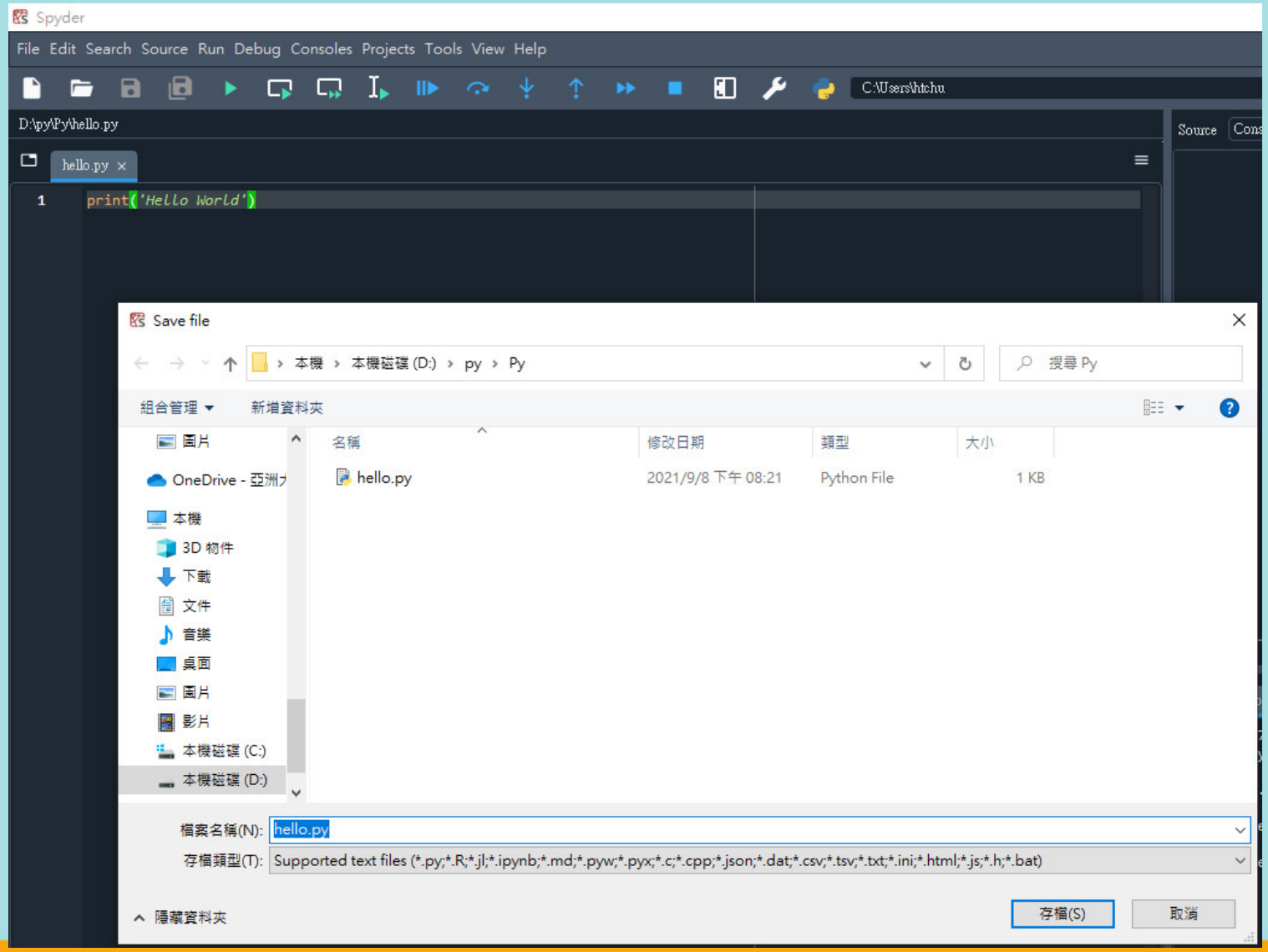
Python程式的編輯工具

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

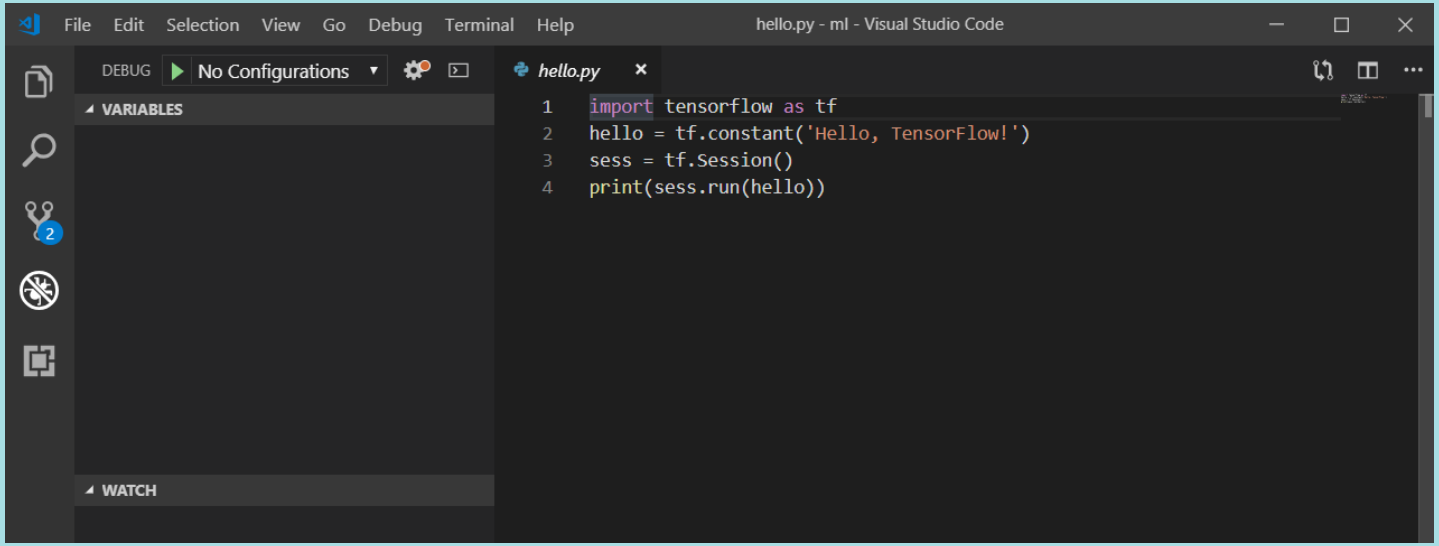
Python IDLE


Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
Ln: 3 Col: 4

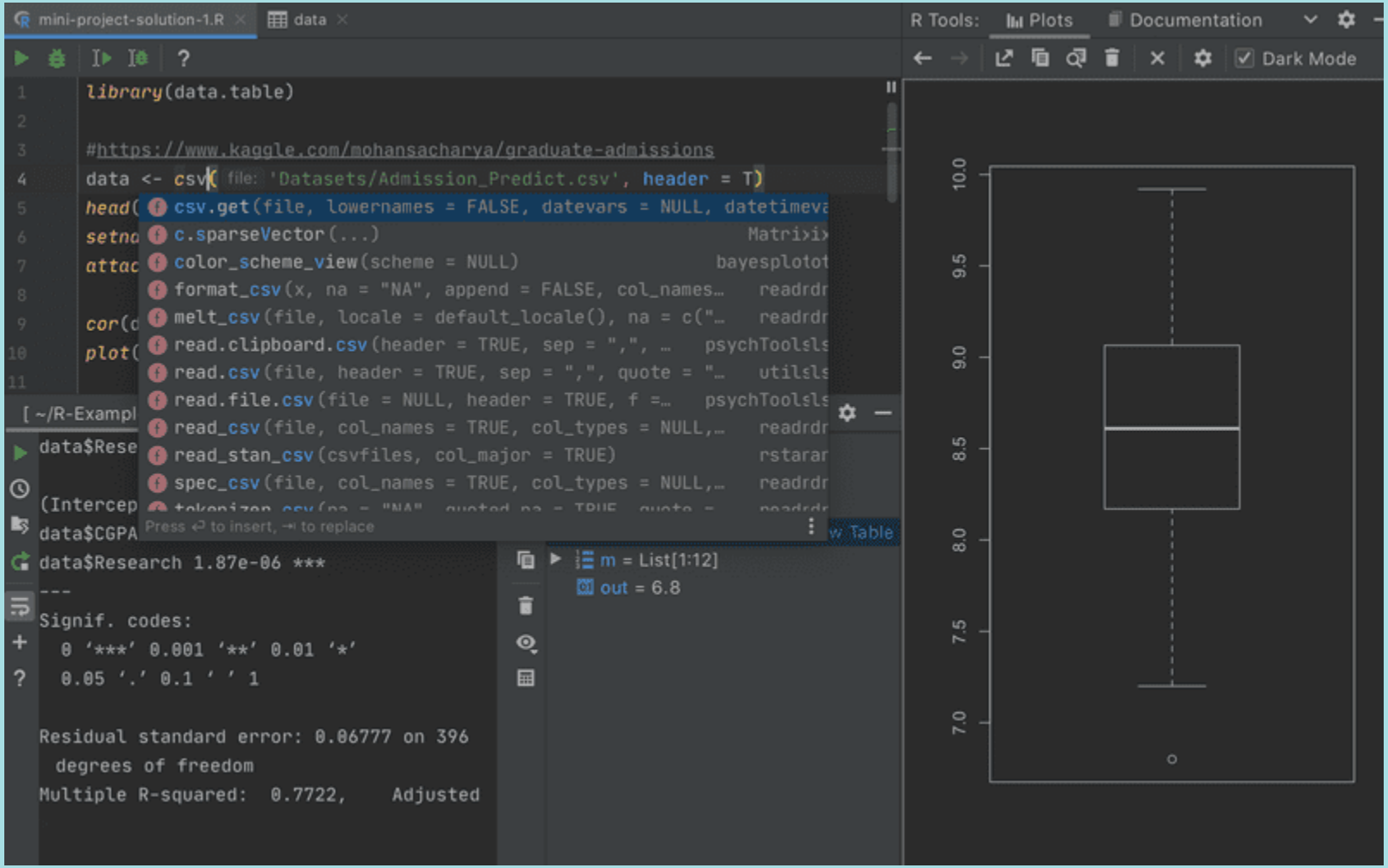
Spyder


Spyder
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\htchu
D:\py\Py\hello.py
hello.py
1 print('Hello World')
Source
Save file
本機 › 本機磁碟 (D:) › py › Py
搜尋 Py
組合管理
新增資料夾
名稱
修改日期
類型
大小
hello.py
2021/9/8 下午 08:21
Python File
1 KB
OneDrive - 亞洲
本機
3D 物件
下載
文件
音樂
桌面
圖片
影片
本機磁碟 (C:)
本機磁碟 (D:)
檔案名稱(N): hello.py
存檔類型(T): Supported text files (*.py;*.R;*.jl;*.ipynb;*.md;*.pyw;*.pyx;*.c;*.cpp;*.json;*.dat;*.csv;*.tsv;*.txt;*.ini;*.html;*.js;*.h;*.bat)
隱藏資料夾
存檔(S)
取消

Visual Studio Code



PyCharm


mini-project-solution-1.R
data
library(data.table)
#https://www.kaggle.com/mohansacharya/graduate-admissions
data <- csv(file: 'Datasets/Admission_Predict.csv', header = T)
head(
setna
attac
cor(
plot(
csv.get(file, lowernames = FALSE, datevars = NULL, datetimeva
c.sparseVector(...)
color_scheme_view(scheme = NULL)
format_csv(x, na = "NA", append = FALSE, col_names…
melt_csv(file, locale = default_locale(), na = c("…
read.clipboard.csv(header = TRUE, sep = ",", …
read.csv(file, header = TRUE, sep = ",", quote = "…
read.file.csv(file = NULL, header = TRUE, f =…
read_csv(file, col_names = TRUE, col_types = NULL,…
read_stan_csv(csvfiles, col_major = TRUE)
spec_csv(file, col_names = TRUE, col_types = NULL,…
Press ⏎ to insert, ⇥ to replace
[~/R-Exampl
data$Rese
(Intercep
data$CGPA
data$Research 1.87e-06 ***

Signif. codes:
0 '***' 0.001 '**' 0.01 '*'
0.05 '.' 0.1 ' ' 1
Residual standard error: 0.06777 on 396
degrees of freedom
Multiple R-squared: 0.7722, Adjusted
m = List[1:12]
out = 6.8
R Tools:
Plots
Documentation
Dark Mode
10.0
9.5
9.0
8.5
8.0
7.5
7.0

Thanks!

Q&A