

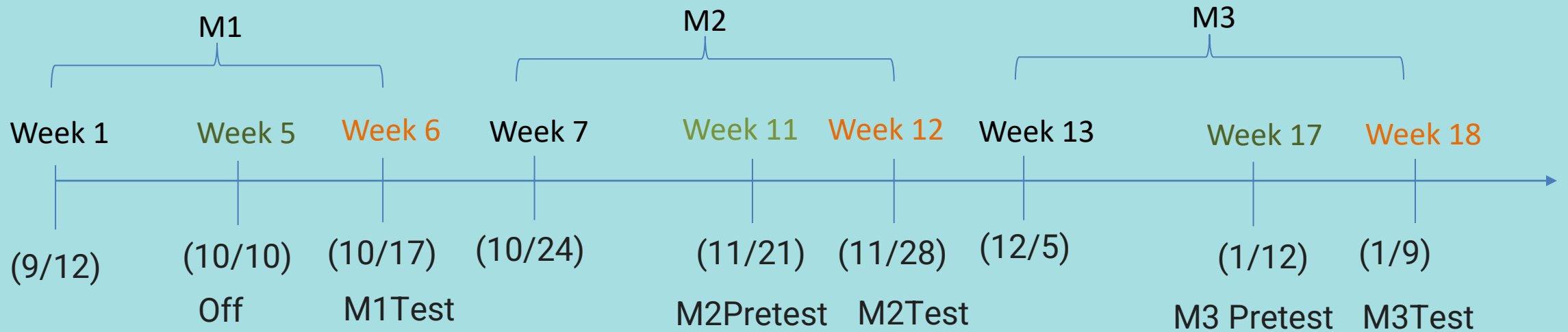


Fundamental Programming Course

Week 1

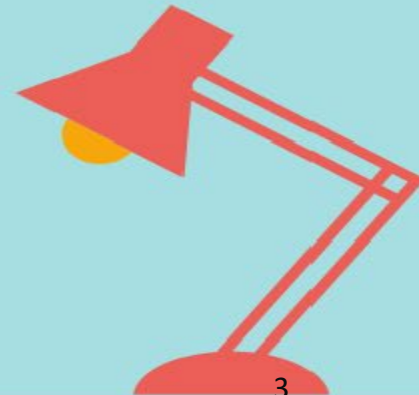
Asia University

Schedule



Syllabus

- **W1-Python Introduction and Programming Tools**
- W2-Variables and Operations
- W3-Loop and formatted output
- W4-Condition and Containers
- W5-String and built-in functions
- W6-M1 test
- W7-Dictionary Container
- W8-File I/O
- W9-Function
- W10-Advanced flow control
- W11-Advanced operations and generators
- W12-M2 test
- W13-Advanced functions
- W14-Class fundamentals (classes, objects, properties, constructors, methods)
- W15-Advanced Classes (Static methods, class Methods and class decorators)
- W16-Modules and Packages
- W17-Advanced programming(Argparse and Venv)
- W18-M3 test



Content

- Essential
 - Kissipo Learning)
 - KISS Principle: Colab + Github
 - Anaconda amd Jupyter notebook
 - Hello World
 - IPO model: input–process–output
 - Input: input()
 - Process: assignment
 - Process: Use of built-in basic functions (help, type)
 - Output: print()
- Advanced
 - AboutPython
 - Editor:IDLE, Spyder, Visual Studio Code, PyCharm
 - Run
 - Debug

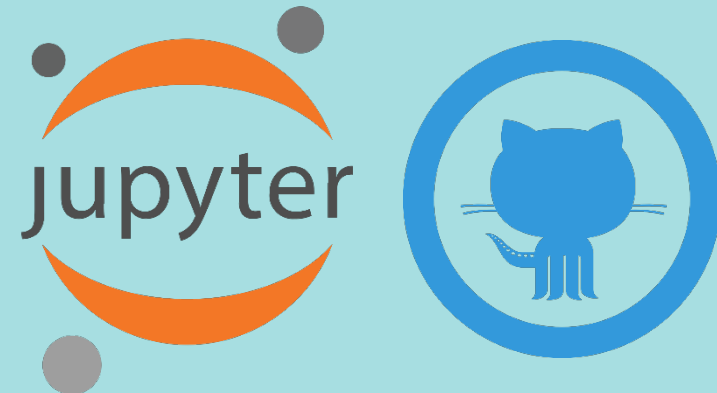


(A) ESSENTIAL



Kissipo

Kissipo = KISS principle + IPO model



Kissipo Learning

Kissipo = KISS principle + IPO model

KISS principle

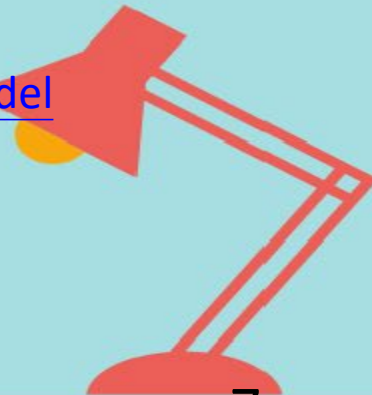
"keep it simple, stupid" or "keep it stupid simple", is a design principle noted by the U.S. Navy in 1960.

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

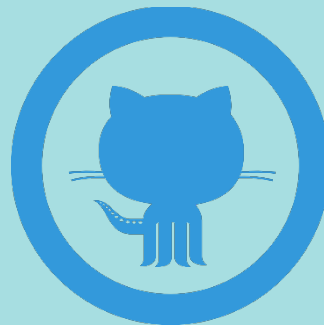
- (1) Notebook(Google Colab) ◦
- (2) Github

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

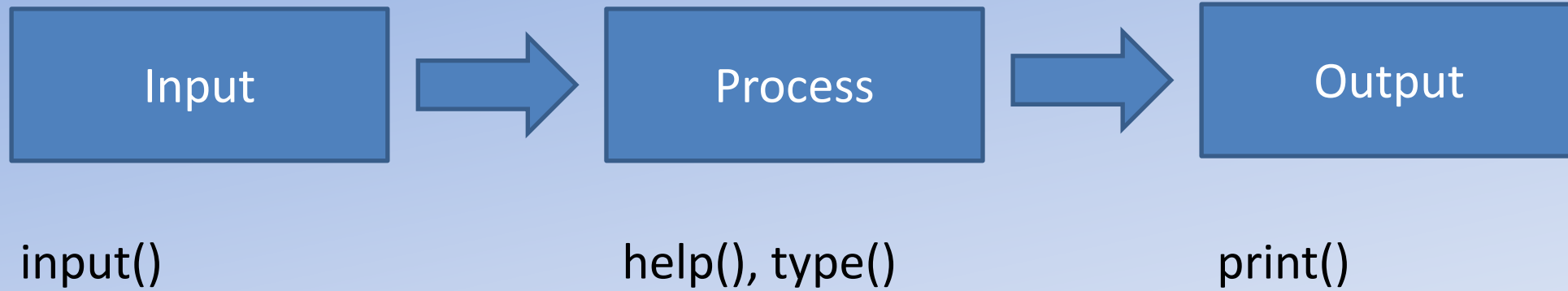
variable declaration,
data container
for-loop/while-loop
if, elif, else
range()

IPO-O: output

print()
open(), write()



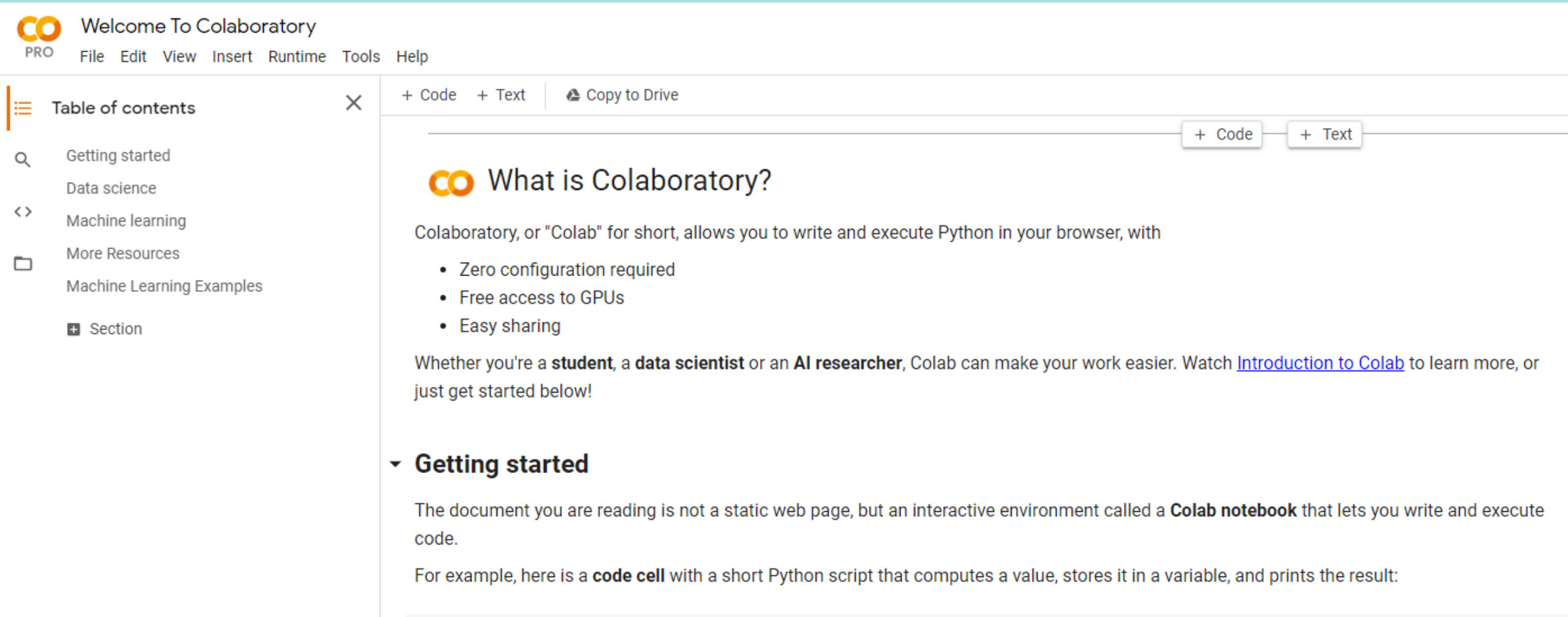
IPO Model



The basic idea of this chapter is that students should know:
Input with `input()`, output with `print()`
`help()` can view the description of the function or category
`type()` can check the type of the variable



Notebook(Google Colab)



The screenshot displays the Google Colaboratory (Colab) web interface. At the top, the 'Welcome To Colaboratory' header is visible, followed by a menu bar with options: File, Edit, View, Insert, Runtime, Tools, and Help. On the left side, there is a 'Table of contents' sidebar with a search icon and a list of items: Getting started, Data science, Machine learning, More Resources, Machine Learning Examples, and a 'Section' button. The main content area features a title 'What is Colaboratory?' with the Colab logo. Below the title, a paragraph explains that Colaboratory, or 'Colab' for short, allows users to write and execute Python in their browser. This is followed by a bulleted list of features: Zero configuration required, Free access to GPUs, and Easy sharing. Another paragraph states that whether you're a student, a data scientist, or an AI researcher, Colab can make your work easier, and provides a link to 'Introduction to Colab'. A section titled 'Getting started' is expanded, showing a paragraph that describes the Colab notebook as an interactive environment for writing and executing code. It then introduces a 'code cell' containing a short Python script that computes a value, stores it in a variable, and prints the result.

PRO Welcome To Colaboratory

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

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:

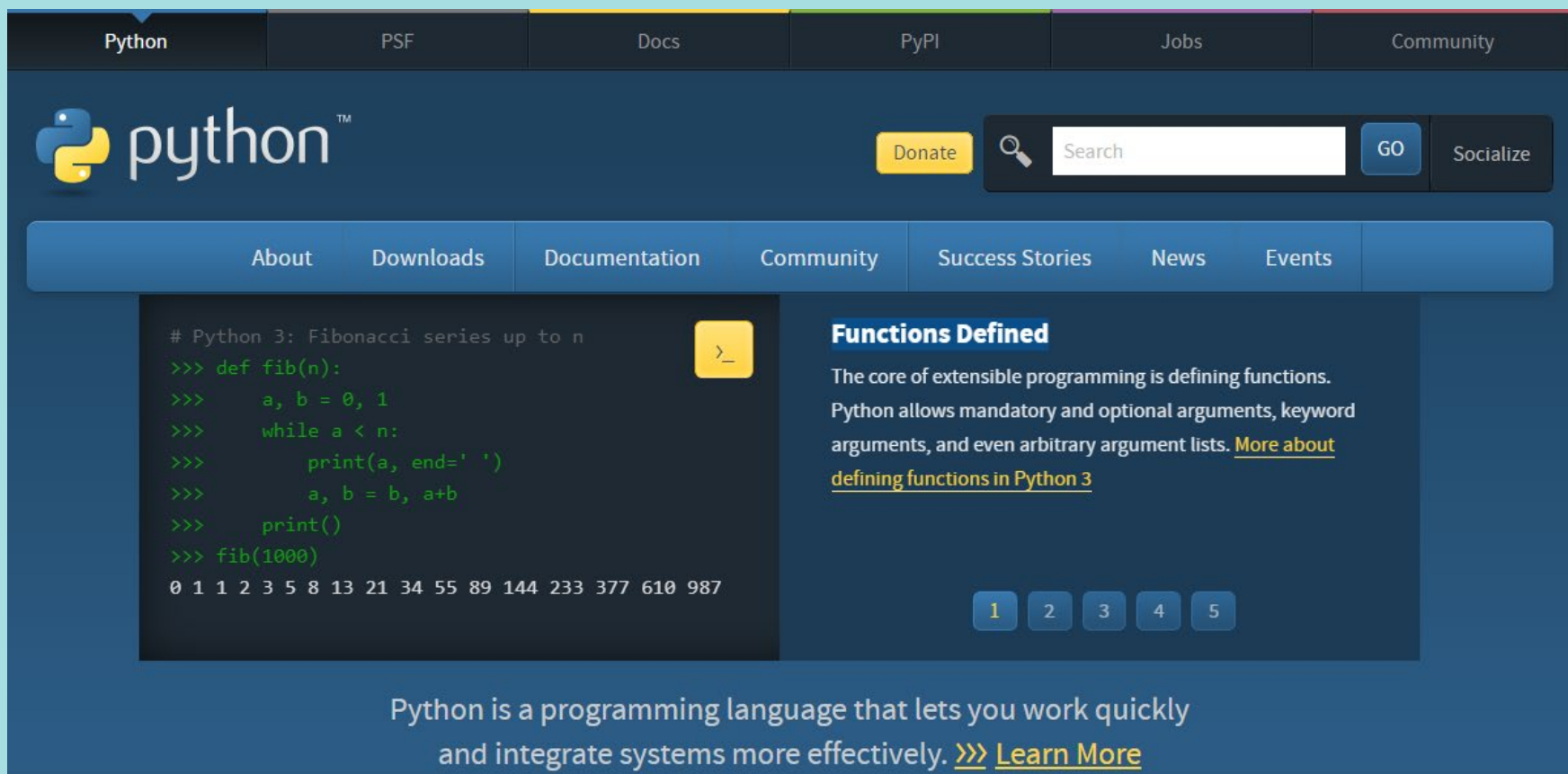
Jupyter Notebooks



- Jupyter is a non-profit organization that aims to "develop open source software, open standards and services for interactive computing in dozens of programming languages".
- Derived from IPython by Fernando Pérez in 2014, Jupyter supports execution environments in dozens of languages.
- The name of the Jupyter Project is a reference to the three core programming languages supported by Jupyter, which are Julia, Python, and R.
- Also a tribute to Galileo's notebooks recording the discovery of Jupiter's moons.
- The Jupyter Project develops Jupyter Notebook, JupyterHub, and JupyterLab, the next-generation version of Jupyter Notebook.



Python官網的介紹



Python Versions

- Version ~~Python 2.7.x~~ and Python 3.8.x
- `print`
- Unicode
- Integer division operation `//`



Sunsetting Python 2



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Python Software Foundation
@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

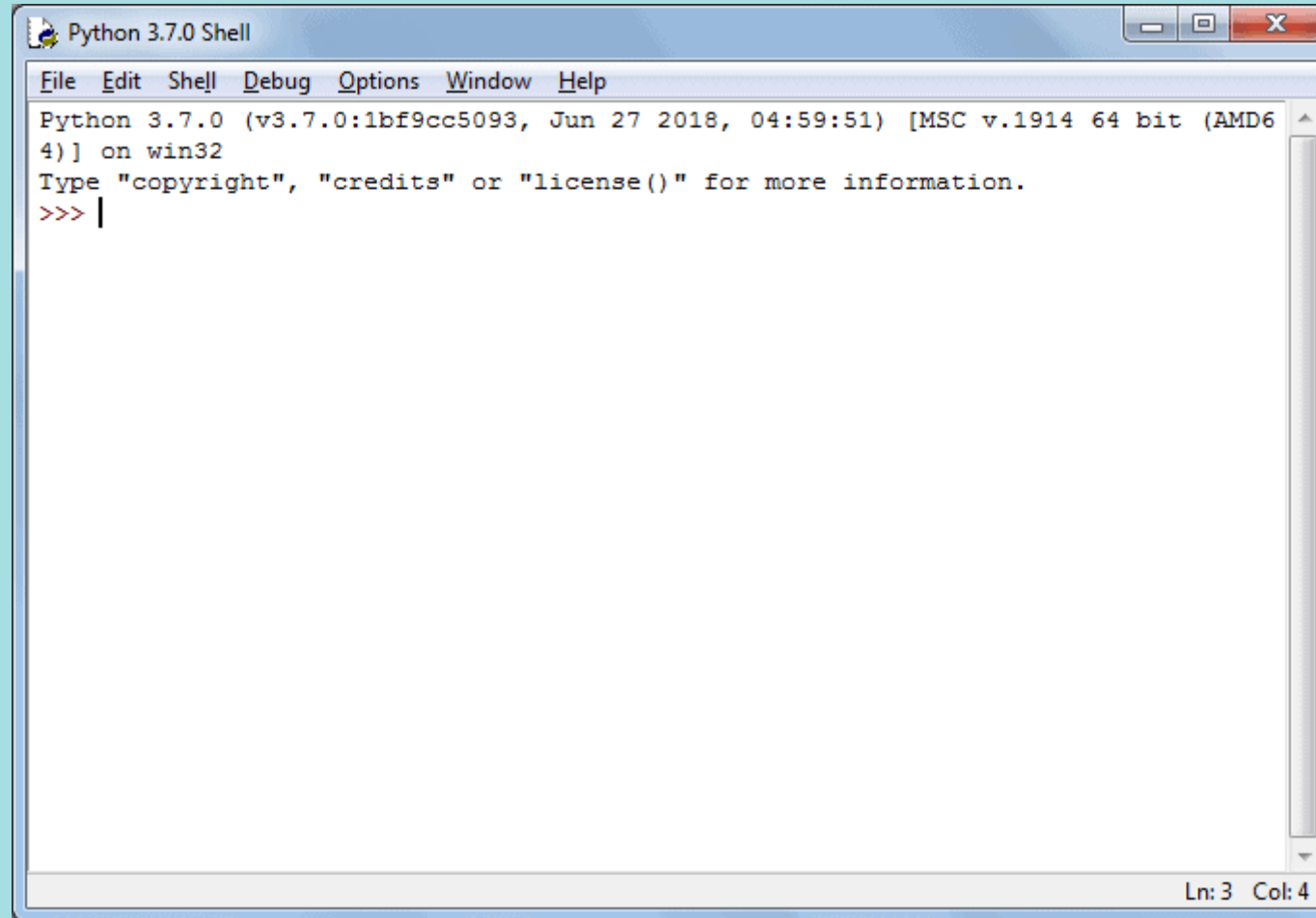


Python editors

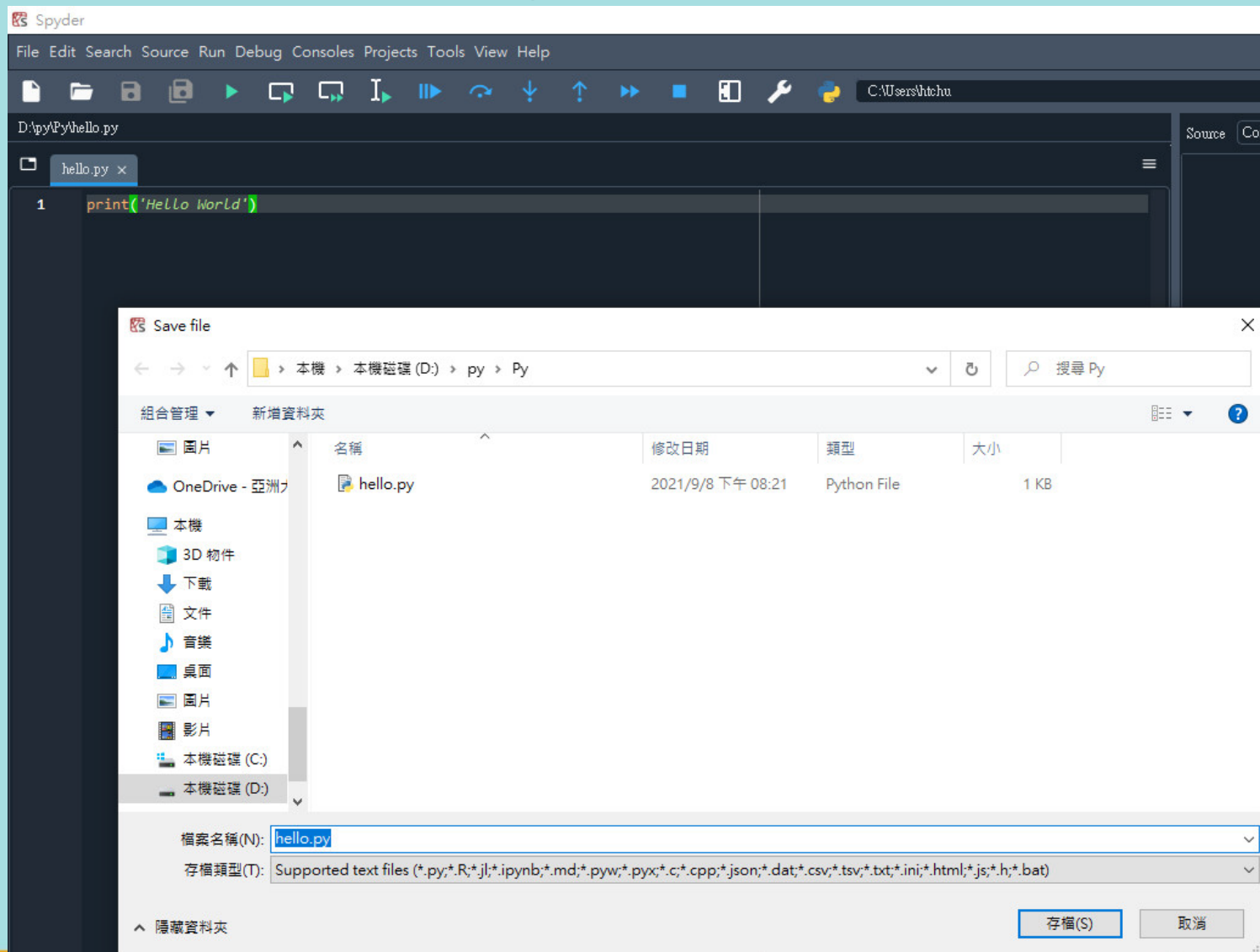
- Python IDLE
 - Spyder
 - Visual Studio Code
 - PyCharm
- Colab



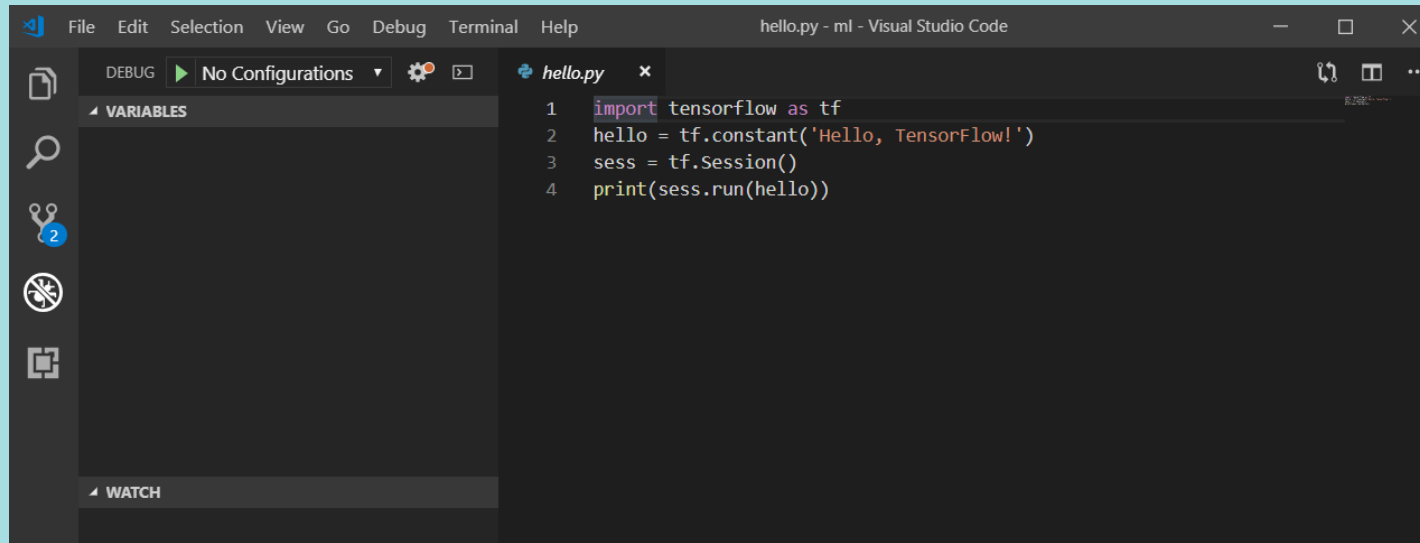
Python IDLE



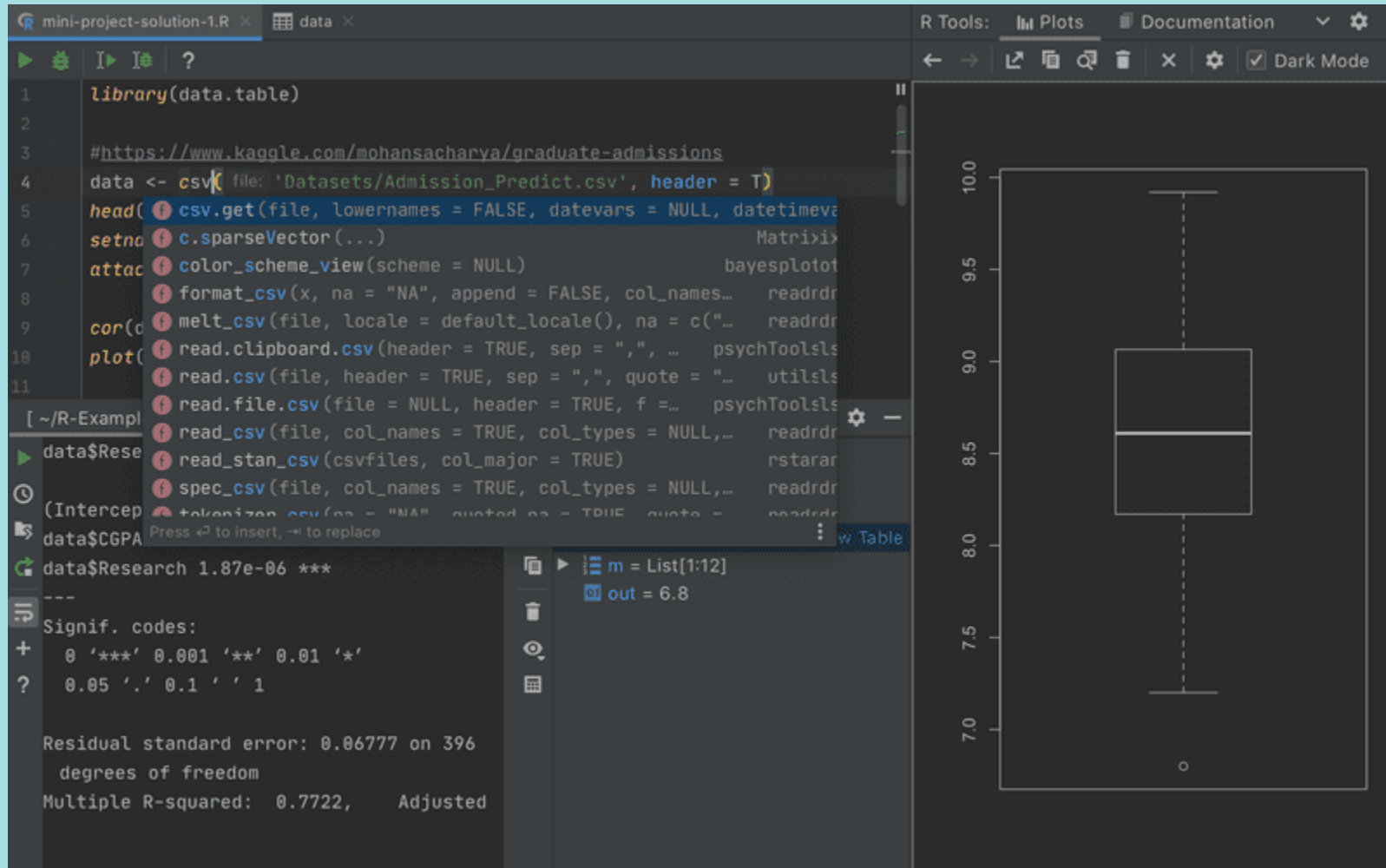
Spyder



Visual Studio Code



PyCharm



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

