程式設計概論
PROGRAMMING 101

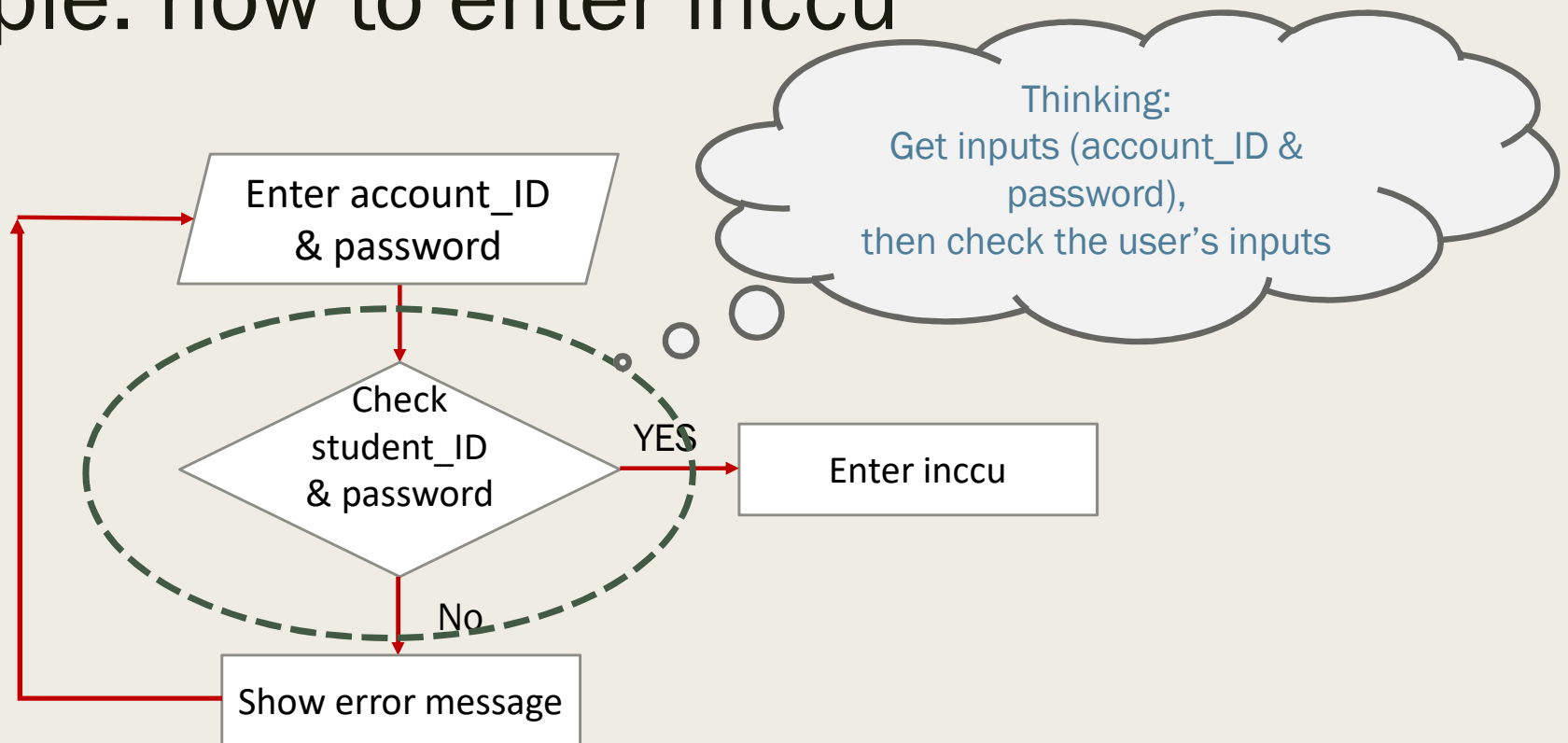授課老師：邱淑怡

Date: 2025/2/17

Outline

- Objective

- About this course

- Content
  - *About Python*

- Grading

- Teaching Assistant (TA)

- About something

- Grouping

- Q & A

Objective

- 邏輯的訓練
  - *運算思維*
  - *邏輯推理*
- 資訊化的時代需兼具的資訊能力
- 具備分析資料的能力
- 提供多元化的發展
- 具備跨領域的能力

Example: how to enter inccu

This course

- 課堂練習題(exercises)
- 回家作業(HW)
- 隨堂測驗(quizzes)
- 期中考: 不能用生成式AI的工具
- 分組討論 (group discussion)
- 期末報告 (group project)
- Textbook: Starting Out With Python, Second Edition

Origin of Python

- The founder of Python is Guido van Rossum (吉多·范羅蘇姆, born 31 January 1956)

- Rossum received a master's degree in mathematics and computer science from the University of Amsterdam in 1982

- During the Christmas season of 1989, Van Rossum, in order to pass the time, decided to develop a new scripting language interpreter.

- Van Rossum remains the primary developer of Python.

- His goal is "Computer Programming for everyone"

- Python 2.0 was released on Oct. 16, 2000.

- Python 3.0 was released on Dec. 3, 2008.

- Now, Python 3.13.2: the release date is Feb. 4, 2025

https://www.techapple.com/archives/10553

Python

- Easy to learn
- Powerful
- Interpreter language
- Cross-platform
- Free and open source
- Portability(可移植性)
- Embeddability(可嵌入性)
- …

- **Various modules**
  - Artificial Intelligence (AI)
  - Data science
  - Machine learning/deep learning
  - Web crawler
  - Big data
  - Object-oriented programming (OOP)
  - ….

Cross-platform（作業系統的平台）

- *Windows 11/10/ 7*
- *Apple MacOS*
- *Linux*
  - Red hat
  - Ubuntu
  - CentOS
  - ...
- *...*

Python執行環境架構示意圖

Python programs (xxx.py)

Python Interpreter

Python程式執行環境

Library   Library   Library

Operating System(作業系統)

Driver(驅動程式)

Hardware(電腦硬體)

What is a library?(函式庫or程式庫)

- Library (函式庫): provide some functions and classes for programmers
- Python Library (函式庫是模組和套件的統稱)
  - Built-in function (內建函式):安裝Python時一併安裝的 functions，**啟動python開發環境便可使用**
  - Built-in Modules (or standard library):安裝Python時一併 安裝的模組與套件，**但使用時必須先進行匯入的動作**
  - External library(外部函式庫): 需安裝的模組和套件，再 匯入才能使用，又稱第三方函式庫，網路上針對不同 用途所推出的外部函式庫

How to write and run our python programs?

1. Colaboratory (簡稱Colab): need google account

2. Install Python and applications (Jupyter notebook or Pycharm ….)
    1. Install python *(https://www.python.org/)*
    2. Install applications (IDE): vs code, Jupyter notebook

1. Use ipad/PC/NB
Google Colab：雲端的開發平台

Colaboratory 簡稱Colab，是由 Google 所提供，一個支援Python的雲端開發平台，主要目的是想要幫助人工智慧、機器學習和資訊教育的推廣。

- 開發者不需下載、不需安裝，只需要瀏覽器就可以運作，完全免費。
- 在Colab 中撰寫的程式碼預設是儲存在使用者的Google 雲端硬碟中，執行時由虛擬機器提供強大的運算能力，不會用到本機的資源，而且還提供免費的GPU。
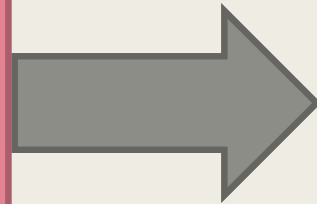- Colab 預設安裝了一些機器學習時常用的模組，像是TensorFlow、scikit-learn、pandas 等，讓你可以直接使用！

2. Use PC/NB run Python files
How to write Python programs?(2 steps)

Step 1:
Install Python from the Website (3.12.5)
https://www.python.org/

Step 2:
Install Python environment system

Teacher: The quickest way to learn a language is to speak with natives
Me trying to learn Python:

➢ Jupyter Notebook(install anaconda)
➢ Pycharm community
➢ Visual studio code (VS code)

Grading

- Course participation: 30%
  - *Exercises*
  - *Quizzes : 10%*

- Homework: 20%

- Midterm：30%

- Final project：20%

Contact

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分組說明

- 每組3-4人
- 加退選結束後進行分組
  - *自行分組、協助分組*

Course in progress

- Do exercises every week

- Results of Group discussion

- Upload Python programs or results

ABOUT TA

Review

- E_Textbook (on Moodle) Chapter1

Q & A