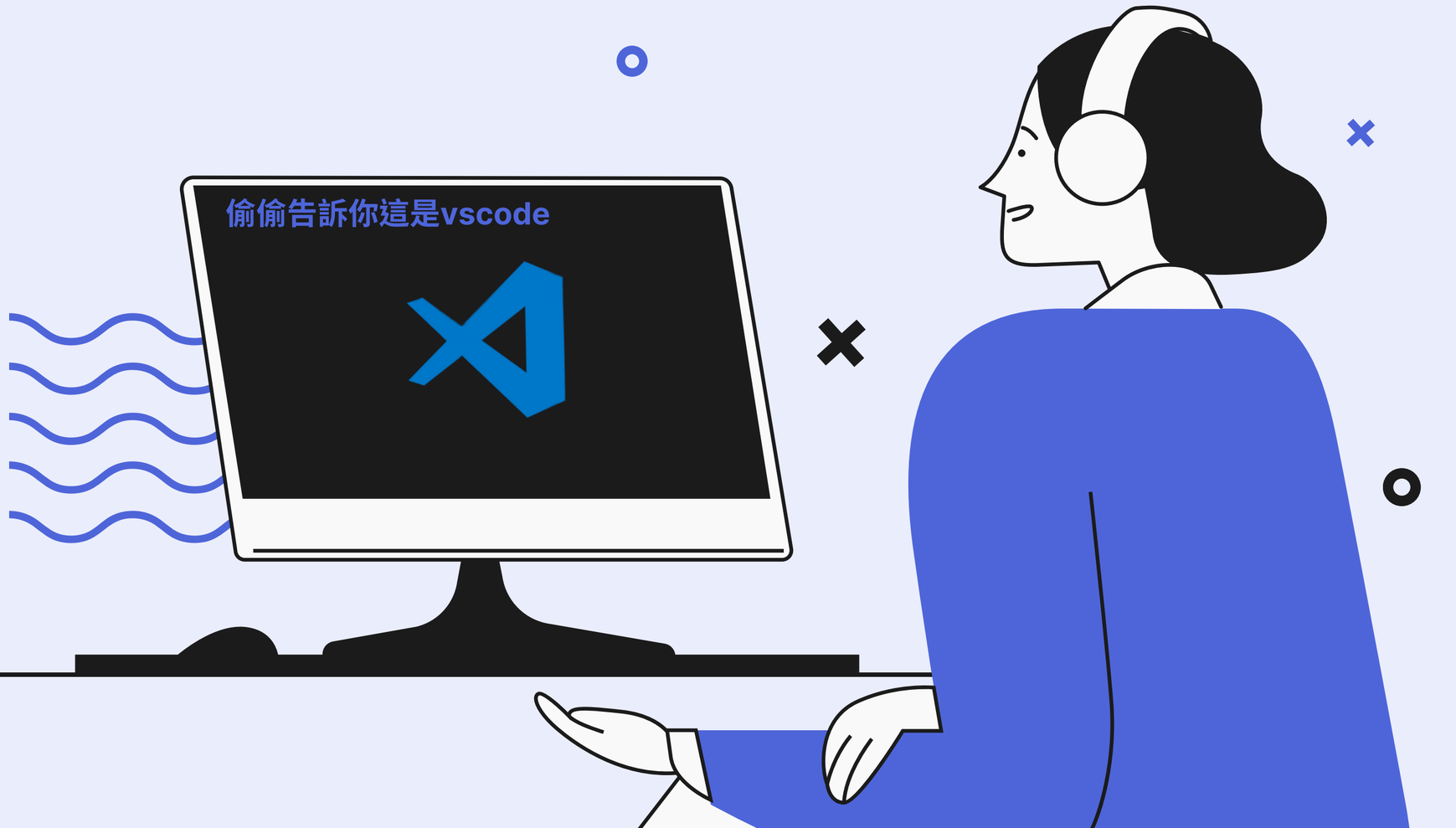
Python Flask 與 HTML



聽不懂想睡覺很正常XD

簡報內容

前情提要和科補

Python Flask

開始前的環境建置

部分code白話文解說

示範-Demo

心得感想與反思

Open Source-將程式碼開源

結尾

Q: 前後端資料互傳很重要?

A: 是，而且是非常重要

舉個例子:
平時逛購物網站、IG都要登入自己的帳號，那後端系統是如何驗證你輸入的帳號密碼是否正確?

What is Python?

一種廣泛使用的直譯式、進階程式語言。因內建多函式庫且模組化，近年崛起成最受歡迎的程式語言。常被用於運算、開發、API撰寫等等。

What is HTML?

HyperText Markup Language
嚴格來說不算是程式語言，屬於"超文本標記語言"，雖然不是程式語言，但卻和coding有極大的關聯。

知道了Python 那什麼是Flask?

Python基於和前端溝通的簡易函式庫。Flask也被稱為「微框架」，因使用簡單的核心，能用擴充方式增加其他功能。

何謂「微框架」?(將於稍後介紹)

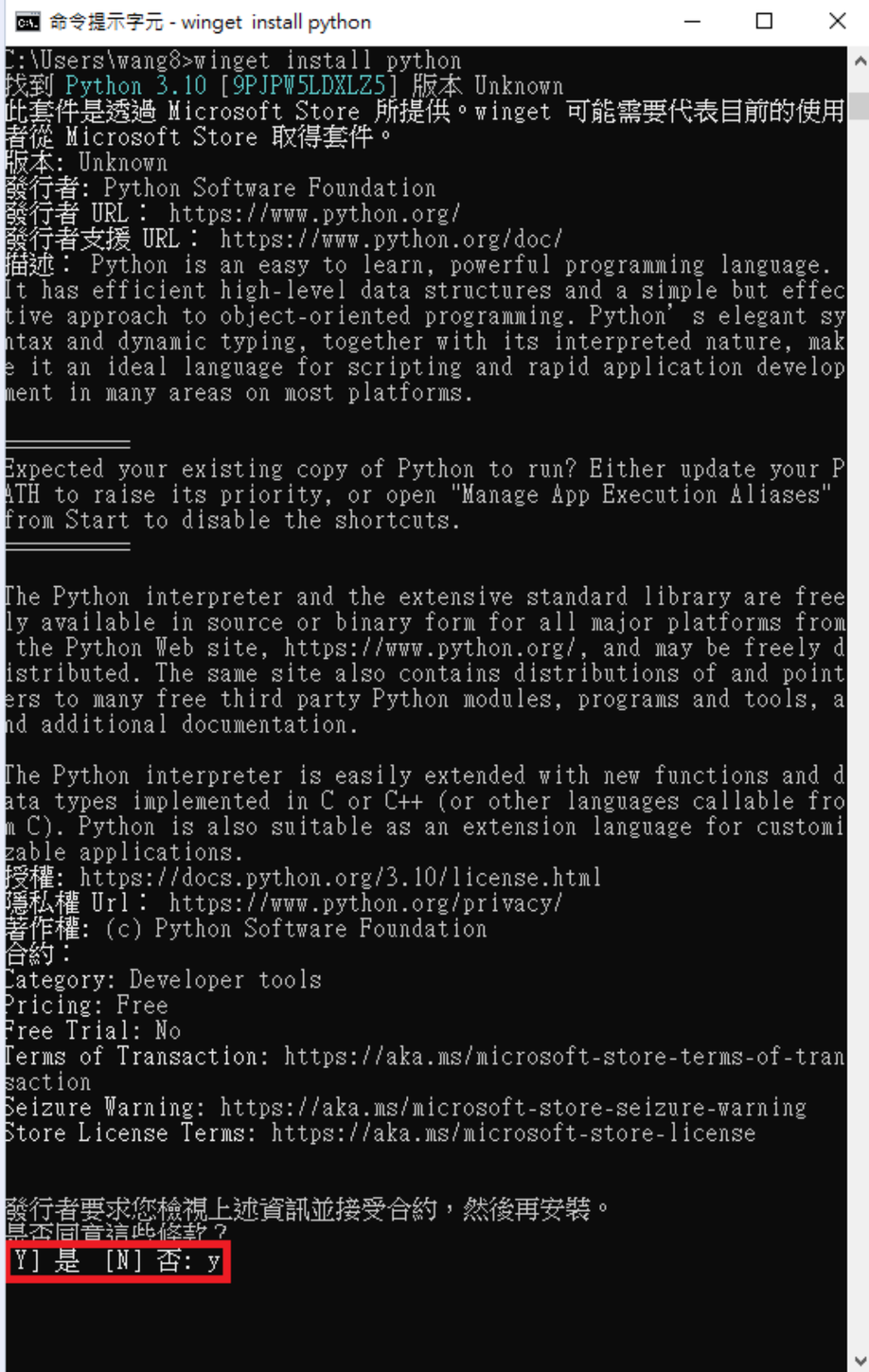
喇賽完为~進入主題

環境建置(1)

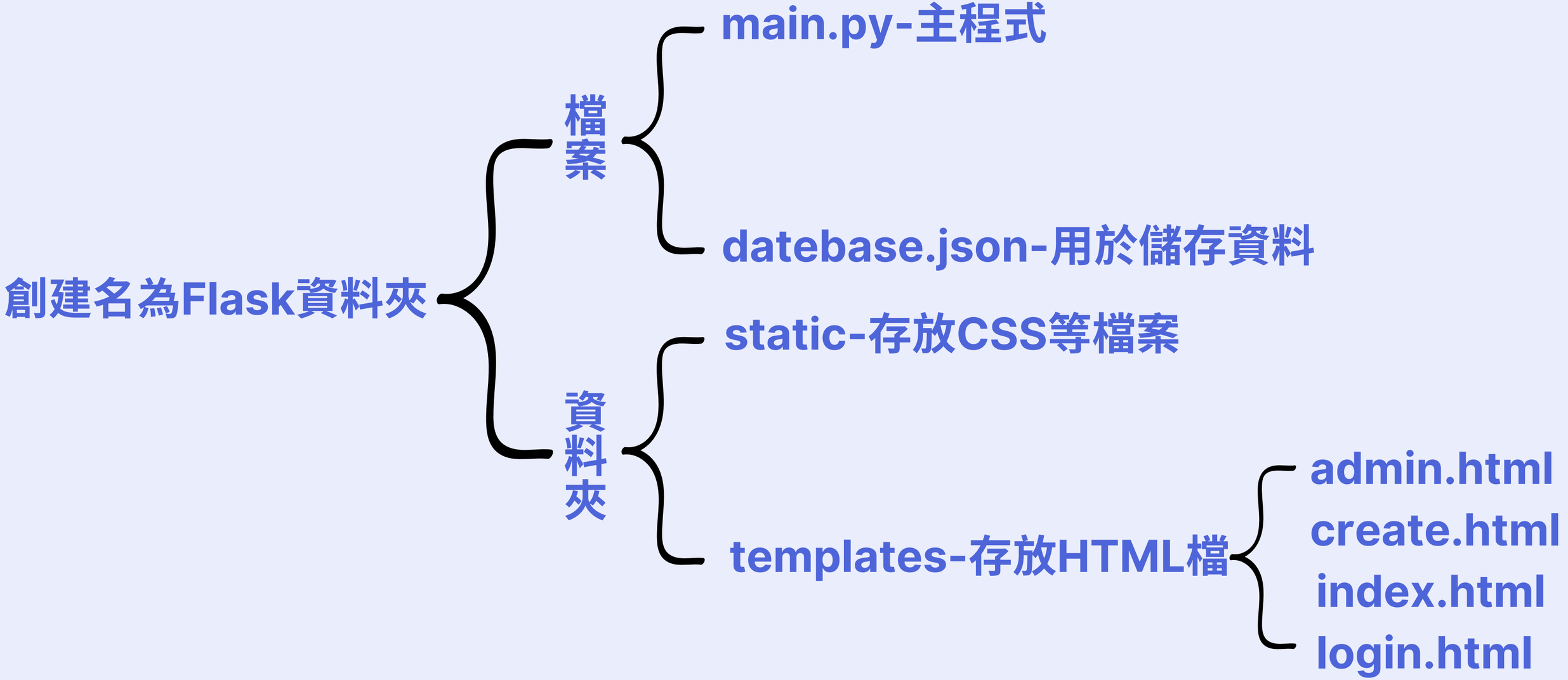
下載Python

WAY 1:瀏覽
https://www.python.org/downloads/

WAY 2:使用CMD(命令提示字元)打上:
winget install python
(如右圖，再打上"Y"即會進行自動下載)



環境建置(2)


創建名為Flask資料夾
檔案
main.py-主程式
datebase.json-用於儲存資料
資料夾
static-存放CSS等檔案
templates-存放HTML檔
admin.html
create.html
index.html
login.html

環境建置(3)

於CMD/PowerShell分別輸入以安裝套件

pip install Flask
pip install requests

```
PS C:\Users\wang8> pip install Flask
Collecting Flask
  Downloading Flask-2.2.2-py3-none-any.whl (101 kB)
     ---------------------------------------- 101.5/101.5 kB 1.5 MB/s eta 0:00:00
Collecting Werkzeug>=2.2.2
  Downloading Werkzeug-2.2.2-py3-none-any.whl (232 kB)
     ---------------------------------------- 232.7/232.7 kB 1.6 MB/s eta 0:00:00
Requirement already satisfied: Jinja2>=3.0 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from Flask) (3.1.2)
Requirement already satisfied: click>=8.0 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from Flask) (8.1.3)
Requirement already satisfied: itsdangerous>=2.0 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from Flask) (2.1.2)
Requirement already satisfied: importlib-metadata>=3.6.0 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from Flask) (4.12.0)
Requirement already satisfied: colorama in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from click>=8.0->Flask) (0.4.5)
Requirement already satisfied: zipp>=0.5 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from importlib-metadata>=3.6.0->Flask) (3.8.1)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\wang8\appdata\local\programs\python\python38\lib\site-packages (from Jinja2>=3.0->Flask) (2.1.1)
Installing collected packages: Werkzeug, Flask
  Attempting uninstall: Werkzeug
    Found existing installation: Werkzeug 2.1.2
    Uninstalling Werkzeug-2.1.2:
      Successfully uninstalled Werkzeug-2.1.2
Successfully installed Flask-2.2.2 Werkzeug-2.2.2
```

Package	Version
aiohttp	3.8.3
aiosignal	1.2.0
altgraph	0.17.3
asciichartpy	1.5.25
async-timeout	4.0.2
attrs	21.2.0
certifi	2022.6.15
chardet	4.0.0
charset-normalizer	2.1.0
click	8.1.3
colorama	0.4.5
Flask	2.1.3
Flask-SQLAlchemy	2.5.1
frozenlist	1.3.1
future	0.18.2
greenlet	1.1.2
idna	3.3
importlib-metadata	4.12.0
itsdangerous	2.1.2
Jinja2	3.1.2
line-bot-sdk	1.18.0
MarkupSafe	2.1.1
multidict	5.2.0
nextcord	2.2.0
pefile	2022.5.30
pip	22.3.1
psutil	5.9.1
psycopg2	2.9.3
pyinstaller	5.6.2
pyinstaller-hooks-contrib	2022.12
pywin32-ctypes	0.2.0
requests	2.28.1
setuptools	41.2.0
SQLAlchemy	1.4.39
typing_extensions	4.4.0
urllib3	1.26.10
Werkzeug	2.1.2
yarl	1.7.0
you-get	0.4.1620
zipp	3.8.1

安裝完後可使用**pip list**查看是否安裝成功以及安裝版本-->

環境建置(4)

使用import導入相關套件
(Flask/main.py)

```python
from flask import Flask
from flask import request
from flask import render_template

import datetime
import json
```

於json寫入標籤，值為保留
(Flask/datebase.json)

```json
{
    "username": "",
    "password": ""
}
```

正式開始勹前情提要

1.本程式碼僅針對前後端回傳進行研究和實作，並無針對網頁美化、預防資安事件(例XSS、injection...等)。

2.本程式碼為求簡單使用Json作為資料儲存的地方並非常見的SQL(資料庫)。

微框架?
有多微?

啟動環境只需要7行!!
(Flask/main.py)

```python
from flask import Flask
app = Flask(__name__)
@app.route("/")
def index():
    return ""
if __name__ == "__main__":
    app.run(host="127.0.0.1", port=5000, debug=True)
```

```
* Serving Flask app 'file' (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000 (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 312-902-132
```

<--成功啟動
提示說僅是測試人員環境

此時可用任意browser訪問localhost:5000

先從創建帳號開始(白話文翻譯版)!

1~4:導入相關套件

6:設定URL路徑為/create，資料傳輸方式使用GET和POST

8:如果傳輸方式為POST

9~14:宣告username和password的變數並用於接收前端回傳的資訊

16~18:開啟Json檔且將前端回傳後端資料以UTF-8寫入

19~27:檔案開啟時將輸入框回傳至前端頁面顯示

```
1   from flask import Flask
2   from flask import request
3   import json
4   app = Flask(__name__)
5
6   @app.route("/create", methods = ['GET', 'POST'])
7   def create():
8       if request.method == 'POST':
9           create_user = request.values["createuser"]
10          create_pw = request.values["createpw"]
11          create = {
12              "username" : create_user,
13              "password" : create_pw
14          }
15
16          with open('datebase.json', mode = 'w', encoding = 'utf-8') as datebase:
17              json.dump(create, datebase, indent=4)
18              return "帳號創建完畢!"
19      else:
20          return'''
21      <form method="post" action="/create">
22          <p>創建帳號</p>
23          <input type="text" name="createuser">
24          <p>創建密碼</p>
25          <input type="text" name="createpw">
26          <input type="submit" name="submit" value="send">
27      </form>
28          '''
```

備註:標記紅色為網概內容

登入帳號(白話文翻譯版)!

1~5:導入相關套件
7:設定URL路徑為/login，資料傳輸方式使用GET和POST
9:如果傳輸方式為POST
10~11:宣告name和pw變數並用於接收前端回傳的資訊
12~13:開啟Json檔且將前端回傳後端資料以UTF-8讀出
14~15:如果前端輸入的帳號和密碼"完全"等於Json檔裡的值的話進入admin.html，如不是則顯示"帳號或密碼錯誤!"
19~25:檔案開啟時將輸入框回傳至前端頁面顯示

```
1   from flask import Flask
2   from flask import request
3   from flask import render_template
4   import json
5   app = Flask(__name__)
6
7   @app.route("/login", methods = ['GET', 'POST'])
8   def login():
9       if request.method == 'POST':
10          name = request.values["name"]
11          pw = request.values["pw"]
12          with open('datebase.json', mode = 'r', encoding = 'utf-8') as datebase:
13              date = json.load(datebase)
14          if name == (date["username"]) and pw == (date["password"]):
15              return render_template("admin.html")
16          else:
17              return "帳號或密碼錯誤！"
18      return'''
19      <form method="post" action="/login">
20          <p>登入帳號</p>
21          <input type="text" name="name">
22          <p>登入密碼</p>
23          <input type="text" name="pw">
24          <input type="submit" name="submit" value="send">
25      </form>'''
```

備註:標記紅色為網概內容

示範

創建帳號

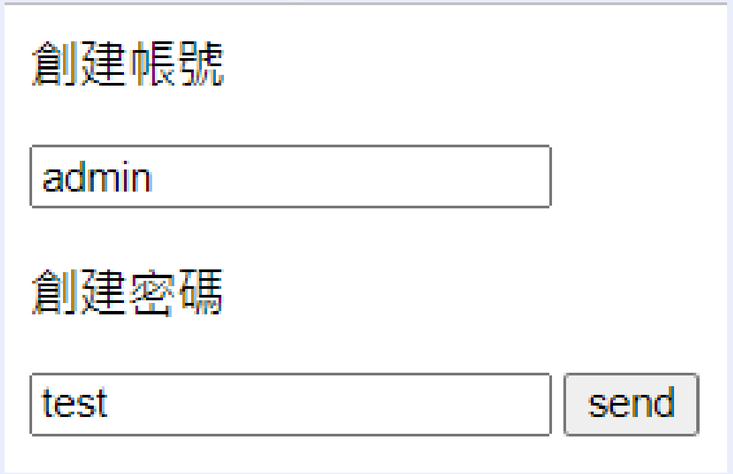
(Flask/datebase.json)

```
{
    "username": "",
    "password": ""
}
```

確認資料為空值

進入創建帳號頁面輸入資料

(Flask/templates/create.html)



輸入完畢按下送出

帳號創建完畢!

回去查看資料是否被寫入

(Flask/datebase.json)

```
{
    "username": "admin",
    "password": "test"
}
```

登入帳號(1)

(Flask/templates/login.html)

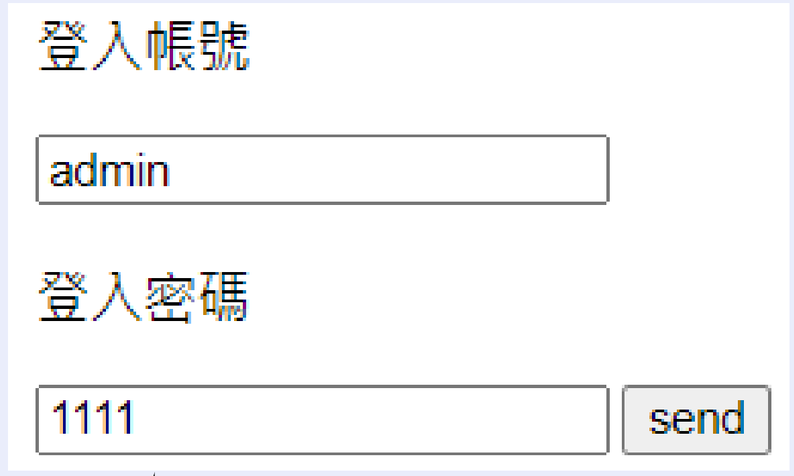
(Flask/datebase.json)

```
{
    "username": "admin",
    "password": "test"
}
```

確認資料是否已被創建

輸入錯誤帳號或密碼

(Flask/templates/login.html)



回傳對應結果(登入失敗)

(Flask/templates/login.html)

帳號或密碼錯誤！

登入帳號(2)

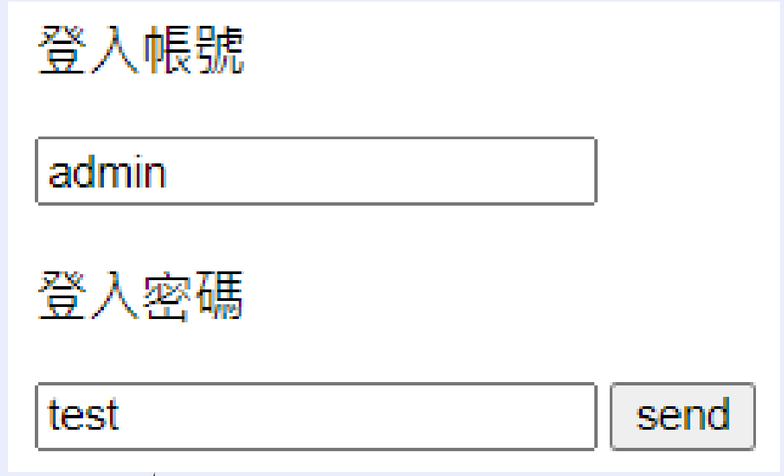
(Flask/datebase.json)

```
{
    "username": "admin",
    "password": "test"
}
```

確認資料是否已被創建

輸入正確帳號和密碼

(Flask/templates/login.html)



(Flask/templates/admin.html)

回傳對應結果(成功登入)

心得感想與反思

心得感想~~

雖然接觸Python已經長達一段時間了，但嚴格來說，這是我第一份正式完成並公開的Python程式專案，完成時的心情只有感動和歡喜，因為這代表我在程式設計的路上成功了第一步，也給未來的我一個方向和走下去的動力。

補充一下:
Q:為何接觸那麼久才完成一份專案?
A:因為之前都把時間花在學網概和HTML等其他東西

反思和待改進~~

1.程式題目決定過久
(造成壓縮到編程的時間)

2.缺乏經驗
(許多語法幾乎都是陌生的，需要花時間學習)

Ex.全域變數、區域變數的使用時機

相關連結、意見回饋、Q&A問答?

Email

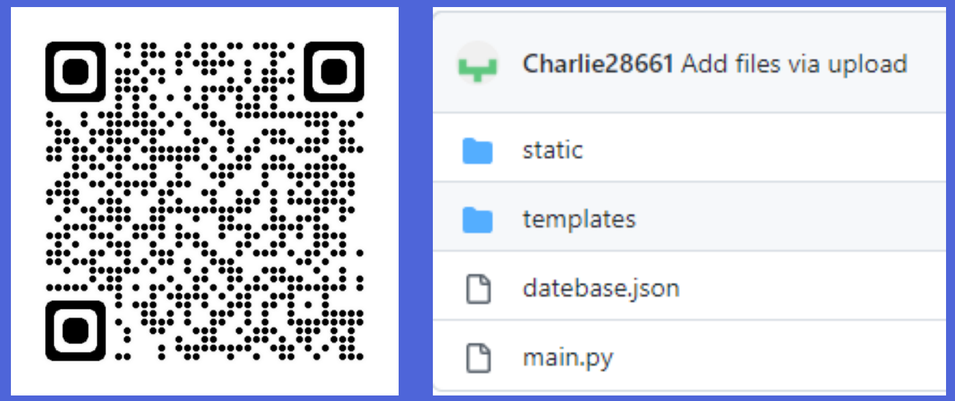
service@ncves.com

u111004@nhes.edu.tw

Website(自我介紹網站)

ncves.com

Github開源專案(Open Source):



NCVES資料下載網站

download.ncves.com

如果對這份PPT有興趣，歡迎至此下載-->