111-1基礎程式設計(17)

亞大資工系

課程大綱

- W1-Python簡介及程式工具
- W2-變數和運算
- W3-迴圈和格式化輸出
- W4-判斷式和容器
- W5-字串處理和輸出入
- W6-M1測驗
- W07-字典容器
- W08-檔案處理
- W09-函數
- W10-進階流程控制
- W11-進階運算和生成器
- W12-M2測驗
- 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

主週主題

- Week17-基礎套件
  - Topic 1(主題1)- urllib函數庫
  - Topic 2(主題2)- SQLite 數據庫
  - Topic 3(主題3)-非同步式(asynchronous)
  - Topic 4(主題4)-並行 Concurrency
  - Topic 5(主題5)-內建函數和函數庫的複習

Topic 1- urllib函數庫

urllib.request 是一個用來從URLs (Uniform Resource Locators)取得資料的Python模組。它提供一個了非常簡單的介面能接受多種不同的協議， urlopen 函數。也提供了較複雜的介面用於處理一些常見的狀況，例如:基本的authentication、cookies、proxies等等，這些都可以由handler或opener物件操作。

```
import urllib.request
with urllib.request.urlopen('http://www.asia.edu.tw/') as response:
    html = response.read()
```

Topic 2-SQLite 數據庫 DB-API 2.0 接口

- 創建一個 Connection 物件
- 創建一個 Cursor 游標物件

```
import sqlite3
con = sqlite3.connect('example.db')

cur = con.cursor()

# Create table
cur.execute('''CREATE TABLE stocks(date text, trans text, symbol text, qty real, price real)''')

# Insert a row of data
cur.execute("INSERT INTO stocks VALUES ('2006-01-05','BUY','RHAT',100,35.14)")

# Save (commit) the changes
con.commit()

# We can also close the connection if we are done with it.
# Just be sure any changes have been committed or they will be lost.
con.close()
```

SQL (Structured Query Language)

- DDL: data definition language

```
CREATE TABLE Books
(Id INT PRIMARY KEY IDENTITY(1,1),
Name VARCHAR (50) NOT NULL,
Price INT)
```

- DML:

```
INSERT into students values(1,'ashish','java');
INSERT into students values(2,'rahul','C++');
SELECT * from students;
```

Topic 3- asyncio (Since 3.4)
非同步式(asynchronous)

同步的網頁要求

```
import requests
import time
url = 'https://www.google.com.tw/'
start_time = time.time()
def send_req(url):
    res = requests.get(url)
for i in range(10):
    send_req(url)
```

非同步的網頁要求

```
url = 'https://www.asia.edu.tw/'
async def send_req(url):
    res = await loop.run_in_executor(None,requests.get,url)

tasks = []

loop = asyncio.get_event_loop()
for i in range(10):
    task = loop.create_task(send_req(url))
    tasks.append(task)

loop.run_until_complete(asyncio.wait(tasks))
```

Topic 4-並行 Concurrency

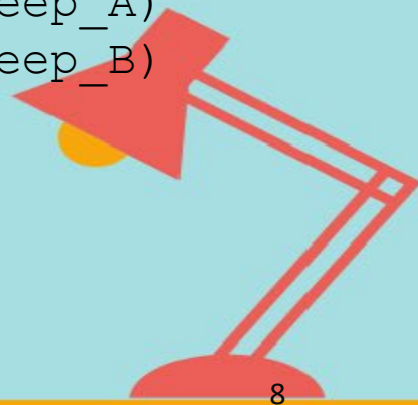
兩個函數在同一個process(thread)依序執行

```
import time
def sleep_A():
    for i in range(2):
        print(i, end="_")
        time.sleep(1)
    return
def sleep_B():
    for i in range(3):
        print(i, end="=")
        time.sleep(1)
    return

sleep_A()
sleep_B()
```

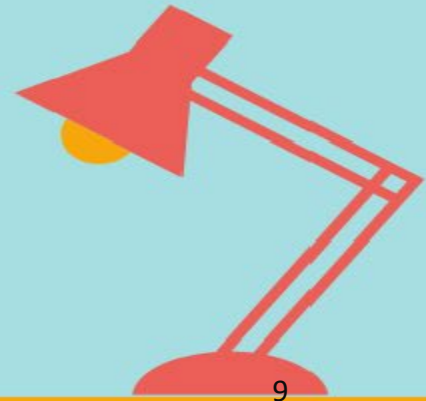
兩個函數在不同的thread同時執行

```
def sleep_A():
    for i in range(2):
        print(i, end="_")
        time.sleep(1)
    return
def sleep_B():
    for i in range(3):
        print(i, end="=")
        time.sleep(1)
    return
thread_1 = threading.Thread(target=sleep_A)
thread_2 = threading.Thread(target=sleep_B)
thread_1.start()  # 啟動這個執行緒
thread_2.start()  # 啟動這個執行緒
thread_1.join()
thread_2.join()
```



Topic 5-內建函數和函數庫的複習

- 文字排序
- 每個月的第一天星期幾和有幾天



Thanks!

Q&A