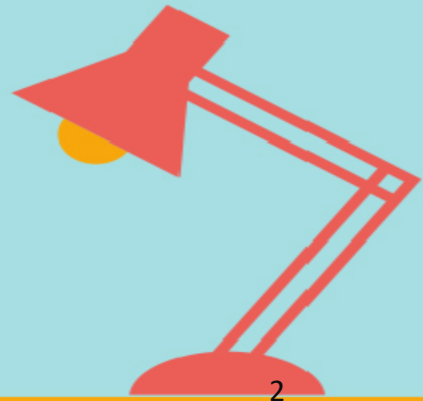
110-1基礎程式設計(17)

亞大資工系

課程大綱

- Week17-網路爬蟲相關基礎套件
  - Topic 1(主題1)- urllib函數庫
  - Topic 2(主題2)- SQLite 數據庫
  - Topic 3(主題3)-收集學校新聞的大數據
  - Topic 4(主題4)-非同步式(asynchronous)
  - Topic 5(主題5)-並行 Concurrency
  - Topic 6(主題6)-內建函數和函數庫的複習



IPO Model (W17)

從網路讀取資源
從資料庫查詢資料

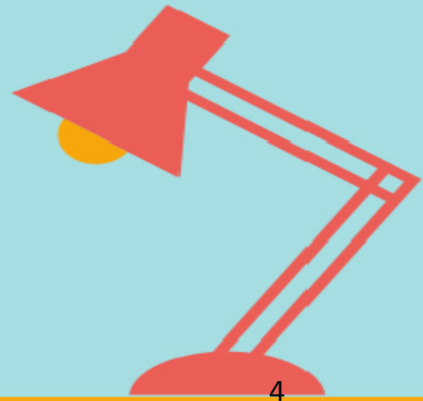
非同步式(asynchronous)
並行(concurrency)

寫入資料庫

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。

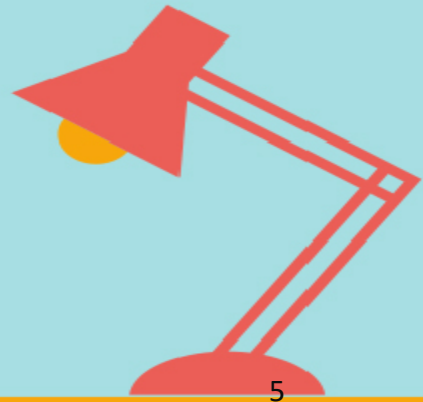
```
import urllib.request
with urllib.request.urlopen('http://www.asia.edu.tw/') as response:
    html = response.read()
```



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()
```



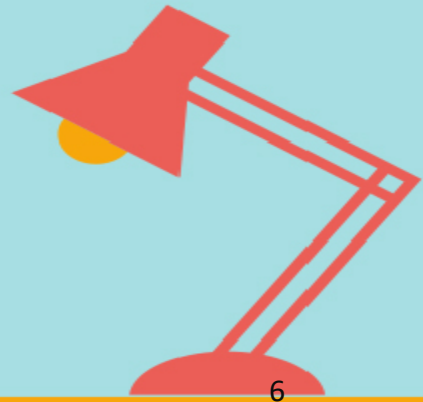
SQL (Structured Query Language)

- DDL: data definition language

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

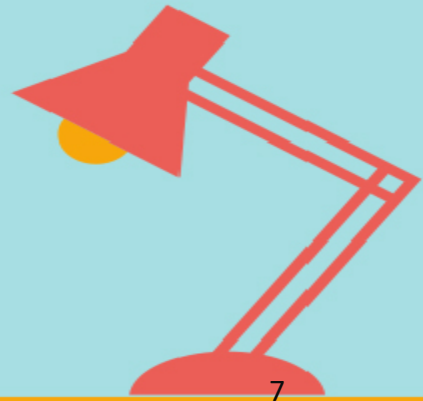
- DML:

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



Topic 3-讀取學校的新聞標題

- 讀取學校的新聞標題
- 建立新聞標題的資料庫
- 查詢學校新聞標題有人工智慧



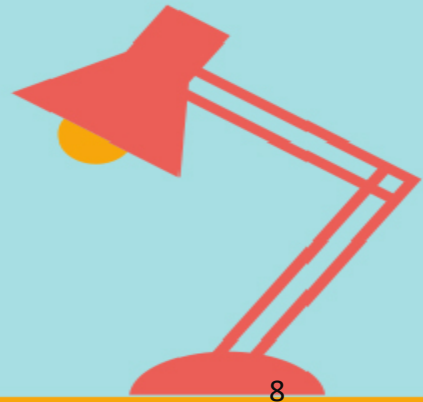
Topic 4- asyncio (Since 3.4)
非同步式(asynchronous)

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))
```



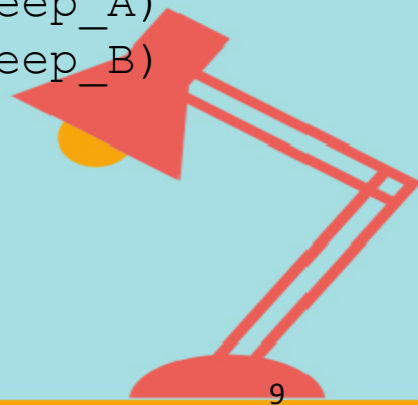
Topic 5-並行 Concurrency

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()
```

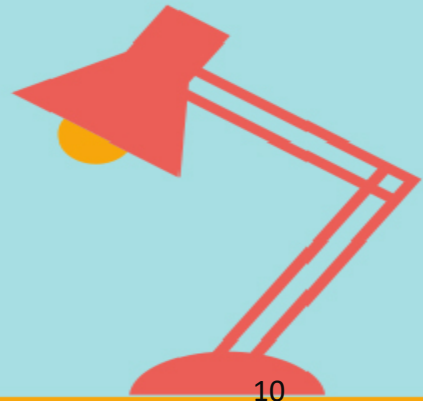
兩個函數在不同的**thread**同時執行

```
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 6-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