



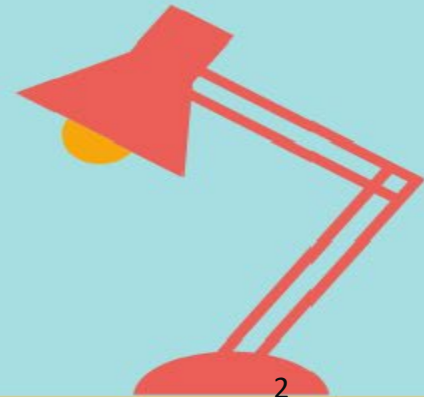
112-1基礎程式設計(12)

亞大資工系

課程大綱

- W1-Python簡介及程式工具
- W2
- W3-變數和運算
- W4-迴圈和格式化輸出
- W5-判斷式和容器
- W6-字串處理和輸出入
- W7-字典容器
- W8-檔案處理
- **W9-期中測驗**

- W10-函數
- W11-進階流程控制
- W12-進階運算和生成器
- 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-期末測驗

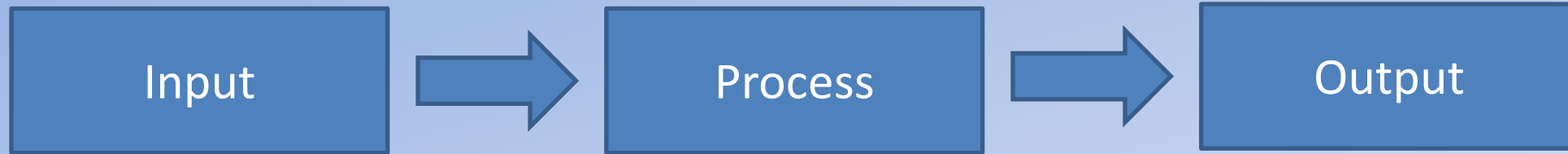


本週主題-進階運算和生成器

- Week12-進階運算
 - Topic 1(主題1)-基本運算複習
 - Topic 2(主題2)-偶數、奇數、幾位數
 - Topic 3(主題3)-因數、倍數、質數
 - Topic 4(主題4)-階乘計算和費氏數列計算
 - Topic 5(主題5)-Membership Operators
 - Topic 6(主題6)-Identity Operators
 - Topic 7(主題7)-流程控制的複習
 - Topic 8(主題8)-生成器的建立
 - Topic 9(主題9)-生成器函式 (yield)



IPO Model (W11)



運算子複習
變數的檢查
偶數、奇數、幾位數的判別
因數、倍數、質數的計算



Topic 1-基本運算複習

- 算數運算 (Arithmetic operators)
 - + - * / // % **
- 位元運算 (Bitwise operators)
 - & | ~ ^ >> <<
- 比較運算 (Comparison operators)
 - == != > >= < <=
- 邏輯運算 (Logical operators)
 - and or not



Topic 2-偶數、奇數、幾位數

- `if a %2==0:`
 - `print("even")`#偶數
 - `else:`
 - `print("odd")`#奇數
-
- `a =4567`
 - `d4 = (a%10000)//1000`
 - `d3 = (a%1000)//100`
 - `d2 = (a%100)//10`
 - `d1 = (a%10)`
 - `print(f"{d4} {d3} {d2} {d1}")`



Topic 3-因數、倍數、質數

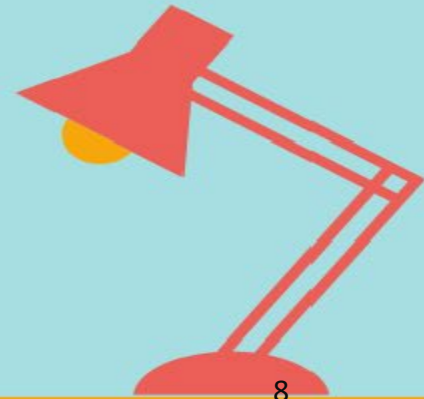
- `a = 124`
- `for n in range(1,a+1):`
- if `a%n == 0`:
- `print(n, end=" ")`
- `print()`

- `a = 124`
- `for n in range(a,1000+1):`
- if `n%a == 0`:
- `print(n, end=" ")`
- `print()`



Topic 4-階乘計算和費氏數列計算

- 階乘計算
 - $n! = 1 * 2 * \dots * n$
- 費氏數列
 - $F(n) = F(n-1) + F(n-2)$, $F(0) = 0$, $F(1) = 1$



Topic 5- Membership Operators

```
aa = [1, 3, 5, 7]  
tt = (9, 11, 13)
```

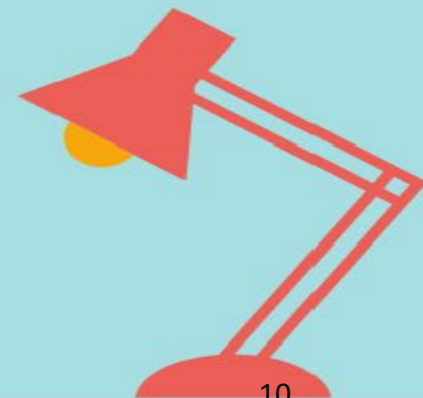
```
bb = 4  
if bb in aa:  
    print(f"{bb} found")  
else:  
    print(f"{bb} not found")
```

```
bb = 11  
if bb not in tt:  
    print(f"{bb} not found")  
else:  
    print(f"{bb} found")
```



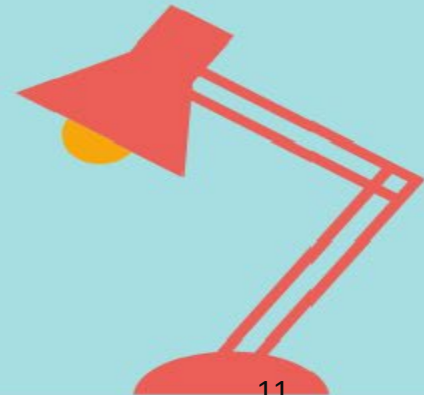
Topic 6- Identity Operators

- 數值的檢查
- 字串的檢查
- 物件的檢查



Topic 7-流程控制的複習

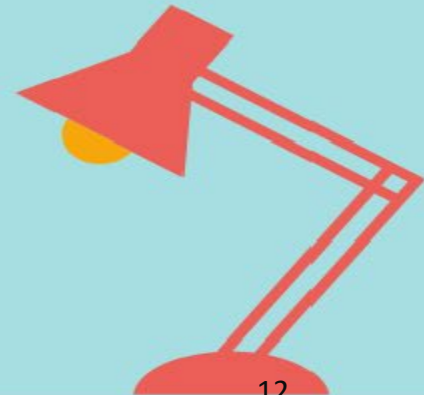
- if 條件式
- for迴圈
- 反轉字串



Topic 8-生成器的建立

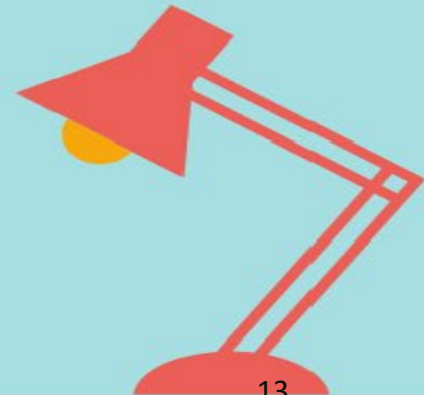
```
li = [x * x for x in range(10)]  
print(li)
```

```
g = (x * x for x in range(10))  
print(g)
```



Topic 9-生成器函数 (yield)

```
def odd():  
    print('step 1')  
    yield 1  
    print('step 2')  
    yield(3)  
    print('step 3')  
    yield(5)
```





Thanks!

Q&A

