

Python 101 - Week 2

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Outline

- Advanced control flow
 - Basic data type : string, float, integer
 - 記住在 Python 的世界，最基本的變數
 - 不是 文字 就是 數字
 - 先不論 True, False, boolean 變數
-

String

- 大家都說 Python 處理字串非常強大
 - 記得字串記得用 單引號 或者 雙引號 括弧起來
 - name = poc
 - name = "poc"
 - name = 'poc'
-

More about string

- upper/lower

```
>>> company="vIvoTEk"  
>>> company.upper()  
'VIVOTEK'  
>>> company.lower()  
'vivotek'
```

More about string

- contains

```
>>> "vivo" in company.lower()
True
>>> "iivivo" in company.lower()
False
```

More about string

- concatenation

```
>>> company + 2014
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: cannot concatenate 'str' and 'int' objects

>>> company + str(2014)
'vIvoTEk2014'
```

More about string

- 讓使用者輸入
 - 年齡：50
 - 姓名：更生人
 - 地區：台北市

輸入完之後，輸出

- 安安你好！我是 "更生人" 住在 "台北市" 今年 "50" 歲， 你呢？
- 動手做做看 3 分鐘

More about string

- Variables escape from string

```
>>> name='更生人'
>>> age=50
>>> location = "台北"
>>> print "安安你好！我是 {0} 住在 {2} 今年 {1} 歲， 你呢?"
      .format(name, location, age)
```

Number

- 下面的適合於 iPython 實驗

```
salary = 100
print (salary*5)
ss = str(salary)
weight = 59.1
5/2
5.0/2
5/float(2)
money = '50'
int(money)
float(money)
```

Conditional if/else

```
if a > 5:
    print (a,">",5)
elif a <= 7:
    print (a,"<=",7)
else:
    print ("Neither test was true")
```

作業觀摩

```
weight = float(raw_input("Input your weight:"))
height = float(raw_input("Input your height(cm):"))
count = float(weight/((height*height)/10000))

bmi=round(count,1)
```

作業觀摩

```
while bmi >=25.0:
    print("Your BMI is "+ str(bmi) + ", you are too fat!")
    break

while 18.5 <= bmi <= 24.9:
    print("Your BMI is "+ str(bmi) + ", you are great!")
    break
```

Conditional if/else add while in

```
a = 0
while a < 10:
    a = a + 1
    if a > 5:
        print (a, ">", 5)
    elif a <= 7:
        print (a, "<=", 7)
    else:
        print ("Neither test was true")
```

- 實例：偵測 Camera 是否 alive？如果 retry 超過一定次數沒有回應 就判定 oox

Quiz

- 來一個階乘 10!
- 什麼是階乘 ??
- E.g.
 - $3! = 3 \times 2 \times 1$
 - $10! = 10 \times 9 \times \dots \times 1$

Where is FOR loop ?

- 傳說中的 For loop 該怎麼用？

```
int i=0;
for( i = 0 ; i<10 ; i++)
{
    printf("%d", i);
}
```

FOR loop Python version

```
for i in range(99):
    print i

for i in range(1,10,3):
    print i
```

Assignments - BMR

- 作業檔名 `02_bmr.py`
- 計算基礎代謝率
- input：體重、性別、身高、年齡
- output：每天最低身體消耗熱量

```
BMR(男)=(13.7×體重(公斤))+(5.0×身高(公分))-(6.8×年齡)+66  
BMR(女)=(9.6×體重(公斤))+(1.8×身高(公分))-(4.7×年齡)+655
```

Assignments - 九九乘法加倍奉還版

- 作業檔名 `02_multiplies.py`
- output：印出 99x99 乘法表 table

```
1x1=1  
1x2=2  
...  
99x98=..  
99x99=..
```

Assignments - 終極密碼猜數字

- 作業檔名 `02_guess_number.py`

```
>> 請猜密碼，範圍 1~100  
>> 13  
>> 請猜密碼，範圍 13~100  
>> 50  
>> 請猜密碼，範圍 13~50  
>> 38  
>> 恭喜你猜中了，猜了7次
```
