下載 PDF

https://github.com/SCU-LAWTECH/Project_2020/blob/master/Class_01/0926_001.pdf

SCU LawTech

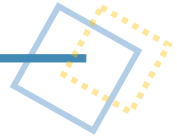
Class #01

LAWTECH
learn coding get outstanding

Content

- 安裝 Anaconda
- Line 群組
- Github 帳號申請
- 變數
- 資料型態

安裝 Anaconda



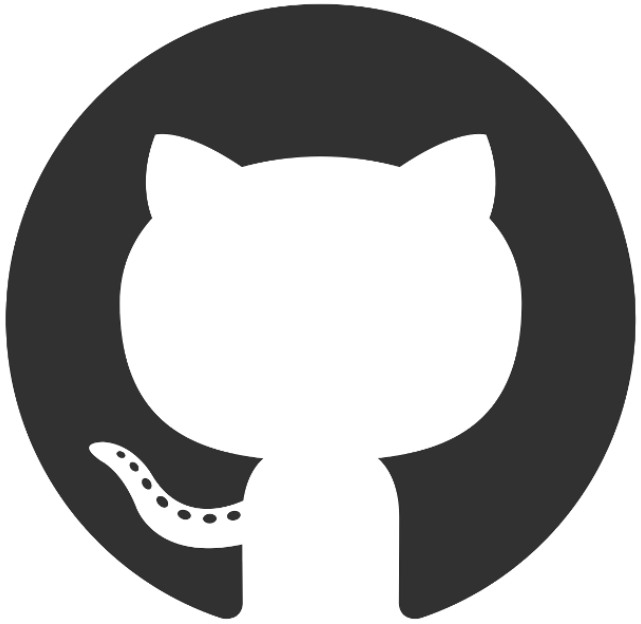
Anaconda Installers

Windows	MacOS	Linux
Python 3.8	Python 3.8	Python 3.8
64-Bit Graphical Installer (466 MB)	64-Bit Graphical Installer (462 MB)	64-Bit (x86) Installer (550 MB)
32-Bit Graphical Installer (397 MB)	64-Bit Command Line Installer (454 MB)	64-Bit (Power8 and Power9) Installer (290 MB)

https://www.anaconda.com/products/individual

Line 群組

GitHub 帳號申請



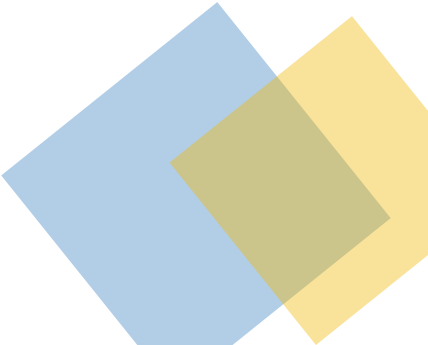
https://docs.google.com/forms/d/e/1FAIpQLScZ4ktM0EpFNlZJUHfbwS7d2U7eygA-QGnhQvAL71vTKEOaYw/viewform?usp=sf_link

變數（Variable）

- 變數是為了方便在程式中調用記憶體的值
- “= “：賦值、指派

```
In [8]: a = 123

In [9]: print(a)
123
```



變數命名規則

- 變數名稱只能包括：大小寫字母、中文、數字、底線
- 命名時請避開「系統保留字」或「函數名稱」

and	del	for	is	raise
assert	elif	from	lambda	return
break	else	global	not	try
while	def	finally	in	print
continue	exec	import	pass	
class	except	if	or	yield

Python 保留字

變數（Variable）

- Python 是物件導向的程式語言
- 物件包含三個要素

ID

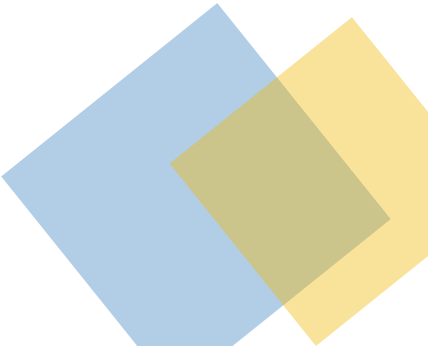
唯一識別

Type

物件型態

Value

物件的值



變數（Variable）

```
In [7]: a = 123
```

ID

唯一識別

```
In [8]: id(a)
Out[8]: 140716787810960
```

Type

物件型態

```
In [9]: type(a)
Out[9]: int
```

Value

物件的值

```
In [10]: print(a)
123
```

資料型態

- 數值型態
- 字串型態
- 邏輯型態
- 容器型態

```
#數值型態
Integers = 5
Float = 3.9 #小數

#字串型態
String = 'hello'
a = '蘋果'
我 = '123'

#邏輯型態：布林值，有True & False
Boolean = True

#容器型態
Tuple = (1,2,3) #元組，不可變動
List = [1,2,3,4] #列表
Set = {1,2,3,4,5,6} #集合
Dictionary = {'key':'value'} #字典，key&value是一組的
```

print( )

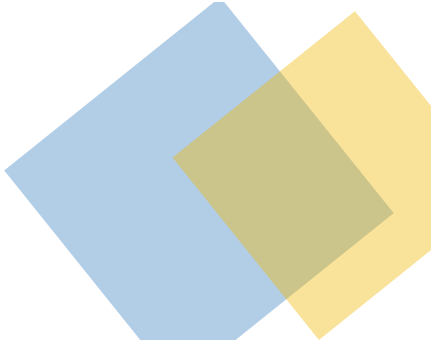
```
print(value, ..., sep=' ', end='\n')
```

```
print('a')
print('b', end='.')
print('c', end='/')
```

```
a
b.c/
```

```
print('a', 'b', 'c')
print('a', 'b', 'c', sep='/')
```

```
a b c
a/b/c
```



型態轉換

- int( )：轉為整數
- float( )：轉為浮點數
- str( )：轉為字串

```
t = 23.44555
type(t)
```

```
float
```

```
q = int(t)
q
```

```
23
```

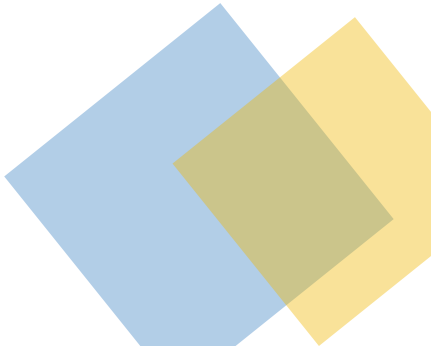
```
type(q)
```

```
int
```

eval( )

```
eval(str)
```

- 計算字串中有效的表達式，並返回結果
- 將字串轉成相對應的型態
- 將被轉換為字串的變數，反轉回變數



數值型態

```
#數學運算
print(32 + 45) #加
print(12 - 8) #減
print(12 * 2) #乘
print(12 ** 2) #指數
```

```
77
4
24
144
```

```
print(18 / 4) #除

print(18 // 4) #除取商
print(18 % 4) #除取餘
```

```
4.5
4
2
```

取商數時，在負值要小心!!

數值型態

- 大小比較：== 、 < 、 >

```
In [32]: 2 > 3
Out[32]: False

In [33]: 2 < 3
Out[33]: True

In [34]: 2 == 3
Out[34]: False
```

字串型態

- “” 或 ‘’ 都可以

```
#字串相加
str1 = 'apple'
str2 = 'pen'
print(str1 + str2)
```

```
applepen
```

```
#重複字串
str1 = 'apple'
print(str1*3)
```

```
appleappleapple
```

字串型態

```
num = 123
str3 = 'test'
print(num + str3)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-39-b77bf6c19808> in <module>
      1 num = 123
      2 str3 = 'test'
----> 3 print(num + str3)

TypeError: unsupported operand type(s) for +: 'int' and 'str'
```

字串型態

- 字串由多個字元組成

```
#字串長度 == 字元個數
len(str1)
```

```
5
```

字串型態

- 找位置（index）相關的，皆使用 [ ]
- Index 從 0 開始，取頭不取尾


```
str1 = 'apple'
```

```
str1[0]
```

```
str1[-1]
```

```
str1[1:-2]
```

```
str1[::3]
```

字串型態

【 Notes 】 `str [ start : end : step ]`

- start：字符的起始位置
- end：字符的結尾位置
- step：字符的間隔（步長）

```
str2 = 'hello, how are you?'
```

```
str2[1:9]
```

```
'ello, ho'
```

```
str2[1:9:2]
```

```
'el,h'
```

字串型態

【 Notes 】 `str.split(分割符, 最大分割次數)`

- 分割符不會出現在output上，他只是切分的依據

```
# 切割字串
str3 = 'hello, how are you?'
str3.split('o')
```

```
['hell', ', h', 'w are y', 'u?']
```

```
# 切割字串
str3 = 'hello, how are you?'
str3.split('o', maxsplit=1)
    #maxsplit：可以指定分割次數
```

```
['hell', ', how are you?']
```

字串型態

【 Notes 】 `str.replace(被替代, 替代, 替代次數)`

```
# 取代
str3 = 'hello, how are you?'
str3.replace('l', 'i') #次數沒指定，預設全部取代
```

```
'heiio, how are you?'
```

字串型態

- 字串格式化：把字串中的變數替換成變數值

```
# 字串格式化(基本)
text = 'world'

print('hello {}'.format(text))
```

```
hello world
```

```
a = 123
print(f"測試{a}")
```

```
測試123
```

邏輯型態

- 邏輯運算符：is、not、and、or

AND	T	F
T	T	F
F	F	F

OR	T	F
T	T	T
F	T	F

```
print(True and False)
```

```
False
```

```
print(True or False)
```

```
True
```

容器型態 - tuple

- tuple：元組
- tuple 內的元素不可變動

```
1, 'Bob', 32
```

```
(1, 'Bob', 32)
```

容器型態 - tuple

```
test = (1, 'Bob', 32)
```

```
# 取值
test[2]
```

```
32
```

```
len(test)
```

```
3
```

```
(1, 'Bob', 32) + (2, 'Bobb', 322)
```

```
(1, 'Bob', 32, 2, 'Bobb', 322)
```

```
(1, 'Bob', 32)*2
```

```
(1, 'Bob', 32, 1, 'Bob', 32)
```

容器型態 - list

- list：列表、串列
- list 內的元素可以變動

```
a = [1, 2, 3, 4, 5]
a
```

```
[1, 2, 3, 4, 5]
```

容器型態 - list

- 在最後面增加元素

```
x = [1, 23, 34]
```

```
a.append(x)
a
```

```
[1, 2, 3, 4, 5, [1, 23, 34]]
```

```
a.extend(x) #拆開
a
```

```
[1, 2, 3, 4, 5, 1, 23, 34]
```

容器型態 - list

- 指定位置插入

```
a.insert(0, 23)
a
```

```
[23, 1, 2, 3, 4, 5]
```

容器型態 - list

- 提取：取出，並在 list 中將他刪除

```
list.pop(index)
```

```
a.pop(0)
```

```
1
```

```
a
```

```
[2, 3, 4, 5]
```

容器型態 - list

- 刪除，遇到的第一筆

```
list.remove(要刪除的值)
```

```
a.remove(2)
```

```
a
```

```
[1, 3, 4, 5]
```

容器型態 - list

- 找出 x 的第一個 index (位置)

```
list.index(要尋找的值)
```

```
a.index(2)
```

```
1
```

容器型態 - list

- 找出 x 的第一個 index (位置)

```
list.count(要計算次數的值)
```

```
a.count(1)
```

```
2
```

容器型態 - list

- 排序

`list.sort()` ：排序

`list.reverse()` ：反轉

```
b = [1,75,3,65,19]
```

```
b.sort()
b
```

```
[1, 3, 19, 65, 75]
```

```
b.reverse()
b
```

```
[75, 65, 19, 3, 1]
```

容器型態 - list

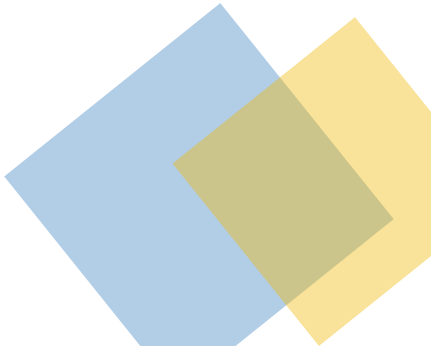
```
# 相加、相乘
a = [1,3,3]
b = [23,4,5]
```

```
a + b
```

```
[1, 3, 3, 23, 4, 5]
```

```
a*3
```

```
[1, 3, 3, 1, 3, 3, 1, 3, 3]
```



容器型態 - list

- 多維 list

```
#多維list
a = ['hey', '3', 'hi', [7, ['hello', 5, '9'], 9]]
len(a)
```

```
4
```

```
a[3][0]
```

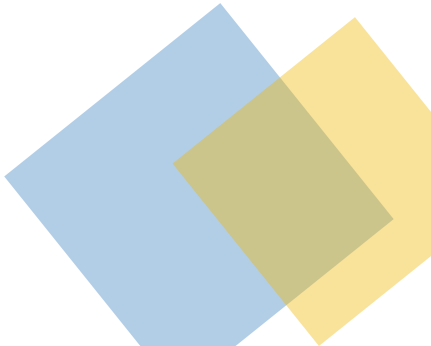
```
7
```

容器型態 - list

- 多維 list

```
int(a[1]) + a[3][0] + a[3][-1] + a[3][1][1] + int(a[3][1][-1])
```

```
33
```



容器型態 - dict

【Notes】

`{ }`：在查詢時，速度會比list快上很多

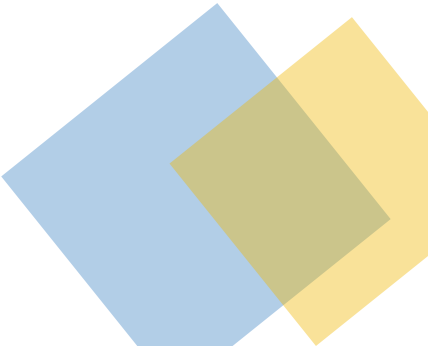
因為使用hash的技術，可以直接對應到我們要找的值

- dict：字典

映射類型：{'key':'value'}，一個key僅能對應到一個value

```
#宣告一個dict變數
dict1 = {}
type(dict1)
```

```
dict
```



容器型態 - dict

```
dict1 = {'A':1, 'B':[1,2,3]}
dict1
```

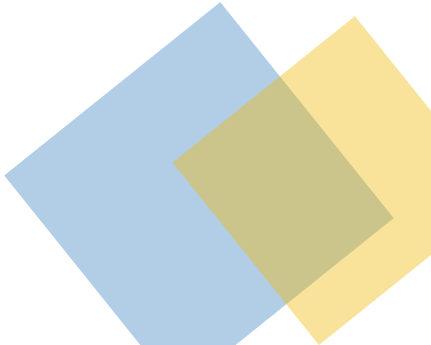
```
{'A': 1, 'B': [1, 2, 3]}
```

```
dict1['C'] = [5,6,7] #新增
dict1
```

```
{'A': 1, 'B': [1, 2, 3], 'C': [5, 6, 7]}
```

```
dict1['B'] = [7,8,9] #更改
dict1
```

```
{'A': 1, 'B': [7, 8, 9], 'C': [5, 6, 7]}
```



容器型態 - dict

- 查詢

```
# 所有的key（鍵）
dict1.keys()
```

```
dict_keys(['A', 'B', 'C'])
```

```
# 所有的values（值）
dict1.values()
```

```
dict_values([1, [7, 8, 9], [5, 6, 7]])
```

```
# 所有 key&values（鍵值對）
dict1.items()
```

```
dict_items([('A', 1), ('B', [7, 8, 9]), ('C', [5, 6, 7])])
```

容器型態 - dict

- 刪除：指定 key 刪除，其相對應的 value 也會隨之刪除

```
dict1.pop('A')
```

```
1
```

```
dict1
```

```
{'B': [7, 8, 9], 'C': [5, 6, 7]}
```

容器型態 - set

- 集合，無序、不重複的元素集
- 像是只有 key 的 dict

```
Set = set()
type(Set)
```

```
SET = {1,2,3,4}
type(SET)
```

```
set
```

容器型態 - set

```
# List轉set
a = [1, 2, 2, 1, 4, 2, 3]
setA = set(a)
setA
```

```
{1, 2, 3, 4}
```

```
# 增加元素
SET.add(34)
SET
```

```
{1, 2, 3, 4, 34}
```

```
# 刪除元素
SET.remove(2)
SET
```

```
{1, 3, 4, 34}
```

```
# 判斷元素是否存在於集合中
1  not in SET
```

```
False
```

容器型態 - set

```
# 聯集
setA = {1, 2, 3, 4}
setB = {2, 3, 4}
setA | setB
```

```
{1, 2, 3, 4}
```

```
# 交集
setA & setB
```

```
{2, 3, 4}
```

```
# 插集（注意！順序）
setA - setB
```

```
{1}
```

```
setB - setA
```

```
set()
```

THANKS

LAWTECH
learn coding get outstanding