編譯器與直譯器



### python variable and memory address assignment process，

### 在python 中，任何整數、福點數、字串都是一個物件。

### Python 變數可看成是一個有名字的指標(記憶體位址)，可以隨時指到不一樣的物件。而物件就是在那個位址的記憶體內容。 記憶體 記憶體位址

 例如 : x=7

 y=7

 7 140732373805040

X 140732373805040

y 140732373805040

>>> y=7

>>> x=7

>>> print(id(x))

140732373805040 # same memory address

>>> print(id(y))

140732373805040 # same memory address

>>> z=x

>>> x

7

>>> print(id(z))

140732373805040 # same memory address

>>> test = x\*y

>>> test

49

>>> print(id(test))

140732373806384

>>> test1=test # same memory address

>>> print(id(test1))

140732373806384 # same memory address

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### Variable type, functions: type(), bin(), oct(),hex(),int(),bool(), float(),float.is\_integer(), round()

>>> type (x)

<class 'int'>

>>> type (3.2)

<class 'float'>

>>> type ("Hello")

<class 'str'>

>>> greet = "Hello there ! This is Duh!!"

>>> greet

'Hello there ! This is Duh!!'

>>> type(greet)

<class 'str'>

### example of operator +,- \*,\*\*,/,//,%

##

>>> high=160

>>> feet=30

>>> inch=2.5

>>> tfeet=high//feet ## 取商數

>>> lfeet=high%feet ## 取餘數

>>> tinch=lfeet/inch

>>> print ("you are "+str(tfeet)+" feet and "+ str(tinch)+ " inch")

you are 5 feet and 4.0 inch

>>> print ("you are ", tfeet," feet and ",tinch, " inch")

you are 5 feet and 4.0 inch

>>> tinch =round(tinch) ### 4捨5入

>> print("you are ", tfeet," feet and ",tinch, " inch")

you are 5 feet and 4 inch

### read input from user integer

>>> weight= int(input("please input your weight (in kg).\n"))

please input your weight (in kg).

90

>>> high= int(input("please input your high (in cm).\n"))

please input your high (in cm).

176

>>> BMI=weight/(high/100)\*\*2 ### BMI= 體重/身高平方(公尺)

>>> print ( "your BMI is ",BMI)

your BMI is 29.054752066115704

>>> print ( "your BMI is %4.1f " %BMI)

your BMI is 29.1

## read in string

>>> name= input("please input your name \n")

please input your name

Duh

>>> age= int(input("please input your age \n"))

please input your age

18

>>> month= 18\*12

>>> print(name," 你在世上已經歷了 " ,month, "個月")

Duh 你在世上已經歷了 216 個月

>>> tinch\*\*tinch ## 次方乘冪

256

>>> tinch

4

>>> tinch\*\*2

16

>>> 4\*\*4 ## 4的4次方

256

 ### the execute order of operator

>> a=1+2\*3

>>> a

7

>>> b=1+2\*3\*\*3

>>> b

55

>>> c=1+(2+3)\*2\*\*2

>>> c

21

### print format use %

>>> a=weight/10

>>> b=weight/5

>>> c=weight //10

>>> d= weight % 5

>>> print(" weight /10 /5 //10 %5 ")

 weight /10 /5 //10 %5

>>> print(weight, a,b,c,d)

189 18.9 37.8 18 4

>>> print("%3d %3d %3d %3d %6.1f" % (weight, a,b,c,d))

 189 18 37 18 4.0 ## use %3d 限制輸出整數3格，浮點數6格寬，小數點1格寬

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Exercise:

1. 請讀入一個時間秒數後，轉成時、分、秒輸出。
2. 請讀入兩個時、分、秒後，計算兩個時間的間隔。
3. 攝氏溫度轉華氏溫度公式為 F = 9/5 \* C + 32，華式轉攝氏溫度公式為 C = (F - 32) \* 5/9，請寫一程式能讀進華氏溫度，轉為攝氏溫度後輸出。讀進攝氏溫度，轉為華氏溫度後輸出。
4. 請寫一程式能問使用者名字，年齡，再將年齡轉換成幾周並回應給使用者。(一周為7天)

如:

請輸入你的姓名

Duh

請輸入你的年齡

18

Duh 你好! 你目前在世上已經活了 936 周。

## string operation

>>> last="Duh"

>>> first="C.M."

>>> fullname=last+" "+first

>>> fullname

'Duh C.M.'

>>> call=3

>>> love=fullname\*call

>>> love

'Duh C.M.Duh C.M.Duh C.M.'

### Ask Input from user

>>> name=input()

Well Duh

>>> name

'Well Duh'

>>> name=input("please input your name:\n")

please input your name:

C.M. Duh

>>> name

'C.M. Duh'

>>> lastname=input("please input your last name:\n")

please input your last name:

Duh

>>> firstname=input("please input your first name:\n")

please input your first name:

C.M.

>>> print ("Very Nice to meet you Mr. "+lastname+" "+firstname)

Very Nice to meet you Mr. Duh C.M.

>>> fullname=lastname+firstname

>>> print ("Very Nice to meet you Mr. "+fullname)

Very Nice to meet you Mr. DuhC.M.

\*\*\* Exercise ----

請寫一程式能讀入一個人名及國、英、數三科成績，三科成績需用3種不同的型別轉換方式轉成整數88 型別。將這三科成績加總、計算平均及印出。

如:90

請輸入你的名字=>

Duh Well.

請輸入國文分數=>

90

請輸入英文分數=>

89

請輸入數學分數=>

92

Duh Well, 你好! 你的三科總分=>271 分

平均=> 90.3333 分

## for loop test

>>> for i in range(1,5):

... print(i)

 File "<stdin>", line 2

 print(i)

 ^

IndentationError: expected an indented block

>>> for i in range(1,5):

... print(i)

...

1

2

3

4

>>> for i in range(1,5):

... print(i)

... print(i+5)

...

1

6

2

7

3

8

4

9