Python 程式設計

範圍： Set、Dictionary 的應用

銘傳大學電腦與通訊工程系

班　　級	電通四甲
姓　　名	趙啟翔
學　　號	05050130
成　　績	應繳作業共 8 題，前六題每題 10 分，後兩題每題 20 分，滿分為 100 分 共完成 8 題，應得 100 分
授課教師	陳慶逸

※直接將你的程式碼貼在指定的欄位裡，並且執行題目要求的輸入參數

※請確實填寫自己寫完成題數，並且計算得分。填寫不實者(如上傳與作業明顯無關的答案，或是計算題數有誤者)，本次作業先扣 50 分。

EX 1: 針對下面的字典 Adict，試寫幾行 python 程式碼，增加'Jake'這個名字，且其電話為 928544322；並且刪除 Jake 這筆資料。

```
Adict = {'John': 938457566, 'Peter': 928377464, 'Mary': 941662781,
"Jill" : 928662781}

# write your code here

Adict["Jake"] = 928544322

del Adict['Jill']

# testing code
if "Jake" in Adict:
    print("Jake is listed in the Adict.")
if "Jill" not in Adict:
    print("Jill is not listed in the Adict.")
```

EX 2: 若有一個字典 dict_double 的內容如下，試利用程式產生之；並在該字典下面接著寫一個 isKeyPresent(x)函式，該函式的功能可檢查所輸入的鍵值 x 是否存在於 Adict 之中。

dict_double 的內容如下:

{0: 0, 1: 2, 2: 4, 3: 6, 4: 8, 5: 10, 6: 12, 7: 14, 8: 16, 9: 18, 10: 20, 11: 22, 12: 24, 13: 26, 14: 28, 15: 30, 16: 32, 17: 34, 18: 36, 19: 38}

例如：

isKeyPresent(5)	**Key is present in the dictionary**
isKeyPresent(9)	**Key is present in the dictionary**
isKeyPresent(25)	**Key is not present in the dictionary**

我的作答：

請在下面欄位貼上程式碼：

```
def isKeyPresent(i):
    dict_double = {0: 0, 1: 2, 2: 4, 3: 6, 4: 8, 5: 10, 6: 12, 7: 14,
8: 16, 9: 18,
10: 20, 11: 22, 12: 24, 13: 26, 14: 28, 15: 30, 16: 32, 17: 34, 18:
36, 19: 38}
    if i in dict_double:
        print("Key is present in the dictionary")
    if i not in dict_double:
        print("Key is not present in the dictionary")
isKeyPresent(5)
isKeyPresent(9)
isKeyPresent(25)
```

執行結果擷圖：

In [5]:

```
def isKeyPresent(i):
    dict_double = {0: 0, 1: 2, 2: 4, 3: 6, 4: 8, 5: 10, 6: 12, 7: 14, 8: 16,
10: 20, 11: 22, 12: 24, 13: 26, 14: 28, 15: 30, 16: 32, 17: 34, 18: 36, 19:
    if i in dict_double:
        print("Key is present in the dictionary")
    if i not in dict_double:
        print("Key is not present in the dictionary")
isKeyPresent(5)
isKeyPresent(9)
isKeyPresent(25)

```

```
Key is present in the dictionary
Key is present in the dictionary
Key is not present in the dictionary
```

EX 3: 針對下面的字典 Adict，試以下面型式輸出 Adict 的內容。

Member: John -> Tel: 938457566

Member: Peter -> Tel: 928377464

Member: Mary -> Tel: 941662781

Member: Jill -> Tel: 928662781

```
Adict = {'John': 938457566, 'Peter': 928377464, 'Mary': 941662781,
"Jill" : 928662781}
for name, number in Adict.items():
   print("Member: %s -> Tel: %d" % (name, number))
```

執行結果擷圖：

```
In [6]:
Adict = {'John': 938457566, 'Peter': 928377464, 'Mary': 941662781, "Jill" : 9
for name, number in Adict.items():
    print("Member: %s -> Tel: %d" % (name, number))

Member: John -> Tel: 938457566
Member: Peter -> Tel: 928377464
Member: Mary -> Tel: 941662781
Member: Jill -> Tel: 928662781
```

EX 4: 試寫一 python 函式 generateDict(n)，它會根據我們所給予的 n 值，回傳一個內容為{1:2, 2:8, 3:18, 4: 32, …, n: 2*n*n}的字典。例如：

generateDict(3)	{1: 2, 2: 8, 3: 18}
generateDict(10)	{1: 2, 2: 8, 3: 18, 4: 32, 5: 50, 6: 72, 7: 98, 8: 128, 9: 162, 10: 200}

```
def generateDict(n):
    d = {i: 2*i**2 for i in range(1,n+1)}
    return d

print(generateDict(3))
print(generateDict(10))
```

執行結果擷圖：

```
In [8]:
def generateDict(n):
    d = {i: 2*i**2 for i in range(1,n+1)}
    return d

print(generateDict(3))
print(generateDict(10))

{1: 2, 2: 8, 3: 18}
{1: 2, 2: 8, 3: 18, 4: 32, 5: 50, 6: 72, 7: 98, 8: 128, 9: 162, 10: 200}
```

EX 5: 若 myDict = { 'data1':160,'data2':-254,'data3':1247, 'data4':2247}，試寫一 python 程式來得到字典裡所有值(value)連乘的結果。以本例而言，其輸出值應為 -1333800。

```
myDict = { 'data1':160,'data2':-254,'data3':1247, 'data4':2247}
d=1
for name, number in myDict.items():
    d=d*number
print(d)
```

執行結果擷圖：

```
In [14]:
1 myDict = { 'data1':160,'data2':-254,'data3':1247, 'data4':2247}
2 d=1
3 for name, number in myDict.items():
4     d=d*number
5 print(d)

-113873645760
```

EX 6: zip() 是 Python 的一個內建函數，它接受一系列可迭代的對象作為參數，將對象中對應的元素打包成一個個 tuple。例如：

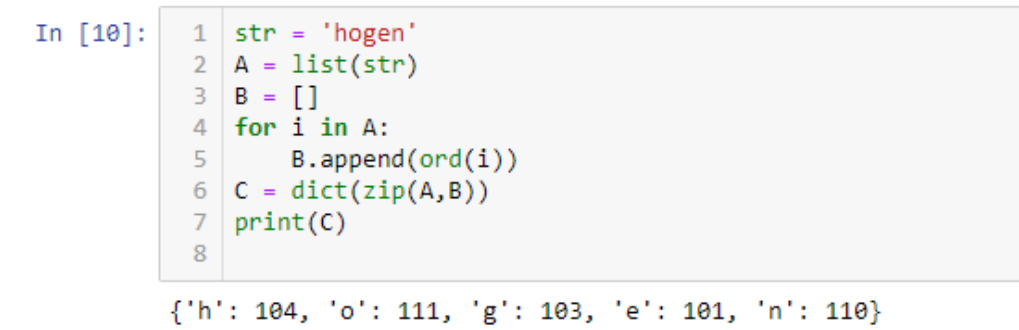
```
a = [1, 2, 3]
b = ['bird', 'dog', 'cat']
c = dict(zip(a,b))   # c = {1: 'apple', 2: 'dog', 3: 'cat'}
```

現有字串 str = 'hogen', 試將之轉成一個由該字串裡的字母所構成的串列 A；再建立一個由這些字母對應的 ASCII 碼所構成的串列 B (使用 ord()函式可將英文字母轉換為 ASCII 碼)，最後列印出由 A 和 B 建立的字典 C。C 的內容如下:

C = {'h': 104, 'o': 111, 'g': 103, 'e': 101, 'n': 110}

```
str = 'hogen'
A = list(str)
B = []
for i in A:
    B.append(ord(i))
C = dict(zip(A,B))
print(C)
```

執行結果擷圖：



EX 7: 現在一字典 num = {'n1': [2, 3, 7, 9, 1], 'n2': [5, 1, 2, 8, 13], 'n3': [3, 2, 4, 6, 9]}，試寫一 python 程式來將字典裡所有由串列所構成的值(value)都進行排序。例如本例最後應輸出：

{'n1': [1, 2, 3, 7, 9], 'n2': [1, 2, 5, 8, 13], 'n3': [2, 3, 4, 6, 9]}

以 for-loop 寫法：

```
num = {'n1': [2, 3, 7, 9, 1], 'n2': [5, 1, 2, 8, 13], 'n3': [3, 2, 4,
6, 9]}
for i in num:
    num[i] = sorted(num[i])
print(num)
```

In [11]:
```
num = {'n1': [2, 3, 7, 9, 1], 'n2': [5, 1, 2, 8, 13], 'n3': [3, 2, 4, 6, 9]}
for i in num:
    num[i] = sorted(num[i])
print(num)

```

```
{'n1': [1, 2, 3, 7, 9], 'n2': [1, 2, 5, 8, 13], 'n3': [2, 3, 4, 6, 9]}
```

以解析式 for-loop 寫法：

```
num = {'n1': [2, 3, 7, 9, 1], 'n2': [5, 1, 2, 8, 13], 'n3': [3, 2, 4,
6, 9]}
num = {i: sorted(num[i]) for i in num}
print(num)
```

執行結果擷圖：

In [12]:
```
num = {'n1': [2, 3, 7, 9, 1], 'n2': [5, 1, 2, 8, 13], 'n3': [3, 2, 4, 6, 9]}
num = {i: sorted(num[i]) for i in num}
print(num)

```

```
{'n1': [1, 2, 3, 7, 9], 'n2': [1, 2, 5, 8, 13], 'n3': [2, 3, 4, 6, 9]}
```

EX 8: 找出同時出現在兩個不同的字典中的鍵-值對，

例如：

x = {'key1': 1, 'key2': 3, 'key3': 2}

y = {'key1': 1, 'key2': 2}

Sample output: ('key1', 1)

x = {'key1': 1, 'key2': 3, 'key3': 2}

y = {'key1': 1, 'key2': 3}

Sample output:

('key2', 3)

('key1', 1)

```
x = {'key1': 1, 'key2': 3, 'key3': 2}
y = {'key1': 1, 'key2': 3}
z = x.items() & y.items()
for i in z:
    print(i)
```

執行結果擷圖：