Q1. Create a function which will take a list as an argument and return the product of all the numbers after creating a flat list.

Use the below-given list as an argument for your function.

list1 = [1,2,3,4, [44,55,66, True], False, (34,56,78,89,34), {1,2,3,3,2,1}, {1:34, "key2": [55, 67, 78, 89], 4: (45,22, 61, 34)}, [56, 'data science'], 'Machine Learning']

Note: you must extract numeric keys and values of the dictionary also.

Code:

```
def func(l):
    lst=[]
    for i in l:
        if(type(i)==int):
            lst.append(i)
        elif(type(i)==list):
            for j in i:
                if(type(j)==int):
                    lst.append(j)
        elif(type(i)==tuple):
            for j in i:
                if(type(j)==int):
                    lst.append(j)
        elif(type(i)==set):
            for j in i:
                if(type(j)==int):
                    lst.append(j)
        elif(type(i)==dict):
            a=i.keys()
            for j in a:
                if(type(j)==int):
                    lst.append(j)
            b=i.values()
            for j in b:
```

```
            if(type(j)==int):
                lst.append(j)
            elif(type(j)==list):
                for k in j:
                    if(type(k)==int):
                        lst.append(k)
            elif(type(j)==tuple):
                for k in j:
                    if(type(k)==int):
                        lst.append(k)
        product=1
        for i in lst:
            product=i*product
    return product

list1 = [1,2,3,4, [44,55,66, True], False, (34,56,78,89,34), {1,2,3,3,2,1}, {1:34, "key2": [55, 67, 78, 89], 4: (45,22, 61, 34)},
        [56, 'data science'], 'Machine Learning']

func(list1)
```

```
4134711838987085478833841242112000
```

Q2. Write a python program for encrypting a message sent to you by your friend. The logic of encryption should be such that, for a the output should be z. For b, the output should be y. For c, the output should be x respectively. Also, the whitespace should be replaced with a dollar sign. Keep the punctuation marks unchanged.

Input Sentence: I want to become a Data Scientist.

Encrypt the above input sentence using the program you just created.

Note: Convert the given input sentence into lowercase before encrypting. The final output should be lowercase.

Code:

```
def encryption(msg1):
    msg1=msg1.lower()
    msg2=""
```

```
    for i in msg1:
        if(ord(i)<=122 and ord(i)>=97):
            msg2=msg2 + chr(122-(ord(i))+97).lower()
        elif(ord(i)==32):
            msg2=msg2 + "$"
        else:
            msg2=msg2 + i

    return msg2

msg = "I want to become a Data Scientist."
encryption(msg)
```

```
'r$dzmg$gl$yvxlnv$z$wzgz$hxrvmgrhg.'
```