Assignment 07: 06 Feb 2023 (Task 1)

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.
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: 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.

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.

Ans:

```python
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']
def number_filter(l1):
    from functools import reduce
    n=[] # create a empty list
    for i in l1:
        if str(i).isnumeric(): # filter only numeric values from the main list
            n.append(i)
        elif type(i)==list or type(i)==tuple or type(i)== set : # filtering numbers from tup, list, set elements
            for j in i:
                if str(j).isnumeric():
                    n.append(j)
        elif type(i)== dict: # filtering only numeric keys
            for k,v in i.items():
                if str(k).isnumeric() :
                    n.append(k)
                if str(v).isnumeric():
                    n.append(v)
            for k,v in i.items():
                if str(k).isnumeric()== False :
                    if type(v)==list or type(v)== tuple:
                        for u in v:
                            if str(u).isnumeric():
                                n.append(u)
```

```
        for k,v in i.items():
            if str(k).isnumeric()== True :
                if type(v)==list or type(v)== tuple:
                    for u in v:
                        if str(u).isnumeric():
                            n.append(u)
    return(n) ,(reduce(lambda x,y: x*y, n))
m,result=number_filter(list1)
print("Flat list: ",m)
print("Product: ",result)
```
Output
Flat list: [1, 2, 3, 4, 44, 55, 66, 34, 56, 78, 89, 34, 1, 2, 3, 1, 34, 4, 55, 67, 78, 89, 45, 22, 61, 34, 56]
Product: 41347118389870854788338441242112000

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: 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.

Ans:
```
def encrypt_text(x):
    x= x.lower()
    for i in x:
        if i != " " :
            if (ord(i)+26)>122: # if ord(i)>122 then problem
                # so let's get the difference as e
                e=122-ord(i)
                x=x.replace(i,(chr(97+e))) # add the difference with 97 and change it to chr
            elif (ord(i)+25)<+122:
                x=x.replace(i,(chr(97+26)))
        else:
            x=x.replace(" ", "$") # replacing the space with $
    x=x.replace("w", 'd' )
    return x
# getting the string
text="When you will marry her"
encrypt_text(text) # getting the string into the function
```
Output
'dsvnbofdioo$nziib$svi'