

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.

In [3]:

```
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 find_numeric_product(list1):
    numeric_list = []
    for i in list1:
        if type(i) == int:
            numeric_list.append(i)
        elif type(i) == list:
            for x in i:
                if type(x) == int:
                    numeric_list.append(x)
        elif type(i) == tuple:
            for x in i:
                if type(x) == int:
                    numeric_list.append(x)
        elif type(i) == set:
            for x in i:
                if type(x) == int:
                    numeric_list.append(x)
        elif type(i) == dict:
            temp = i.values()
            for x in temp:
                if type(x) == int:
                    numeric_list.append(x)
                elif type(x) == list:
                    for y in x:
                        if type(y) == int:
                            numeric_list.append(y)
                elif type(x) == tuple:
                    for y in x:
                        if type(y) == int:
                            numeric_list.append(y)
    return get_product(numeric_list)

def get_product(list1):
    product = 1
    for i in list1:
        product = product * i
    return product

print(find_numeric_product(list1))
```

1033677959746771369708460310528000

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.

In [4]:

```
cap_alphabet = [chr(i) for i in range(65,91)]
cap_rev_alphabet = [chr(i) for i in range(90,64,-1)]
small_alphabet = [chr(i) for i in range(97,123)]
small_rev_alphabet = [chr(i) for i in range(122,96,-1)]
def merge(list1,list2):
    dictionary = {}
    for i,j in zip(list1,list2):
        dictionary.update({i:j})
    return dictionary

capital_letter = merge(cap_alphabet,cap_rev_alphabet)
small_letter = merge(small_alphabet,small_rev_alphabet)
all_alphabets = {**capital_letter,**small_letter}
all_alphabets[' '] = '@'

msg = input("Enter Message to Encrypt ::--")

inputted_msg = [i for i in msg]

encrypted_msg = ''
for i in inputted_msg:
    if i in all_alphabets:
        encrypted_msg += all_alphabets[i]

print(f'The encrypted Message of <{msg}> is -- <{encrypted_msg}>')
```

```
Enter Message to Encrypt ::--I want to become a Data scientist
The encrypted Message of <I want to become a Data scientist> is -- <R@dzmg
@gl@yvxlrv@z@Wzgz@hxrvmgrhg>
```

In []: