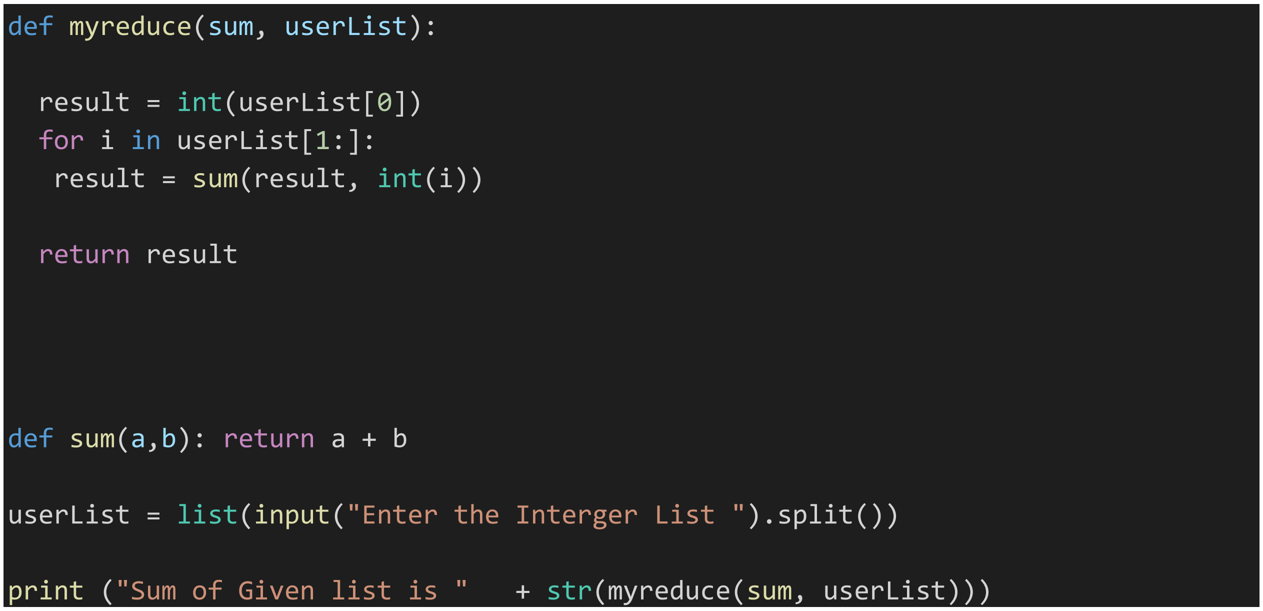
Session 2:
Assignment 2

2. Problem Statement

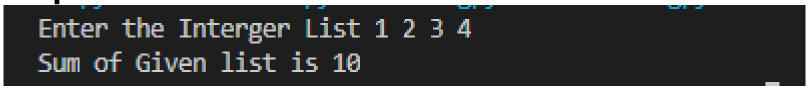
Task 1:

1.1. Write a Python Program to implement your own myreduce() function which works exactly like Python's built-in function reduce()



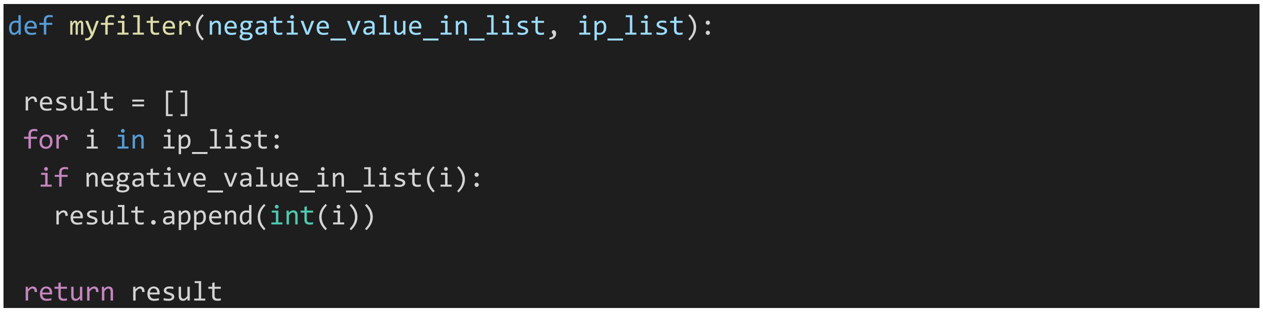
```
def myreduce(sum, userList):

  result = int(userList[0])
  for i in userList[1:]:
   result = sum(result, int(i))

  return result




def sum(a,b): return a + b

userList = list(input("Enter the Interger List ").split())

print ("Sum of Given list is "   + str(myreduce(sum, userList)))
```

Output:



```
Enter the Interger List 1 2 3 4
Sum of Given list is 10
```

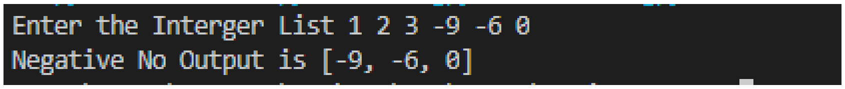
1.2. Write a Python program to implement your own myfilter() function which works exactly like Python's built-in function filter()



```
def myfilter(negative_value_in_list, ip_list):

 result = []
 for i in ip_list:
  if negative_value_in_list(i):
   result.append(int(i))

 return result
```

```
def negative_value_in_list(x):
 if (int(x) <= 0):
  return x

userList = list(input("Enter the Interger List ").split())
print ("Negative No Output is "  + str(myfilter(negative_value_in_list, userList)
))
```

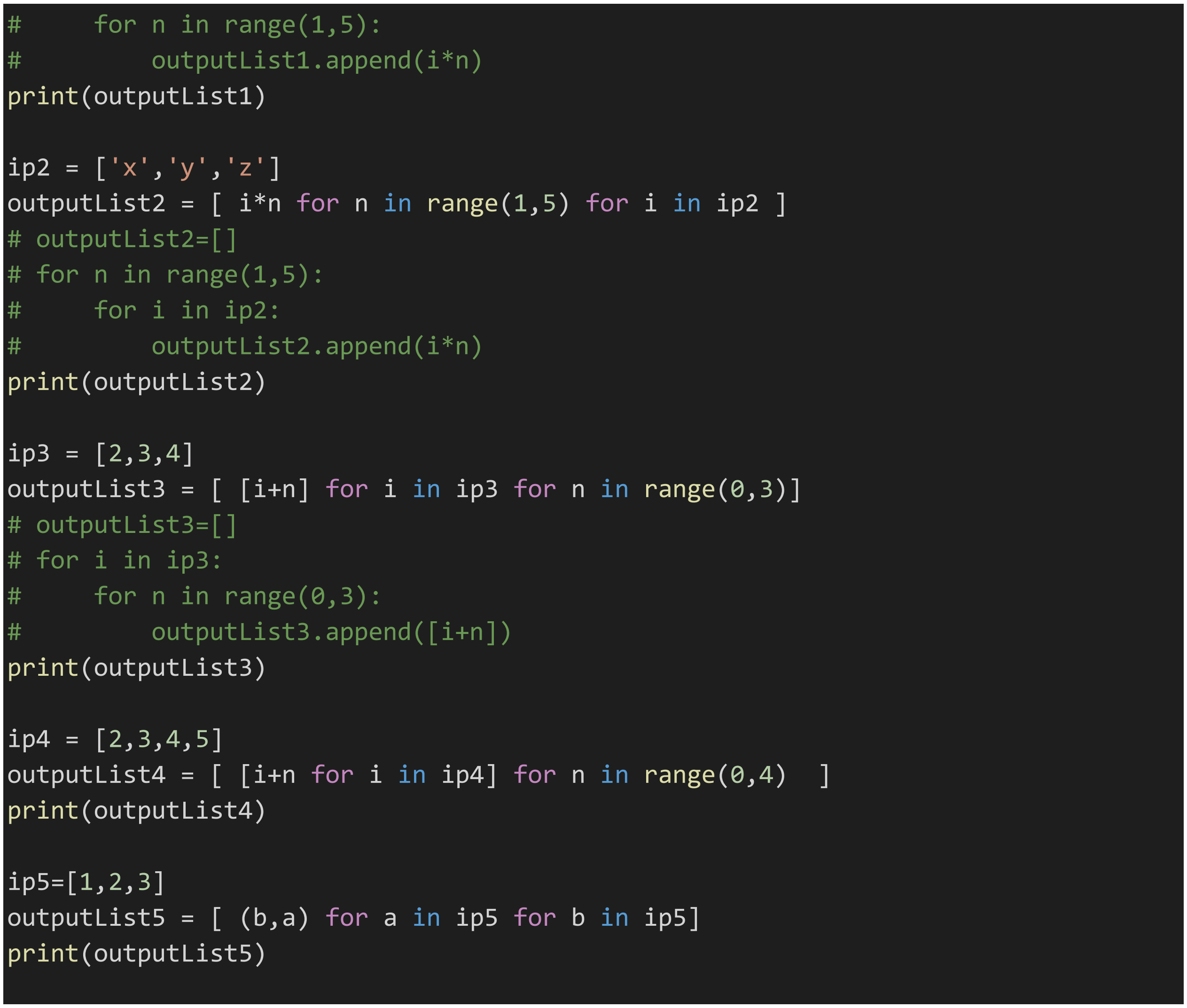
Output:



```
Enter the Interger List 1 2 3 -9 -6 0
Negative No Output is [-9, -6, 0]
```

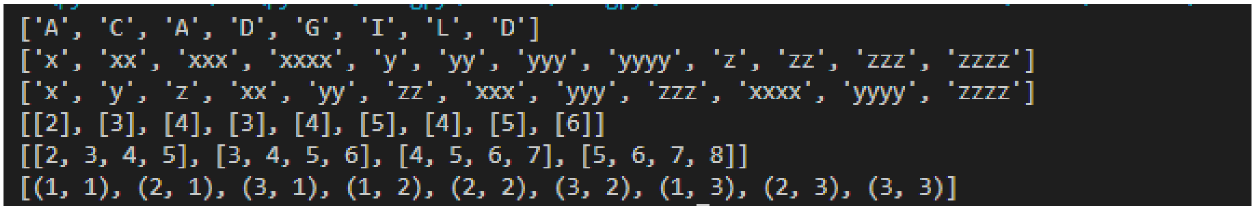
2. Implement List comprehensions to produce the following lists.
   Write List comprehensions to produce the following Lists
   ['A', 'C', 'A', 'D', 'G', 'I', 'L', ‘ D']
   ['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']
   ['x', 'y', 'z', 'xx', 'yy', 'zz', 'xx', 'yy', 'zz', 'xxxx', 'yyyy', 'zzzz']
   [[2], [3], [4], [3], [4], [5], [4], [5], [6]]
   [[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]
   [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]

```
ip = "ACADGILD"
outputList = [ i for i in ip ]
# outputList = []
# for i in ip:
#     outputList.append(i)
print (outputList)

ip1 = ['x','y','z']
outputList1 = [ i*n for i in ip1 for n in range(1,5)  ]
# outputList1=[]
# for i in ip1:
```



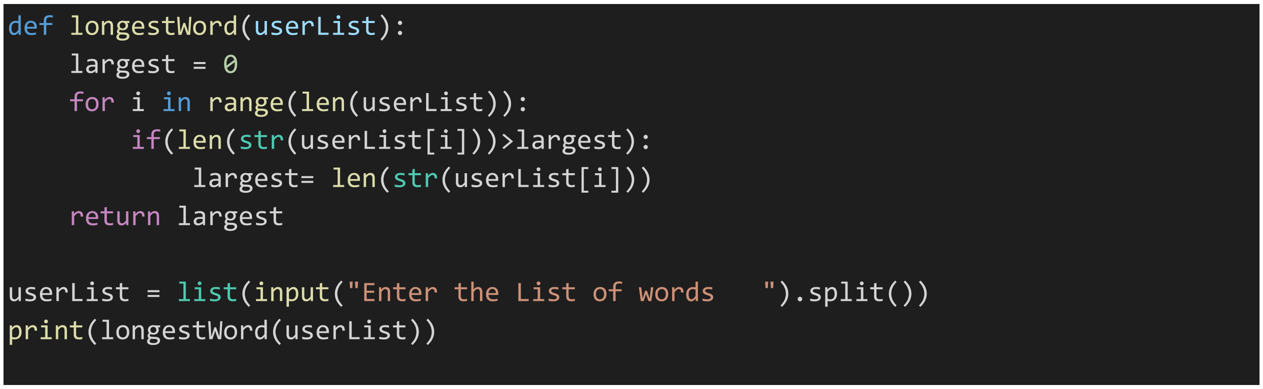
```
#     for n in range(1,5):
#         outputList1.append(i*n)
print(outputList1)

ip2 = ['x','y','z']
outputList2 = [ i*n for n in range(1,5) for i in ip2 ]
# outputList2=[]
# for n in range(1,5):
#     for i in ip2:
#         outputList2.append(i*n)
print(outputList2)

ip3 = [2,3,4]
outputList3 = [ [i+n] for i in ip3 for n in range(0,3)]
# outputList3=[]
# for i in ip3:
#     for n in range(0,3):
#         outputList3.append([i+n])
print(outputList3)

ip4 = [2,3,4,5]
outputList4 = [ [i+n for i in ip4] for n in range(0,4)  ]
print(outputList4)

ip5=[1,2,3]
outputList5 = [ (b,a) for a in ip5 for b in ip5]
print(outputList5)
```

Output:



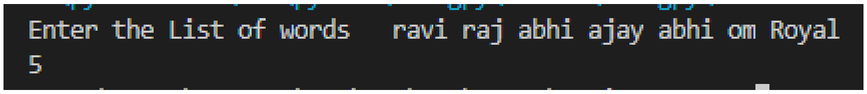
```
['A', 'C', 'A', 'D', 'G', 'I', 'L', 'D']
['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']
['x', 'y', 'z', 'xx', 'yy', 'zz', 'xxx', 'yyy', 'zzz', 'xxxx', 'yyyy', 'zzzz']
[[2], [3], [4], [3], [4], [5], [4], [5], [6]]
[[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]
[(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]
```

3. Implement a function longestWord() that takes a list of words and returns the longest one.



```
def longestWord(userList):
    largest = 0
    for i in range(len(userList)):
        if(len(str(userList[i]))>largest):
            largest= len(str(userList[i]))
    return largest

userList = list(input("Enter the List of words   ").split())
print(longestWord(userList))
```

Output:



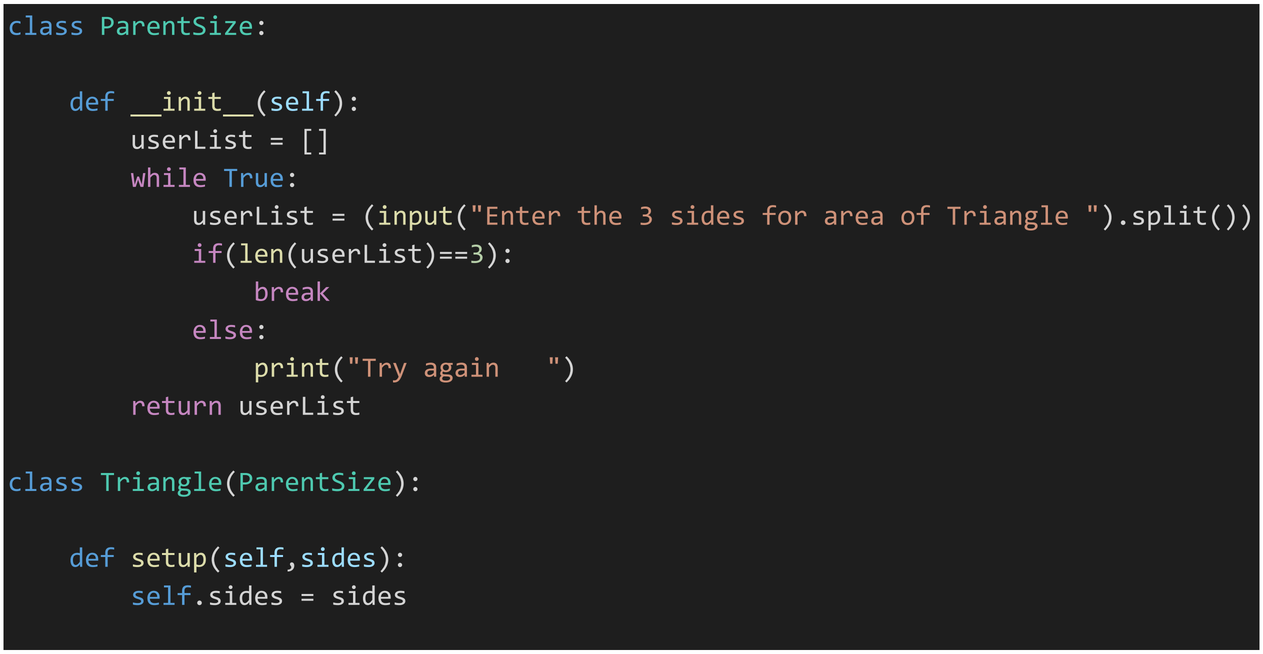
```
Enter the List of words   ravi raj abhi ajay abhi om Royal
5
```

Task 2:

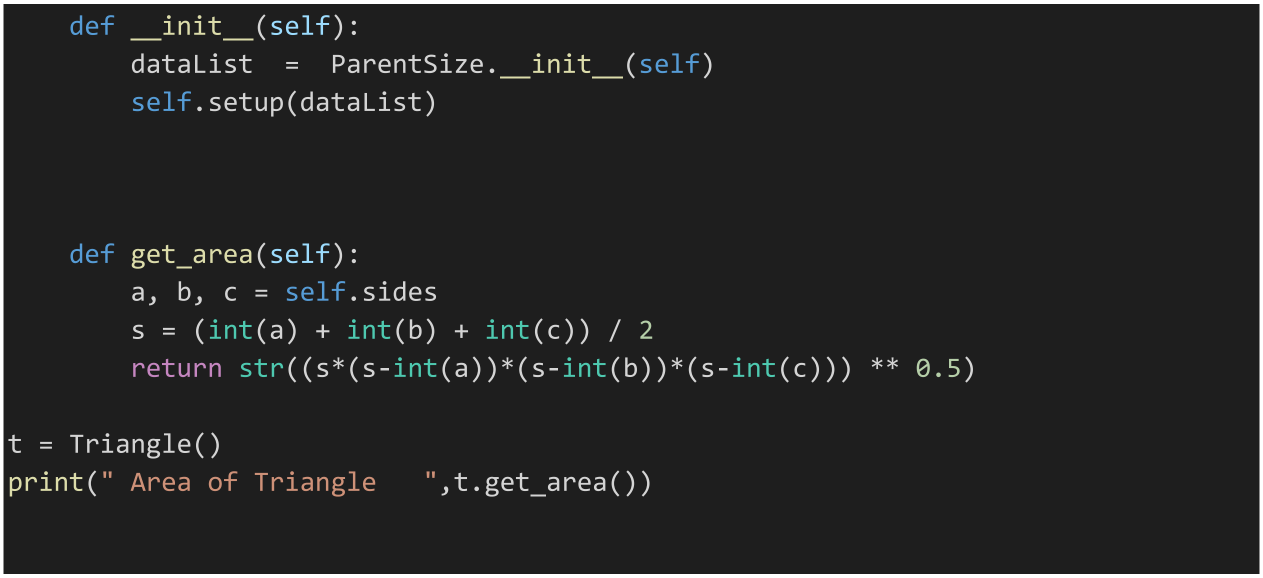
1.1. Write a Python Program(with class concepts) to find the area of the triangle using the below formula.

area = (s*(s-a)*(s-b)*(s-c)) ** 0.5

Function to take the length of the sides of triangle from user should be defined in the parent class and function to calculate the area should be defined in subclass.

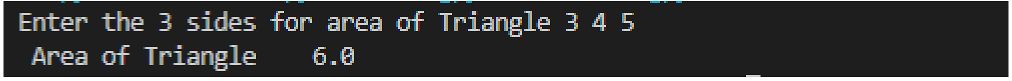


```
class ParentSize:

    def __init__(self):
        userList = []
        while True:
            userList = (input("Enter the 3 sides for area of Triangle ").split())
            if(len(userList)==3):
                break
            else:
                print("Try again   ")
        return userList

class Triangle(ParentSize):

    def setup(self,sides):
        self.sides = sides
```



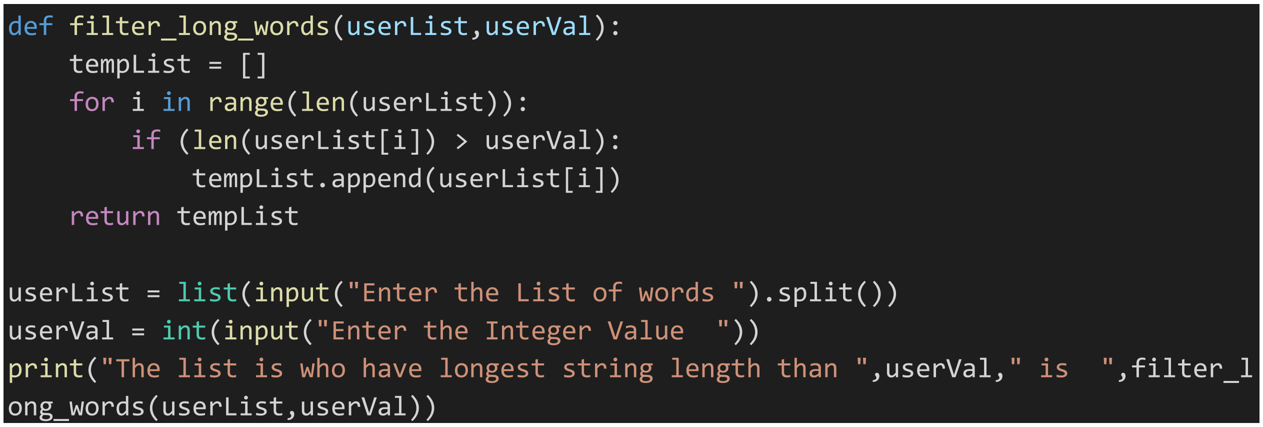
```
    def __init__(self):
        dataList  =  ParentSize.__init__(self)
        self.setup(dataList)



    def get_area(self):
        a, b, c = self.sides
        s = (int(a) + int(b) + int(c)) / 2
        return str((s*(s-int(a))*(s-int(b))*(s-int(c))) ** 0.5)

t = Triangle()
print(" Area of Triangle   ",t.get_area())
```

Output:



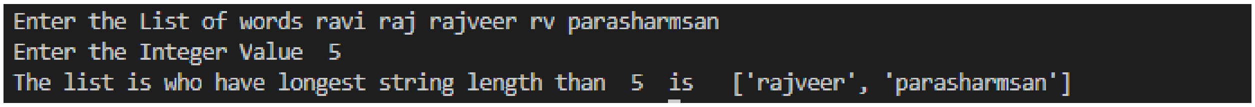
```
Enter the 3 sides for area of Triangle 3 4 5
 Area of Triangle    6.0
```

1.2. Write a function filter_long_words() that takes a list of words and an integer n and returns the list of words that are longer than n.



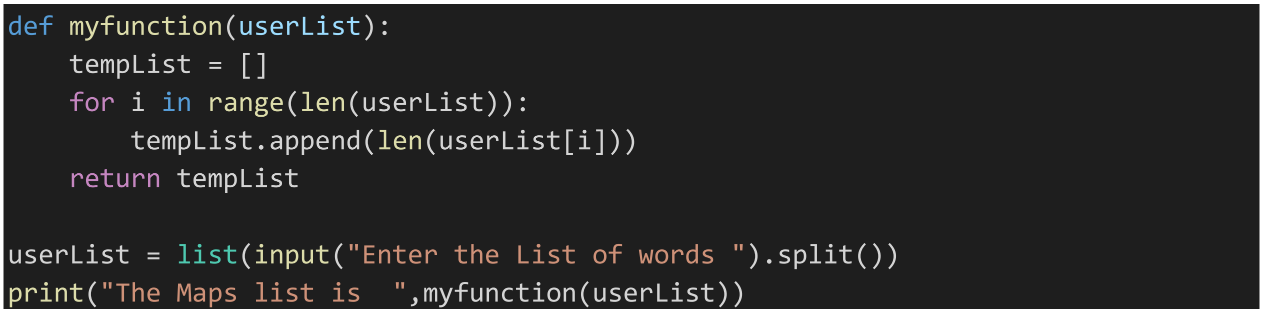
```
def filter_long_words(userList,userVal):
    tempList = []
    for i in range(len(userList)):
        if (len(userList[i]) > userVal):
            tempList.append(userList[i])
    return tempList

userList = list(input("Enter the List of words ").split())
userVal = int(input("Enter the Integer Value  "))
print("The list is who have longest string length than ",userVal," is  ",filter_l
ong_words(userList,userVal))
```

Output:



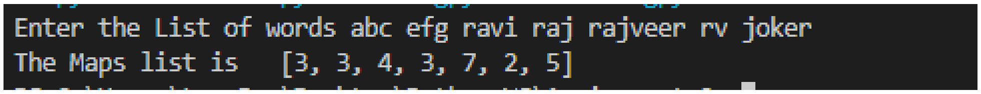
```
Enter the List of words ravi raj rajveer rv parasharmsan
Enter the Integer Value  5
The list is who have longest string length than  5  is   ['rajveer', 'parasharmsan']
```

2.1. Write a Python program using function concept that maps list of words into a list of integers representing the lengths of the corresponding words.
Hint: If a list [ab,cde,erty] is passed on to the python function output should come as [2,3,4]
Here 2,3 and 4 are the lengths of the words in the list.



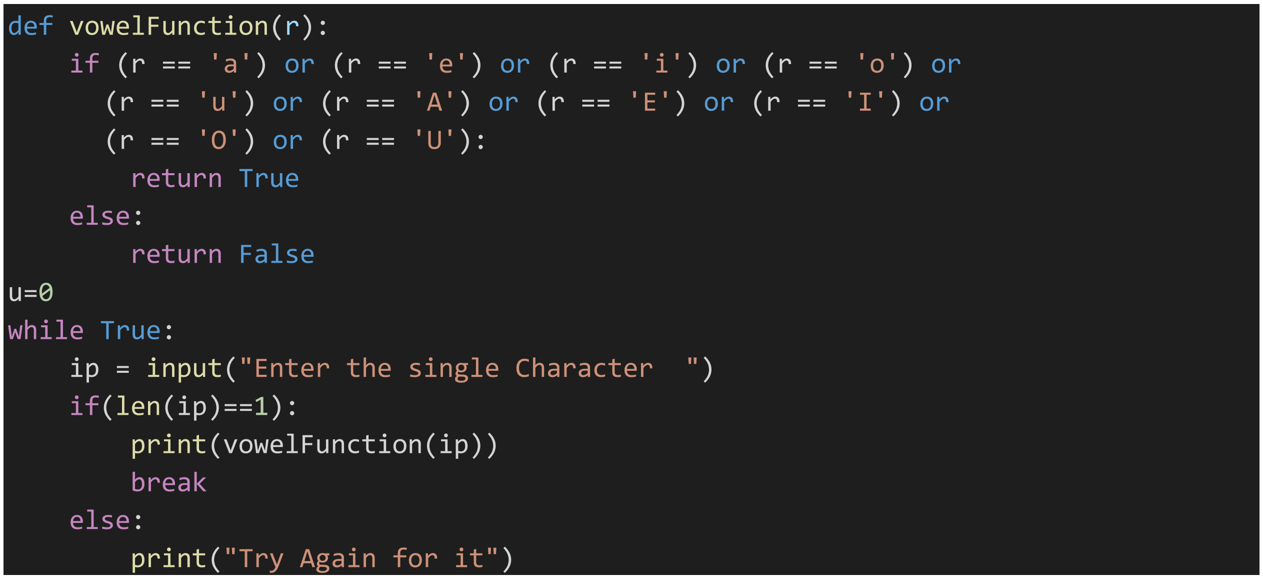
```
def myfunction(userList):
    tempList = []
    for i in range(len(userList)):
        tempList.append(len(userList[i]))
    return tempList

userList = list(input("Enter the List of words ").split())
print("The Maps list is  ",myfunction(userList))
```

Output:



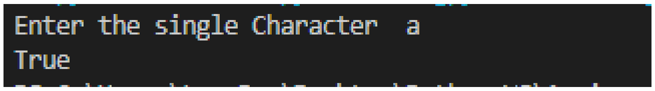
```
Enter the List of words abc efg ravi raj rajveer rv joker
The Maps list is   [3, 3, 4, 3, 7, 2, 5]
```

2.2. Write a Python function which takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.
NOTE: The solution shared through Github should contain the source code used and the screenshot of the output.



```
def vowelFunction(r):
    if (r == 'a') or (r == 'e') or (r == 'i') or (r == 'o') or
      (r == 'u') or (r == 'A') or (r == 'E') or (r == 'I') or
      (r == 'O') or (r == 'U'):
        return True
    else:
        return False
u=0
while True:
    ip = input("Enter the single Character  ")
    if(len(ip)==1):
        print(vowelFunction(ip))
        break
    else:
        print("Try Again for it")
```

Output:



```
Enter the single Character  a
True
```