Problem Statement

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.

Solution:

```
class Triangle:
 def __init__(self, side1, side2, side3):
  self.side1 = side1
  self.side2 = side2
  self.side3 = side3
  print ("Initialised Triagle super class [" +  str(side1) + "," + str(side2) + "," + str(side3) + "]")

class Triangle_Utilities(Triangle):

 def __init__(self, side1, side2, side3):
  print ("Initialised Utils Child class" )
  super(Triangle_Utilities, self).__init__(side1, side2, side3)

 def get_area(self):
  s = (self.side1 + self.side2 + self.side3)/2
  print (str(s))
  return (s*(s-self.side1)*(s-self.side2)*(s-self.side3))**0.5

instance = Triangle_Utilities(3,4,5)
print ("Area of triangle = " + str(instance.get_area()) )
```

```
Initialised Utils Child class
Initialised Triagle super class [3,4,5]
6.0
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.

```
class list_Utilities:
 def __init__(self, wordlist):
  self.wordlist = wordlist
  print ("Initialised list_Utilities object")

 def filter_long_words(self, n):
  return list(filter(lambda x:len(x) > n, self.wordlist))

instance = list_Utilities(["This","is","a","beautiful","day"])
print ("New List of Words  => " + str(instance.filter_long_words(3)) )
```

```
Initialised list_Utilities object
New List of Words  => ['This', 'beautiful']
```

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 map_Words_to_Length(List):
    ''' This function Map's the words with their corresponding length'''
    return list(map(len, List))

word_List=list(input("Input : Please enter Words : ").split(","))
#List Comprehension has been done to remove white trailing white spaces
List=[x.strip() for x in word_List]
#function Execution
Words_lengths=map_Words_to_Length(List)

print("Output: Length of Words are :",Words_lengths )
```

```
Input : Please enter Words : ab,cde,erty
Output: Length of Words are : [2, 3, 4]
```

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.

```
def is_vowel(char):
    all_vowels = 'aeiou'
    return char in all_vowels

c=input('Enter any alphabet')
print(is_vowel(c))
```

```
Enter any alphabetl
False
```
