PYTHON - 4 - Assignment

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Problem 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.

In [1]:

```
import math

class TriangleDifinition:
    def __init__(self):
            self.SideA=float(input('Enter SideA:\t'))
            self.SideB=float(input('Enter SideB:\t'))
            self.SideC=float(input('Enter SideC:\t'))

class Triangle(TriangleDifinition):
    def Area(self):
        a=self.SideA
        b=self.SideB
        c=self.SideC
        s=(a+b+c)/2
        if (s*(s-a)*(s-b)*(s-c)) >=0:
            area = "Area:\t\t" + str((s*(s-a)*(s-b)*(s-c)) ** 0.5)
        else:
            area = "Area:\t\tInvalid Input!!"
        return (area)

# Call the Triangle Class with the side value and calculate area
Triangle1 = Triangle()
print(Triangle1.Area())
```

```
Enter SideA:    12
Enter SideB:    15
Enter SideC:    20
Area:           89.66569856974293
```

Problem 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.

In [2]:

```
def filter_long_words(listOfWords,n):
    lstOutput=[Word for Word in listOfWords if len(Word)>n]
    return lstOutput


# Call filter_long_words with a list of Words
lst=list('Write a function filter_long_words() that takes a list of words'.split(' '))
print('Input Word List:\n\t', lst)
print('\nResult list:\n\t', filter_long_words(lst,4))
```

```
Input Word List:
        ['Write', 'a', 'function', 'filter_long_words()', 'that', 'take
s', 'a', 'list', 'of', 'words']

Result list:
        ['Write', 'function', 'filter_long_words()', 'takes', 'words']
```

Problem 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.

In [3]:

```
def LenthOfWords(listOfwords):
    lstOutput=[len(Word) for Word in listOfwords]
    return lstOutput

# Call filter_long_words with a list of Words
lst=list('Write a Python program using function'.split(' '))
print('Input Word List:\n\t', lst)
print('\nResult list:\n\t', LenthOfWords(lst))
```

```
Input Word List:
        ['Write', 'a', 'Python', 'program', 'using', 'function']

Result list:
        [5, 1, 6, 7, 5, 8]
```

Problem 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.

In [5]:

```
def isVowel(char):
    bOut = False
    lstVowels = "AaEeIiOoUu"
    lstOutput=[1 for Vowel in lstVowels if Vowel==char]
    bOut = bool(sum(lstOutput))
    return bOut

# Call isVowel
strInput=input('Enter a chatacher: \t')
print('Is the char vowel?\t',isVowel(strInput))
```

```
Enter a chatacher:      a
Is the char vowel?       True
```