Data Science Masters :Assignment 4

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 [26]:
```
# Solution:

class InputClass():  # Parent Class
    def __init__(self,sides=[]):
        self.input_sides = sides
    def getInput(self):
        self.input_sides = [float(input("Enter the value of side "+str(i+1)+" : ")) for i in range(3)]
class OutputClass(InputClass): # SubClass
    def findArea(self):
        a,b,c = self.input_sides
        s = (a + b + c) / 2         # calculate the semi-perimeter
        area = (s*(s-a)*(s-b)*(s-c)) ** 0.5
        print('Area of the triangle is %0.2f' %area)

triangle = OutputClass() # Object for subClass (OutputClass)
triangle.getInput()      # Accessing the parent class method getInput()
triangle.findArea()      # Calculating the area defined in subclass findArea()
```

```
Enter the value of side 1 : 3
Enter the value of side 2 : 4
Enter the value of side 3 : 5
Area of the triangle is 6.00
```

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 [1]:
```
# Solution:

def filter_long_words(strList,n):
    return [word for word in strList if len(word) > n]
inputStrList = input("Enter the List of names in a comma-seperated format: ")
inputList = inputStrList.split(",")
numberChar =  int(input("Enter the number of characters for filtering the list: "))
print("Filtered List with more than",numberChar,"characters:",filter_long_words(inputList,numberChar))
```

```
Enter the List of names in a comma-seperated format: Marcy,Rod,James,Smith,Lara,Sherry,Paul,Jim,Colin,Craig
Enter the number of characters for filtering the list: 4
Filtered List with more than 4 characters: ['Marcy', 'James', 'Smith', 'Sherry', 'Colin', 'Craig']
```

2.1 Write a Python program using function concept that maps list of words into a list of integer 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 [2]:
```
# Solution:

def str_mapwithlength(strList):
    return [len(word) for word in strList]
inputStrList = input("Enter the List of words in a comma-seperated format: ")
inputList = inputStrList.split(",")
print("Output List:",str_mapwithlength(inputList))
```

```
Enter the List of words in a comma-seperated format: a,bc,def,ghij,klmno,pqrstu,vwxyz12
Output List: [1, 2, 3, 4, 5, 6, 7]
```

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 [3]:
```
# Solution:

def checkVowel(char):
    c = char.upper()
    if (c == "A" or c == "E" or c == "I" or c == "O" or c == "U"):
        return True
    else:
        return False
char =  input("Enter the letter to check whether it is Vowel or Consonant: ")
if(checkVowel(char)):
    print(char,"is a vowel")
else:
    print(char,"is a consonant")
```

```
Enter the letter to check whether it is Vowel or Consonant: e
e is a vowel
```