1. Introduction

This assignment will help you to consolidate the concepts learnt in the session.

2. 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.

Source Code:

```
class Triangle:
    def __init__(self,a,b,c):
        self.a = float(a)
        self.b = float(b)
        self.c = float(c)

    def area(self):
        s=(self.a + self.b + self.c)/2
        return((s*(s-self.a)*(s-self.b)*(s-self.c))**0.5)

a=input("Enter the value of a = ")
b=input("Enter the value of b = ")
c=input("Enter the value of c = ")
t = Triangle(a, b, c)
print("area : {}".format(t.area()))
```

Output Screenshot:

In [50]:
```
class Triangle:

    def __init__(self,a,b,c):
        self.a = float(a)
        self.b = float(b)
        self.c = float(c)

    def area(self):
        s=(self.a + self.b + self.c)/2
        return((s*(s-self.a)*(s-self.b)*(s-self.c))**0.5)

a=input("Enter the value of a = ")
b=input("Enter the value of b = ")
c=input("Enter the value of c = ")
t = Triangle(a, b, c)
print("area : {}".format(t.area()))
```

```
Enter the value of a = 2
Enter the value of b = 3
Enter the value of c = 4
area : 2.9047375096555625
```

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.

Source Code:

```
def filter_long_words(l,a):
    words=[]
    for j in l:
        if(len(j)>=a):
            words.append(j)
    return words

n=input("Please input the list of words: ")
nt=n.split(",")
na=input("Please input an integer: ")
long=filter_long_words(nt,int(na))

print("The list of words greater than the integer is",long)
```

Output Screenshot:

```
In [6]: def filter_long_words(l,a):
            words=[]
            for j in l:
                if(len(j)>=a):
                    words.append(j)
            return words

        n=input("Please input the list of words: ")
        nt=n.split(",")
        na=input("Please input an integer: ")
        long=filter_long_words(nt,int(na))

        print("The list of words greater than the integer is",long)
```

```
Please input the list of words: Paes,Pele,Sindhu,Sachin,Leonardo,Maradona
Please input an integer: 5
The list of words greater than the integer is ['Sindhu', 'Sachin', 'Leonardo', 'Maradona']
```

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.

Source Code:

```
def translate(*args):
    list1=[]
    for i in args:
        list1.append(i)

    list2=[]
    for i in list1:
        list2.append(len(i))
    print(list2)

translate("hi","world","kolkata")
```

Output Screenshot:

```
def translate(*args):
        list1=[]
        for i in args:
                list1.append(i)

        list2=[]
        for i in list1:
                list2.append(len(i))
        print(list2)

translate("hi","world","kolkata")
```

```
[2, 5, 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.

Source Code:

```
def is_vowel(char):
    all_vowels = 'aeiou'
    return char in all_vowels
print(is_vowel('j'))
print(is_vowel('o'))
print(is_vowel('c'))
print(is_vowel('e'))
print(is_vowel('k'))
```

Output Screenshot:

```
In [17]: def is_vowel(char):
             all_vowels = 'aeiou'
             return char in all_vowels
         print(is_vowel('j'))
         print(is_vowel('o'))
         print(is_vowel('c'))
         print(is_vowel('e'))
         print(is_vowel('k'))

         False
         True
         False
         True
         False
```