**ASSIGNMENT NUMBER 3**

**STATEMENT**:  Implement C++/Java/Python program to create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called function get\_data() to initialize base class data members and another member function display\_area() to compute and display the area of figures. Make classes to suit their requirements. Using these three classes, design a program that will accept dimension of a triangle or a rectangle interactively, and display the area. Remember the two values given as input will be treated as lengths of two sides in the case of rectangles, and as base and height in the case of triangles, and used as follows:  
Area of rectangle= x\*y Area of triangle =1/2\*x\*y

**AIM**: To create a base class and derived classes to calculate the area of triangle or rectangle.

**DESCRIPTION**: Create a base class shape which gets the input as dimensions of shape.

Ask user area of which shape is to be calculated and according to that call the function of respective class and display the area.

Source Code:

**#include<iostream>**

**using namespace std;**

**class Shape //base class**

**{**

**public:**

**double a,b;**

**virtual void get\_data () = 0; //Accepting Values**

**virtual void display\_area () = 0;**

**};**

**class Triangle:public Shape // calculating & Displaying area**

**{**

**public:**

**void get\_data()**

**{**

**cin>>a>>b;**

**}**

**void display\_area ()**

**{**

**cout<<"Area of triangle "<<0.5\*a\*b<<endl;**

**}**

**};**

**class Rectangle:public Shape // calculating & Displaying area**

**{**

**public:**

**void get\_data()**

**{**

**cin>>a>>b;**

**}**

**void display\_area ()**

**{**

**cout<<"Area of rectangle "<<a\*b<<endl;**

**}**

**};**

**int main()**

**{**

**Triangle t;**

**Shape \*st = &t;**

**cout<<"Enter base and height of triangle : ";**

**st->get\_data();**

**st->display\_area();**

**Rectangle r;**

**Shape \*sr = &r;**

**cout<<"Enter length and breadth of rectangle: ";**

**sr->get\_data();**

**sr->display\_area();**

**return 0;**

**}**

**OOP CONCEPT USED**:

1. **Class**-:The building block of C++ that leads to Object Oriented programming is a Class. It is a user defined data type, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class. A class is like a blueprint for an object.
2. **Object**-: An Object is an instance of a Class. When a class is defined, no memory is allocated but when it is instantiated (i.e. an object is created) memory is allocated. In this assignment, we created objects for all classes to use significantly to calculate the area of shape.

**CONCLUSION**: In this assignment, we learned the use of classes and objects in object oriented programming.