

Lab Assignment-6

6. Programming project on Pointers, Virtual Functions and Polymorphism

- 6.1 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 triangle and rectangle from the base shape. Add to the base class, a member function `get_data()` to initialize base class data members and another member function `display_area()` to compute and display the area of figures. Make `display_area()` as a virtual function and redefine this function in the derived classes to suit their requirements.

Using these three classes, design a program that will accept dimensions 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 = $\frac{1}{2} * x * y$

- 6.2 Extend the above program to display the area of circles. This requires addition of a new derived class 'circle' that computes the area of a circle. Remember, for a circle we need only one value, its radius, but the `get_data()` function in base class requires two values to be passed.(Hint: Make the second argument of `get_data()` function as a default one with zero value.)