

## Polymorphism

1. Write a console based program to implement polymorphism using inheritance. Consider the example of Shape as base class with method show(). And then a child class Circle and Rectangle which inherit the base class Shape and override its method show(). Add one more Method with the name of getInfo(). This method would display the class name in which it is implemented. Do not override this method. When you will call the method getInfo() with child object it would still show the name of the base class, which implies that method has been directly inherited and was not overridden.

2. Write a subclass called SubClass that is derived from SuperClass and that adds an integer data field called data2 and a public method called checkCondition() that will check if data1 is equal to 10 and data2 is equal to 15, the checkCondition () method should return “Condition True!”. Also, create methods called setData2() and getData2() for setting and retrieving the value of data1 and data2, as well as a constructor that accepts arguments for the starting values of data1 and data2. data1 is data member of SuperClass.

3. Create a class named Pizza that stores information about a single pizza. It should contain the following:

- Private instance variables to store the size of the pizza (either small, medium, or large), the number of cheese toppings, the number of pepperoni toppings, and the number of ham toppings
- Constructor(s) that set all of the instance variables.
- Public methods to get and set the instance variables.
- A public method named calcCost( ) that returns a double that is the cost of the pizza.

Pizza cost is determined by:

Small: \$10 + \$2 per topping

Medium: \$12 + \$2 per topping

Large: \$14 + \$2 per topping

- public method named getDescription( ) that returns a String containing the pizza size, quantity of each topping.

Write test code to create several pizzas and output their descriptions. For example, a large pizza with one cheese, one pepperoni and two ham toppings should cost a total of \$22. Now Create a PizzaOrder class that allows up to three pizzas to be saved in an order. Each pizza saved should be a Pizza object. Create a method calcTotal() that returns the cost of order. In the runner order two pizzas and return the total cost.