Kantipur Engineering College

Dhapakhel, Lalitpur

Subject: Object-Oriented Programming
Lab - 10

Title:
Runtime polymorphism

Objective:

- To be familiar with the concept of runtime polymorphism.
- To understand how the virtual functions help in the runtime polymorphism.

Theory:

- Compile time polymorphism vs runtime polymorphism
- Need for virtual function
- Array of pointers to derived class
- Abstract class versus concrete class
- Pure virtual function

Lab exercises

1. WAP to create a class named media with title and price as its data members and display as its member function. Derive two classes book and tape from the class media. Class book should have pages as its member and class tape should have time as its members. Your program should have a constructor to initialize the data members and the display should be a virtual function.

2. Write a program with Student as an abstract class and create derive classes Engineering, Medicine, and Science from base class Student. Create the objects of the derived classes and access them using an array of pointers of type base class Student. Your program should have input and display as a virtual function.

3. Create an abstract class shape with two members x and y, a constructor for initialization, and a pure virtual function to compute area( ). Derive three specific classes, Triangle, Rectangle, and Circle which override the function area () Use these classes in the main( ) function and display the area of the triangle, rectangle, and circle.