Programming Paradigms Lab Assignment (CS 2273)

Assignment Sheet 4 (Part 1) : Inheritance and Polymorphism using C++

Time : Two weeks

Develop the below mentioned programs using these concepts wherever applicable -

- Any C++ concepts as mentioned in previous Assignments
- Inheritance – Multiple, Multilevel and Hybrid wherever applies
- Dynamic Polymorphism

Problems

1. Complete the following classes with suitable data members and methods. In client program take instance of these classes and demonstrate various functionality of these objects.

```
Class Vehicle {
private :
     // Price
     // Manufacturer
public :
    // Default constructor
    // Parametrized constructor
    // Copy constructor
    // Assignment operator
    // Read data
    // Display data
};
```

```
Class Car : public Vehicle {
    private :
        // Color
        // Number Of Seats
        // Model

    public :
        // Default constructor
        // Parametrized constructor
        // Copy constructor
        // Assignment operator
        // Read data
        // Display data
};
```

2. Write a program to design Classes for `Student, Clerk, Professor`. Each of these Classes should contain below mentioned attributes. Make sure proper class hierarchy is designed following the principle of inheritance.

   Provide a mechanism to display the profile/detail of various kind of Object of these class.

   `Student` : Name, Age, Gender, Dept, Year

   `Clerk` : Name, Age, Gender, WorkLoad, Salary

   `Professor` : Name, Age, Gender, Dept, CourseLoad, Salary

3. A plot is broken into different geometric shapes like `Triangle`, `Rectangle` and `Circle` of different size of arbitrary number. Provide a mechanism to sum up total area covered by these shapes.