

Programming Paradigms Lab Assignment (CS453)

Assignment Sheet 5 : C++ Inheritance and Polymorphism

Time : Two weeks

Develop the below programs with C++ Class and Object concepts mentioned below wherever applicable.

- Any C++ concepts as mentioned in Assignment Sheet 3
- Inheritance
- Polymorphism

Problems

1. Complete the classes below 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
        // NumberOfSeats
        // 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 information. Make sure proper class hierarchy is designed following the principle of inheritance.

Student : Name, Age, Gender, Dept, Year

Clerk : Name, Age, Gender, WorkLoad, Salary

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

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

Once problem 1 and 2 are completed, then attempt problem 3.

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.