**Assignment (Lab):**

You are tasked with designing a C++ program that demonstrates the use of multiple inheritance. Create three classes:

Shape, Color, and ColoredShape. The Shape class should have a member function getArea() that calculates and returns the area of the shape. The Color class should have a member variable color and a member function setColor() to set the color. The ColoredShape class should inherit from both Shape and Color and should provide a function displayInfo() that displays the color and area of the shape.

Write the C++ program to implement these classes and demonstrate their use in the main() function by creating an instance of ColoredShape and displaying its information  
  
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**Practice: (Lab)**

1. You are tasked with designing a program to manage employees in an organization. You need to create a set of classes to represent different types of employees using inheritance. The common properties for all employees are their name, employee ID, and salary.

Create a base class called Employee with data members for the name, employee ID, and salary. Include member functions for setting and getting these properties.

Create three derived classes: Manager, Developer, and Designer. Each of these classes should inherit from Employee and add a specific property related to the type of employee (e.g., department for Manager, Programming Language for Developer, and Design Specialty for Designer).

Implement constructors for each of the derived classes to initialize their specific properties.

Create member functions in each derived class to display information about the employee, including the common properties and the type-specific property.

In the main() function, create instances of Manager, Developer, and Designer, set their properties, and display their information.

Write the C++ program to implement these classes and demonstrate their use in the main() function.

Date: 04.11.2023

**Final Lab Test**

**Time: 11:00 AM - 1 PM**

Syllabus:

1. Operator Overloading:

- Binary operator overloading

- Unary operator overloading

- Relational and logical operator overloading

- Operator overloading using friend functions

2. Inheritance:

- Single inheritance

- Multiple inheritance

- Multilevel inheritance

3. Virtual Functions:

- Applying Polymorphism using virtual functions

- Pure Virtual functions

- Abstract classes

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Lecture-7: Solving problems from the text book practice section.

Topic: Operator Overloading (CLO2)

Lecture-8: Problem solving:

Solving problems from the text book

Topic: Inheritance, Defining derived classes, Single inheritance, multiple inheritance

(CLO2)

Lecture-9:

Problem solving:

Solving problems from the text book

Topic: Multilevel inheritance, Hierarchical inheritance, Virtual base classes, Constructors in derived classes, Nesting of classes.

(CLO2)

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**Course Code: CSE-1221 Course Title: Computer Programming-II**

**(Assignment)**

**Total marks: 10**

**Deadline: 04.11.2023**

Marks-10:

1. Create a class named "Student" with public members for "name," "ID," "semester," and "section," and a private member for "cgpa."

Implement two member functions, "get\_data" to input student data and "show\_data" to display it.

Extend the class for 'N' students. Prompt the user for 'N,' declare an array of 'N' student objects, input data for each student using "get\_data," and display each student's data using "show\_data."

2. Create a class named "Customer" with public members for "name," "address," "mobile," and a public array "price" consisting of 10 elements.

Implement two member functions, "get\_data" to input customer data and "show\_data" to display it.

Extend the class for 'N' customers. Prompt the user for 'N,' declare an array of 'N' customer objects, input data for each customer using "get\_data," and display each customer's data using "show\_data."

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**Final Quiz Syllabus:**

- Class, Object, Access Specifiers

- Constructor and Destructor, Constructors with parameters, passing objects to functions, returning objects from function

- Friend functions

- Operator Overloading

- Inheritance: Defining derived classes, Single inheritance, multiple inheritance, Multilevel inheritance

- Polymorphic class, Pure Virtual functions, Abstract classes.