Lab 06 Tasks:

1. Create a base class named Rectangle that includes data members for the length and width of a Rectangle, as well as functions to assign and display those values. Derive a class named Block that contains an additional data member to store height, and contains functions to assign and display the height. Write a main() function that demonstrates the classes by instantiating and displaying the values for both a Rectangle and a Block.

2. Imagine a publishing company that markets both book and audiocassette versions of its works. Create a class publication that stores the title (a string) and price (type float) of a publication. From this class derive two classes: book, which adds a page count (type int), and tape, which adds a playing time in minutes (type float). Each of these three classes should have a getdata() function to get its data from the user at the keyboard, and a putdata() function to display its data.
   Write a main() program to test the book and tape classes by creating instances of them, asking the user to fill in data with getdata(), and then displaying the data with putdata().

3. Create a class Person with default constructor. Inherit a new class called Student from class Person with default constructor and create a Teacher class which inherit from Person that also contain default constructor. In the main function create Teacher, Student and Person objects and observe the results.

4. Design a class named Employee. The class should keep the following information in
   - Employee name
   - Employee number
   - Hire date

   Write one or more constructors and the appropriate accessor and mutator functions for the class.
   Next, write a class named ProductionWorker that is derived from the Employee class. The ProductionWorker class should have member variables to hold the following information:
   - Shift (an integer)
   - Hourly pay rate (a double)

   The workday is divided into two shifts: day and night. The shift variable will hold an integer value representing the shift that the employee works. The day shift is shift 1, and the night shift is shift 2. Write one or more constructors and the appropriate accessor and mutator functions for the class. Demonstrate the classes by writing a program that uses a ProductionWorker object.

5. In a vehicle manufacturing company, there are different types of vehicles:
   - Vehicle class that contains general attributes like manufacturer, model, and methods like getInfo().
   - Car class that inherits from Vehicle, with additional attributes like numDoors and methods like getCarDetails().
   - ElectricCar class inherits from Car, with additional attributes like batteryCapacity, and a method getElectricCarDetails().

   Write a program to implement this hierarchy and demonstrate how a ElectricCar object can access data and methods from both Vehicle and Car classes. Include methods to input and output the details of the electric car.

6. In a university, the base class is Person which includes general details like name and age.
   - The Teacher class inherits from Person and has attributes like subject and salary, with a method getTeacherDetails().
   - The Student class also inherits from Person and has attributes like rollNumber and course, with a method getStudentDetails().

   Write a program where Person is the base class, and both Teacher and Student inherit from it. Create a Teacher object and a Student object, input their details, and display them using their respective methods. Demonstrate how both derived classes share common properties from the Person class.