LAB TASKS:

Task - 01:

A school library wants to organize its library system by categorizing books according to their genre. They need an automated system that will allow them to input the details of the books that are in their library. To do this, you need to implement a program that contains a base class called **Books** that will contain a data member to store the genre of the book. Derive two other classes from the base class and name them accordingly. Each of these two classes will hold details about a book from a specific genre of your choice such as Novel, Narrative, Mystery and so on. The derived class will contain data members to store the title and the author of the book. Display the details of each book along with their genre.

Task - 02:

A vehicle company is deciding to hire a programmer to develop a system that will allow the company to enter the details of the vehicles sold by them. As a programmer, you need to implement a program that contains a base class called **Vehicles** that contains a data member to store the price of the vehicles. Derive two other classes named as **Car** and **Motorcycle**.

- The Car class will contain data members to store details that include seating capacity, number of doors and fuel type (diesel or petrol).
- The Motorcycle class will contain data members to store details such as the number of cylinders, the number of gears and the number of wheels.

Derive another subclass named as Audi of Car and Yamaha of Motorcycle.

- The Audi class will contain a data member to store the model type.
- The Yamaha class will contain a data member to store the make – type.

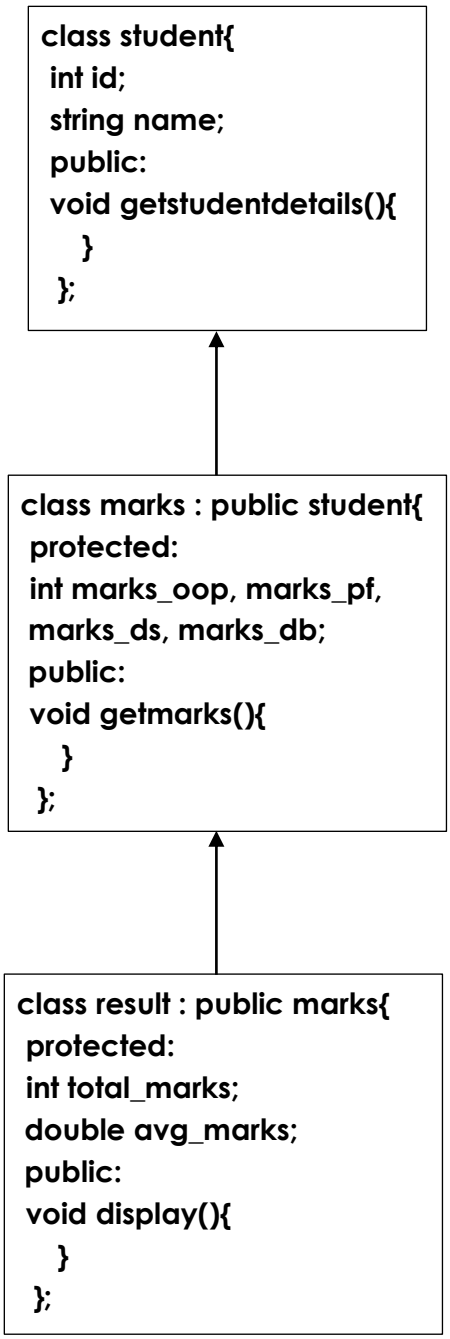
Display the details of an Audi car (price, seating capacity, number of doors, fuel type, model type) and the details of the Yamaha motorcycle (price, number of cylinders, number of gears, number of wheels, make – type).

Task - 03:

A university is deciding to upgrade its system. In order to upgrade, you need to implement the following scenario as shown in the figure:
Note the following:

- The class student has a function that displays all the information about the student.
- Class marks is derived from class student and has a function that displays all the marks obtained in the courses by the students.
- Class result is derived from class marks. This class has a function that calculates the total marks and then calculates the average marks. It then displays both the total and the average marks.
- In the main function you are required to do the following:
    - Create an object of the result class.

- Then display the student details, the marks obtained in each courses and the total and the average marks.



Task 04:

Your instructor teaches three different subjects HCI, OOP, and DLD. He marked the student's exam and now he wants to find the total marks, average marks of each subject students. Your instructor asked you to write a program for him which can help him in above given scenario. your program will ask the user to input number of students along with their names, ids and marks (as base class). your program must also

contain three more classes for mentioned subjects (a class per subject DLD, HCI, OOP) which will be derived from the base class and will be used for defining the student's marks. your program must generate the student id autonomously for each student.

Task 05:

Consider the same scenario given above and write a class with name PercentagePerSubject which will be derived from class DLD, HCI and OOP and will return the average of each class. (Also write down about the type of inheritance which will be used).

Task 06:

You are hired by daraz.com the assigned you a task to write a program which contains a class with name T-shirts containing data member to calculate number of clothes in basket (assume that user bought). Create two more classes with name and V-neck and O-neck which calculates number of V-neck shirts and O-Shirts in basket. Print number of t-shirts of each type and the total number of t-shirts in each basket.