

Comp111-Programming II

ASSIGNMENT # 3

OOP – Objects and relationships

Task 1

Create a base class called Vehicle that has the manufacturer's name (type string), number of cylinders in the engine (type int), and owner (type Person, defined separately).

Then create the following derived classes.

A class called Truck that is derived from Vehicle and has additional properties like the load capacity in tons (type double since it may contain a fractional part) and towing capacity in kilograms (type int).

A class called Bus that is derived from Vehicle and has additional properties like the no of passengers (type int) and luggage weight. There should be a function to display the RouteInfo (type Route, defined separately)

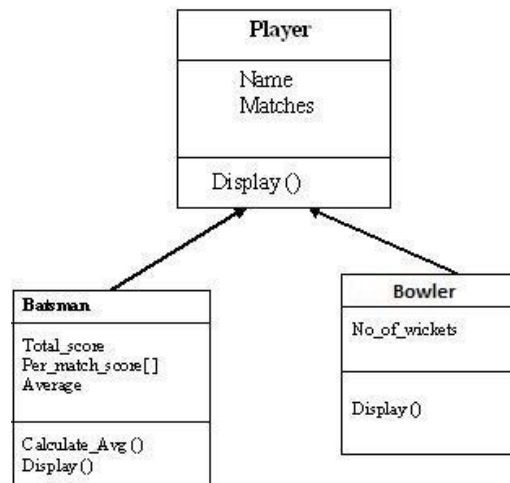
The classes Person and Route shall be defined separately. Person class defines all the attributes and functions of a person who may be the owner of a vehicle. The class route defines all the attributes related to a route, like travelling time, distance, source, destination, fare etc. It is associated to class Bus.

Write a main function creates multiple objects of Truck and Bus. It then displays all the information related to that objects in a loop.

Hint: Inheritance, composition/aggregation, association and polymorphic behavior should be reflected in your solution.

Task 2

Write a **PYTHON** program that implements the given class hierarchy.



Your program contains **three classes**

1- Player

This class contains two data members

- i. Name //Player's name
- ii. Matches //for number of matches player played

The Player class should contain a member function named Display() which is meant to display the data members values on the screen.

There should be an **abstract method** PlayerType() in player class.

2- Batsman

This class should contain the following data members

- I. Total_score //for total scores a Batsman scored
- II. Per_match_score[] //for per match score, the list size should equal to the number of matches a Batsman/Player played
- III. Average //for score's average

This class should also contain two member functions. One of which named Calculate_Avg () which is meant to calculate average scores of batsmen. It should also contain another member function named Display() which is meant to display the information of Batsman. Before displaying the data members of Batsman, it should display the data members of Player.

Also a function PlayerType() which prints the type of player e.g., batsman or Bowler

3- Bowler

This class should contain the following data member

- i. No_of_wickets //for total number of wickets a bowler have taken

- ii. `Per_match_wickets[]` //for per match score, the list size should equal to the number of matches a Batsman/Player played

This class should also contains a member function named `Display()` which is meant to display the information of bowler. Before displaying the data members of bowler, it should display the data members of Player.

Also a function `PlayerType()` which prints the type of player e.g., batsman or Bowler.