RIPHAH INTERNATIONAL UNIVERSITY LAHORE

OOP PROJECT REPORT

Project Title:

Car Dealership

Concepts Implemented:

- Classes & Objects
- Constructors (Default/Parameterized) & Destructors
- Setters/Mutators & Getters/Accessors
- Inheritance
- Aggregation
- Composition
- Friend Function
- Polymorphism/Virtual Function
- File Handling

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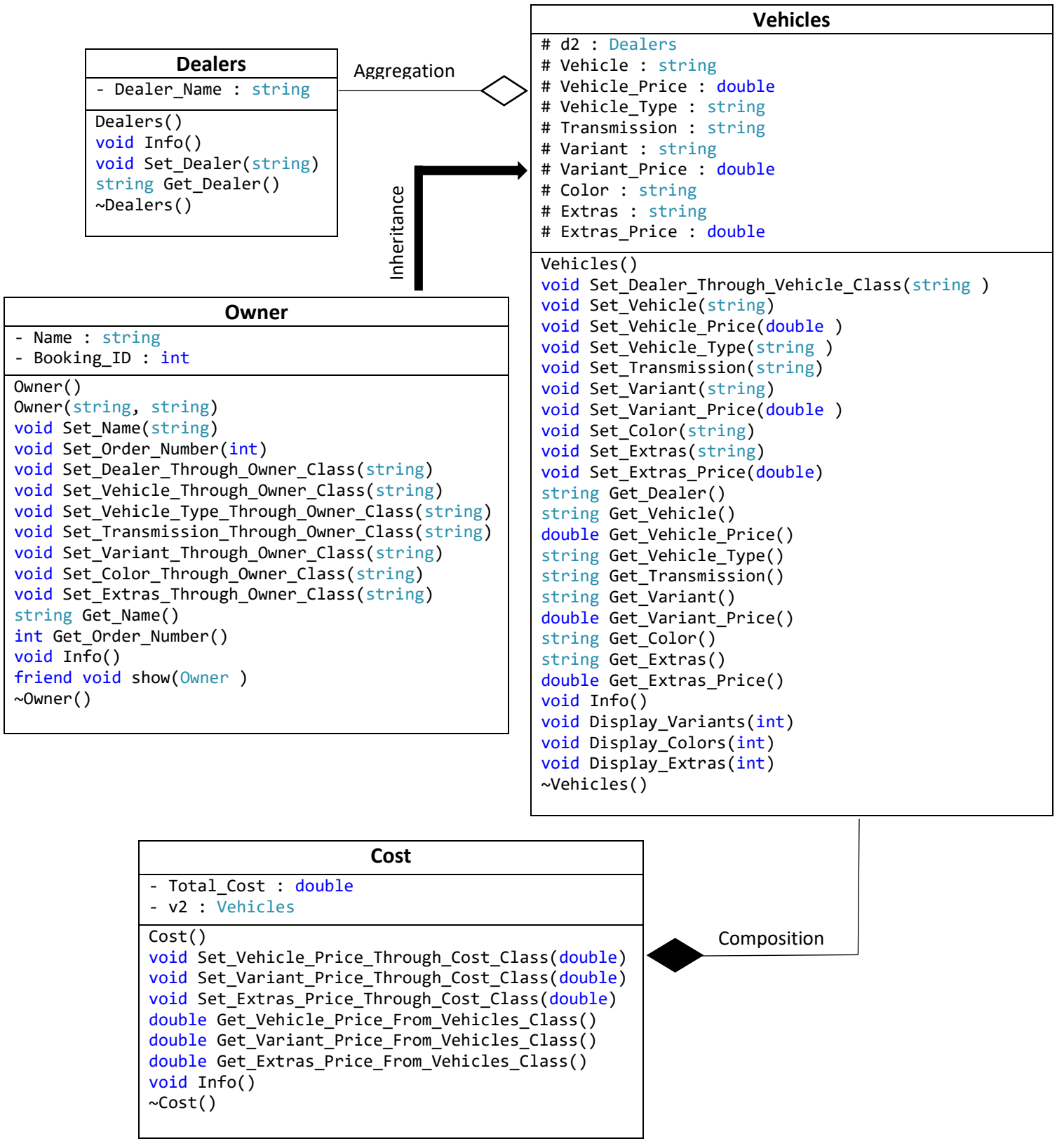
OOP-Project Car-Dealership

Class UML-Diagram



Virtual Function:

In Object oriented programming, Virtual function is implemented for polymorphic operation (to be called at the run time). A virtual function must has same name in every class but its definition may be different. Virtual function has its specialty that it is capable of being inherited and it is a function which is easily over-ridable. In class Dealers, we make a virtual function *Info()* , and over-ride it in every other class.

Friend Function and Inheritance:

Friend Function:

As a Friend Function is used to access the private members of a class. It is doing the same in this current program. Friend Function's prototype has been declared in Owner class and is made friend of this class. It displays the Vehicle's Information after the Owner's Information.

Inheritance:

Inheritance is used to inherit the functions to the other class so that it can access inherited class's functions or members. Here the inherited class is Vehicles and is inherited through owner class and Owner class can access the public functions of Vehicles Class.

Aggregation and Composition:

Aggregation:

Aggregation is a specialized form of association between two or more objects in which each object has its own life cycle but there exists an ownership as well. In Vehicles Class, we created an object of Dealers class, so we show that the vehicle belongs to which of the owner.

Composition:

Composition is a special case of aggregation. In other words, a restricted aggregation is called composition. When an object contains the other object and that object cannot exist without the other object, then it is called composition. In Cost Class, we created an object of Vehicle. Cost is totally dependent on the vehicle. There is no cost, if a vehicle does not exist.

Classes:

1. ***Dealers:*** Displays list of Car Dealers. Its main purpose is to Implement Aggregation concept between Dealers Class and Vehicles Class. Dealers Class Object is added in Vehicles Class as its protected member to access Setter/Getter of Dealers Class.
2. ***Vehicles:*** It is the Main Class of program containing few member variables and functions to display list of Cars, their Variants, Colors, and Extras.
3. ***Owner:*** This class is publically inherited from Vehicles Class containing few member functions and afriend function to display vehicles info.
4. ***Cost:*** This class contains object of Vehicles Class as its private member to implement Composition. Main purpose of this class is to display Vehicle's Cost info.

Functions:

1. ***Info():*** It is Virtual Function of type Void and depends upon the object of class from which it is being called. It is used in all four classes but its definition is different in every class.
2. ***Display Variants():*** It is member function of Vehicles Class of type Void having an integer as parameter. This parameter is the vehicle number that user have selected and according to this, control structures in this functions are executed and display Variants of specific vehicle.
3. ***Display Color():*** It is member function of Vehicles Class of type Void having an integer as parameter. This parameter is the vehicle number that user have selected and according to this, control structures in this functions are executed and display Colors of specific vehicle.
4. ***Display Extras():*** It is member function of Vehicles Class of type Void having an integer as parameter. This parameter is the vehicle number that user has selected and according to this, control structures in this functions are executed and display Extras of specific vehicle.
5. ***Show():*** This is a Friend Function of type Void having an Object of Owner Class as parameter whose prototype is declared in Owner Class. Main purpose of this function is to display Vehicles Info.