**B24 Ex03 Noa 322543448 Yael 322695693 – Solution Explanation**

**Classes**

1. **Vehicle (Class)** - Abstract base class for various types of vehicles, containing shared properties and methods that all vehicles must have.
2. **Car (Class)** - Represents a specific type of vehicle, extending the general properties of a vehicle to include details specific to cars: car color and number of doors.
3. **Motorcycle (Class)** - Represents a specific type of vehicle, extending the general properties of a vehicle to include: license type and engine volume.
4. **Truck (Class)** - Represents a specific type of vehicle, extending the general properties of a vehicle to include: cargo tank volume and if it contains dangerous materials.
5. **Tire (Class)** - Represents the tire of a vehicle.
6. **EnergySystem (Class)** - Abstract base class for different types of energy systems in vehicles.
7. **ElectricSystem (Class)** - Represents a specific type of energy system, extending the general properties to include details specific to electric powered engines.
8. **FuelSystem (Class)** - Represents a specific type of energy system, extending the general properties to include details specific to fuel powered engines.
9. **VehicleCard (Class)** - Represents registration of a vehicle.
10. **GarageManager (Class)** - Management class for handling operations related to the garage, such as adding vehicles, retrieving vehicle information, and managing vehicle states.
11. **VehicleCreator (Class)** - Factory class for creating instances of different types of vehicles.
12. **ValueOutOfRangeException (Class)** - Custom exception class designed to handle errors when a value does not fall within an expected range.
13. **VehicleNotInGarageException (Class)** - Custom exception class to handle cases where an operation is attempted on a vehicle that is not present in the garage.
14. **GarageUI (Class)** - Serves as the user interface layer for interacting with the garage management system.
15. **Program (Class)** - Contains the main entry point for the application.

**Enums**

1. **eCarColor (Enum)** - Enumerates different types of car colors.
2. **eFuelType (Enum)** - Enumerates different types of fuel that can be used in fuel-based vehicles.
3. **eLicenseType (Enum)** - Enumerates different types of licenses of a motorcycle.
4. **eNumOfDoors (Enum)** - Enumerates the different number of door options in a car.
5. **eVehicleStatus (Enum)** - Enumerates different types of states the car can have: InRepair, Repaired, or Paid.
6. **eVehicleType (Enum)** - Enumerates different types of vehicles managed by the garage.
7. **eGarageOptions (Enum)** - Enumerates the different possible actions a user can take within the garage system interface.



