Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251**

**Software Engineering I**

Project Name

Software Design

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| --- |
| **Team Names** |
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June&2022

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# Team

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# Document Purpose and Audience

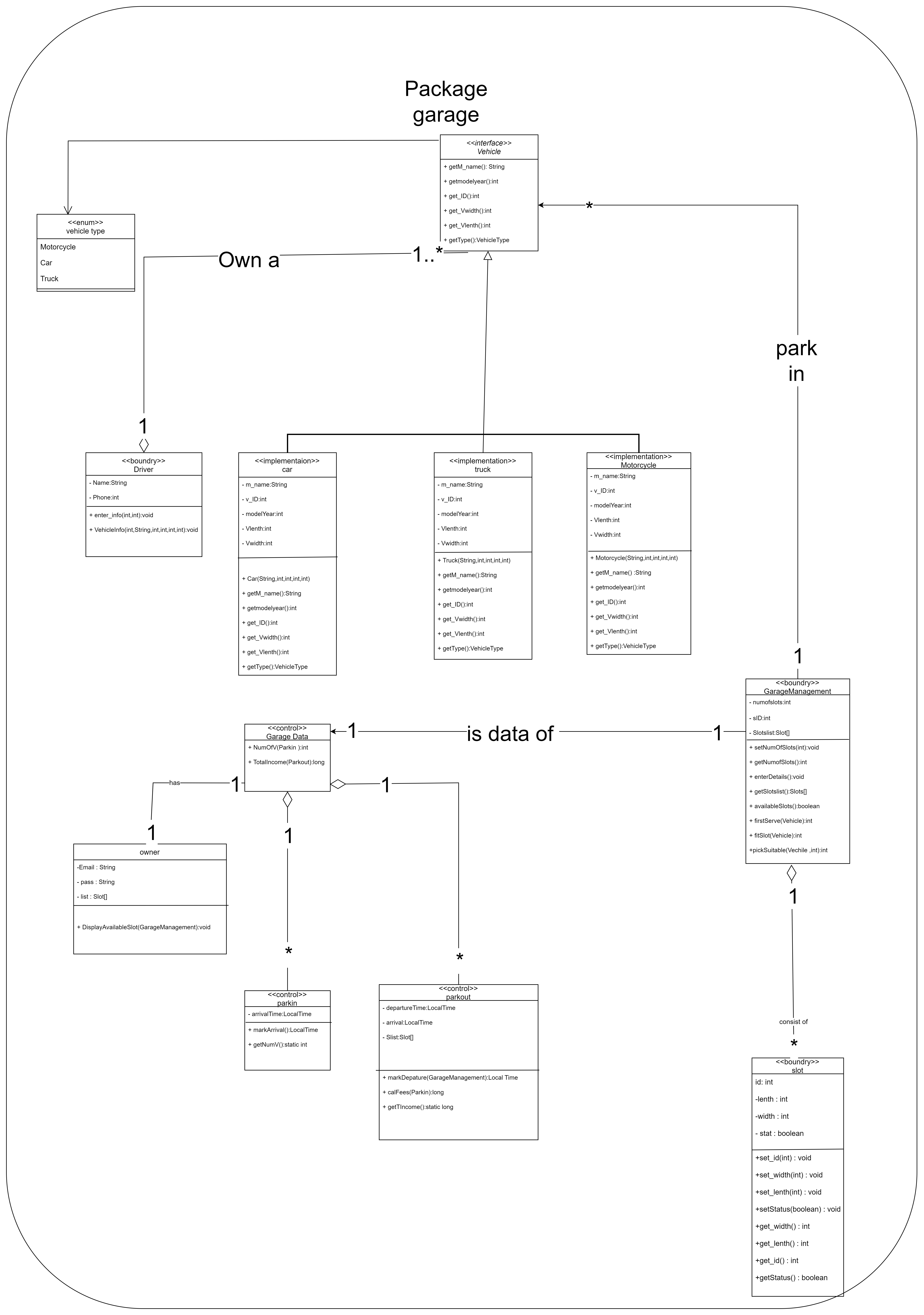
The purpose of this document is to outline the design views of the project which will satisfy functional and nonfunctional requirements stated in the SRS Document and serving as a guideline throughout development phase of the project for developers.

# Main audience of this document includes the developers of this project.

# System Models

## 

## I. Class diagrams



| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | Vehicle | It is an interface class that contain methods belonging to any vehicle, whether it is a car or a truck or motorcycle. |
| 2 | Car | It is a class that implement the Vehicle methods and has a constructor to set all values belonging to the car, whether model year or model name etc. |
| 3 | Truck | It is a class that implement the Vehicle methods and has a constructor to set all values belonging to the truck, whether model year or model name etc. |
| 4 | Motorcycle | It is a class that implement the Vehicle methods and has a constructor to set all values belonging to the motorcycle, whether model year or model name etc. |
| 5 | VehicleType | It is a class that representing an Enum that contain the types of the vehicles like car or truck or motorcycle. |
| 6 | Driver | It is a class that responsible for take the name, the phone and the vehicle type of the driver and store them and the driver has one vehicle to park it the relation between driver and vehicle is one-to-one. |
| 7 | Owner | It is the owner's class that enables him to see the available slots based on the configuration that he needs. |
| 8 | GarageData | It is a class that we can use it to know the total number of vehicles that park in the garage and the total income |
| 9 | GarageMangemet | It is a class that responsible for enables us to know if there are available slots or not, and if there is, enables us to know their places and pick the available slot based on any of the two configurations, in other words this class manages the slots of the garage so the relation between it and the class slot is one-to-many. |
| 10 | Slot | It is a class that responsible for set and get the information of any slot |
| 11 | Parkin | It is a class that responsible for capture the time of the arrival time of the vehicle to the garage and count the number of vehicles that exist in the garage. |
| 12 | Parkout | It is the class that capture the departure time of the vehicle and calculate the fees and enables the owner to know the total income. |

### Important Algorithm

the best fit algorithm compare the vehicle width and depth with the garage slots and find the best slot that fits and break when its found

The first come first served compare the vehicle width and depth from the slot list and return the first slot that fists the vehicle(the same size or greater than the vehicle size)

## II. Sequence diagrams

**Sequence diagram id 1**

**Diagram, schematic

Description automatically generated**

**Sequence diagram id 2**

**Diagram, schematic

Description automatically generated**

**Sequence diagram id 3**

**Diagram

Description automatically generated**

### 

**Sequence diagram id 4**

Diagram

Description automatically generated

### Class - Sequence Usage Table

| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| Parkin | Park in, id = 2 | markArrival. |
| Parkout | Park out, id = 2 | markDepature, calFees. |
| GarageMangement | Park in, Enter the garage info, id = 2, 1 | availableSlots, pickSuitable, firstServe, setNumOfSlots, enterDetails,. |
| Owner | Enter the garage info, id = 1 | ChooseConfig, DisplayAvailableSlot. |
| GarageData | Calculate total income, id = 3 | NumOfV, TotalIncome. |
| Driver | Park in, id = 2 | VehicleInfo, enter\_info. |
| Slot | Enter the garage info, id = 1 | The system use Stters to store the vehicle information. |

# Ownership Report

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| --- | --- |
| **Item** | **Owners** |
| Class diagram,purpose and audience ,sequence diagram | *Sama Hussien* |
| Sequence diagram | *Mohamed Ayman* |