Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251**

**Software Engineering I**

Parking Garage

Software Design

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| --- | --- |
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# Team

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# Document Purpose and Audience

* **The document purpose for introducing the software design specification for Parking Garage application. (Class Diagram and sequence diagram).**
* **Audience: Customer (the owner of the garage).**

# System Models

## I. Class diagrams

Graphical user interface

Description automatically generated

| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | Screen | It’s responsible for displaying any data and transferring the interaction stage between the system and the operator. |
| 2 | Garage | It’s responsible for the operations done by the system and store garage data. |
| 3 | ParkIn | It’s responsible for park in process. |
| 4 | ParkOut | It’s responsible for park out process. |
| 5 | Slot | Contains the information of the slot (ID, width, depth and availability) and responsible for setting the availability |
| 6 | Vehicle | It’s responsible for carrying all the data concerning all vehicles registered in the system such as (Vehicle’s info, Dimensions, Arrival Time, Departure Time). |
| 7 | Receipt | It’s responsible for calculating the fees of each vehicle in the garage at the leaving time. |
| 8 | GarageHistory | It’s responsible for carrying data such as (Vehicles, Total Income). |
| 9 | CalcTime | It’s responsible for setting arrival time and departure time. |
| 10 | Configuration | It’s responsible for set the park way that will garage will work on it. |
| 11 | ParkWay | It’s a interface class that inherit from it two child such(FirstFit,BestFit) |
| 12 | FirstFit | It’s responsible for set garage select first slot. |
| 13 | BestFit | It’s responsible for set garage select Best suitable slot. |

### Important Algorithm

## II. Sequence diagrams

Diagram

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated

Graphical user interface

Description automatically generated with medium confidence

### Class - Sequence Usage Table

| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| Screen | 1, 2, 3, 4, 5 | startParkingIn()  enterModelName()  enterModelYear()  enterVehicleID()  enterVehicleWidth()  enterVehicleDepth()  getVehicleInfo()  noAvaliableSlot()  displaySlot()  startParkingOut()  printReceiptVehicle()  requestTotalIncome()  displayTotalIncome()  requestAvailableSlots()  displayAvaliableSlot()  setup()  enterConfiguration()  enterCapacity()  enterSlotsInfo() |
| Garage | 1, 2,3,4,5 | add()  setAvalibilty()  requestTotalIncome()  requestTotalVehicles()  getSlots()  displayAvailiableSlot()  setCapacity()  setSlots() |
| Slot | 1, 2 | SetAvailibilty(flag) |
| Vehicle | 1, 2 | setSlot()  setArrivalTime()  getID()  setDepartureTime()  getArrivalTime()  getDepartureTime()  setFees() |
| Receipt | 2 | CalcFees(stayTime) |
| ParkIn | 1,4 | parkIn()  setParkWay() |
| ParkOut | 2 | ParkOut() |
| ParkWay | 1 | selectSlot() |
| Configuration | 4 | setConfiguration()  getConfiguration() |
| CalcTime | 1,2 | setArrivalTime()  setDepartureTime() |
| Receipt | 2 | calcFees() |
| GarageHistory | 2,3,4 | addIncome()  addVehicle()  getTotalIncome()  getVehicles()  addSlots() |

# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Class Diagram | *All the team* |
| Sequence Diagram | *All the team* |