Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251**

**Software Engineering I**

Parking System

Software Design

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# Team

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# Document Purpose and Audience

# System Models

## I. Class diagrams

**Graphical user interface, application, Teams

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| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | ParkingSystem | It is responsible for parking in and parking out |
| 2 | Garage | It stores all Garage slots |
| 3 | UserInterFace | it is responsible for interacting with garage owner to input needed data and displays free slots for him and displays messages if an error occurred. |
| 4 | Slot | It is responsible for storing ID, depth, and width for every slot |
| 5 | Vehicle | It is responsible for storing info, arrival time, departure time and slot ID for every Vehicle |
| 6 | SearchType | It is an interface class for BestFit and FirstSlot classes (search ways) |
| 7 | BestFit | It is responsible for parking the car using BestFit configuration depends on car width and depth comparing to the slot. |
| 8 | FirstSlot | It is responsible for parking the car using First come first served configuration that parks the car in first free slot available. |
| 9 | Free | It is responsible for freeing the slot after the park out |
| 10 | Time | It is responsible for marking the arrival and departure time for a Vehicle. |
| 11 | Configuration | It is responsible for storing the configuration and detecting the current search way. |
| 12 | Calculate | It is responsible for doing some calculations (fees, total income, total number of vehicles) |
| 13 | Dimension | It stores the depth and width of every slot and vehicle |

### Important Algorithm

None

## II. Sequence diagrams

**SETUP**

**Text

Description automatically generated with medium confidence**

**Park in**

**Diagram

Description automatically generated**

**Park out**

Diagram, schematic

Description automatically generated

**DisplayAvailableSlots**

Diagram

Description automatically generated

### Class - Sequence Usage Table

| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| ParkingSystem | ParkIn,parkout, Set configuration | setSearchType,Parkin, searchForVehicle parkOut |
| Garage | Parkin,parkout,display, Set configuration | getGarageSlots |
| UserInterFace | Set configuration ,ParkIn,parkout,display | displaySlots, StartParkingIn, StartParkingOut, inputVehicle, changeConfiguration, printTotalIncome, printTotalNoOfVehicles, startGarageSetUp, inputSlot, printArrivalTime, printDepartureTime, printSelectedSlot, noAvailableSlots, noSuchDimensions, operationIsDone, idNotFound,printFees |
| Slot | Parkout,display | setSlotWidth, setSlotDepth, setId, getId, getSlotWidth, getSlotDepth, State, setOn, setOff |
| Vehicle | Parkin,parkout | setIdNum,setModelName, setModelYear,setWidth,setDepth, setId,setArrivalTime, setDepartureTime,setSlotid, getModelName,getModelYear, getArrivalTime,getDepartureTime, getIdNum,getWidth,getDepth, getSlotId |
| SearchType | parkin | SearchForSlot |
| BestFit | NONE | SearchForSlot |
| FirstSlot | NONE | SearchForSlot |
| Free | ParkOut | setSlotFree |
| Time | ParkIn,ParkOut | getTime,markArrivalTime, markDepurtureTime |
| Configuration | Set configuration | setConfiguration, getCurrentConfiguration |
| Calculate | Parkin,parkout | calculateFees,getTotalIncome, modifyTotalIncome, incrementNoOfVehicles, getNoOfVehicles |
| Dimension | NONE | setWidth,setDepth,getWidth, getDepth |

# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Class diagram Class usage table, sequence diagram and class usage table | *All team have participated in doing it* |
|  |  |