Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251**

**Software Engineering I**

Automated Garage System

Software Design

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# Team

|  |  |  |  |  |
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# Document Purpose and Audience

* The purpose of this documents is to document the process of the whole project of helping the administrator to operate his garage to maximize the profit.
* describe the changes that are occurring in our application to ease the whole process also save time.
* The audience to read this document are Technicians, especially project managers and Executives.
* Generally, it is useful for everyone who make business, economic, administrative, legal, governmental, political decisions on the stuff that the experts and technicians work with.

# System Models

| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
|  | Garage | This class is the main system class “Controller” the administrator can fill slots in it and display the free slots  choose the configuration of the parking |
|  | Slot | This class is responsible for Setting and getting the dimensions of the slots in the garage |
|  | Administrator | This class is responsible for administrator account “Emails and passwords” |
|  | Driver | This class is responsible for getting the arrival time and Departure time of the vehicle and store it also contains the slot which the driver parking in it |
|  | Vehicle | This class is responsible for getting vehicle Data from the driver and store it |
|  | TotalIncome | This class is responsible for calculate income for the garage at any instant of time. |
|  | slotDisplayer | This class is responsible for displaying slots for admin. |
|  | Authenticate | For Verify email and password for admin |
|  | ParkIn | This interface is responsible for Choosing parking method. |
|  | Parking | This class is responsible for driver park in and park out. |
|  | ParkInbestFit | This class is responsible for choosing the most suitable slot that fits the vehicle. |
|  | ParkInfirstFree | This class is responsible for choosing the first slot that fits the car dimensions even it much bigger the car dimensions. |
|  | DriverExceptions | This class is responsible for handling all driver Wrong input |
|  | AdminstratorExceptions | This class is responsible for handling all Administrator Wrong input |

## I. Class diagrams

A picture containing letter

Description automatically generated

### Important Algorithm

**ParkIn:** first it check If the driver did a park in before or not if he is new if the administrator chose first slot the system check all slots if the first free slot is empty it will check the if the slot greater than vehicle dimensions if the administrator chose best fit slot system will loop on slots and check if slots are free it will pick the dimension of slot and save it in temp variable to compare it with vehicle dimensions

## II. Sequence diagrams

Chart, diagram

Description automatically generated with medium confidence

**Diagram

Description automatically generatedDiagram

Description automatically generatedDiagram

Description automatically generated with low confidence**

### Class - Sequence Usage Table

| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| Garage | Park in – park out – Display free slots – calculate income -Fill Slots - Login | FillSlots , setArrSize |
| Administrator | Display free slots – calculate income | SetEmail , SetPassword ,GetEmail, GetPassword |
| Slot | Park in – park out - | SetWidth , SetLength ,GetWidth , GetLength |
| totalIncome | Calculate Income | incIncome-getIncome |
| Authenticate | Set Configuration | Login |
| Vehicle | Park in – park out |  |
| ParkInBestFit | Park in | parkInMethod |
| ParkInFirstFree | Park in | parkInMethod |

# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Java code | *Tarek Magdy, Mohamed Samy, Nour Muhammed* |
| Class diagram / Sequence/ Use case / Description | *All team understand it 100%* |