Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251 - Software Engineering I**

Project Name

Software Requirements Specifications (SRS)

Team Names

Month & Year

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# Instructions[To be removed]

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# Team

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# Document Purpose and Audience

* **This document describes the details of the software application and what the user expect it to do and how to make it better.**
* **The target audience is the developers**
* **The project members**
* **Soft ware engineer**

# Introduction

## Software Purpose

* **Application for book parking slot online ,the user choose the available slot that best fit his car dimension ,and the application calculate funds and total income of the parking.**

## Software Scope

* **The name of this project is the Active Park Assist System (APA). The APA is a feature that enables the car to select and park in a parking space at the request of the driver. This system will be embedded into the vehicles current computer systems and will interface with several of the vehicles subsystems. The APA will be able to see available parking spots when the driver turns the system on and will display the available spots to the driver. Upon selection, the system will then begin to park in the available space. The vehicle will avoid all obstacles and park with the bounds of the selected space**

## Definitions, acronyms, and abbreviations

**Abbreviations and Definitions:**

**a. Human-machine interface(HMI): The HMI is a control panel that the driver can use to adjust settings in the car and initiate the auto-pilot features**

**b. Active Park Assist(APA): The Active Park Assist system we will build.**

**c. Available parking spots: A parking spot width is >1.2x where x is the width of the vehicle.**

# Requirements

## Functional Requirements

1. The system allows the owner to check the available slots to park.
2. The owner can choose the number of parking slots
3. The owner can choose the hours that the parking is available
4. The user must enter his car model, id number, model year and dimension
5. The system must search for the best suitable slot for user’s car
6. user can book for parking by app
7. The user can search for a free slot by app
8. The system allows the user to cancel the booking by app
9. The system must calculate the funds of staying when user park out with an hourly rate of 5 EGP
10. Owner should be able to show the total income and the total number of cars
11. The system calculates arrival time and departure time automatically
12. The user can search for a free slot
13. The user can pay the bill using cash

## Non Functional Requirements

## 1.Parking application must be easy to use. “usability”

## 2. Booking process should take 10 seconds at most. “performance”

## 3. the user should see parking spaces that do not fit the vehicle's specifications as they are occupied. “safety”

## 4. System should prevent booking conflict.

## 5. the user must be informed that the operation done successfully or not. “performance”

## 6. System should be able to support up to 1000 simultaneous users. “scalability”

## 7. System should support cash and credit card payment.

8. system is using secured protocols.

## Use Case Model

Diagram

Description automatically generated

## 

## Use Case Tables

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC1 | |
| Use Case Name: | search | |
| Actors: | customer | |
| Pre-conditions: | The customer inside is doing a search on free slots | |
| Post-conditions: | The customer has successfully booked slot or canceled a reservation | |
| Flow of events: | **User Action** | **System Action** |
| 1- The customer inside is doing a search on free slots  2- the customer wants to book slot |  |
|  | 3- The system asks the customer to enter information about the car |
| 4-the customer entered the information about the car |  |
|  | 5-The system chooses a slot for him that fits the specifications of his car  6- The booking process has been successfully completed |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1- The customer inside is doing a search on free slots  2- the customer wants to book slot |  |
|  | 3- There are no free slots for your car's specifications |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC2 | |
| Use Case Name: | Display | |
| Actors: | owner | |
| Pre-conditions: | The owner wants to see the available free slots and their dimensions | |
| Post-conditions: | The owner has successfully saw the available free slots and their dimensions | |
| Flow of events: | **User Action** | **System Action** |
| 1- The customer inside is doing a search on free slots  2- the customer wants to book slot |  |
|  | 3- The system asks the user to enter information about the car |
| 4-the customer entered the information about the car |  |
|  | 5-the system displays available slots and their dimensions  6- The booking process has been successfully completed |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1- The customer inside is doing a search on empty slots  2- the customer wants to book slot |  |
|  | 3- The system fell while it was displaying free places |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC3 | |
| Use Case Name: | Park-in | |
| Actors: | customer | |
| Pre-conditions: | the customer wants to book slot in the parking | |
| Post-conditions: | The customer has successfully parked | |
| Flow of events: | **User Action** | **System Action** |
| 1- the customer wants to park |  |
|  | 3- The system asks the user to enter information about the car |
| 4-the customer entered the information about the car |  |
|  | 5-the system displays available slots and their dimensions  6-the system calculates the arrival time |
| 7- The customer has parked |  |
| Exceptions: | **User Action** | **System Action** |
| 1- the customer wants to park |  |
|  | 3- There are no free slots |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC4 | |
| Use Case Name: | Info of vehicles | |
| Actors: | customer | |
| Pre-conditions: | customer wants to park in  customer wants to find an available slot | |
| Post-conditions: | System search for the available slot  System offers the slot to the user | |
| Flow of events: | **User Action** | **System Action** |
| 1- customer wants to park |  |
|  | 2- System asks for car’s data to find a suitable slot |
| 3- customer enters the car dimension |  |
|  | 4- System offer the slot |
| 5- customer heads to the slot to park in |  |
| Exceptions: | **User Action** | **System Action** |
| 1- customer enters the car dimension |  |
|  | 2- there is no place in the garage  3- there is no slot suitable for the car |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC5 | |
| Use Case Name: | Calculate | |
| Actors: | Owner | |
| Pre-conditions: | Calculate total income and total number of cars | |
| Post-conditions: | Total income of the garage and total number of cars displayed | |
| Flow of events: | **User Action** | **System Action** |
| 1- owner wants to know the total income and total number of cars of the day |  |
|  | 2- System calculates the total income  3- System calculates the total number of cars  4- system displays total income |
| Exceptions: | **User Action** | **System Action** |
| 1- owner wants to know the total income and total number of cars of the day |  |
|  | 2-The system fell while it was calculating the total income and total number of cars |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC6 | |
| Use Case Name: | Payment | |
| Actors: | customer | |
| Pre-conditions: | User wants to depart from the garage | |
| Post-conditions: | Driver paid the fees | |
| Flow of events: | **User Action** | **System Action** |
| 1- customer wants to park out |  |
|  | 2- System saves the leaving time  And calculate the fees |
| 3- customer pays the fees |  |
|  | 4- System marks that the user pays |
| 5- user check out and leave |  |
| Exceptions: | **User Action** | **System Action** |
| 1- customer did not pay the fee |  |
|  | 2- system won’t open the gate |
| Includes: | none | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | UC7 | |
| Use Case Name: | Park out | |
| Actors: | customer | |
| Pre-conditions: | User wants to depart from the garage | |
| Post-conditions: | Driver paid the fees | |
| Flow of events: | **User Action** | **System Action** |
| 1- user selects the slot ID |  |
|  | 2- System saves the leaving time  3- Calculates the number of hours. 4-calculate the fees |
| 5- User pays the fees |  |
| Exceptions: | **User Action** | **System Action** |
| 1-there is a problem happened with payment |  |
|  | 2- system requests the user to pay again |
| Includes: | none | |
| Notes and Issues: |  | |

# Ownership Report

|  |  |
| --- | --- |
| Item | Owner |
| **Functional Requirements** | Youssef |
| Non\_ **Functional Requirements** | Rana |
| Use case model | Ibrahim |
| Use case description | Ibrahim /Aliaa |