Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251 - Software Engineering I**

Project Name

Software Requirements Specifications (SRS)

Team Names

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# Team

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| --- | --- | --- | --- |
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# Document Purpose and Audience

**What is this document?**

This document shows the purpose and the scope of the software, explained the requirements (functional and non-functional) of the software, and illustrates the system models using the use case diagram and the use case tables.

**Who is excepted to read it?**

The project Manager and the customer.

# Introduction

## Software Purpose

It helps the users to reduce the time spent in the parking zone. Its purpose is to automate and maximize the use of parking zones, as well as to meet all of the customers' requirements.

## Software Scope

* The system should include a touch screen or computer to help the driver to provide personal and vehicle information.
* high efficiency computer can be able to capture automatically the arrival time and the departure time of a vehicle , calculate the cost in a little part of time , calculate the total income in an given point in time , count the number of the vehicle in the garage and should handle the exceptions
* A good system to be able to select the suitable slot to the vehicle
* Screen to show the available parking slot and to display if there are error massage
* Electronic garage gates
* security system to save the information of the customers

## Definitions, acronyms, and abbreviations

# Requirements

## Functional Requirements

* The user must be able to provide personal and vehicle information.
* The system should capture automatically the arrival time ofa vehicle if there is an available slot.
* During the park-in function the system shall pick a free slot based on the active slot configuration.
* The system should capture automatically the departure time ofa vehicle from the garage.
* The system shouldcalculate the total income as well as the total number of vehicles that used the parking garage at any given point in time.
* The system should display the available parking slots.
* The system should handle the exceptions that can happen during user interaction and through any other calculations and displays an error message.

## Non Functional Requirements

|  |  |
| --- | --- |
|  | **Details** |
| **Performance** | * During the park-out calculating the parking-fees should be done within 20 second |
| **Usability** | * The system is designed to be user-friendly and simple to use. * User should be notified if there is no available slot |
| **Reliability** | * All orders should be stored in the database without any errors. |
| **Security** | * Users cannot access the database, do not read and write the information. |
| **Scalability** | * System should be able to support up to 1000 Cars. |

# 

# System Models

## Use Case Model

## 

## Use Case Tables

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 1 | |
| Use Case Name: | Park-in | |
| Actors: | Driver | |
| Pre-conditions: | The driver enters his vehicle’s info | |
| Post-conditions: | The driver gets in the garage | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver enters his vehicle’s info |  |
|  | 2- The system selects a suitable free slot for the vehicle depends on his info |
| 3- The driver park his vehicle in garage |  |
|  | 4- system set time of entering automatic |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1- The driver enters his vehicle data |  |
|  | 2- no available slots  3- no suitable free slots |
| Includes: | Enter vehicle’s info | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 2 | |
| Use Case Name: | Enter the vehicle’s info | |
| Actors: | Driver | |
| Pre-conditions: | The driver enters his vehicle’s info | |
| Post-conditions: | System save the data | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver enters his vehicle’s info |  |
|  | 2- The system save vehicle’s info |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1- The driver enters wrong info |  |
|  | Display error messages |
| Includes: |  | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 4 | |
| Use Case Name: | Pick free Slot | |
| Actors: | Driver | |
| Pre-conditions: | The driver enters his vehicle’s info | |
| Post-conditions: | System Pick free Slot | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver enters his vehicle’s info |  |
|  | 2- The system Pick free Slot depends on come first served slots and slot with the minimum dimension to hold the vehicle |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  | 1- not found suitable slot  2- not found available slot |
|  |  |
| Includes: | Enter vehicle’s info | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 5 | |
| Use Case Name: | Park-out | |
| Actors: | Driver | |
| Pre-conditions: | The driver asks to get out of the garage | |
| Post-conditions: | The driver gets out of the garage | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver asks to get out of the garage |  |
|  | 2- System calculates the parking fees |
| 3- The driver pays the parking fees |  |
|  | 4- System opens the exit door |
| 5- The driver gets out of the garage |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: | Pay fees | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 6 | |
| Use Case Name: | Pay fees | |
| Actors: | Driver, Bank | |
| Pre-conditions: | The driver asks to pay parking fees | |
| Post-conditions: | system confirms the success of the payment process | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver asks to pay parking fees |  |
|  | 2- System shows the parking fees and payment methods (cash – credit card) |
| 3- The driver Choose the payment method and pay them |  |
|  | 4- system confirms the success of the payment process |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: |  | |
| Notes and Issues: | If system of bank is down .. the driver should pay cash | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 7 | |
| Use Case Name: | Pay using Credit Card | |
| Actors: | Driver, Bank | |
| Pre-conditions: | The driver asks to pay parking fees using Credit Card | |
| Post-conditions: | system confirms the success of the payment process | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver asks to pay parking fees using Credit Card |  |
|  | 2- The system connects the driver to the bank system |
| 3- The driver interacts with the bank system |  |
|  | 4- system confirms the success of the payment process |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1- the driver has not enough money |  |
|  | 2- The system does not open the exit door |
| Includes: |  | |
| Notes and Issues: | If system of bank is down .. the driver should pay cash | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 8 | |
| Use Case Name: | Pay Cash | |
| Actors: | Driver | |
| Pre-conditions: | The driver asks to pay parking fees Cash | |
| Post-conditions: | system confirms the success of the payment process | |
| Flow of events: | **User Action** | **System Action** |
| 1- The driver asks to pay parking Cash and pay |  |
|  | 2- the system return the change |
|  | 3- system confirms the success of the payment process |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
| 1-the driver has not enough money |  |
|  | 2- The system does not open the exit door |
| Includes: |  | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 9 | |
| Use Case Name: | No Money | |
| Actors: | Driver | |
| Pre-conditions: | the driver has not enough money | |
| Post-conditions: | The system does not open the exit door | |
| Flow of events: | **User Action** | **System Action** |
| 1- user has not enough money |  |
|  | 2- The system does not open the exit door |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: |  | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 10 | |
| Use Case Name: | Show income | |
| Actors: | Manager | |
| Pre-conditions: | Manager asks to Show income | |
| Post-conditions: | Display income | |
| Flow of events: | **User Action** | **System Action** |
| 1- Manager asks to Show income and enter the time |  |
|  | 2- Display income in the selected time |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: | Enter Time | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 11 | |
| Use Case Name: | Enter Time | |
| Actors: | Manager | |
| Pre-conditions: | Manager Enter Time | |
| Post-conditions: | System save the Time | |
| Flow of events: | **User Action** | **System Action** |
| 1- Manager Enter Time |  |
|  | 2- System save the Time |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: |  | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 12 | |
| Use Case Name: | Show Available parking slots | |
| Actors: | Manager | |
| Pre-conditions: | Manager asks to show available slots | |
| Post-conditions: | Display Available parking slots | |
| Flow of events: | **User Action** | **System Action** |
| 1- Manager asks to show available slots |  |
|  | 2-Display Available parking slots |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  | 1- not found slot available |
|  |  |
| Includes: |  | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 13 | |
| Use Case Name: | Show Number of vehicle | |
| Actors: | Manager | |
| Pre-conditions: | Manager asks to Show Number of vehicle | |
| Post-conditions: | Display Number of vehicle | |
| Flow of events: | **User Action** | **System Action** |
| 1- Manager asks to Show Number of vehicle and enter the time |  |
|  | 2-Display Number of vehicle in selected time |
|  |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: | Enter time | |
| Notes and Issues: |  | |

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 14 | |
| Use Case Name: | Enter Slots Details | |
| Actors: | Manager | |
| Pre-conditions: | Manager asks to Enter Slots Details | |
| Post-conditions: | Manager Enter Slots Details | |
| Flow of events: | **User Action** | **System Action** |
| 1- Manager asks to Enter Slots Details |  |
|  | 2- system allows Manager to enter Slots Details |
| Manager Enter Slots Details |  |
|  |  |
|  |  |
| Exceptions: | **User Action** | **System Action** |
|  |  |
|  |  |
| Includes: |  | |
| Notes and Issues: |  | |

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# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Software purpose | *Mira Ehab* |
| Software scope | Mostafa Mohamed |
| Functional and non-functional requirements | Mira Ehab |
| Use case Diagram | Joeshwoa George  Osama Ibrahim  Mira Ehab |
| Use case Table | Osama Ibrahim |

# Policy Regarding Plagiarism:

**Students have collective ownership and responsibility of their project. Any violation of academic honesty will have severe consequences and punishment for ALL team members.**

1. تشجع الكلية على مناقشة الأفكار و تبادل المعلومات و مناقشات الطلاب حيث يعتبر هذا جوهريا لعملية تعليمية سليمة
2. ساعد زملاءك على قدر ما تستطيع و حل لهم مشاكلهم فى الكود و لكن تبادل الحلول غير مقبول و يعتبر غشا.
3. أى حل يتشابه مع أى حل آخر بدرجة تقطع بأنهما منقولان من نفس المصدر سيعتبر أن صاحبيهما قد قاما بالغش.
4. قد توجد على النت برامج مشابهة لما نكتبه هنا أى نسخ من على النت يعتبر غشا يحاسب عليه صاحبه.
5. إذا لم تكن متأكدا أن فعلا ما يعد غشا فلتسأل المعيد أو أستاذ المادة.
6. فى حالة ثبوت الغش سيأخذ الطالب سالب درجة المسألة ، و فى حالة تكرار الغش سيرسب الطالب فى المقرر.