**A picture containing text

Description automatically generatedCairo University**

**Faculty of Computers Science and Artificial Intelligence**

**CS251**

**Software Engineering1**

**Parking Garage Application**

**Software Requirements Specifications (SRS)**

|  |  |  |  |
| --- | --- | --- | --- |
| **IDs** | **Names** | **Email** | **Phones** |
| 20201089 | Sahar Hamdi Abdel Hafeez | [hamdisahar388@gmail.com](mailto:hamdisahar388@gmail.com) | 01558769921 |
| 20200359 | Omar Mohammed Mostafa | [omar.m.elesawy2002@gmail.com](mailto:omar.m.elesawy2002@gmail.com) | 01127456120 |
| 20201175 | Menna Allah Ahmed Abdel Aziz | [ahrashid100@gmail.com](mailto:ahrashid100@gmail.com) | 01141131009 |
| 20200479 | Mohammed Nasser Abdel Samea | [MohammedN.Abdelsamea@gmail.com](mailto:MohammedN.Abdelsamea@gmail.com) | 01150903601 |

**May & 2021**

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**Contents**

[Instructions [To be removed] 3](#_Toc101814799)

[Team 3](#_Toc101814800)

[Document Purpose and Audience 3](#_Toc101814801)

[Introduction 3](#_Toc101814802)

[Software Purpose 3](#_Toc101814803)

[Software Scope 3](#_Toc101814804)

[Definitions, acronyms, and abbreviations 3](#_Toc101814805)

[Requirements 4](#_Toc101814806)

[Functional Requirements 4](#_Toc101814807)

[Non Functional Requirements 4](#_Toc101814808)

[System Models 4](#_Toc101814809)

[Use Case Model 4](#_Toc101814810)

[Use Case Tables 5](#_Toc101814811)

[Ownership Report 6](#_Toc101814812)

[Policy Regarding Plagiarism: 6](#_Toc101814813)

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 2**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**Team:**

|  |  |  |  |
| --- | --- | --- | --- |
| **IDs** | **Names** | **Email** | **Phones** |
| 20201089 | Sahar Hamdi Abdel Hafeez | [hamdisahar388@gmail.com](mailto:hamdisahar388@gmail.com) | 01558769921 |
| 20200359 | Omar Mohammed Mostafa | [omar.m.elesawy2002@gmail.com](mailto:omar.m.elesawy2002@gmail.com) | 01127456120 |
| 20201175 | Menna Allah Ahmed Abdel Aziz | [ahrashid100@gmail.com](mailto:ahrashid100@gmail.com) | 01141131009 |
| 20200479 | Mohammed Nasser Abdel Samea | [MohammedN.Abdelsamea@gmail.com](mailto:MohammedN.Abdelsamea@gmail.com) | 01150903601 |

**Document Purpose and Audience:**

**-Document purpose**

This document is considered as the base of the SRS between the developers and the client.

**-Targeted Audience**

The client, who is a person want to Park his Vehicle through an Online Application, as he can book an empty and available slot that is suitable for his vehicle Dimensions.

**Introduction**

**Software Purpose**

**The main purpose of the software is to facilitate the:**

-Parking Vehicle using Garage Application: to reserve a Vehicle in a specific time slot and price and calculate the parking fees during the park-out based on the time-of-stay with an hourly rate

of 5 EGP

-Garage owner: to Setup Slots (maximum Number of slots, set the slot Dimensions (slot Depth and Width) and set slots IDs.

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 3**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**Software Scope**

**The software provides the availability of:**

-Parking Garage Application reservation in specific slots with specific Dimensions.

-Payment Process Using the Credit Card.

-Searching for Available Slots, Adding Parking Slots, and Searching Parking Slots.

- Calculate the parking fees during the park-out based on the time-of-stay with an hourly rate of 5 EGP.

-Calculate the total income as well as the total number of vehicles that used the parking

garage at any given point in time.

**Definitions, acronyms, and abbreviations**

|  |  |
| --- | --- |
| **Abbreviations** | **Definitions** |
| **Vehicle Dimensions** | Width and Depth of the actor’s vehicle |
| **Credit Card** | Way for payment, he can get it from bank and add some money for it, to be able to withdraw from it he should enter password and then get the amount of money he needs. |
| **Cash** | Way for payment if the actor doesn’t have a credit card he could pay for garage owner |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 4**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**Requirements**

**Functional Requirements**

1. Vehicle identified.
2. marks the arrival time of a vehicle if there is an available slot.
3. pick a free slot based on the active slot.

* The application shall capture such time automatically from the system

1. Choose configuration:
2. first come first served slots
3. the minimum dimension to hold the vehicle.

5.marks the departure time of a vehicle from the garage

* The application shall capture such time automatically from the system.

6. Calculate the parking fees

7.Calculate the total income as well as the total number of vehicles

8.Display the available parking slots

**Non-functional requirements**

1. **Safety:** the system must be secured
2. **Availability:** System must be available 24hours
3. **Reliability:** System must not suffer more than one failure in 1-month   
   period
4. **Recovery from failure:** In failure cases, System must recover from failure within 2 hours’ maximum.
5. **Response time:** The response time for paying during the park-out must be within 15 seconds.
6. **Usability:**

* The ease with which actors can use a system to book
* Show steps for the users to teach him how to use the system

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 5**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**System Models**

**Use Case model**

**Diagram

Description automatically generated**

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 6**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**Use Case Tables**

|  |  |
| --- | --- |
| Use case ID: | **1** |
| Use case Name: | Set Up Slots |
| Actors: | Garage Owner |
| Pre-Conditions: | * Garage owner goes in system. |
| Post-Conditions: | * Garage owner succeeded in set up slots |
| Flow of Events: | |  |  | | --- | --- | | **User Action** | **System Action** | | Garage Owner goes in system |  | |  | Display a list of vehicle numbers to enable Garage owner to choose the maximum number of vehicles | | Choose maximum number of vehicles |  | | Garage Owner clicks on select slot dimensions button |  | |  | Display form to fill slots’ dimensions. | | Fill slots’ Dimensions. |  | |
| Exceptions: | Non |
| Includes: | Non |
| Notes and Issues: | Non |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 7**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

|  |  |
| --- | --- |
| Use Case ID: | **#2** |
| Use case Name: | Configurations |
| Actors: | Garage Owner |
| Pre-Conditions: | * Garage Owner goes in system to select algorithm he needs to use. |
| Post-Conditions: | * Garage Owner succeeded in choose algorithm then pick free slot for user. |
| Flow of Events: | |  |  | | --- | --- | | **User Action** | **System Action** | | Garage owner goes in system to select algorithm he needs to use. |  | |  | Display two options (first come first served slots  Or minimum dimension to hold the vehicle) | | Select his own choice |  | |  | Display message tells him the algorithm has been selected | | When driver want to park In, garage owner will select suitable slot for him |  | |  | Display slot’s place to the driver | |
| Exceptions: | Non |
| Includes: | The Driver who wants to park in can’t pick a free slot before garage owner select garage algorithm  Configurations can be: (first come first served slots  Or minimum dimension to hold the vehicle). |
| Notes and Issues: | Garage Owner will Select Algorithm just one time at first |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 8**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

|  |  |
| --- | --- |
| Use Case ID: | #3 |
| Use Case Name: | Calculate |
| Actors: | Garage Owner |
| Pre-Conditions: | * User will park for a certain period. |
| Post-Conditions: | * Will collect parking fees and calculate the total income. |
| Flow of Events: | |  |  | | --- | --- | | User Action | System Action | | Garage owner will receive the arrival time and the departure time. |  | |  | Calculate fees and total income. | |  | Send total payment to the driver to complete the payment process. | |
| Exceptions: | Non |
| Includes: | Calculate function that calculate total payment, total income, and total number of vehicles.   1. Should calculate total payment for one driver to complete checkout process. 2. Should take arrival time and departure time before calculating the total payment. |
| Notes and Issues: | Non |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 9**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

|  |  |  |
| --- | --- | --- |
| **Use Case ID:** | #4 | |
| **Use Case Name:** | Vehicles identify | |
| **Actors:** | Vehicles owner | |
| **Pre-conditions:** | • The user set his data | |
| **Post-conditions:** | • The user finished the identification data | |
| **Flow of events:** | **User Action** | **System Action** |
| 1-User open the system  2- User Enter Model name and Model year from the list |  |
|  | 3- System displays a list of models |
| 4- User Enter Vehicle dimensions and Unique identification number |  |
|  | 5- System store the data in database |
|  |  |
| **Exceptions:** | **User Action** | **System Action** |
| 1- User Enter wrong data. |  |
|  | 2- Try again |
| **Includes:** | Model name, Model year Vehicle dimensions and Unique identification number | |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 10**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 13**

**CS251: Phase 1 – Team Name**

Software Requirements Specifications

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does your class diagram respect or violate SOLID principles? Justify your answer.

-Our class diagram respect SOLID principles: as we use the **S** and the **O** principles

Does your class diagram contain any design pattern(s), if yes name it and list the   
names of the classes involved in such pattern(s)

-NO

**Ownership Report**

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Code | Omar Mohammed |
| Use case | All |
| Sequence diagram | All |
| Class Diagrams | All |
| Functional & Non-Functional | All |

**CS251 - Software Engineering I – 2022 – Software Requirements Specifications v1.0 | 14**