**A picture containing text

Description automatically generatedCairo University**

**Faculty of Computers Science and Artificial Intelligence**

**CS251**

**Software Engineering1**

**Parking Garage Application**

**Software Design**

|  |  |  |  |
| --- | --- | --- | --- |
| **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](#_Toc101814919)

[Team 3](#_Toc101814920)

[Document Purpose and Audience 3](#_Toc101814921)

[System Models 3](#_Toc101814922)

[I. Class diagrams 3](#_Toc101814923)

[Important Algorithm 4](#_Toc101814924)

[II. Sequence diagrams 5](#_Toc101814925)

[Class - Sequence Usage Table 6](#_Toc101814926)

[Ownership Report 6](#_Toc101814927)

[Policy Regarding Plagiarism: 7](#_Toc101814928)

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

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**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 Design Specifications v1.0 | 3**

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**System Models**

1. **A picture containing text, indoor

   Description automatically generatedClass Diagrams**

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

**CS251: Phase 1 – <Team Name>**

Software Design Specification

|  |  |  |
| --- | --- | --- |
| **Class ID** | **Class Name** | **Description & Responsibility** |
| **1.** | **Vehicle** | Identify the vehicle data  :Set model name, unique identification number, Model year,  vehicle dimensions (vehicle width and depth) and total number of vehicles . |
| **2.** | **Park** | Select the slots and configurations :  **The park process** |
| **3.** | **Calculation** | The calculation of the garage :  Calculate the total fees, income and vehicles |
| **4.** | **Slot** | Check the status of the slots :  Get ids for every slot |
| **5.** | **Configuration** | Select one of the tow configuration algorithm:  First or second |
| **6.** | **FirstIn** | 1st configuration : first come first served slots i.e., the park-in  function will use the first free slot available from the parking garage slots |
| **7.** | **MostFit** | 2nd configuration:  best-fit approach  where you need to find the slot with the minimum dimension to hold the vehicle |
| **8.** | **Display** | Display available slot ,dimensions and ticket |
| **9.** | **Parkout** | Mark the departure time |
| **10**. | **Screen** | The interaction between the user and the system(boundary):  Open the system ,press on the screen and enter the info |
| **11.** | **TimeDetector** | Select the parkout time and the duration |

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

**CS251: Phase 1 – <Team Name>**

Software Design Specification



1. **Sequence DiagramsDiagram

   Description automatically generated**



## Diagram Description automatically generated with medium confidence

**Diagram

Description automatically generatedDiagram

Description automatically generated**

**Diagram

Description automatically generatedA picture containing diagram

Description automatically generated**

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

**CS251: Phase 1 – <Team Name>**

Software Design Specification

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

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**CS251: Phase 1 – <Team Name>**

Software Design Specification

|  |  |  |
| --- | --- | --- |
| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| **Vehicle** | 4 | setModelName  setYearModel setIdenNumber  setDimensions |
| **Park** | (4) | parkProcess() |
| **Calculating** | (3) | ticketPrice() |
| **Slot** | 1 | getId() |
| **parkOut** | 3 | parkOutTime() |
| **Configurations** | 1 | setConf(),setSize() |
| **FirstIn** | 1,2 | parkingAlgo() |
| **MostFit** | 1,2 | parkingAlgo() () |
| **Screen** | (1,2,3,4) | Pressed on the screen, open the system, enterInfo,confScreen(),formPage() |
| **Display** | 3 | Displayticket(),ticketPrice() |
| **TimeDetactor** | 3,4 | parkoutTime() |

**CS251 - Software Engineering I – 2022 – Software Design Specifications v1.0 | 11**

**CS251: Phase 1 – <Team Name>**

Software Design Specification

**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 Design Specifications v1.0 | 12**