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Cairo university

**CS251 - Software Engineering I**

Parking Garage Application

Software Requirements Specifications (SRS)

|  |  |  |  |
| --- | --- | --- | --- |
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Software requirements specification

**Document Purpose and Audience**

**What this document is?**

İt's a software requirements specification for a parking garage system

**Who is expected to read it?**

Other students. Our professor, and our TA

**Introduction**

**Software Purpose**

This piece of software was required as a university project, and we believe its purpose is for other students to get used to it in the future

**Software Scope**

This project is for the creation of a software for Parking Garage application.  This app will be for all kinds of cars. The garage will be available 24 hour. the garage app supports usability, where any person can use it while following the instructions and error messages. garage owner should enter number of slots and its dominions, car owner should enter car dominions, the app will choose the best slot for the car

## Definitions, acronyms, and abbreviations

|  |  |
| --- | --- |
| The Name | The definition |
| First fit | It is mean that the user should park in first location for his vehicle |
| Best fit | It is mean that the user should park his vehicle in the location with the minimum dimensions |

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**Requirements**

**Functional Requirements**

1-customer wants to park in the garage so the system will check if there is an available slot that fits his vehicle's dimensions, on the other hand, the garage may be full so the vehicle cannot park in the garage

2-the customer wants to park out so he will pay the parking fees according to the time of stay with an hourly rate of 5EGP

3-system of the garage calculates the total income as well as the number of vehicles at any given point in time

4- Display Available slots.

**Non-Functional Requirements**

**Response time(performance):** the system will find an available slot within 20 seconds at most

**Availability (performance):** the system will be available for almost 24 hours and if it is down not more than 5 minutes per week

**Scalability (performance):** the system will have 30 customers at the same time

**Supportability:** adding new slots to the garage without any modifications to the system

**Usability:** customers can park in without a prior reservation

**Robustness:** the system can tolerate the wrong input from the customer

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**Systems Models**

**Use Case Model**

Diagram

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**Use Case Tables**

|  |  |  |
| --- | --- | --- |
| Use Case ID: | 1 | |
| Use Case Name: | Park In | |
| Actors: | Driver | |
| Pre-conditions: | The arrival of the customer in the garage | |
| Post-conditions: | The customer park in the available slot for his vehicle | |
| Flow of events: (**Best-fit approach)** | **User Action** | **system Action** |
| 1. Input his Vehicle details |  |
|  | 2- call a function of parkin |
|  | 3-Get vehicle arrival time |
|  | 4-show the configuration for the user to choose from them |
| 5-user chooses the best fit |  |
|  | 6- sends the available slot location for the user |
| 7- user park successfully |  |
| Alternative Flow of events:  (**First come first served)** | **User Action** | **System Action** |
| 1-Input his Vehicle details |  |
|  | 2- call a function of parkin |
|  | 3-Get vehicle arrival time |
|  | 4-show the configuration for the user to choose from them |
| 5-user chooses the first fit |  |
|  | 6- sends the first empty slot location |
|  | 7-user parks successfully |  |
| Exceptions: | **User Action** | **UI Action** |
| 1-user enter vehicle details |  |
|  | 2-the garage is full or there is no suitable slot |
| Includes: | Arrival time, vehicle dimensions, active slot configuration | |
| Notes and Issues: | adding new slots to the garage without any modifications to the system | |

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| --- | --- | --- |
| Use Case ID: | 2 | |
| Use Case Name: | Park out | |
| Actors: | Driver | |
| Pre-conditions: | The driver opens the application and selects park out | |
| Post-conditions: | The driver parks his vehicle | |
| flow of events: | **User Action** | **System Action** |
| 1- the driver wants to park his vehicle |  |
| 2-customer enters the number of slots that his vehicle in |  |
|  | 3- system checks if there is in this slot |
|  | 4- system calculate the departure time and the application take it. |
|  | 5- the system calculates the time of stay with an hourly rate of 5 EGP |
| 6- the customer pays the parking fees |  |
|  | 7- the customer parks his vehicle successfully. |  |
| Exceptions: | **User Action** | **System Action** |
| 1- The customer’s mobile was stolen so he cannot use the application to park out his car |  |
|  | 2- the system asks him about the identification number of the vehicle |
|  | 3-The customer enters the identification number for the vehicle |  |
|  |  | 4- the system allows him to take his vehicle |
|  | 5-Customer enters number of slots that is empty |  |
|  |  | 6-system displays error message |
| Includes: | Parking fees | |
| Notes and Issues: | none | |

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|  |  |  |
| --- | --- | --- |
| Use Case ID: | 3 | |
| Use Case Name: | Calculate income | |
| Actors: | owner | |
| Pre-conditions: | the owner opens the application and selects view parking income | |
| Post-conditions: | The owner knows the income | |
| flow of events: | **owner Action** | **System Action** |
| 1- the owner chooses to calculate the total income |  |
|  | 2-the Garage Controller call function gets total income |
|  | 3- the function return income |
|  | 4-display income for the user |
| Exceptions | none | |
| Includes: | Time and number of vehicles | |
| Notes and Issues: | none | |

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Software requirements specification

Owner ship Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Use case diagram, requirements and use case table | *Nourhan*  *Nada* |
| scope | *Esraa* |
| intoduction | *Nagi* |