**Cairo University  
Faculty of Computers and Artificial Intelligent** 

**Software Engineering Program**

**SCS252 - Software Modeling**

**Parking Garage application**

Software Requirements Specifications (SRS)

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**Contents**

[Team 2](#_Toc198579144)

[Document Purpose and Audience 3](#_Toc198579145)

[Introduction 3](#_Toc198579146)

[Software Purpose 3](#_Toc198579147)

[Software Scope 3](#_Toc198579148)

[Definitions, acronyms, and abbreviations 3](#_Toc198579149)

[Requirements 4](#_Toc198579150)

[Functional Requirements 4](#_Toc198579151)

[System Models 4](#_Toc198579152)

[Use Case Model 4](#_Toc198579153)

[Ownership Report 5](#_Toc198579154)

[Policy Regarding Plagiarism: 6](#_Toc198579155)

# Team

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# Document Purpose and Audience

This document provides a basic breakdown of the Software to be implemented, a basic textual and graphical explanation of the different aspects of the Software, and provides a reference for developers who will Implement it by defining the Software from the perspective of its Users, to ensure high quality and efficiency of time and resources during Implementation.

For the most part, individuals who read this report are generally not required to know specific Technical Details of this Software or how to implement it. Technicalities is not expected to be understood and is only included when necessary. Due to the complexity of the subject, all complex terms are almost always accompanied by their definition.

Although this document can also be used by technical audiences such as Developers, it is also well-curated for General and Managerial audiences, including CEOs and Managers.

# Introduction

## Software Purpose

The purpose of this software is to solve the given problem statement regarding Automated Parking. That is to simulate a Parking Management System that manages Parking Spaces for a configurable maximum number of Vehicles, providing a satisfactory Customer Experience when interacting with the System, and ensuring a robust Administration Experience to retrieve required Information with Speed and Ease.

## Software Scope

* Storing and Processing relevant Vehicle Information only.
* Sorting and Searching Algorithms to determine the best-fit spot for a vehicle.
* Payment and Transaction Services to process Credit Card and Cash Payments.
* Time Capture Services to get a Vehicle’s Time of Arrival and Departure from the System.

## Definitions, acronyms, and abbreviations

|  |  |
| --- | --- |
| **Term** | **Meaning** |
| **First Come, First Serve** | **Starts from the beginning of the Parking Garage, and checks Parking Spots sequentially till the First Fitting Spot is found.** |
| **Best-Fit Approach** | **Sorts all Available spots according to their Dimensions, then searches for the optimal Spot for a Vehicle.** |

# Requirements

## Functional Requirements

* The Garage Administrator must be able to Initially Setup their Garage Prior to use, by setting its maximum capacity, as well as the specifications of every parking spot
* The Vehicle Driver must be able to register their vehicle’s information when parking.
* The Garage Controller must search for a valid parking spot for the driver, based on the search criteria specified by the Garage Administrator
* The driver should be notified clearly if there isn’t any suitable slot.
* The Garage Controller must precisely capture system time when parking a vehicle in or out and use this information to calculate the vehicle’s duration of stay and parking fees.
* The Vehicle Driver must be able to request the release of their vehicle, by passing its information to the System.
* The Garage Controller should mark the driver’s slot as a free spot when he parks out.
* The Vehicle Driver must know the fees when he parks out according to the time marked.
* When a Driver parks out the system should add his fees to the total income.
* The Garage Administrator must be able to display all currently available parking spots in the Garage.
* The Garage Administrator should be able to know the number of vehicles using the garage at any moment of time, as well as the total income.
* The Payment System must be able to successfully process Payment Transactions.

# System Models

## Use Case Model

# Ownership Report

| **Item** | **Owners** |
| --- | --- |
| Functional Requirements | All |
| Use Case Model | All |
| Document Purpose and Audience | All |
| Introduction | All |

# 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.