Course Name : Software Engineering I

Course Code : CS251

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Project Name : Automated Garage System

Srs Documentation Title :

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Document Purpose and Audience

Purpose :

- **This document is to describe functionality of the Automated garage system and explain in details the following :**
  Introduction to Software Purpose ,Introduction to Software Scope, How to use system functions and How to deal with exceptions .

Audience :

- **Audience are : CEO , Customer ”Car owners” , Project Manager , Business Analyst .**

Introduction

Software Purpose

The purpose of this project is to give the car owners more facilities to park in the garage and allow customers to find and reserve available parking places.

Software Scope

System allows car owners to register into garage system , System provides high security insurances for the system owner ,System allows managing and observing over the garage ,System deals with exceptions.

System doesn’t provide certain maintenance for cars. it’s out of the system’s scope .

Definitions, acronyms, and abbreviations

LPRS	a license-plate recognition system
GLP full	the ground-level parking area is full
RES	reserving an empty spot
GR	guaranteed reservations
walk-ins	Registered customers once

Requirements

Functional Requirements

This section includes the requirements that specify all the fundamental actions of the software system.

Functional Requirement 1 : Registration

Car owner will have the option to register by system .

1.1 Registrations For Walk-ins .

1.2 Registration For Monthly Clients .

1.2.1 Monthly With Specific Days .

1.2.2 Monthly With Whole Week .

Functional Requirement 2 : Garage Access Control

Allow authorized cars to enter.

2.1 Garage Access For Walk-ins .

2.2 Garage Access For Monthly Clients .

Functional Requirements 3 : Occupancy Monitoring

Provide observation and security by monitoring car activity in the garage .

3.1 Display Message At Elevator : Displays various messages at the vehicles elevators .

3.2 Display Message At Walk-ins Level : Displays various messages at the GLP .

Functional Requirement 4 : Administration Login

Control and approve all functions implemented by the system .

4.1 Change Prices For The Parking Garage .

4.2 Account Information

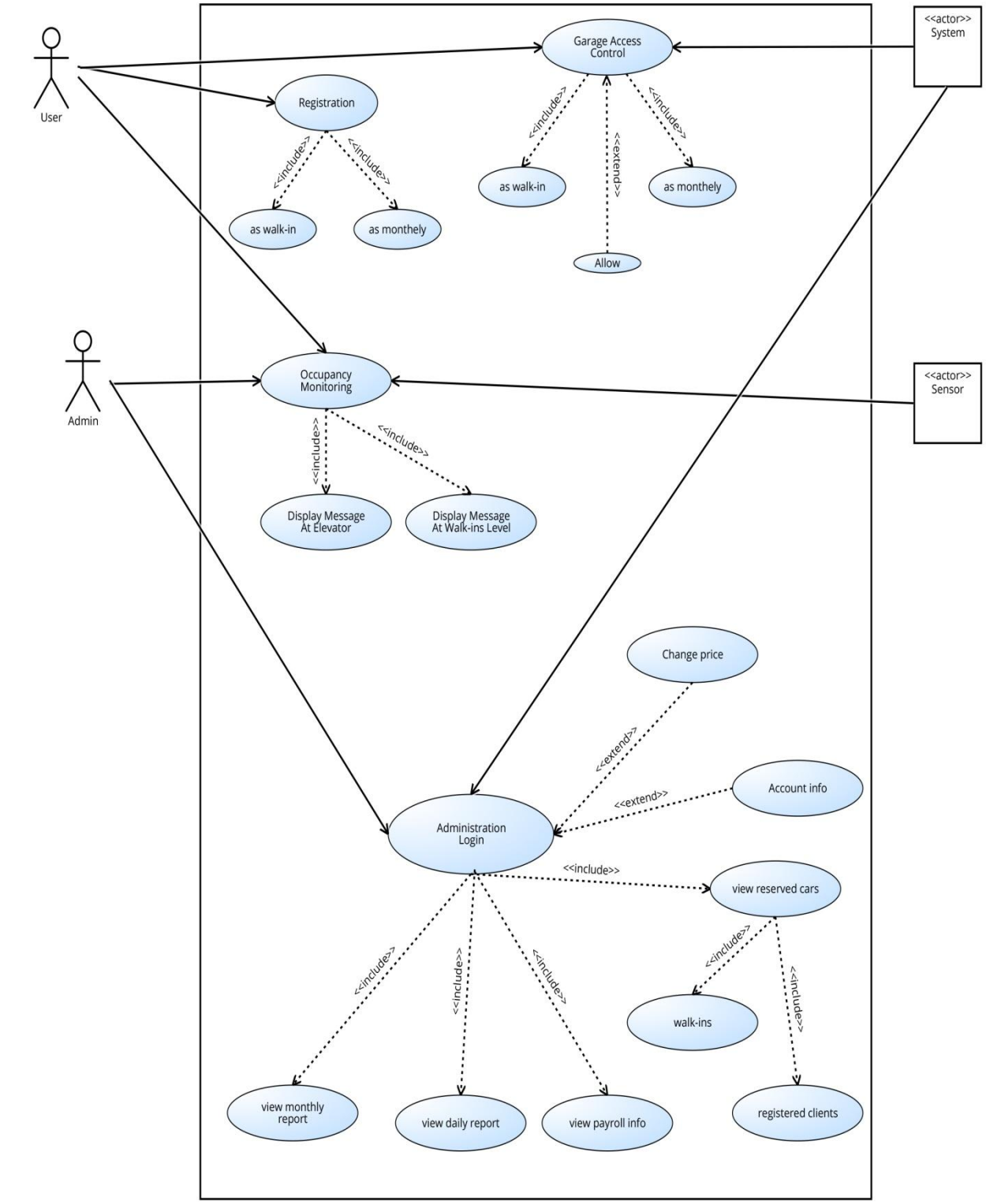
Non Functional Requirements

	Details
Availability	• **This ensures that the system is 24 hours available .**
Security	• **This ensures that the data of registered car owners or data of daily process is 100 % secure.**
Maintainability	• **This ensures that if any component is down then system will generate a suitable solutions of the problem .**
Performance	• **Withdraw operation will be done within 15 second**

System Models

Use Case Model

SRS-Final



Use Case Tables

<table>
<tr><td>Use Case ID:</td><td colspan="2">1</td></tr>
<tr><td>Use Case Name:</td><td colspan="2">Registration</td></tr>
<tr><td>Actors:</td><td colspan="2">System , User</td></tr>
<tr><td>Pre-conditions:</td><td colspan="2">RES , Check LPRS , Check Valid Credit Card.</td></tr>
<tr><td>Post-conditions:</td><td colspan="2">Checkout</td></tr>
<tr><td rowspan="3">Flow of evens:</td><td>User Action</td><td>System Action</td></tr>
<tr><td>1.Enter username and his credit card number.</td><td>2.Check if credit card number existence and licenses plate number existence if entered.</td></tr>
<tr><td>3. User chooses time slot and days

During registered period .</td><td>4- System Verify user data

And provide empty place .</td></tr>
<tr><td>Exceptions:</td><td colspan="2">User enters invalid Credit number .</td></tr>
<tr><td>Includes:</td><td colspan="2">None</td></tr>
<tr><td>Notes and Issues:</td><td colspan="2">Client have the option to enter his/her license plate number or not

Because when our client reach the garage the system will check his/her license plate number .</td></tr>
</table>

Use Case ID:	1.1	
Use Case Name:	Registrations For Walk-ins.	
Actors:	System , User	
Flow of evens:	**User Action**	**System Action**
	1. User check digital display at GLP	
	2.if digital display showed an empty parking slot then user enters his/her credit card number.	3. System withdraw money from user credit card .
Exceptions:	User enters invalid Credit number .	
Includes:	1 , 3.2	
Notes and Issues:	Client may not find an empty parking slot .	

Use Case ID:	1.2	
Use Case Name:	Registrations For Monthly Clients.	
Actors:	System , User	
Flow of evens:	**User Action**	**System Action**
		1. System displays available days And time slots.
	2. User choose days and time slots per month .	3. System verifies registration And occupy time slots .
Exceptions:	None	
Includes:	1	
Notes and Issues:	Client may not find any days or time slots that fits clients desires .	

<table>
<tr><td>Use Case ID:</td><td colspan="2">2</td></tr>
<tr><td>Use Case Name:</td><td colspan="2">Garage Access Control</td></tr>
<tr><td>Actors:</td><td colspan="2">User , System</td></tr>
<tr><td>Pre-conditions:</td><td colspan="2">Registered user , Car has licenses plate , LPRS .</td></tr>
<tr><td>Post-conditions:</td><td colspan="2">Licenses plate of entered car is the same licenses plate as licenses plate of leaving car .</td></tr>
<tr><td rowspan="3">Flow of events:</td><td>User Action</td><td>System Action</td></tr>
<tr><td>1. Car enters the garage .</td><td>System reads licenses plate of entered car and save it .

System Allow entering .</td></tr>
<tr><td>2. Car leaves the garage .</td><td>System check licenses plate of leaving car is the same as licenses plate of leaving car .

System Allow leaving .</td></tr>
<tr><td>Exceptions:</td><td colspan="2">Car has no licenses plate .</td></tr>
<tr><td>Includes:</td><td colspan="2">1</td></tr>
<tr><td>Notes and Issues:</td><td colspan="2">Ensures Empty Slots For Reserving .</td></tr>
</table>

<table>
<tr><td>Use Case ID:</td><td colspan="2">2.1</td></tr>
<tr><td>Use Case Name:</td><td colspan="2">Garage Access For Walk-ins</td></tr>
<tr><td>Actors:</td><td colspan="2">User , System</td></tr>
<tr><td>Pre-conditions:</td><td colspan="2">LPRS .</td></tr>
<tr><td>Post-conditions:</td><td colspan="2">System recalculates available places and system checks if Licenses plate of entered car is the same licenses plate as licenses plate of leaving car .</td></tr>
<tr><td rowspan="3">Flow of events:</td><td>User Action</td><td>System Action</td></tr>
<tr><td>1. Car enters the garage .</td><td>2.System reads licenses plate of entered car and save it .

System Allow entering .</td></tr>
<tr><td>2. Car leaves the garage .</td><td>System check licenses plate of leaving car is the same as licenses plate of leaving car .

System Allow leaving .</td></tr>
<tr><td>Exceptions:</td><td colspan="2">Car has no licenses plate .</td></tr>
<tr><td>Includes:</td><td colspan="2">1.1 , 3.2</td></tr>
<tr><td>Notes and Issues:</td><td colspan="2">Ensures Empty Slots For Reserving .</td></tr>
</table>

Use Case ID:	2.2	
Use Case Name:	Garage Access For Monthly Clients .	
Actors:	User , System	
Pre-conditions:	LPRS , User check digital display monitors .	
Post-conditions:	System recalculates available places and system checks if Licenses plate of entered car is the same licenses plate as licenses plate of leaving car .	
Flow of events:	**User Action**	**System Action**
	1. Car enters the garage .	2.System reads licenses plate of entered car and save it . System Allow entering .
	2. Car leaves the garage .	System check licenses plate of leaving car is the same as licenses plate of leaving car . System Allow leaving .
Exceptions:	Client can't find his/her reserved parking slot .	
Includes:	1.2 , 3.1	
Notes and Issues:	None .	

Use Case ID:	3	
Use Case Name:	Occupancy Monitoring	
Actors:	Administrator , Sensor	
Pre-conditions:	None .	
Post-conditions:	None .	
Flow of events:	**Administrator Action**	**Sensor Action**
		1.Sensor reads licenses plate of entered car and save it . System Allow entering .
	2. Administrator checks camera .	System check licenses plate of leaving car is the same as licenses plate of leaving car . System Allow leaving .
Exceptions:	Car has no licenses plate .	
Includes:	1	
Notes and Issues:	Ensures Empty Slots For Reserving .	

Use Case ID:	3.1
Use Case Name:	Display Message At Elevator
Actors:	Administrator , Sensor
Pre-conditions:	Update Occupied Places .
Post-conditions:	Update Free Places .
Flow of events:	**Display Action**
	1. Show Empty Places .
Exceptions:	Display is down (Hardware Problem).
Includes:	None .
Notes and Issues:	Update Process Stop Because All Places Are Occupied .

Use Case ID:	3.2
Use Case Name:	Display Message At Walk-ins Level
Actors:	Administrator , Sensor
Pre-conditions:	Update Occupied Places .
Post-conditions:	Update Free Places .
Flow of events:	**Display Action**
	1. Show Empty Places .
Exceptions:	Display is down (Hardware Problem).
Includes:	None .
Notes and Issues:	Update Process Stop Because All Places Are Occupied .

Use Case ID:	4	
Use Case Name:	Administration	
Actors:	Administrator , System .	
Pre-conditions:	None .	
Post-conditions:	None .	
Flow of events:	**Administrator Action**	**System Action**
	1. Admin login in the system .	2. System validates admin account .
	3. Administrator view monthly reports , daily reports , payroll information , view number of reserved cars of walk-ins and registered clients .	4.System display admin selected reports .
Exceptions:	None .	
Includes:	None .	
Notes and Issues:	None .	

Use Case ID:	4.1	
Use Case Name:	Change Prices For The Parking Garage .	
Actors:	Administrator , System .	
Pre-conditions:	None .	
Post-conditions:	Announcement For Clients About Price Changes .	
Flow of events:	**Administrator Action**	**System Action**
	1. Admin enters new price	2. System validates new price .
Exceptions:	None .	
Includes:	4	
Notes and Issues:	None .	

Use Case ID:	4.3	
Use Case Name:	Account Information .	
Actors:	Administrator , System .	
Pre-conditions:	None .	
Post-conditions:	None .	
Flow of events:	**Administrator Action**	**System Action**
	1. Admin enter account code number information .	2. System displays selected account information .
Exceptions:	Account Code Number Does Not Exist .	
Includes:	4	
Notes and Issues:	None .	

Ownership Report

- **Remove the following notes and any red notes**
- **For every item in this document, write the owners. If someone is owner of something, s/he understands it 100.%**
- **Team leader must verify the table with the team members.**

Item	Owners
Purpose , Scope	Mohammed Gaber
Use Case Tables	Mohammed Shaker
Function Requirements	Mohammed Boghdady
Use Case Diagram	Mohmmed Ahmed Hamdy