Cairo University

Faculty of Computers and Artificial Intelligence

CS251

Introduction to Software Engineering

GoFo

Software Requirements Specifications

Version 1.0

ID	Name	Email	Mobile
20XX0XXX	Student 1		
20XX0XXX	Student 2		

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CS251: Phase 1 – The Heros
Project: GoFo
Software Requirements Specifications

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Team

ID	Name	Email	Mobile
20190579	Nada Imam Hanafy Azouz	nadaimam8@gmail.com	0 100 292 6213
20190209	Rana Hisham Abdelgawad Abubakr	ranahgawad@gmail.com	

Document Purpose and Audience

Purpose

The purpose of this document is to clarify software requirements that are agreed upon by the stakeholders by specifying the needed functionalities of the software to minimize development time and cost by making the requirements clear.

Audience

- Software Development Team
- Stakeholders

Introduction

Software Purpose

The purpose of GoFo is to facilitate football playgrounds bookings by providing an online booking system with a variety of options for players.

Software Scope

GoFo implements a booking system for football fields with different functionalities for playground owners, and players. It also supports administrators for monitoring fraudulent activities during booking.

Software Requirements Specifications

Definitions, acronyms, and abbreviations

Phrase	Definition
OWASP	The Open Web Application Security Project
eWallet	An electronic device, online service, or software program that allows one party to make electronic transactions with another party bartering digital currency units for goods and services.
Maintainability	The ease with which a software system or component can be modified to correct faults, improve performance or other attributes, or adapt to a changed environment."
Scalability	The ability of the software to support a growing number of users while offering good performance.
Usability	The degree to which a software can be used by specified consumers to achieve quantified objectives with effectiveness, efficiency, and satisfaction in a quantified context of use.
Portability	Portability defines how a system or its element can be launched on one environment or another.
Compatibility	Compatibility defines how a system can co-exist with another system in the same environment.
Availability	Availability measures the ability of a piece of equipment to be operated if needed.
Reliability	Reliability measures the ability of a piece of equipment to perform its intended function for a specific interval without failure.

Software Requirements Specifications

Requirements

Functional Requirements

Requirement ID	Requirement Statement
FR01	The application shall have a login/sign-up screen as soon as the user opens the application.
FR02	The application shall display a box to input username and password if the user chooses to log in.
FR02	If the user chooses to sign up, the application shall ask the user if he is signing up as a playground owner, a player or an administrator.
FR03	The application shall have a sign up page for the player that consists of fields to fill requiring information like his name, user ID, password, email, phone number, and default location.
FR04	The application shall have a sign up page for the playground owner that consists of fields to fill requiring information like his name, user ID, password, email, phone number, and default location.
FR05	The application shall have a panel for playground owners that consists of: 1. "My playground" tab where the playground owner can: ● Request to register a playground by giving the playground name, location, land area, available hours for reservation, the price per hour, and cancellation period for each playground. ● Edit that information for existing playgrounds. ● Check the amount in his eWallet. 2. "My requests" tab where he/she can view the pending requests for reservation, with the following details for each request: ● The reservee information. ● The requested playground. ● The hours to be reserved. ● The status of the team (complete or not).

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	3. "Books" tab where the there is a list of their registered playground that they can click on any playground off and see the following information about it: ● The total reserved hours for that playground. ● Who reserved that playground. ● The hours of each reservation for that playground. ● The available (yet to be reserved) hours for that playground.
FR06	The application shall have a panel for players (reservee) that consists of: 1. "Book playground" tab where: ● All of the registered playgrounds near the player are viewed where the player can filter by location and price and number of hours he wants to reserve. ● The user can select a playground to see information about it like how many pitches it has, how many players for each pitch, each pitch dimensions, type of turf used in each pitch, and price per hour of each pitch. ● The user can choose the pitch he/she wants and send a request for reservation for the playground owner. To book a pitch, the user has to check its free time slots, book one or more hours at once with no time limit as long as the slots are free. ● A booking that can't exceed the balance in his/her eWallet or else the request won't be sent. That booking amount is booked from his/her eWallet until accepted/cancelled. ● The user can retrieve his/her money as long as they cancel within the cancellation period. ● Upon request acceptance, the booking money is immediately transferred from the player's eWallet to the playground owner's eWallet. 2. "Requests" tab where the user can view the status of his reservation requests. A request can be accepted or denied or pending. The user can remove accepted or denied requests from the list and cancel pending requests. ● Denied requests can be cancelled anytime before they are accepted. ● Accepted requests have a cancellation period of up until one day prior to the booked time.

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	3. "Join team" tab that has pending requests of people with incomplete teams until the playground owner approves them. A user can join one of those teams. If a team is completed, its request is removed from that tab. 4. "My books" tab where the user can view information about his accepted requests like the location of the playground, the scheduled time.
FR07	The application shall have a dashboard for an administrator type of user. He/she should have the following authority: ● Be able to verify playgrounds submitted by playground owners. ● Be able to suspend playground owners if fraudulent activities were proven.

Non Functional Requirements

Measure	Details
Performance	● The Sign-in/sign-up screen should take about 5 seconds to load. ● Every panel in the system should take less than 10 seconds to load. ● Checking the available money in the eWallet operation should take less than 15 seconds as it fetches information from another service.
Scalability	System should be able to support up to 1000 simultaneous users without affecting its performance.
Maintainability	The system should have a 70% chance of maintainability for 48 hours. Which means that if a component in the system had a critical issue, there is a 65% chance that this component will be fixed in 2 days.
Reliability and availability	The system should be working without any failures for 90% in a month. Taking into consideration the system's maintainability and reliability, it will be available for the user for 90% of the time.

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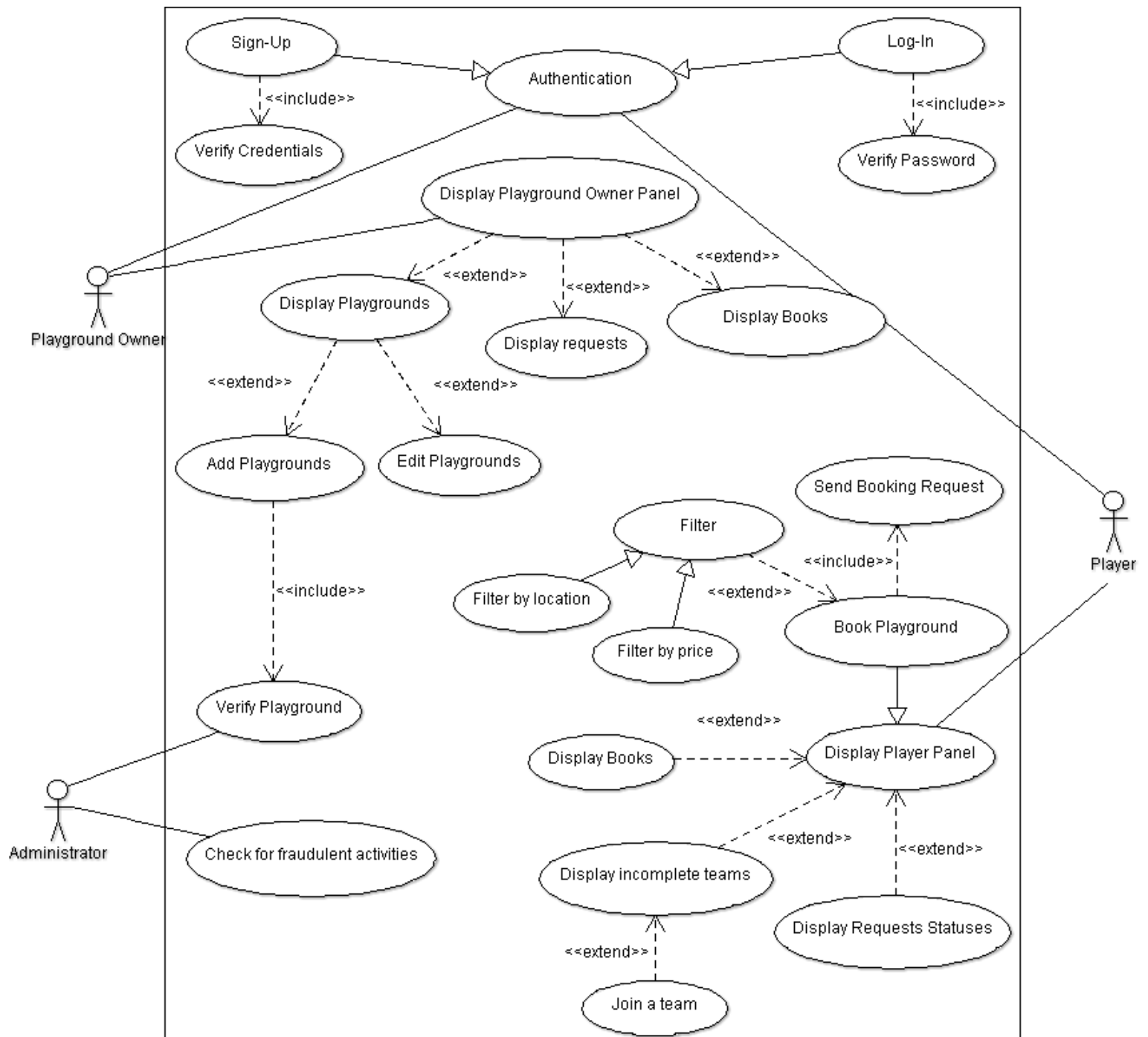| Portability and compatibility	- The system supports android OS from version 6.0 to 11.0 and any android devices that support these versions. - The system can be installed on any iPhone devices running on IOS OS versions 9.0 to 12.0. - The system's website is compatible with the browsers listed below and any operating system that runs them. Google Chrome browser on 60.0 to 92.0 versions. Mozilla Firefox from 70.0 to 88.0 versions. Microsoft edge: all versions.
Security	- Users should access their accounts' payment details and private data. The system also does not return a restricted web page to a user who is not authorized to access it. - The system's development is based on following OWASP standards to ensure web application security.
Usability	- The error rate of users signing in/up should be less than 10%. - The time taken by a user to fill their account details should not be more than 5 minutes. - The time taken by a playground owner to register a new playground should take 5 minutes at most. - The time taken by a playground owner to check the pending requests or books tab should not exceed 10 seconds not including the time for reviewing each request and accepting or deleting them. - The time taken by a player to search for a desired playground should not exceed 10 seconds. - The time taken by a player to search for a team to join should be less than 10 seconds. - The error rate of players submitting a request should be less than 5%. - The time taken by a player to check his requests or books should be less than 10 seconds. - The time taken by an administrator to check the requests tab should be less than 10 seconds not including the time for reviewing each request and accepting or deleting them.

Software Requirements Specifications

System Models

Use Case Model

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- **Playground Owner** is the owner of the playground which he puts it up for booking
- **Player** is the person who books the playground to play in it
- **Administrator** is the person who monitors fraudulent activities and verifies playgrounds

System Navigation Map

NOTE: Kindly zoom in for details

https://wireframepro.mockflow.com/view/Me638027855e890df20c6f42c23bb94821620653110
412#/page/6490d24bba684709b13989ca9b9ea12a/sidebar/off

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Enriched User Stories

- **User Story #1**

User Story ID	US #1
User Story Name	Playground Owner/Player Sign-up
Actors	Playground Owner/Player
Description	**As** a playground owner/Player **I'd like** to be able to sign up to the application **So** that I can sign in and access its services
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground owner/player and I'm on the sign-up **When** I fill in the sign up information fields with my credentials and I click sign up **Then** the system signs me up

Scenarios

Normal Scenario

Actor Action	System Response
1- User clicks on sign up	
	3- System displays sign up page 4- System display boxes to input sign up information
5- User fills in the boxes	
	6- System verifies the user information
	7- System saves user information in the database

Exceptional Scenario

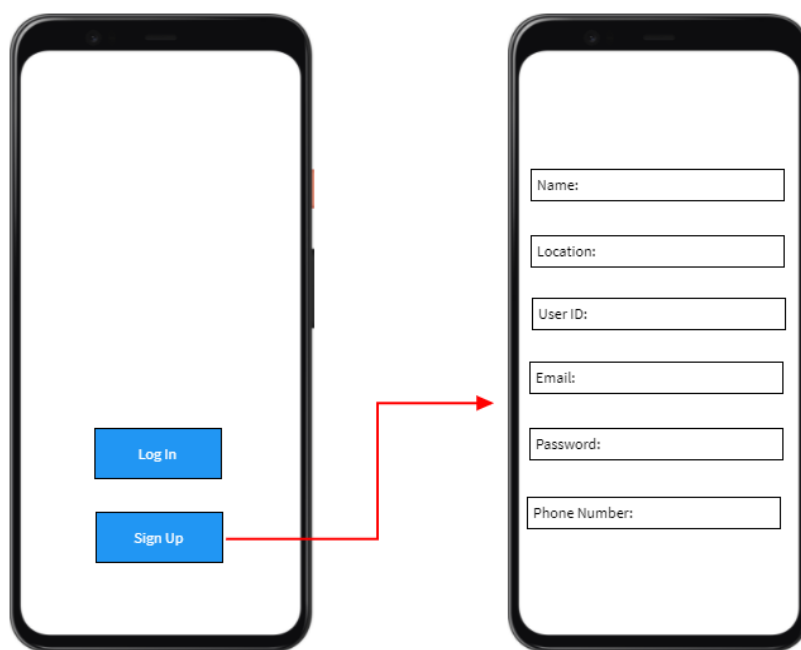| Actor Action	System Response
1- User clicks on sign up	
	3- System displays sign up page 4- System display boxes to input sign up information

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5- User fills in the boxes	
	6- System verifies the user information
	7- System finds input information invalid
	8- System displays "Please enter valid information." message

Screen Design

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Name field	Text < 100 Characters	Structured Text
Location field	Graphic	Google Maps Location
User ID field	Integer< 15 digits	Integer > 0 and valid ID
Email field	Text < 100 Characters	Structured Text
Password field	Alphanumeric < 100 Characters	Password confirmation and must include an uppercase letter, numbers and/or special characters
Phone number field	Integer < 15 digits	Integer > 0 and confirm via text message

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- **User Story #2**

User Story ID	US #2
User Story Name	Log in
Actors	Playground owner/player
Description	**As** a playground owner/player **I'd like** to be able to log in to the application **So** that I can use its functionalities
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a logged-out system user and I'm on the Log-In page **When** I fill in the "Username" and "Password" fields with my authentication credentials and I click the Log-In button **Then** the system signs me in

Scenarios

Normal Scenario

Actor Action	System Response
1- User clicks on log in	
	3- System displays log in page 4- System display boxes to input username and password
5- User fills in the boxes	
	6- System verifies the user information
	7- System accesses user to app functionalities

Exceptional Scenario

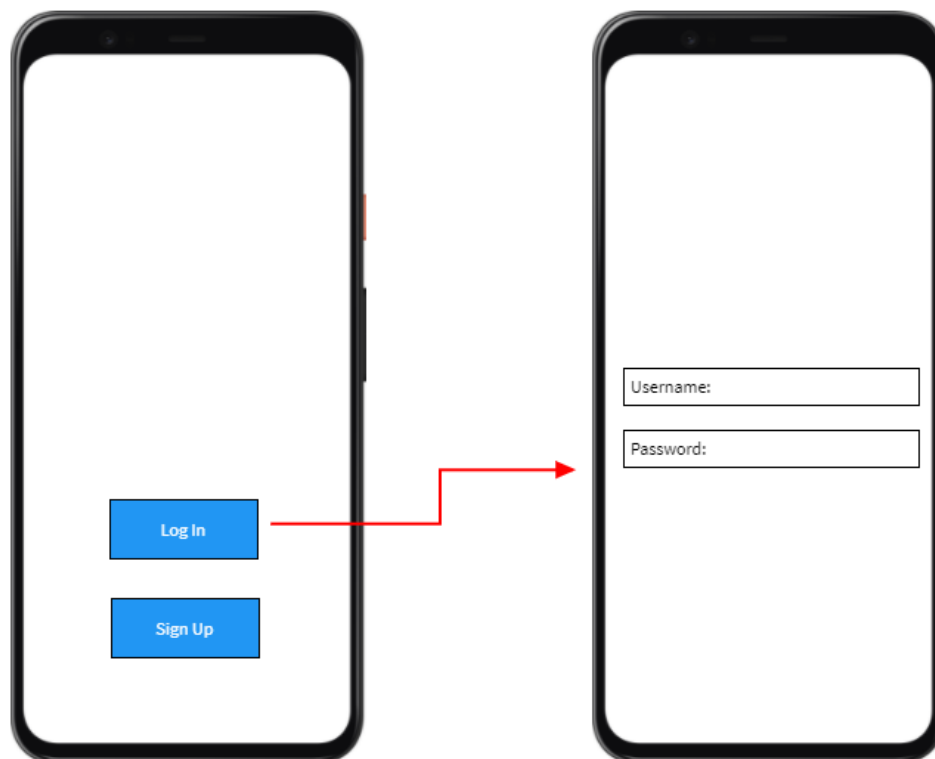| Actor Action	System Response
1- User clicks on log in	
	3- System displays log in page 4- System display boxes to input username and password
5- User fills in the boxes	
	6- System verifies the user information

Software Requirements Specifications

	7- System finds input information invalid
	8- System displays "Please enter valid username/password." message

Screen Design

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Username field	Text < 100 Characters	Structured Text
Password field	Text < 100 Characters	Structured Text

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- **User Story #3**

User Story ID	US #3
User Story Name	Add/Edit Playground
Actors	Playground owner
Description	**As** a playground owner **I'd like** to be able to add/edit my playground **So** that I can offer it for reservation
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a registered playground owner and I'm in the "My playground" tab **When** I fill in the required information for playground registration/edit **Then** the system sends a request to register/edit my playground

Scenarios

Normal Scenario

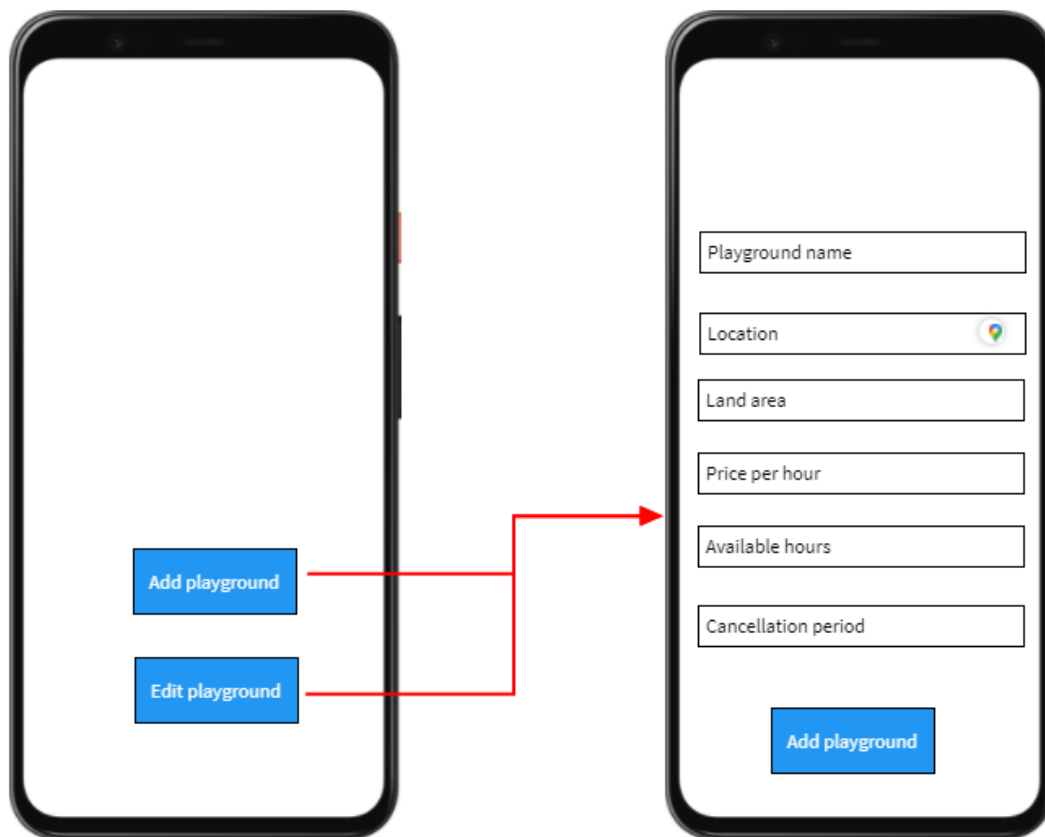| Actor Action	System Response
1- User clicks on log "My playground"	
	2- System displays several options which includes "Add playground" and "Edit playground"
3- User clicks on add or edit playground	
	4- System displays several boxes for input, including playground name, location, land area, available hours for reservation, the price per hour, and cancellation period for each playground.
5. User fills the boxes	
6. User clicks to add or edit playground	
	7. System sends request to administrator

Exceptional Scenario

No exceptional scenario for this user story.

Software Requirements Specifications

Screen Design

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Playground name field	Text < 100 Characters	Structured Text
Playground location field	Graphic	Google Maps Location
Land area field	Integer < 6 digits	Integer > 0 and in meters
Price per hour field	Integer < 4 digits	Integer > 0 and in EGP
Available hours field	Date/time < 15 Character	DD/MM/YY 24-hour format
Cancellation period field	Integer < 3 digits	Integer > 1 measured in days

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- **User Story #4**

User Story ID	US #4
User Story Name	Display requests
Actors	Playground owner
Description	**As** a playground owner **I'd like** to be able to display booking requests **So** that I can accept or deny requests for booking my playgrounds
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground owner and I'm on my home page **When** I fill I click on "My requests" tab **Then** the system displays requests I have for each playground

Scenarios

Normal Scenario

| Actor Action	System Response
1- Playground owner clicks on "My requests"	
	2- System displays the playground booking requests
3- User clicks on a request	
	4- System displays information about which pitch is requested for booking at what time and by whom.
5- Playground owner chooses to accept or deny requests	
	6- System update the list and remove the accepted/denied request

Exceptional Scenario

No exceptional scenario for this case.

Software Requirements Specifications

Screen Design
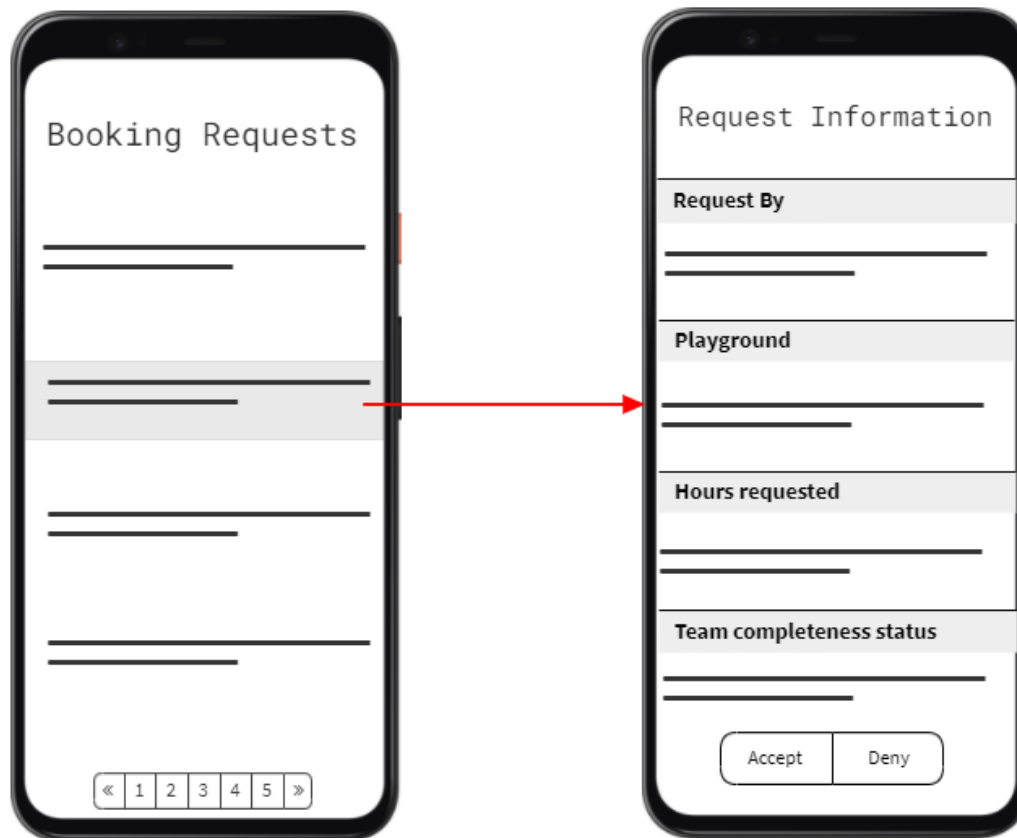
Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Request sender information	Text < 1000 Characters	Structured Text
Playground information	Text < 1000 Characters	Structured Text
Booking time information	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Team status information	Text < 100 Characters	Structured Text

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- **User Story #5**

User Story ID	US #5
User Story Name	Display books
Actors	Playground owner
Description	**As** a playground owner **I'd like** to be able to display books **So** that I can know which pitch is booked at what time and by whom
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground owner and I'm on my home page **When** I fill I click on "Books" tab **Then** the system displays booksI have for each playground

Scenarios

Normal Scenario

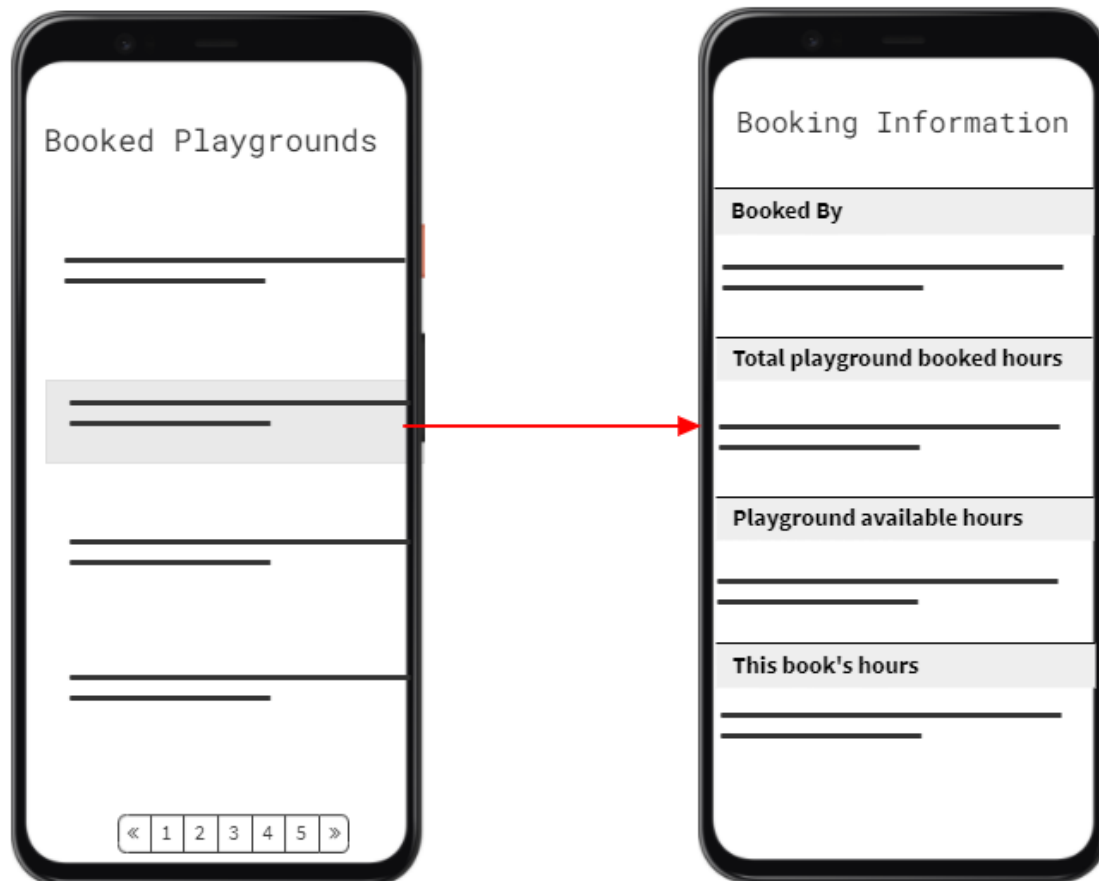| Actor Action	System Response
1- Playground owner clicks on "Books"	
	2- System displays booked playgrounds/timeslots
3- User clicks on a certain book	
	4- System displays information about which pitch is booked at what time and by whom.

Exceptional Scenario

No exceptional scenario for this case.

Software Requirements Specifications

Screen Design

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Booked by information	Text < 1000 Characters	Structured Text
Playground information	Text < 1000 Characters	Structured Text
Booking time information	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Team status information	Text < 100 Characters	Structured Text

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- **User Story #6**

User Story ID	US #6
User Story Name	Check eWallet
Actors	Playground owner
Description	**As** a playground owner **I'd like** to be able to check my eWallet **So** that I can see my balance
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground owner i want to check my eWallet **When** I fill I click on "check eWallet" tab **Then** the system displays available money in my eWallet

Scenarios

Normal Scenario

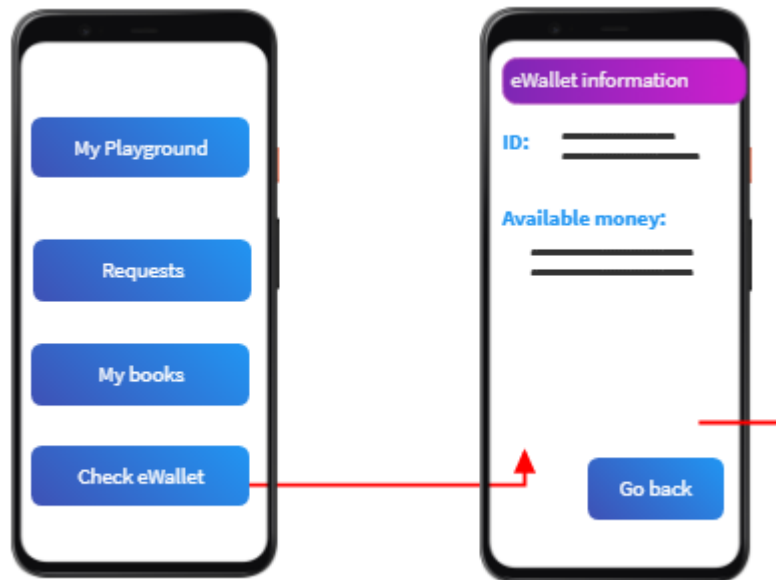| Actor Action	System Response
1- User clicks on "Check eWallet" tab	
	2- System directs the user to screen which contains my eWallet information and the available money.
3- User reviews his information then clicks on the "go back" button.	
	4-System directs the user to his home page.

Exceptional Scenario

There are no exceptional scenarios to this user story.

Software Requirements Specifications

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
ID	Integer <16 digits	Integer > 0 and valid ID
Available money	Integer <4 digits	Integer>=0

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- **User Story #7**

User Story ID	US #6
User Story Name	book playground
Actors	Player
Description	**As** a Player **I'd like** to be able book a playground **So** that I can request to use it from a playground owner
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a player and I'm on the home dashboard **When** I click on the book playground button **Then** the system directs me to nearby playgrounds

Scenarios

Normal Scenario

Actor Action	System Response
1- Player clicks on Book playground	
	2- System displays nearby playgrounds
3- User clicks picks a filter	
	4- System displays information about fitting playgrounds.
5-User chooses a playground	
	6-System displays detailed information about chosen playground.
7- User clicks on Book	
	8-System sends the request to the playground owner. 9- System directs the user back to his home panel.

Exceptional Scenario

Actor Action	System Response
1- Player clicks on Book playground	
	2- System displays nearby playgrounds
3- User clicks on a playground	

Software Requirements Specifications

	4- System displays detailed information about chosen playground.
5. User clicks on Book	
	6-System sends the request to the playground owner. 7-System directs the user back to his home panel.

Screen Design (please zoom in)

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Playground name field	Text < 100 Characters	Structured Text
Playground location field	Graphic	Google Maps Location
Land area field	Integer < 6 digits	Integer > 0 and in meters
Price per hour field	Integer < 4 digits	Integer > 0 and in EGP
Available hours field	Date/time < 15 Character	DD/MM/YY 24-hour format
Cancellation period field	Integer < 3 digits	Integer > 1 measured in days
Type of turf field	text<100 Characters	Structured text
Pitch dimensions field	2 Integers (width x length) < 3 digits	Integer > 0 and in meters

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Software Requirements Specifications

- **User Story #8**

User Story ID	US #8
User Story Name	Player checks requests' status
Actors	Player
Description	**As** a player **I'd like** to be able to check my requests' status **So** that i can review or cancel them
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a player and I'm i have made playground requests **When** I click on my requests button **Then** the system directs me to my reservation requests.

Software Requirements Specifications

Scenarios

Normal Scenario

Actor Action	System Response
1- User clicks on My requests	
	2- System directs them to their requests(accepted, denied and pending) each in a different tab.
3- User clicks on a tab	
	4- System displays detailed information about requests according to the tab
5. User can cancel an accepted or pending request as long as cancellation period isn't over	
	6-System sends the request cancellation to the playground owner . 7-System directs the user back to his home panel.

Exceptional Scenario

There are no exceptional scenarios for this user story.

Software Requirements Specifications

Screen Design

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Software Requirements Specifications

- ## User Story #9

User Story ID	US #9
User Story Name	Player joins team
Actors	Player
Description	**As** a player **I'd like** to be able to join a team **So** that I can send a request to book playground with team
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a player and i need to join a team **When** I click on the join a team button **Then** the system directs me to uncompleted teams for the requested playground

Scenarios

Normal Scenario

| Actor Action	System Response
1- User clicks on Join a team	
	2- System directs the user to screen which contains uncompleted teams for his chosen playgrounds.
3- User picks a team to see its information.	
	4- System shows detailed information about the team like the members and their emails and the playground the team will play on
5-User clicks on "Join team"	
	4-System sends a request to the playground owner after the team is completed. 5-System directs the user to his home page.

Exceptional Scenario

There are no exceptional scenarios to this user story.

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Screen Design
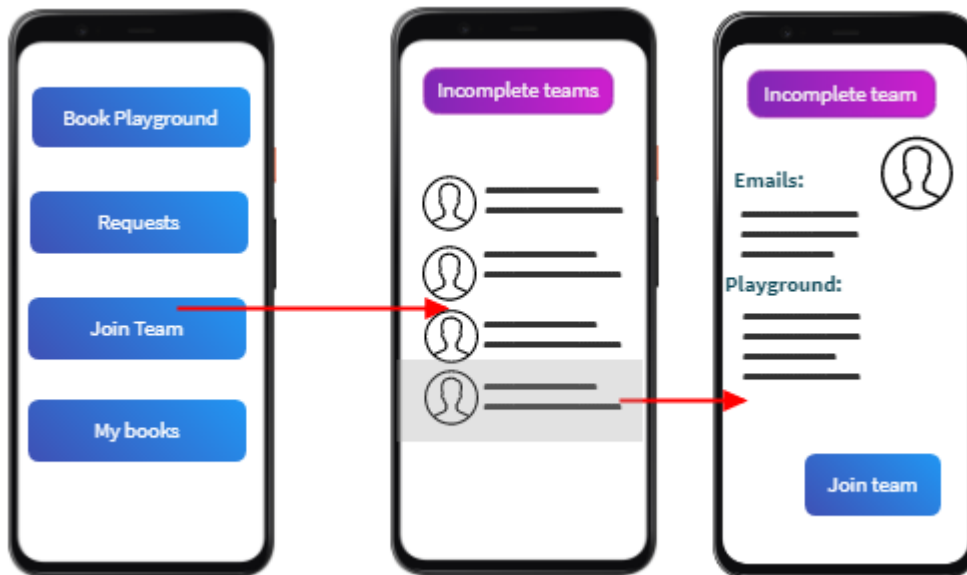
Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Email	text<100 character	Structured text
Playground Name	text<100 character	Structured text

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- **User Story #10**

User Story ID	US #10
User Story Name	Check eWallet
Actors	Player
Description	**As** a playground player **I'd like** to be able to check my eWallet **So** that I can see my balance or transfer to another eWallet
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground player and i want to check my eWallet **When** I fill I click on "check eWallet" tab **Then** the system displays available money in my eWallet

Scenarios

Normal Scenario

| Actor Action	System Response
1- User clicks on "Check eWallet" tab	
	2- System directs the user to screen which contains my eWallet information and the available money.
3- User can choose to transfer money to another eWallet or to go back	
	4-If the user chooses to transfer money the system displays a screen asking the user to fill in the information of the other eWallet and the amount to be transferred.
5-User fills in the required information.	
	6-System transfers the amount to the eWallet. 7-System directs the user to his home page.

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Exceptional Scenario

There are no exceptional scenarios to this user story.

Screen Design
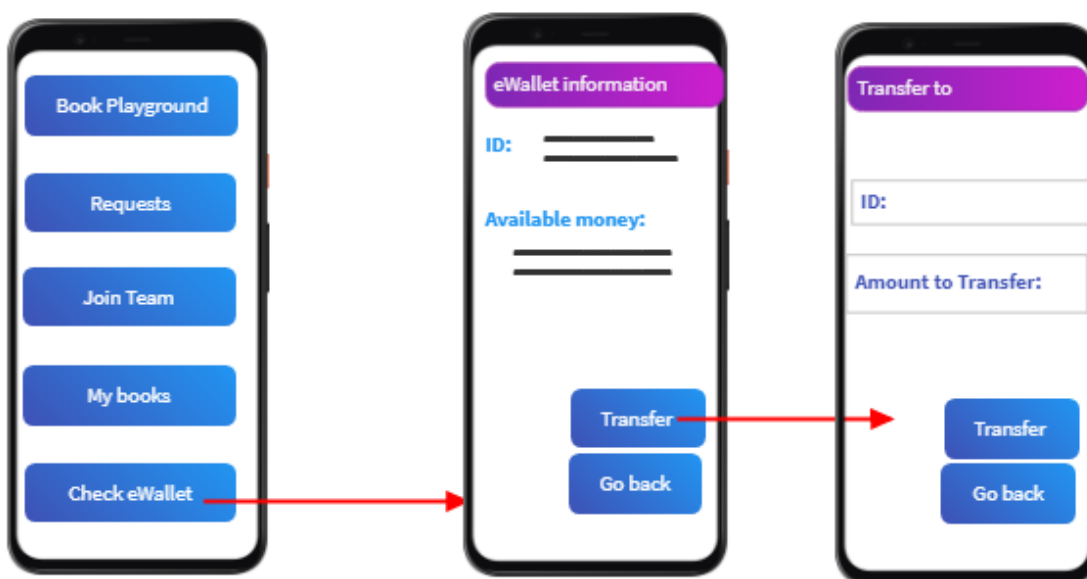
Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
ID	Integer <16 digits	Integer > 0 and valid ID
Available money	Integer <4 digits	Integer>=0
Amount to transfer	Integer <4 digits	Integer>0

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- **User Story #11**

User Story ID	US #11
User Story Name	Display books
Actors	Player
Description	**As** a playground player **I'd like** to be able to display my books **So** that I can remember which books I made
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm a playground owner and I'm on my home page **When** I fill I click on "My books" tab **Then** the system displays books I have made that were accepted

Scenarios

Normal Scenario

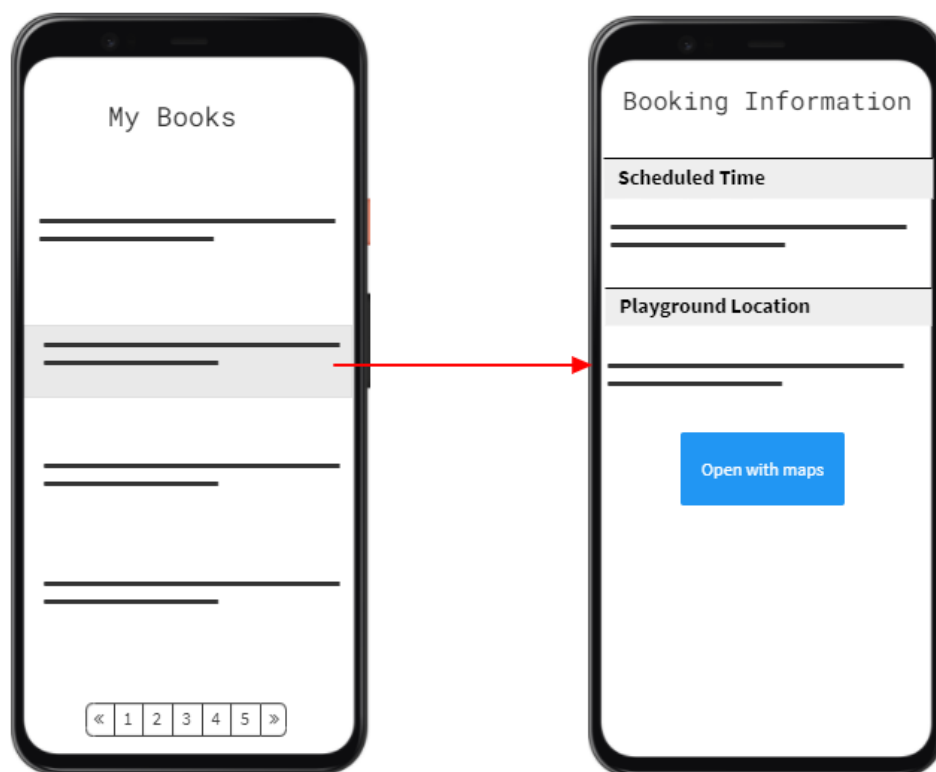| Actor Action	System Response
1- Player clicks on "My books"	
	2- System displays the books made that were accepted
3- Player clicks on a book	
	4- System displays further information about it like which pitch and booking at time and location

Exceptional Scenario

No exceptional scenario for this case.

Software Requirements Specifications

Screen Design

Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Playground location	Text < 1000 Characters	Structured Text
Playground location	Graphic	Google Maps Location
Booking time information	Date/Time < 15 Characters	DD/MM/YY 24-hour format

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- **User Story #12**

User Story ID	US #12
User Story Name	Verify playgrounds
Actors	Administrator
Description	**As** an administrator **I'd like** to be able verify a playground's credentials **So** that the system can avoid fraudulent activities
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm an administrator and I'm on my home page **When** I fill I click on verify playgrounds **Then** the system displays all recently registered playgrounds

Scenarios

Normal Scenario

| Actor Action	System Response
1- Administrator clicks on "Verify Playground"	
	2- System displays recently registered playgrounds and their owners.
3- Player clicks on a playground	
	4- System displays further information about the playground like its name,owner, location, land area and price per hour.
5- Administrator decides whether to accept or deny the registration request after checking its credibility.	
	6- System removes the request or approves it according to the administrator's decision. 7- System directs the administrator to his home page.

Exceptional Scenario

No exceptional scenario for this case.

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Screen Design
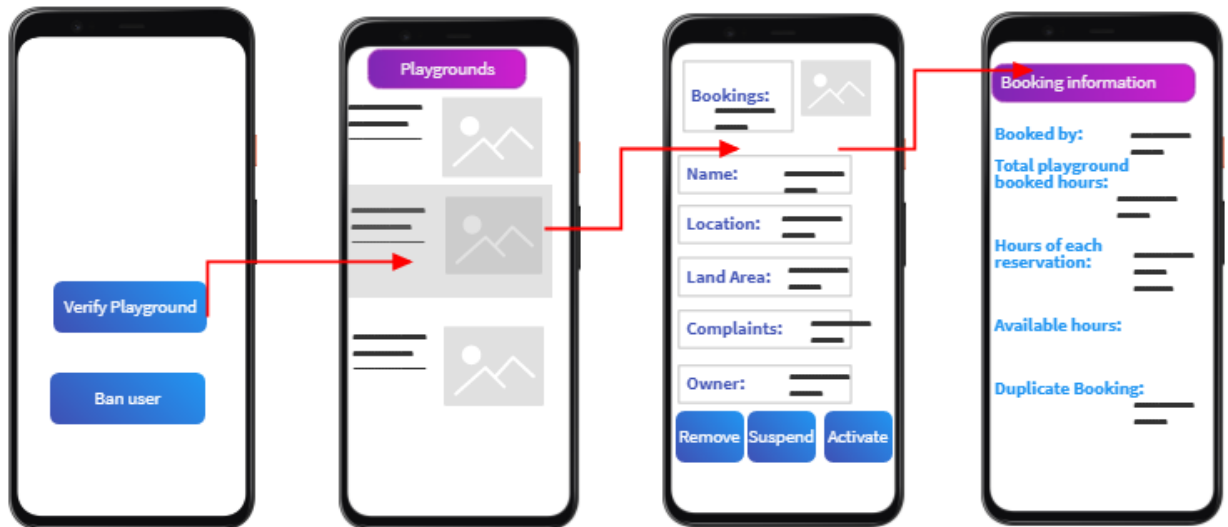
Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Playground name field	Text < 100 Characters	Structured Text
Playground location field	Graphic	Google Maps Location
Land area field	Integer < 6 digits	Integer > 0 and in meters
Complaints field	Text<200 word	Structured text
Owner	Text < 100 Characters	Structured text
Booked by information	Text < 1000 Characters	Structured Text
Total booked hours	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Available hours	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Hours of each reservation	Date/Time < 15 Characters	DD/MM/YY 24-hour format

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- **User Story #13**

User Story ID	US #13
User Story Name	Check activities
Actors	Administrator
Description	**As** an administrator **I'd like** to be able to check users' activities **So** that the system can avoid fraudulent activities
Pre condition	
Post condition	
Acceptance Criteria	**Given** I'm an administrator and I'm on my home page **When** I fill I click on check activities **Then** the system displays all users and their activities.

Scenarios

Normal Scenario

| Actor Action	System Response
1- Administrator clicks on "check activities"	
	2- System displays users and their activities
3- Player clicks on a user	
	4- System displays further information about the user like his recent registered backgrounds and the complaints on his backgrounds if he is an owner.
5- Administrator decides whether to ban the user or not.	
	6- System removes the user or not according to the administrator's decision. 7- System directs the administrator to his home page.

Exceptional Scenario

No exceptional scenario for this case.

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Screen Design
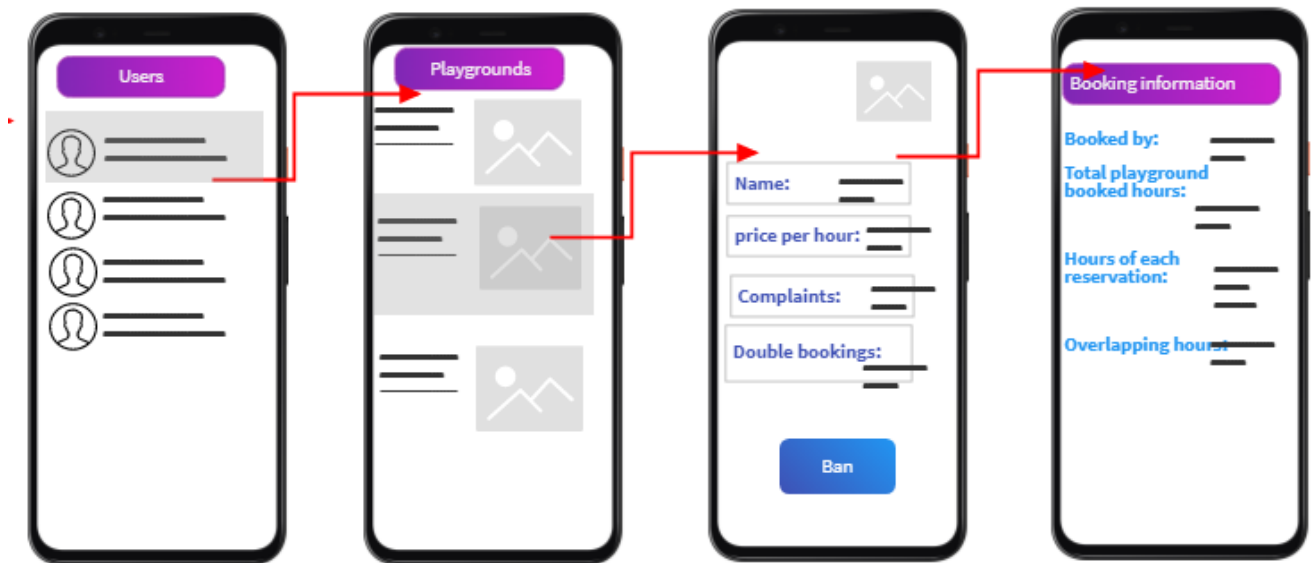
Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Complaints field	Text<200 word	Structured text
Price per hour	Integer < 4 digits	Integer > 0 and in EGP
Overlapping hours	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Total booked hours	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Available hours	Date/Time < 15 Characters	DD/MM/YY 24-hour format
Hours of each reservation	Date/Time < 15 Characters	DD/MM/YY 24-hour format

CS251: Phase 1 – The Heros
Project: GoFo
Software Requirements Specifications

Tools

ArgoUML for use case

www.mockflow.com for System Navigation Map

Ownership Report

Student	Items he created
Student 1	● Non-Functional Requirements ● System Navigation Map ● Document Purpose and Audience ● Part of Definitions ● Part of User Stories
Student 2	● Functional Requirements ● Use Case Diagram ● Purpose ● Scope ● Part of Definitions ● Part of User Stories