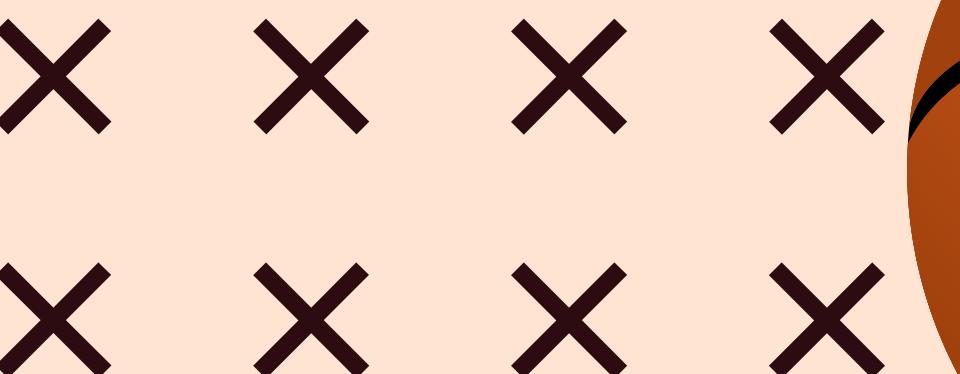


Drop In

Join Now



Problem definition

Organizing a team for playing sports is often difficult if we have
• • a friend who always wants to play sports with us, but cancels at the X X
• • last minute, so we don't have enough teammates to play against X X
other teams. We think that many people may face the same issue, X X
• • so we want to develop an application called "Drop In" which means X X
finding a buddy to play sports with. X X



Problem definition

- don't know who to exercise (play sports) with
- the app for facility reservation doesn't exist
- hard time making a schedule to assemble friends to exercise together with
-
-
-
-
-
-

X X

X X

X X

X X



Objectives

- Our main objective is to solve the shortage of players caused by teammates or friends canceling the plan. From these problems, we want to build an application which allows users to form a team, find a friend, or join the team for the sport they want to play. Moreover, as a supporting feature, we want the app to allow students to reserve specific sports courts at the university directly through the app.
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Project Plan

“There isn't any app for this”

A new system must be built to solve this problem



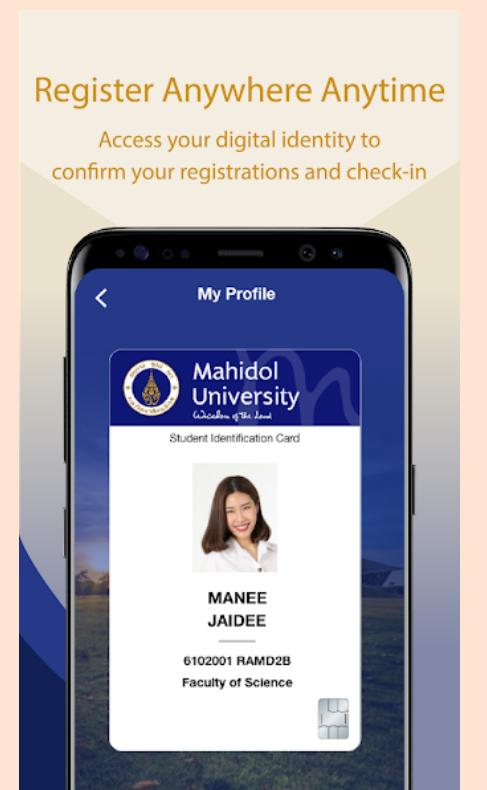
Project Plan

scope

“Safety can be a problem”

Therefore, The app is meant for students only, utilizing the existing Mahidol student ID card credentials paired with the campus database for verification.

Allowing strangers to use the app would impose a safety risk, so strict exclusivity is required.



Project Plan

functions

Create Game Mode:
Users can host a match by selecting the sports type, date, time, location, and max number of people. Private and Public games.

Reservation Mode:
Since MU lacks a dedicated app for sport complex reservations, our app serves this purpose.

Join Mode & Timetable:
Users can search for games by host name or location. Once joined, the "Timetable" feature allows them to track incoming matches.

Project Plan

functions

The Attendance & Penalty System

To solve the problem of users flaking after reserving, we implemented a unique feature inspired by the Anywheel QR system. To prove attendance, a user must scan a QR code at the facility to "join," and scan again to "leave."

If a user enters a match but fails to scan, the system flags them as missing. Users have 3 chances to misbehave; if they fail to show up or scan three times, penalties are applied. This ensures that the community remains reliable and efficient.

Project Plan

milestones

For our milestones, we are aiming to follow the incremental model.

Increment 1: Operational Foundation

The primary deliverable is the Sport Complex Reservation System, the game/match creation and join system and scan system
ETA: 6-8 weeks

Increment 2: Discovery and Management

It introduces a Player Rating System. History and Incoming Match Viewing. the Search System is improved to include Location Priority
ETA: 8-10 weeks

Increment 3: Analytics and Visualization

A Stats System is introduced to track and display user performance data. Advanced Graphic are integrated into the location system
ETA: 4-6 weeks

Programming Languages

Dart: It is easier for developers with experience in C++ and Java to learn. It also offers libraries and frameworks for both UI/UX and logic design, making it more efficient than traditional web development, which often requires multiple languages like HTML, CSS, and JavaScript

SQL (Standard Query Language): Our application uses MySQL for the database, and SQL is the language used to manage it. SQL is used to add, delete, and manage database schema and raw data in the database.

Tools and Environments

Application Framework

Flutter: Flutter is a cross-platform toolkit that renders the UI like a game engine, allowing us to build for both Android and iOS from a single codebase.

Database

MySQL Database (self-hosted within the university): To store large amounts of user data, including personal information and sports game data, we use MySQL.

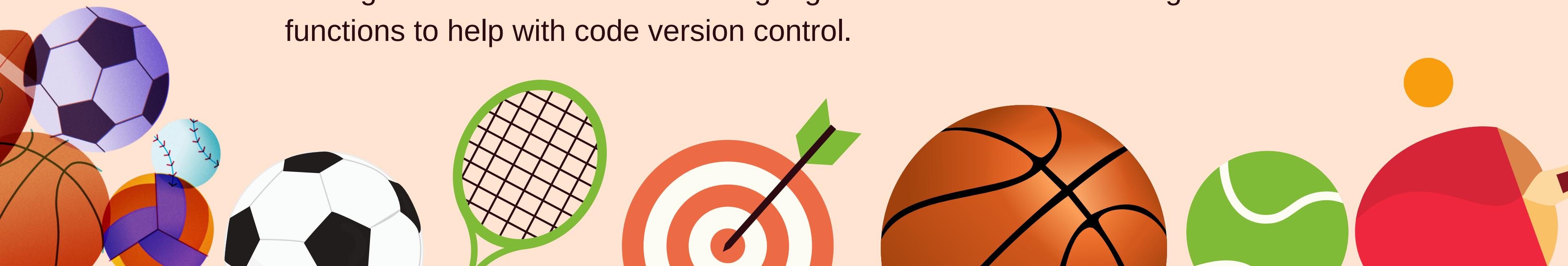
Development Environment (IDE)

Visual Studio Code (VS Code): A popular and easy-to-use code editor that most developers are familiar with.

Android Studio (SDK Tools): Used mainly for its Android Emulator and build tools (Gradle). This lets us simulate an Android device on a computer to test features like the "Location" map and "QR Camera" permissions during development.

Version Control

Git & GitHub: Used for coding sharing and code version management. It acts like a shared google drive with fork and merge functions to help with code version control.



User Journey

Case: User creating session

Journey Phases	Creating session	Config session detail	Book session	People join	Meet up and check in at destination	Check-out	Feedback
Step	<ul style="list-style-type: none"> want to play sport open app click create button 	<ul style="list-style-type: none"> Choose sport Select location Select room Select session privacy setting to public, 5 people 	Click confirm	<ul style="list-style-type: none"> Wait for people to join People join 	<ul style="list-style-type: none"> Follow the map to the location Wait for people at the location People arrive and check in 	<ul style="list-style-type: none"> Let other come scan check-out qr code with you 	<ul style="list-style-type: none"> Report toxic people who join
Touch Points	<ul style="list-style-type: none"> Smart Phone DropIn application Create page 	Session detail page	session detail page	<ul style="list-style-type: none"> Incoming session page 	<ul style="list-style-type: none"> Selected location Random teammate Check-in page 	<ul style="list-style-type: none"> Check in page 	<ul style="list-style-type: none"> non
Experience	Don't know where to play sport and have no friend	Don't know any places but see the list of location and see the map to that destination	none	Nervous will people join?	Ready to play and meet new friend introduce myself to everyone when they come and scan check in qr code with me	Time to say good bye, everyone check out	Feel bad one of the teammate is toxic then report him
Emotion	bored	Normal	Normal	Excited	Excited	Good	Bad
Suggestion	can create button be bigger and easier to find?	will be nice if there a list of equipment the facility provide so I dont need to bring everything with me	none	It will be nice if I can see their profile	The map can be more detailed.	Why they can't check out themself	can I give feedback to the session be for me they refuse to leave the court on time

User Journey

Case: Private game

Journey Phases	Creating session	Config session detail	Book session	Friend join	Go to meet with friend at the destination	Check out	Feedback
Step	<ul style="list-style-type: none"> want to play sport open app click create button 	<ul style="list-style-type: none"> Choose sport select location select room select session privacy setting to private 6 people 	<ul style="list-style-type: none"> Click confirm 	<ul style="list-style-type: none"> Wait for friend to join Friend join and confirm session 	<ul style="list-style-type: none"> Follow the map to the destination with friend Scan qr code with the session owner for check in 	<ul style="list-style-type: none"> everyone come scan qr to check out 	non
Touch Points	<ul style="list-style-type: none"> Phone Dropln application Create page 	<ul style="list-style-type: none"> Session detail page 	<ul style="list-style-type: none"> Session confirmation page 	<ul style="list-style-type: none"> Incoming session Page 	<ul style="list-style-type: none"> Map page Selected location Check in page 	<ul style="list-style-type: none"> Check in page 	non
Experience	Don't know where to play sport but have a lot of friends	Don't know any places but see the list of location and see the map to that destination	non	<ul style="list-style-type: none"> Tell friend to join Wait for friend to join 	Dont know where the location is but follow the map	Session owner put out the qr for everyone to scan	non
Emotion	normal	normal	Normal	Excited	Amazing	good	non
Suggestion	can create button be bigger and easier to find?	will be nice if there a list of equipment the facility provide so I dont need to bring everything with me	none	Can I just invite them instead	can they just not check in since its a private game	Why the session owner can't just click end session	I want to rate my friend

User Journey

Case: User Joining session

Journey Phases	Filter to find the session list	select session	Book session	Meet up and check in at destination	Check-out	Feedback
Step	<ul style="list-style-type: none"> Open app Find join button Filter desired game information Scroll through list of session 	<ul style="list-style-type: none"> Click the desired session with availability See the location in the map 	<ul style="list-style-type: none"> Click join and confirm 	<ul style="list-style-type: none"> Follow the map to the destination Find the session owner Let other come scan Check in qr code with you 	<ul style="list-style-type: none"> Go scan qr code for check-out 	<ul style="list-style-type: none"> Rate the session owner and the session
Touch Points	<ul style="list-style-type: none"> Phone DropIn application Join page 	<ul style="list-style-type: none"> Join page Search result page 	<ul style="list-style-type: none"> Confirmation page 	<ul style="list-style-type: none"> Map page Session location Check in page 	<ul style="list-style-type: none"> Check in page qr code scanner 	<ul style="list-style-type: none"> Feedback page
Experience	Don't know where to play sport and have no friend then go to application and find session	See lot of session have to choose	Excited to go play	Can't wait to meet new people and play looking for the session owner to scan qr code for check in	Go scan check out qr code with the session owner and say goodbye	Feel good leave good review to the session owner
Emotion	Sad	Normal	Excited	Amazing	Good	Good
Suggestion	Can the join button be easier to find	It would better if results of games can be displayed in order the way I want.	none	Why do I have to scan can I just click check in	Can I check out by myself	The session before me is very nice they lent me the equipment can I rate them too

User Persona



Manoach, "the game joiner"

Manoach: 20-year-old Computer Engineering student

Top 3 favorite sports: Basketball, Volleyball, and Swimming

App Use Frequency: 2-3 times a week

Reliability Status: High (rarely miss check-ins/outs)

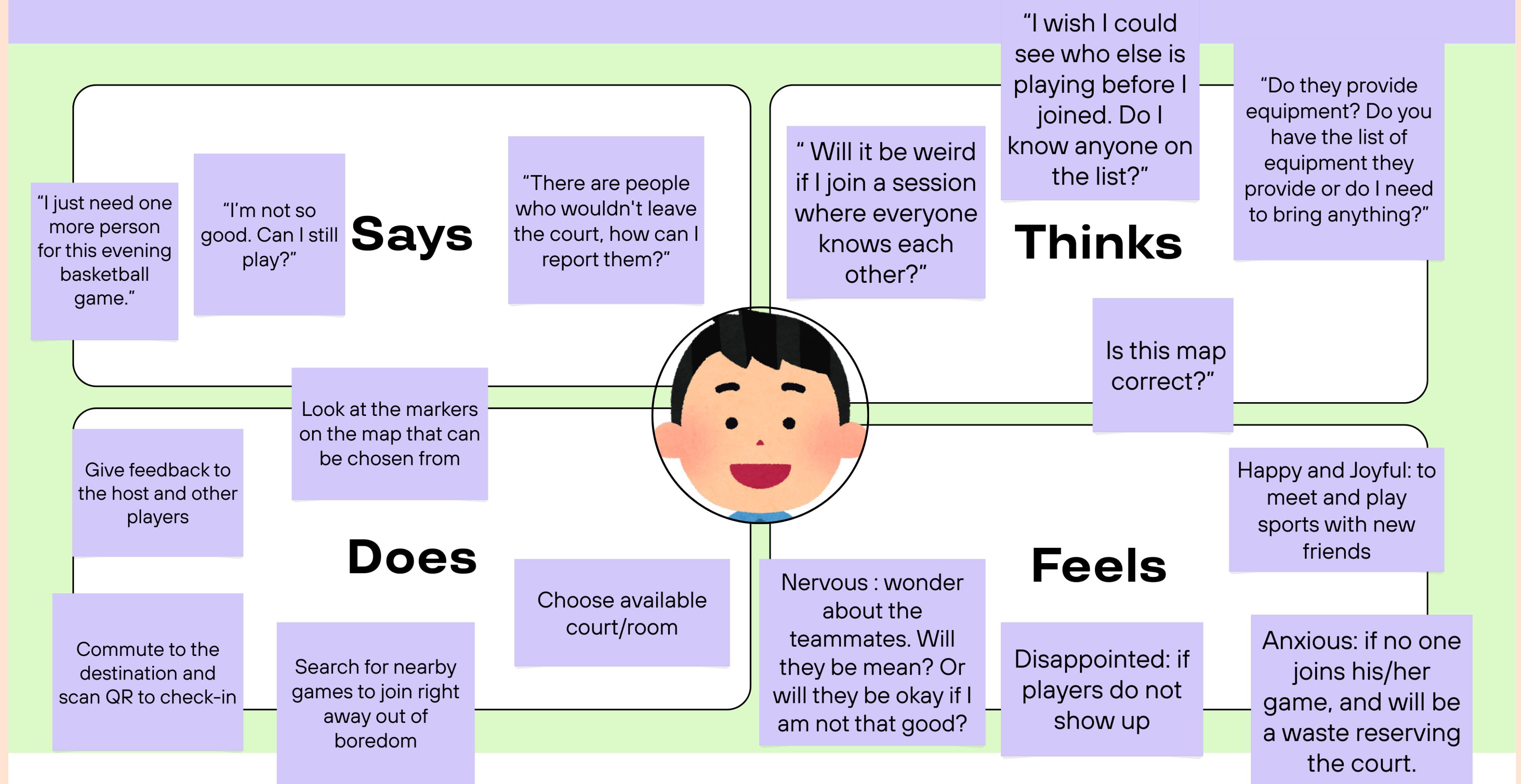
Pain

- Game creators (hosts) have to wait for others to join, and are not guaranteed that the players will show up.
- Users may suffer from failure of scanning QR code, especially when they are late and the lightning is poor.
- There is no way to know if a stranger joining is compatible, or friendly.

Gain

- Every sports complex in MU can be reserved all in one application.
- Easy for freshmen who have no idea where the building is since we have a map and location detail ready to use.
- Not everyone has lots of friends and some sports require more than one person so to be able to join other sessions even though you have no company is convenient.
- Users are all verified MU students. In case of any incident or emergency, the records of who, when, and where can be tracked. Help is easier and faster to seek for.

Empathy Map





User Requirements

1. Log In/ Sign Up
2. Personal Statistics Management
3. Creating Game and Reserving Facility
4. Joining Game
5. QR Scan
6. Feedback System
7. Timetable

System Requirements

Functional Requirements

1. Authentication and Profile Management
2. Game Creation and Facility Reservation
3. Game Discovery and Joining
4. QR System
5. Post-Game and Rating

Non-Functional Requirements

1. Performance Requirements

NFR-1.1 Maximum time for the game List or personal statistics page (standard text/image pages) to load fully: 5 seconds.

NFR-1.2 Average time for joining game and QR interactions to process: 1 second.

NFR-1.3 Real-time court availability and player count updates must occur within 100 milliseconds of a transaction (booking, joining, cancelling).

1. Safety Requirements

NFR-2.1 The system must cooperate with facility administrators to prevent new bookings and notify users instantly if the court goes “unsafe” or “closed”.

1. Security Requirements

NFR-3.1 All personal user data and authentication credentials must be protected.

NFR-3.2 The system must strictly follow authorization checks (e.g., only the host can accept join requests for a private game).

NFR-3.3 The user’s current location must not be shared or accessible by the other users, and not be used for other purposes.

1. Software Qualities

NFR-4.1 The database architecture must be capable of supporting up to 500 concurrent active users and handle peak load without degradation in performance.

NFR-4.2 The system must be functional, well-calculated on real-time player counts, court availability, adding users to the game, and update them correctly across all users' application interfaces.



System Constraints

1. Hardware Requirements

CON-1.1 Scanning QR code requires the device's camera.

CON-1.2 The application can be run on smartphones with IOS version 15 or above, and version 12 or above for Android operating system.

2. Software Requirements

CON-2.1 The application must utilize a reliable, open-source library for fast and accurate QR code decoding across different lighting conditions and camera qualities.

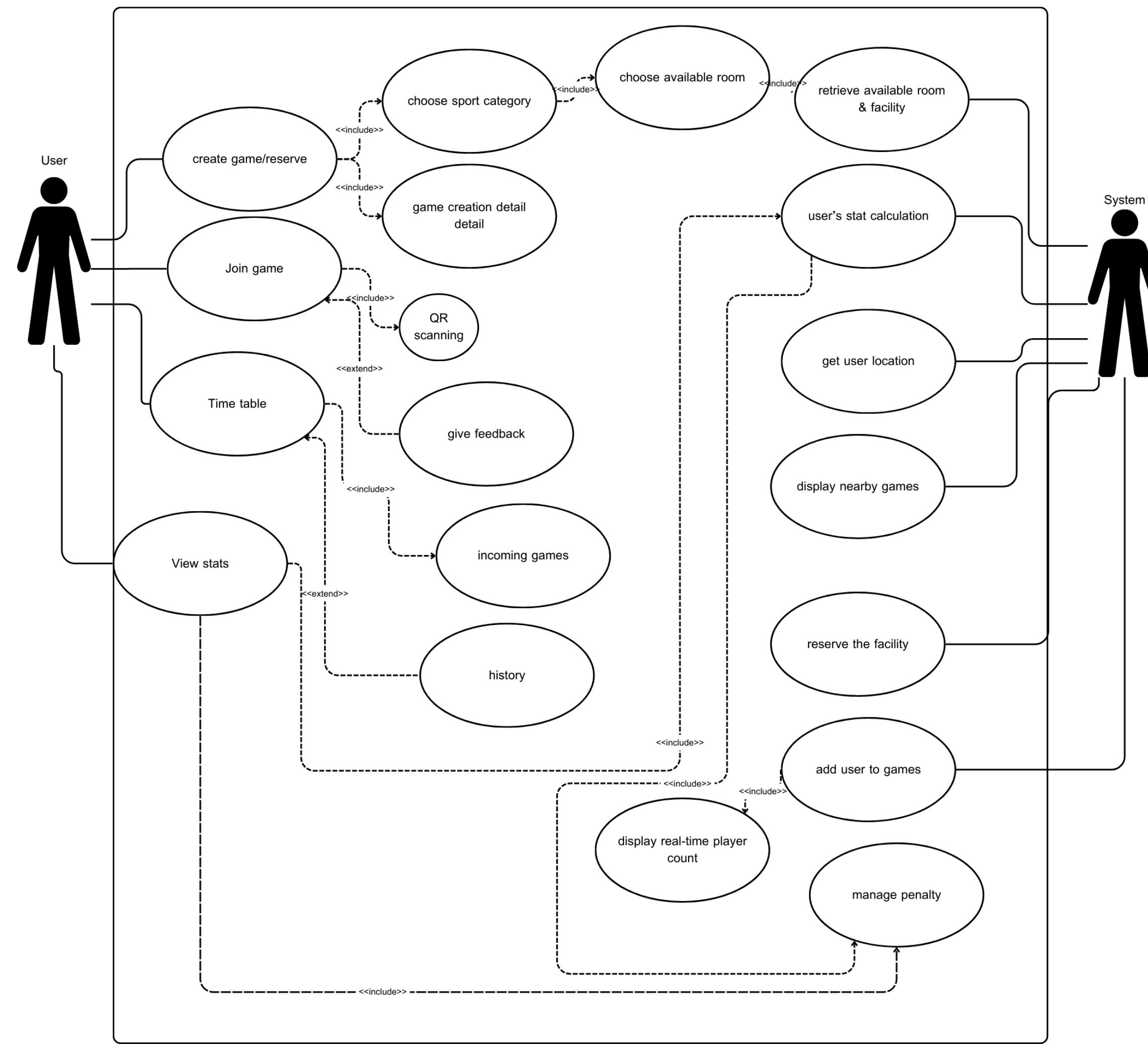


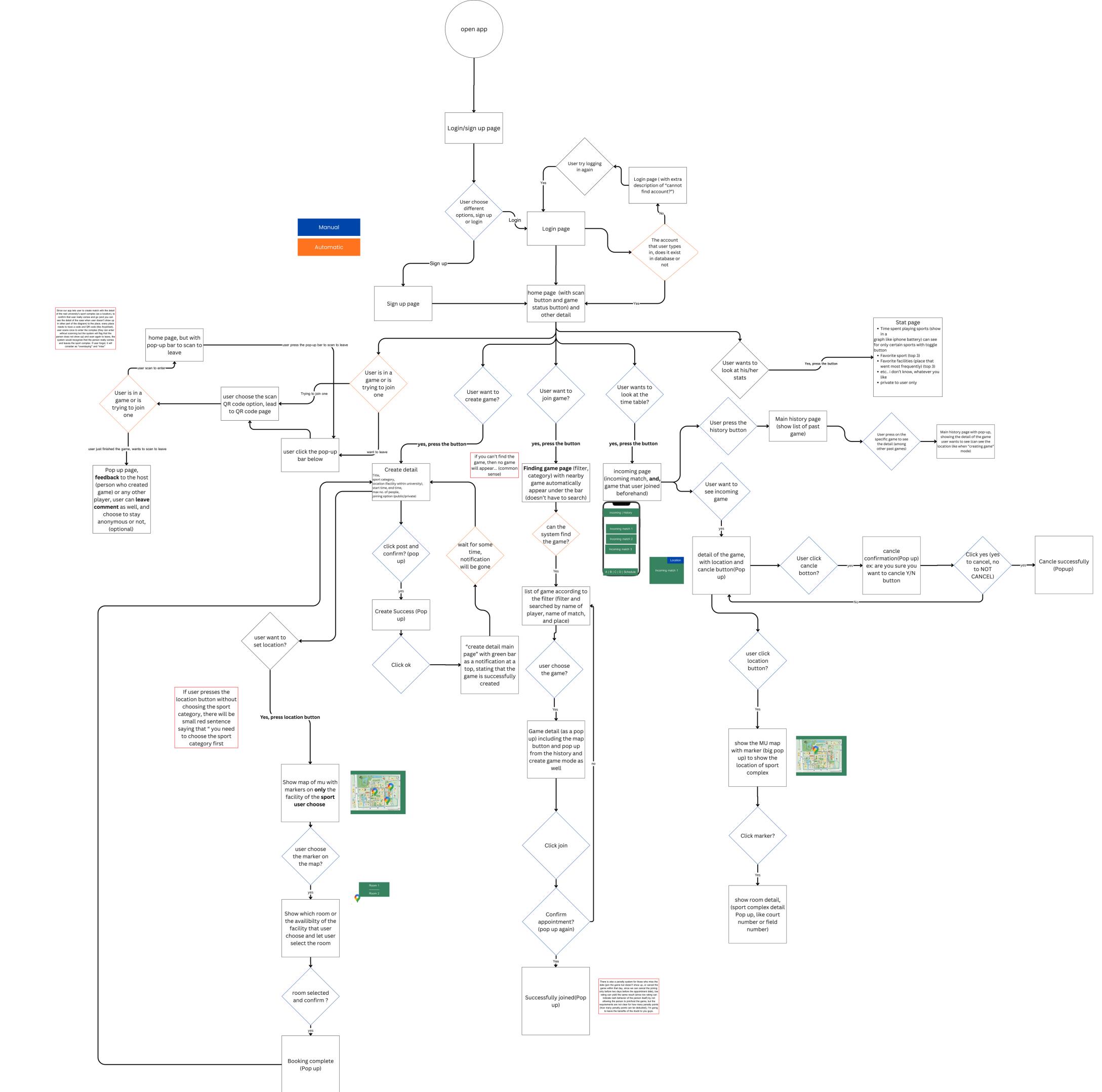
Domain Requirements

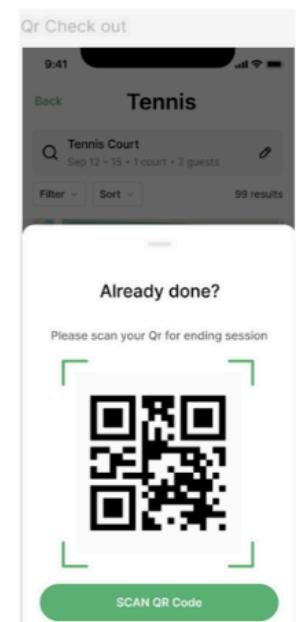
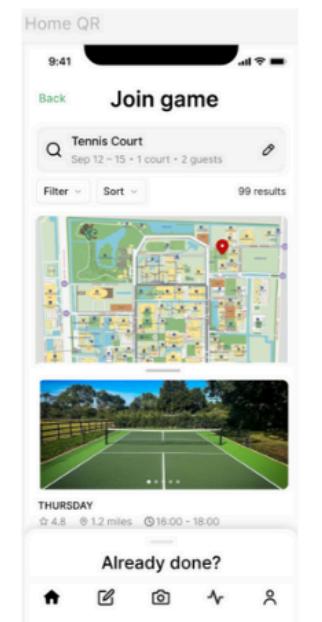
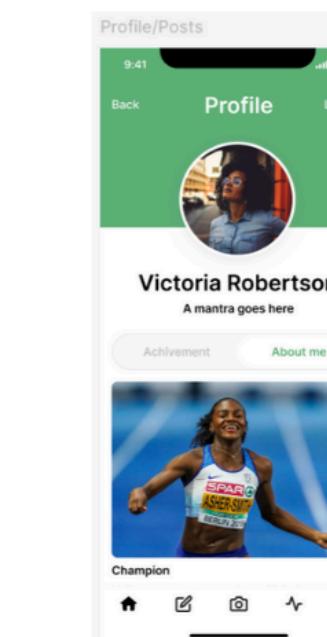
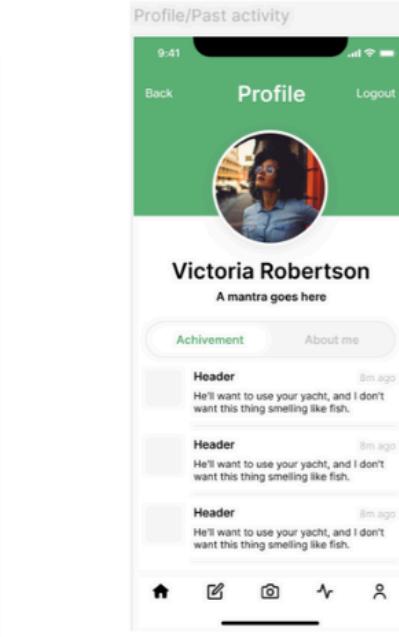
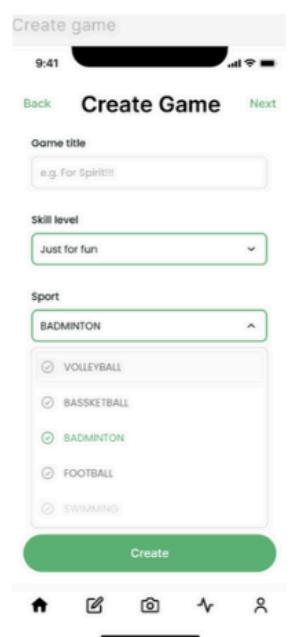
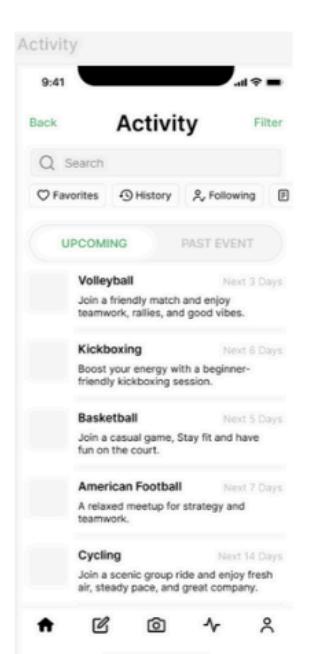
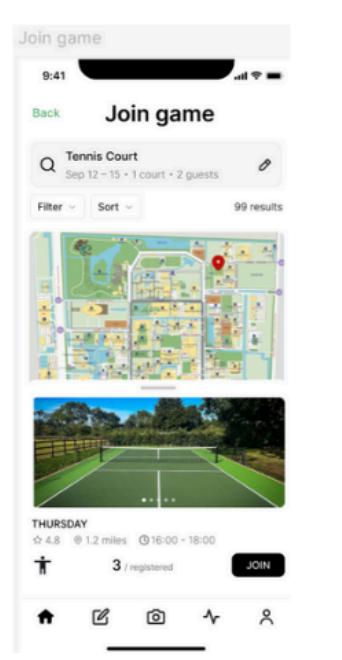
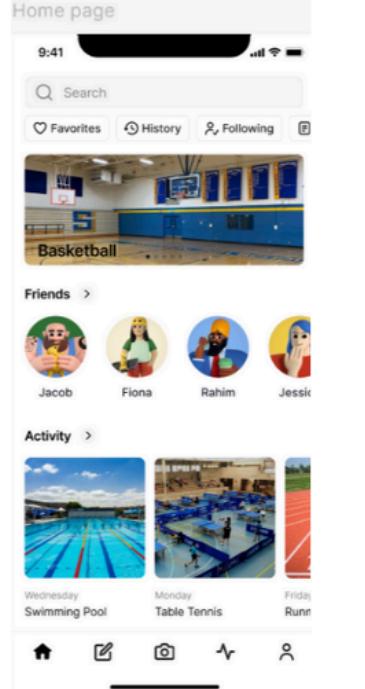
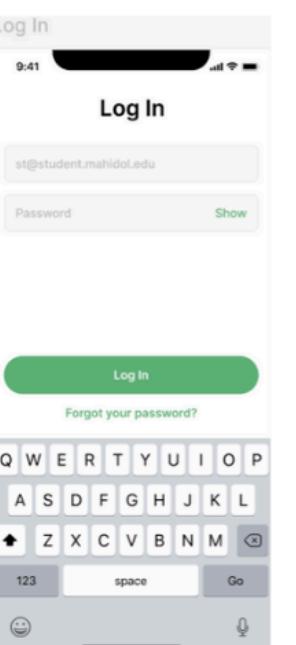
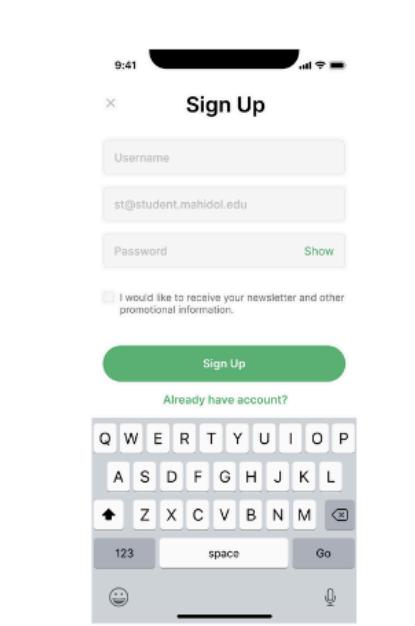
1. The application must integrate with the MU Sports Complex's master schedule data for initial court availability and facility names, which will be the authoritative source for location data.
2. The system must strictly follow the university's booking policies regarding maximum reservation hours, advance booking limits, players limit, or any other regulations.
3. All activities of users done on application must comply with MU code of conduct, with a process for reporting and investigating inappropriate user behavior.



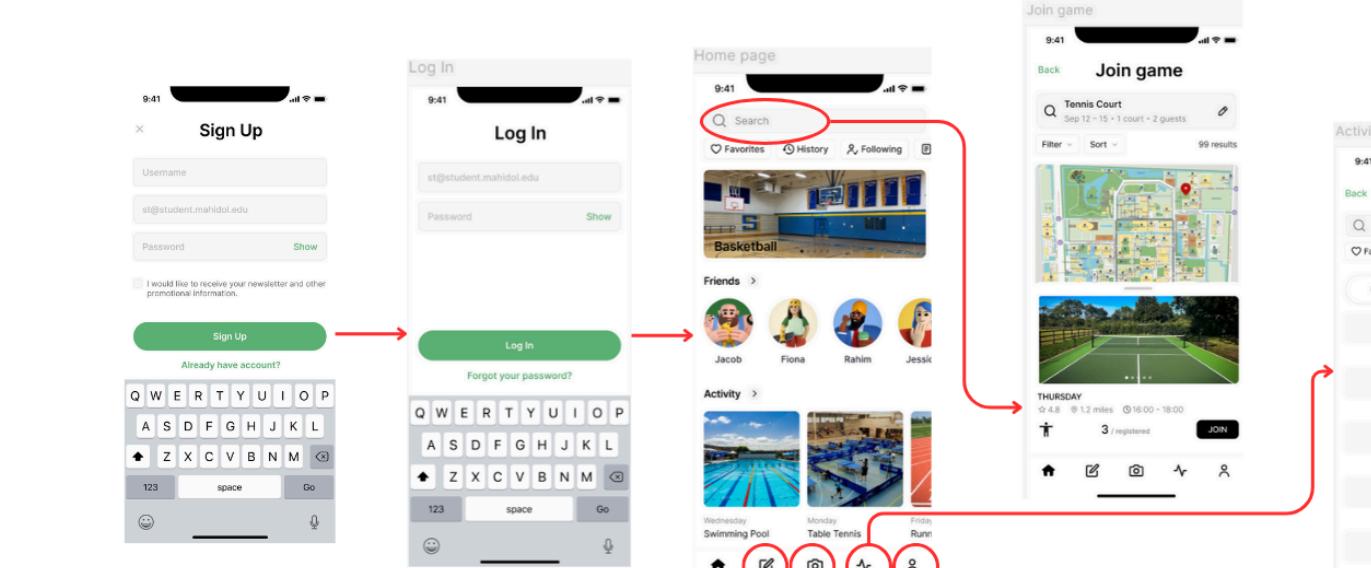
Drop in application



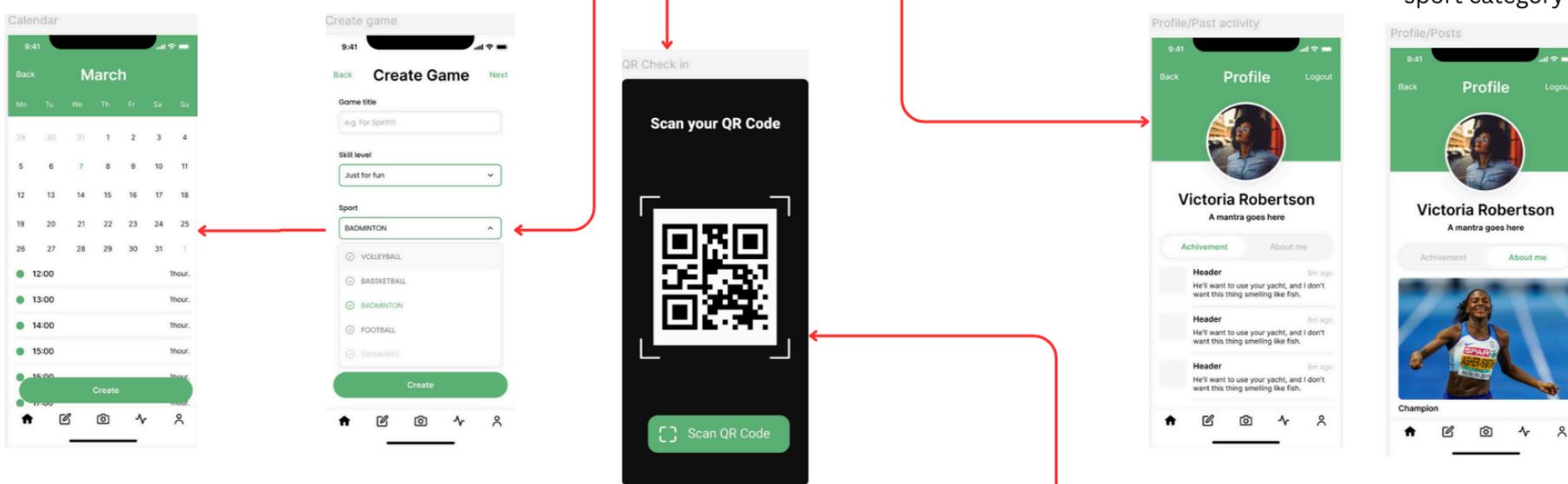




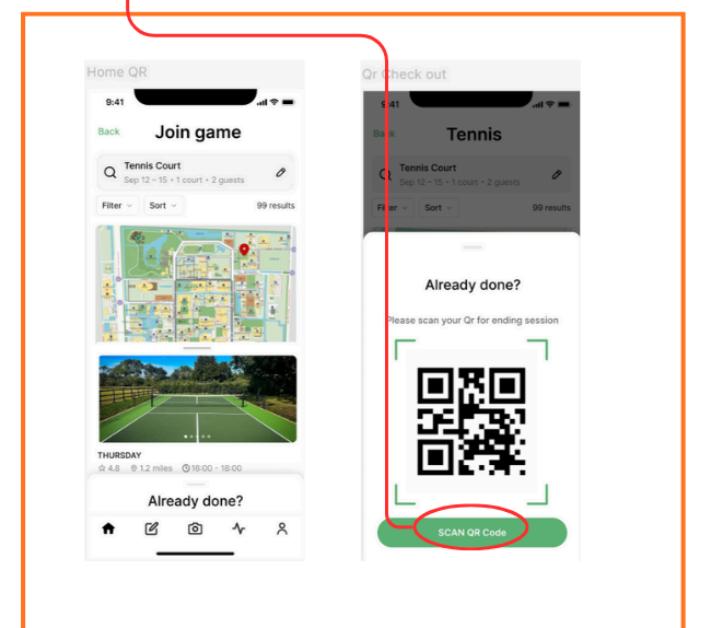
join game page, to find a game to join. The game showing without searching is a game that is happening and near user's location
Can do searching with filter



Activity page, (previously named time table)
is a page to show past joined game and incoming joined game



scan system, for the system to know that the user really joins and leaves the game must scan qr code at the sport complex to enter and leave, similar to Anywheel



Home page and pop-up “already done?”
that is always there when user is in the game user can scan to leave

Stat page, showing personal information like time played for each sport and favorite sport category

Thank You

