



PADELUP

Software design document (SSD)

This Software System Design (SSD) document describes the **PadelUp** website, a web-based application designed to simplify padel court booking, player matchmaking, tournament management, marketplace services, and other related features aiming to digitalize the padel experience by providing a online platform that connects players, clubs, and padel events in an efficient easy way

<https://github.com/omarinho348/PadelUp.git>

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1. Introduction

1.1 Purpose

The purpose of this software design document (SSD) is to describe the software design of the **PadelUp** system. It outlines the system architecture, major components, and their interactions to provide a clear understanding of how the PadelUp website functions.

This document serves as a reference for developers, instructors, and stakeholders involved in the development, evaluation, and maintenance of the system.

1.2 Scope

1.2.1 In Scope

The PadelUp system includes the following features and functionalities:

- User authentication (registration, login, logout, and password recovery).
- User profile management for players, clubs, and administrators.
- Online padel court booking and scheduling.
- Player matchmaking based on availability and preferences.
- Tournament creation, management, and participation.
- Marketplace functionality for browsing and managing padel-related products or services.
- Administrative dashboard for managing users, courts, tournaments, and system content.

1.2.2 Out of Scope

The following features are not included in the current version of the PadelUp system:

- Real-time sensor-based performance tracking or match analytics.
- Artificial intelligence-based recommendations or predictions.
- Native mobile applications (the system is web-based only).
- Payment gateways or advanced monetization features.
- Integration with external third-party sports platforms or APIs.

1.3 Intended Audience

This SSD serves as a reference for developers, instructors and stakeholders involved in the development and maintenance of PadelUp.

It could also be very helpful for developers who might want to develop PadelUp further in the future.

➔ Our Main stakeholders are:

Stakeholder	Description	Roles & Responsibilities
Players (End Users)	Padel players who use the platform to manage their padel activities and interact with other users.	- Create and manage personal accounts- Browse and book available courts- Join tournaments, matches, and training sessions- Buy and sell padel equipment via the marketplace- View booking history, match performance, and PadelIQ level progression
Venue Administrators	Users responsible for managing padel venues and courts registered on PadelUp.	- Add, update, or remove venues and courts- Set and update booking prices- Receive and manage booking notifications- Monitor player behavior and enforce bans when necessary
System Administrators	Technical stakeholders responsible for the stability and security of the platform.	- Manage servers and databases- Maintain system performance and reliability- Provide technical support to users and admins- Handle bug fixes, updates, and optimizations
Coaches	Professionals who offer training sessions and skill development services through the platform.	- Manage training schedules and pricing- Accept or reject session requests- Provide feedback and evaluations affecting PadelIQ scores
Tournament Organizers	Users responsible for creating and managing padel tournaments and competitions.	- Create and manage tournaments and rules- Set entry fees and prize structures- Approve or reject players based on skill level- Record and upload match results- Coordinate with venue administrators- Communicate with participants

1.4 PadelUp Stakeholder

Like each and every software, understanding who are the stakeholders is very important, since they influence the system's requirements, design, and functionality. Our main stakeholders are:

1.4.1 Players (End Users)

Like each and every system, the end users are the first and one of the most important stakeholders. In our case, end users are padel players. We aim to make them use our platform on a daily basis to complete all their padel needs, such as: book padel courts, join tournaments, find matches, improve their skills through the PadellQ system, and buy padel gear from the market place

- Roles and responsibilities
 - Create and manage their personal accounts.
 - Browse and book available courts in their preferred location.
 - Participate in tournaments, matches, and training session.
 - Buy and sell sports equipment through the integrated marketplace
 - View booking history, match performance, and PadellQ level progression.

- Goals and expectations
 - A seamless, responsive, and easy-to-use interface.
 - Accurate and up-to-date court availability.
 - Secure and fast booking process.
 - Accurate data on match history and PadellQ statistics.

1.4.2 Venue administrators

Venue administrators manage the padel courts registered on PadelUp. Each administrator manages his venues and his courts. Each administrator can perform all sorts of CRUD operations on his courts such as adding new courts, removing courts (Renovations case), update booking price and delete venues.

- Roles and responsibilities
 - Add, update or remove courts and their details
 - Set booking prices
 - Receive new booking notifications and manage them
 - Monitor players on court and force bans on bad behavior

- Goals and expectations
 - Admins need simple and efficient dashboards
 - Real-time updates of court availability
 - Real-time notifications upon court bookings or court cancelations

1.4.3 System Administrators

System administrators are responsible for maintaining the technical integrity, security, and reliability of PadelUp.

- Roles and responsibilities
 - Manage the database, maintain the server and the good working flow of the platform
 - Provide technical support for users and admins in case of issues
 - Handle bug reports, performance optimization, and version updates.

- Goals and expectations

- Secure and stable system with minimal to non-existent crashes
- Good error handling

1.4.4 Coaches

Coaches are part of the PadelUp team, they offer professional training sessions to players who seek skill development and performance improvement.

- Roles and responsibilities
- Manage training schedules and pricing.
- Accept or decline session requests from players.
- Provide feedback and evaluations that influence PadelIQ scores.

- Goals and expectations
- A reliable system for managing schedules and payments.
- Provide fair level feedbacks after sessions
- Easy communication with players

1.4.5 Tournament Organizers

They are responsible for creating and managing competitive padel events through PadelUp. They ensure tournaments run smoothly, attract players, and follow fair and transparent rules.

- Roles and responsibilities
- Create and manage tournaments, set their rules, set entry fees and prize money
- Approve or reject players entrance to tournaments based on their level
- Record match results and upload them to the platform
- Coordinate with venue admins to ensure court availability during the tournaments
- Communicate with all players before and during the tournament

- Goals and expectations
- An easy-to-use tournament management interface.
- Accurate players data

1.4.6 Sponsors, promoters and business partners

Sponsors and partners collaborate with PadelUp to promote events, brands, and tournaments.

- Roles and responsibilities
- Collaborate with PadelUp for advertising and sponsorships.
- Offer exclusive discounts or events for PadelUp users to encourage interactivity and encourage more players to register on the platform.
- Goals and expectations
- They expect that their partnership or sponsorship with us will bring them new customers and will increase their brand visibility.
- Access to players data and events

1.5 Definitions and Acronyms Glossary

TERM	DEFINITION
Padel	A racket sport similar to a mix of tennis and squash. It is primarily played in doubles on an enclosed court that uses surrounding walls as part of the game.
Skill Level	A rating assigned to a user indicating their skills, playing ability and level. This helps in forming balanced matches.
PadelIQ	The name of the skill level system we developed in PadelUp to automate the assignment of players skill levels. It controls when a player level goes up or down based on multiple factors.
Marketplace	It functions as a digital marketplace that allows the users to buy/sell their padel gear like rackets, clothing and accessories.
Venue	A physical location or club that hosts one or more padel courts.
Court	A single, individual padel playing field located within a venue.
Match Making	A feature that allows a user who has booked a court to invite other users to join their session. This helps players find partners and fill available spots in a game.
PadelUp dashboard	A user's personal homepage after logging in. It provides a central overview of their upcoming bookings, past activity, and profile management options.
Court Cancellation Policy	A set of rules defined by each venue that outlines the conditions and any potential fees for canceling a confirmed booking. The system automatically applies these rules.

2. System Overview

PadelUp is a web-based platform designed to digitalize and centralize padel-related activities within a single system. The platform connects players, venue administrators, coaches, tournament organizers, and system administrators, enabling them to interact through well-defined roles and functionalities.

The system provides core services such as court booking, player matchmaking, tournament management, training session scheduling, and a marketplace for padel equipment. Each service is implemented as a logical module within the system, ensuring separation of concerns, scalability, and maintainability.

PadelUp follows a role-based access model, where system features are accessible according to the user's role. This ensures data security, proper authorization, and a streamlined user experience. All interactions are performed through a web browser, allowing users to access the system without the need for native mobile applications.

2.1 Similar systems

There exist some websites that are very similar to PadelUp such as:

- Playtomic: <https://playtomic.com/>

Pros:

- Well-established and widely used internationally
- Provides reliable court booking and match scheduling
- Supports basic matchmaking features
- Clean and user-friendly interface

Cons (Compared to PadelUp):

- No integrated padel marketplace for buying or selling equipment
- Limited or no support for local tournaments in Egypt
- No AI-based skill level evaluation
- Does not offer booking sessions with certified padel coaches
- Focuses mainly on booking rather than player development

- Padel Finder(app): <https://padelfinder.web.app/>

Pros:

- Simple and lightweight platform
- Focused on discovering padel courts and matches
- Easy to use for casual players

Cons (Compared to PadelUp):

- Limited functionality beyond court discovery
- No tournament management or participation features
- No marketplace for padel equipment
- No player skill tracking or AI-based skill levels
- No coaching or training session booking

- Pro Padel Egypt: <https://propadeleg.skedda.com>

Pros:

- Strong local presence in Egypt
- Trusted by several padel venues
- Effective court booking system

Cons (Compared to PadelUp):

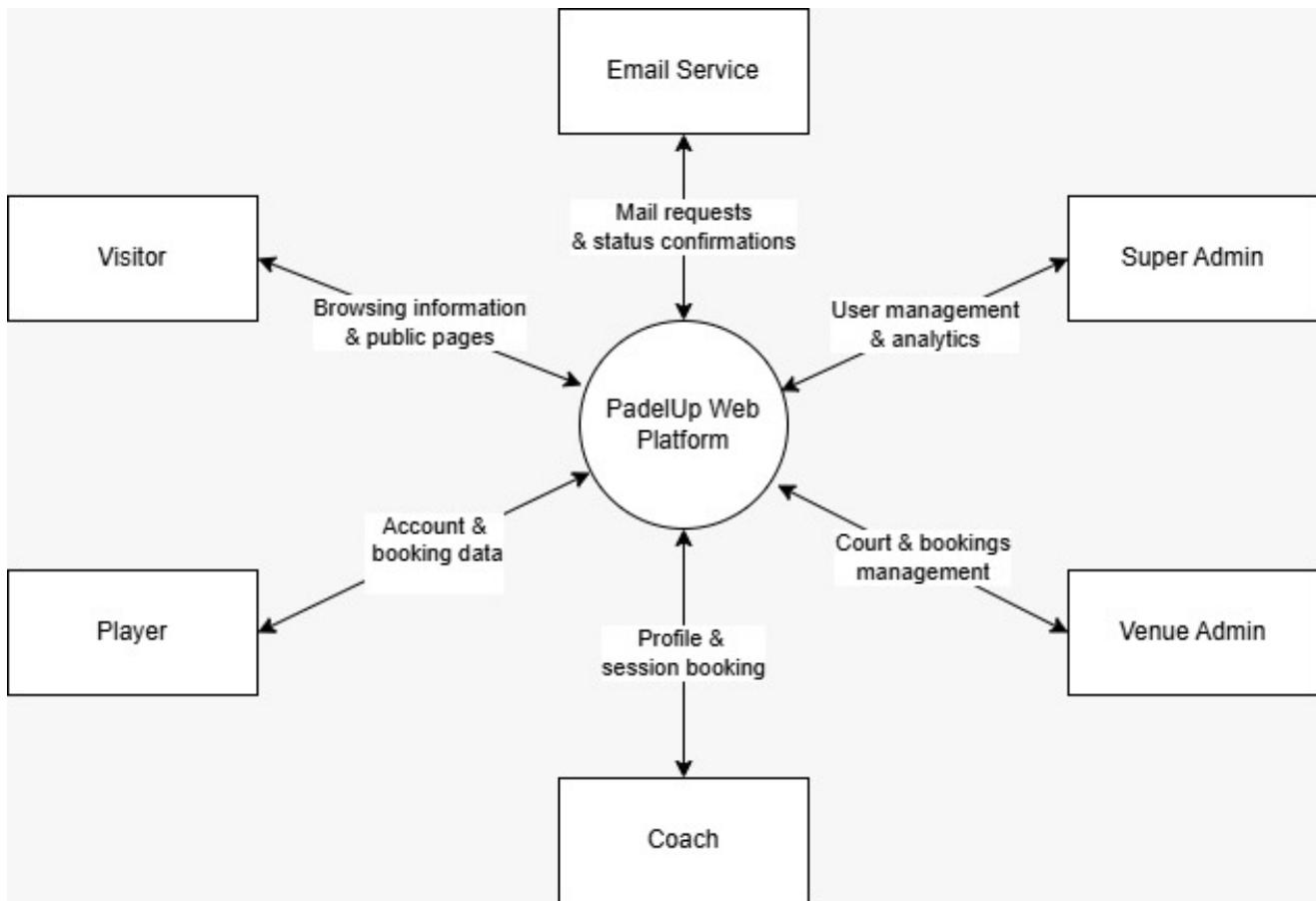
- Primarily focused on venue-side scheduling
- Lacks matchmaking between players
- No tournament registration or management features
- No padel marketplace
- No player skill progression or analytics

These are all websites that Padel players in Egypt use on a daily basis, but as Padel players ourselves we found that none of them cover all the needs padel players require. Almost all of them provide court booking and matchmaking which is good but not enough. They don't provide a trusted Padel Marketplace where players can buy and sell padel goods. Some of them also don't have the feature of joining tournaments while none of them provide AI based Padel Skill levels and the option to book paddle sessions with certified Padel coaches

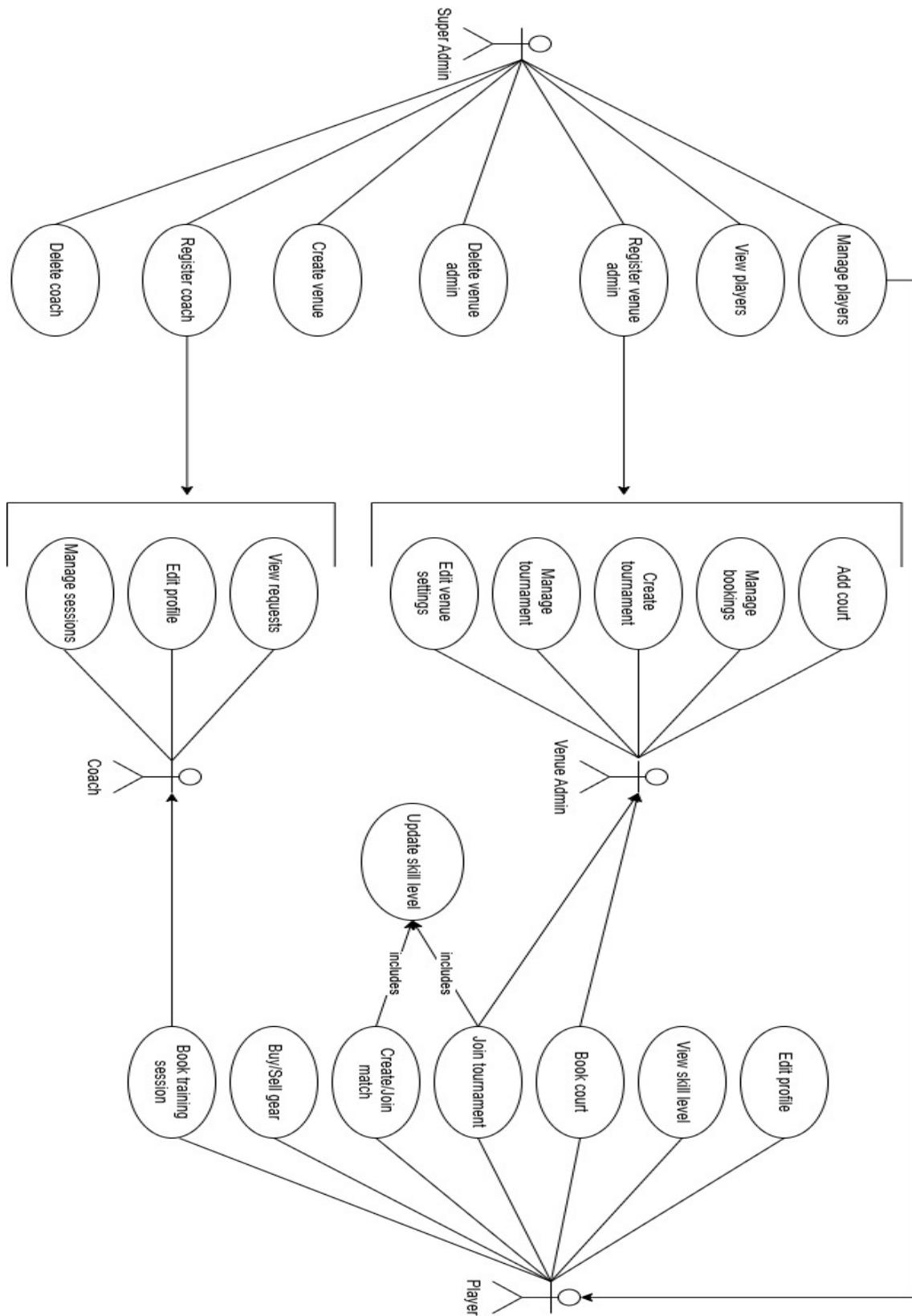
3. Design Viewpoints

3.1 Context Diagram

- The following context model is used to illustrate the operational context of PadelUp **it shows exactly what lies inside and what lies outside the system boundaries.**
- It is the **level 0 data flow diagram(DFD)** that defines the boundary between the system, or part of a system, and its environment, showing the entities that interact with it such as players , coaches , visitors and admins

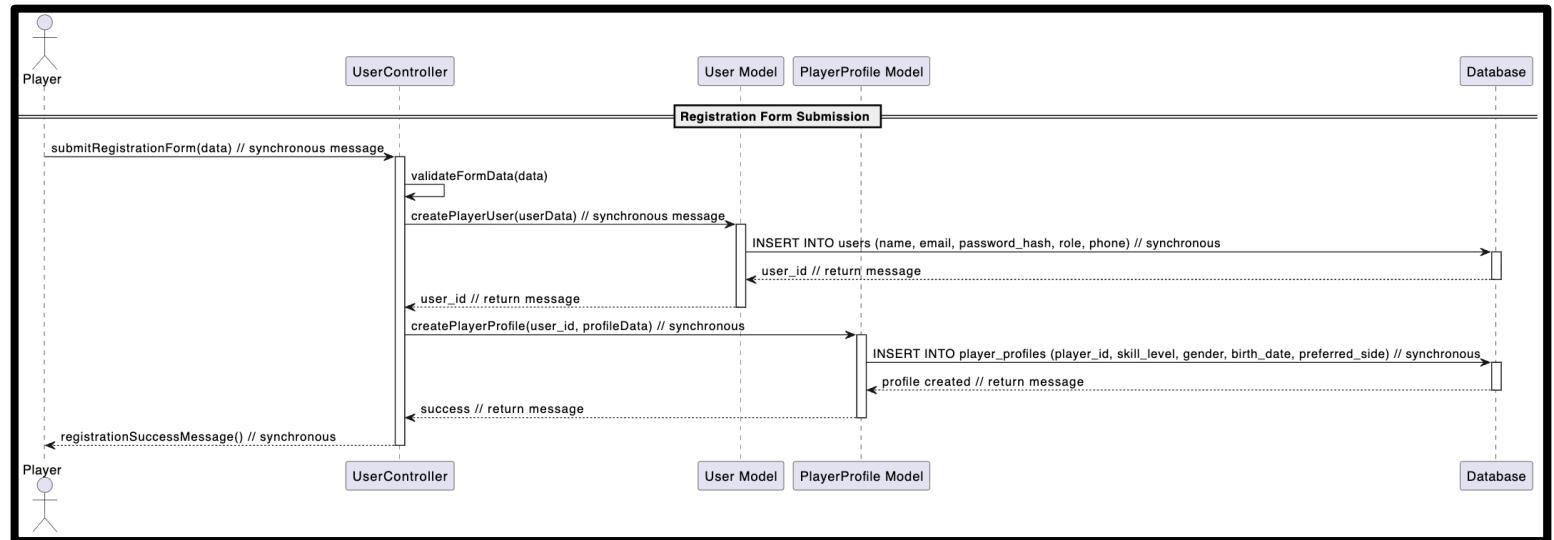


3.2 Use Case Diagram

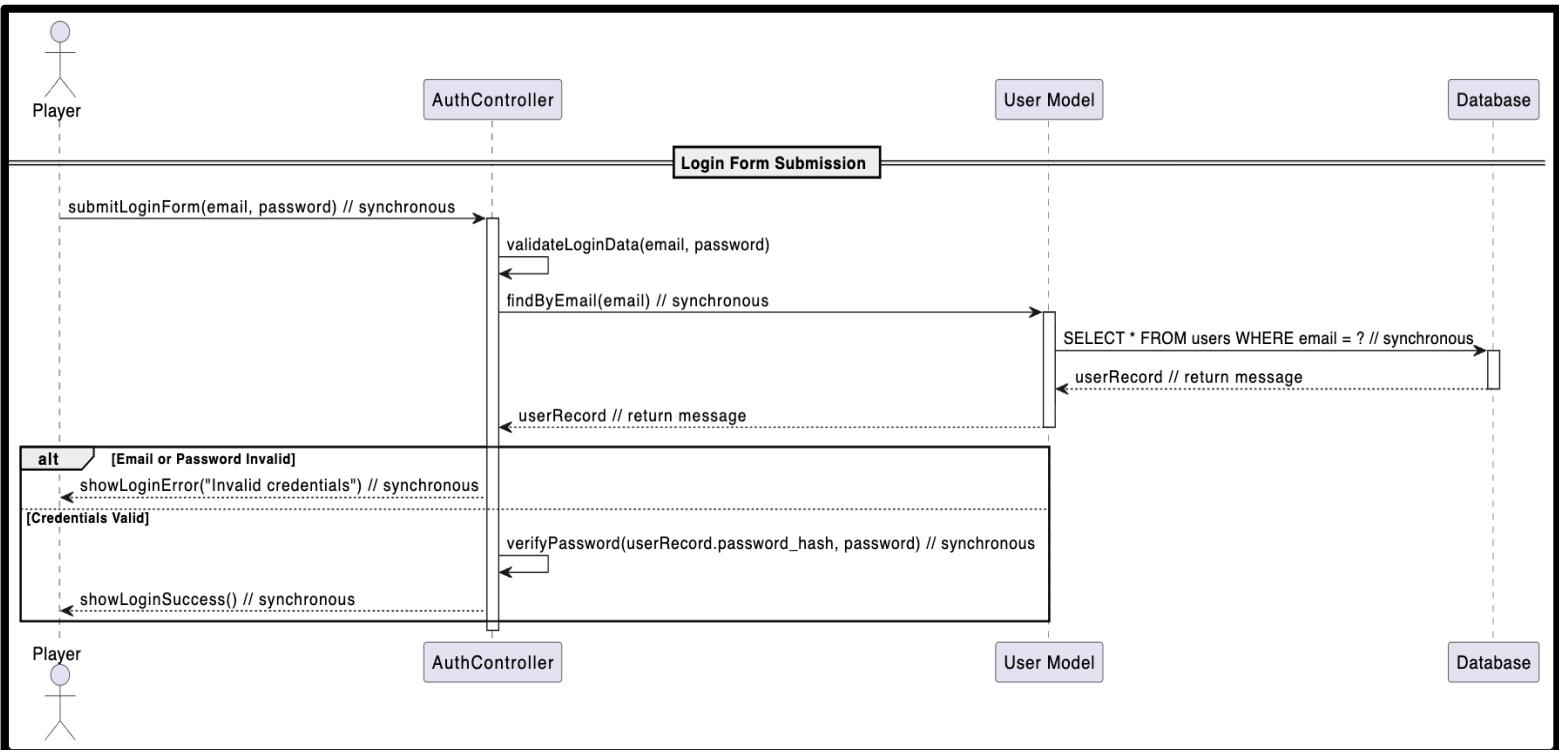


3.3 Sequence Diagrams

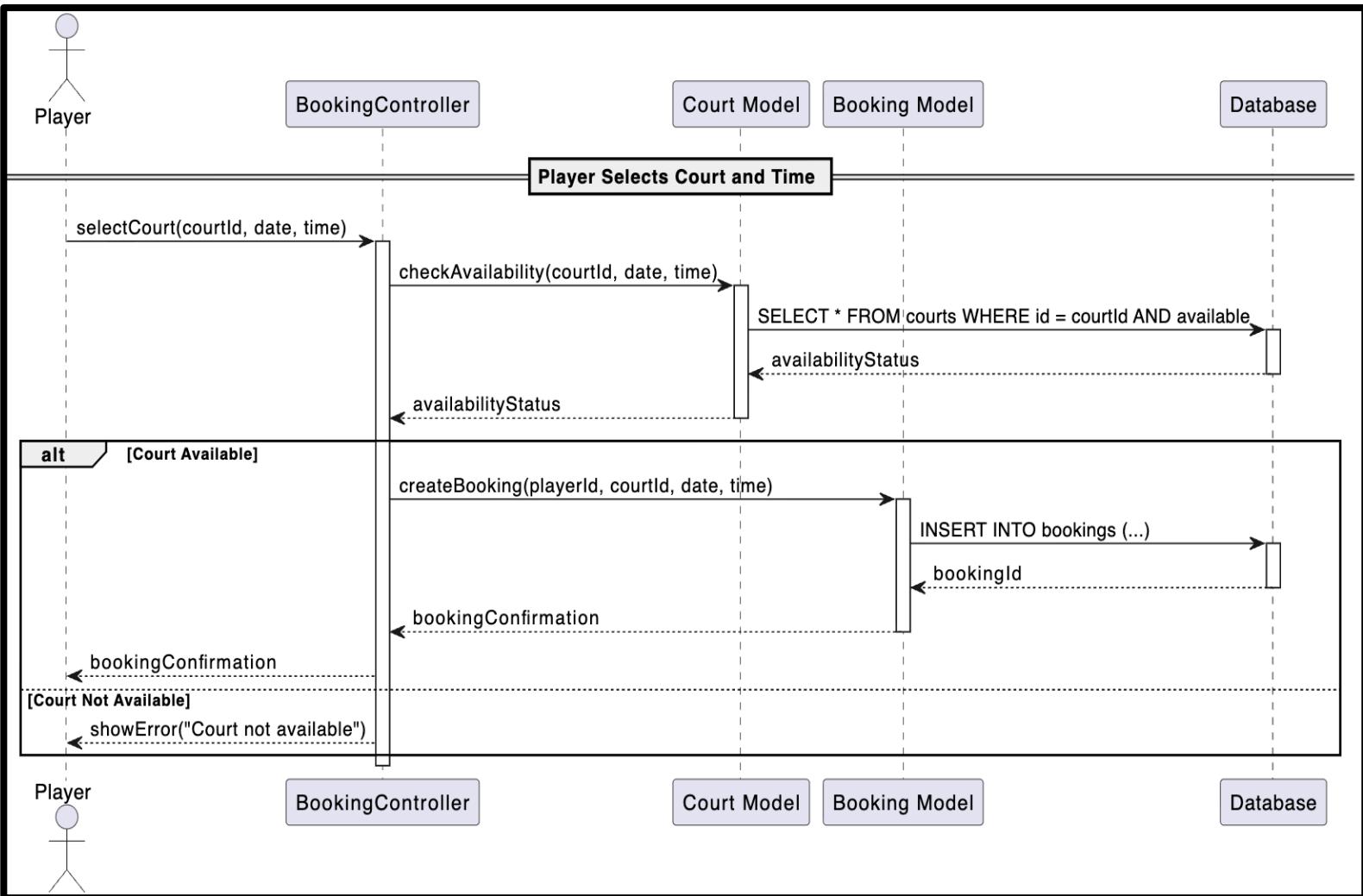
3.3.1 Player registration sequence diagram



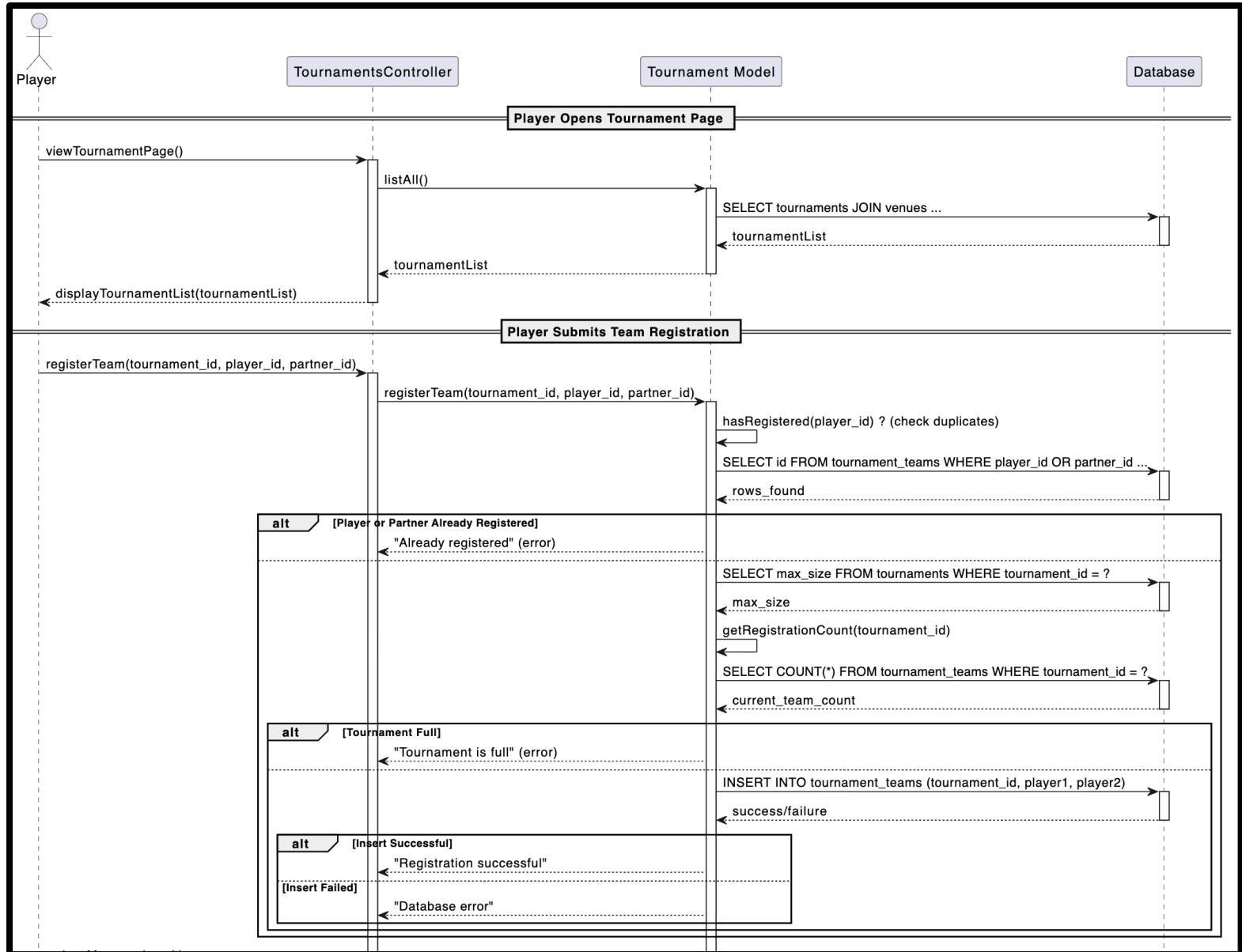
3.3.2 Player login sequence diagram



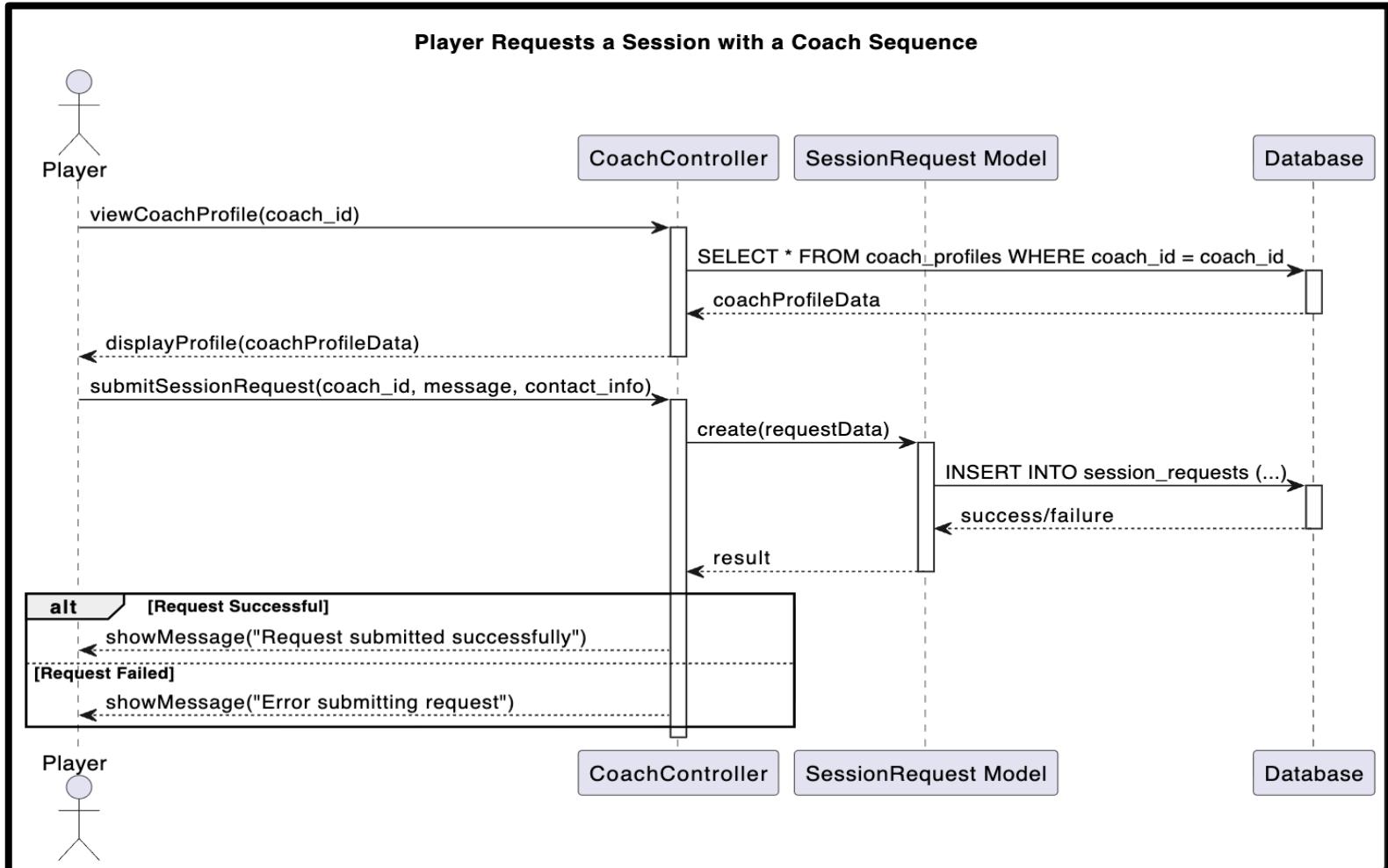
3.3.3 Court Booking sequence diagram



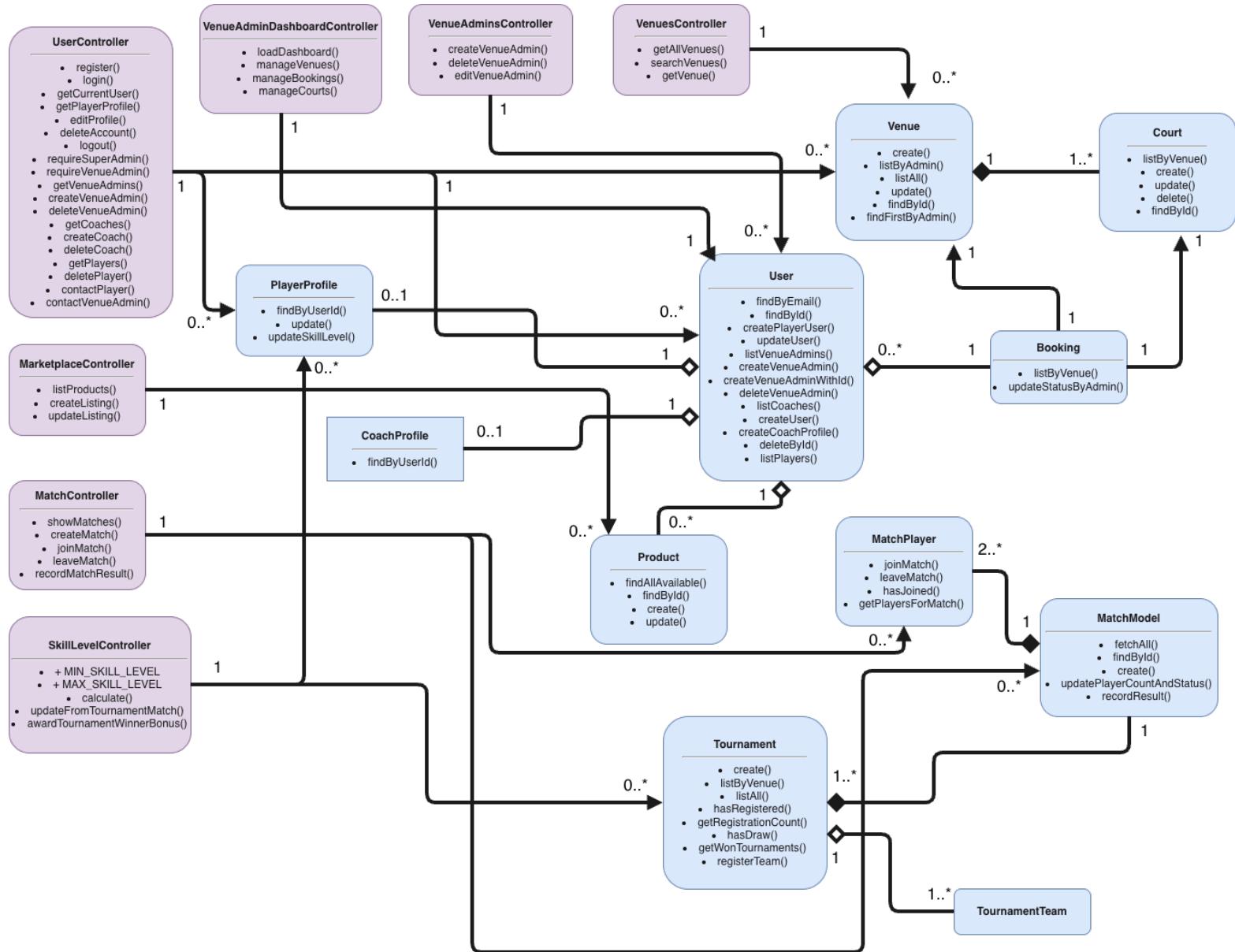
3.3.4 Tournament registration sequence diagram



3.3.5 Training session request with coach sequence diagram

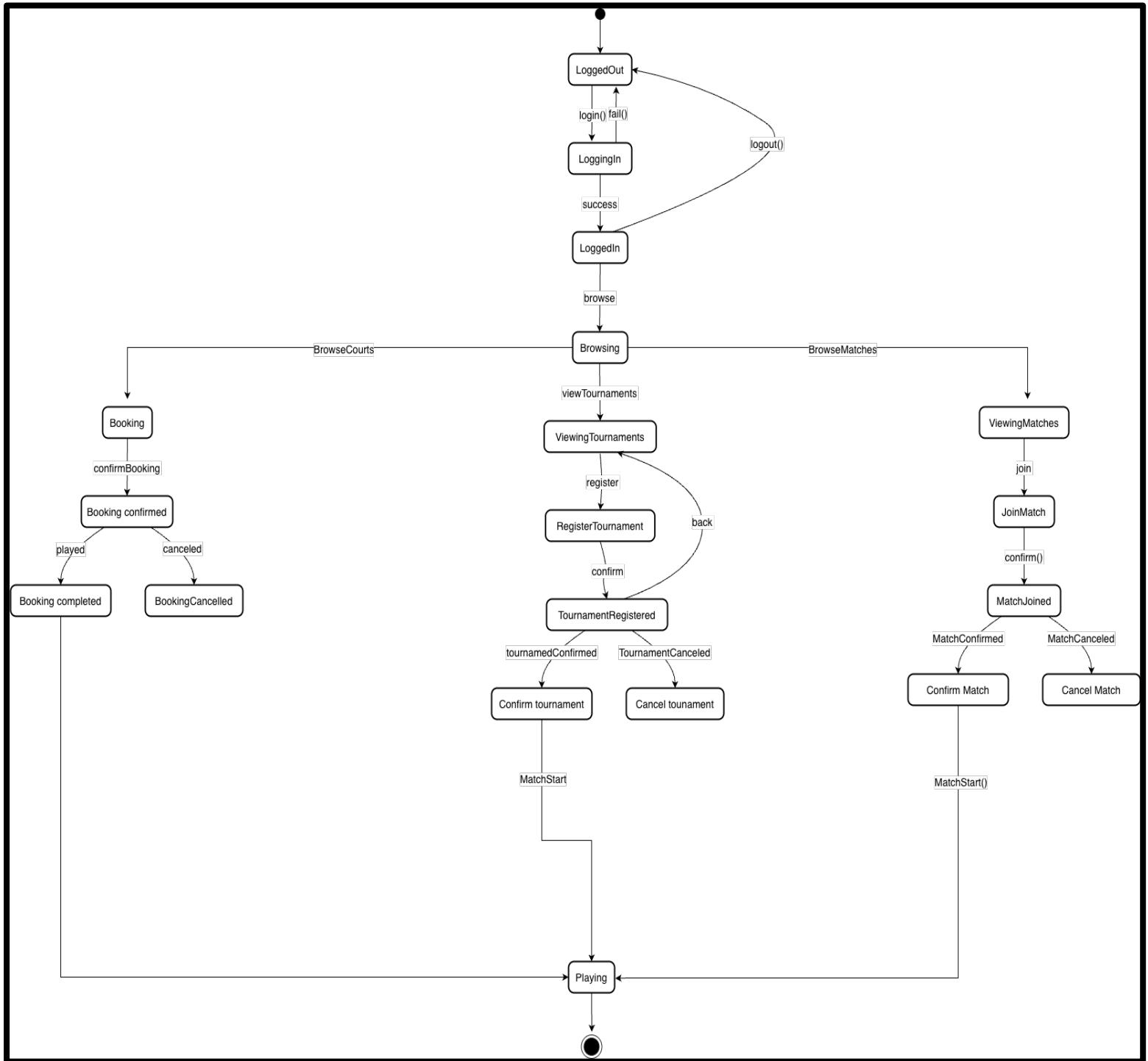


3.4 Class Diagram

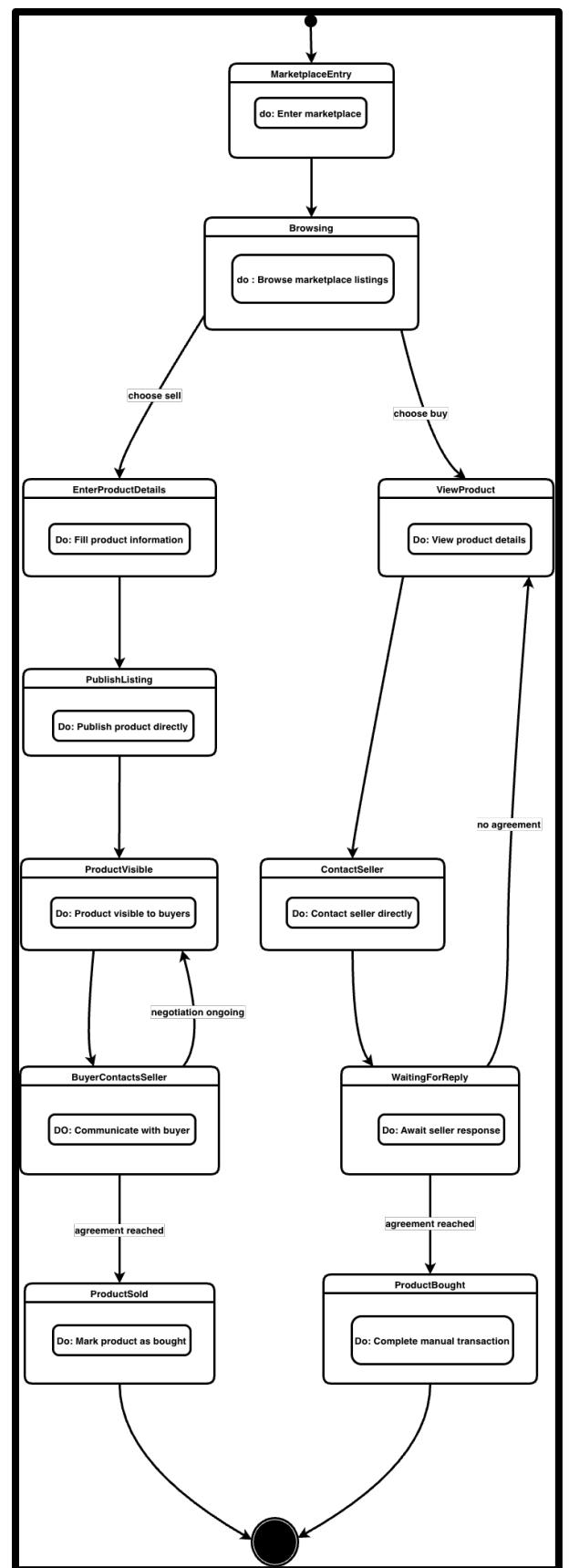


3.5 State Diagram

→The following state diagram shows all the states that a **PadelUp** user encounters until he reaches the playing state were he can play a padel match.

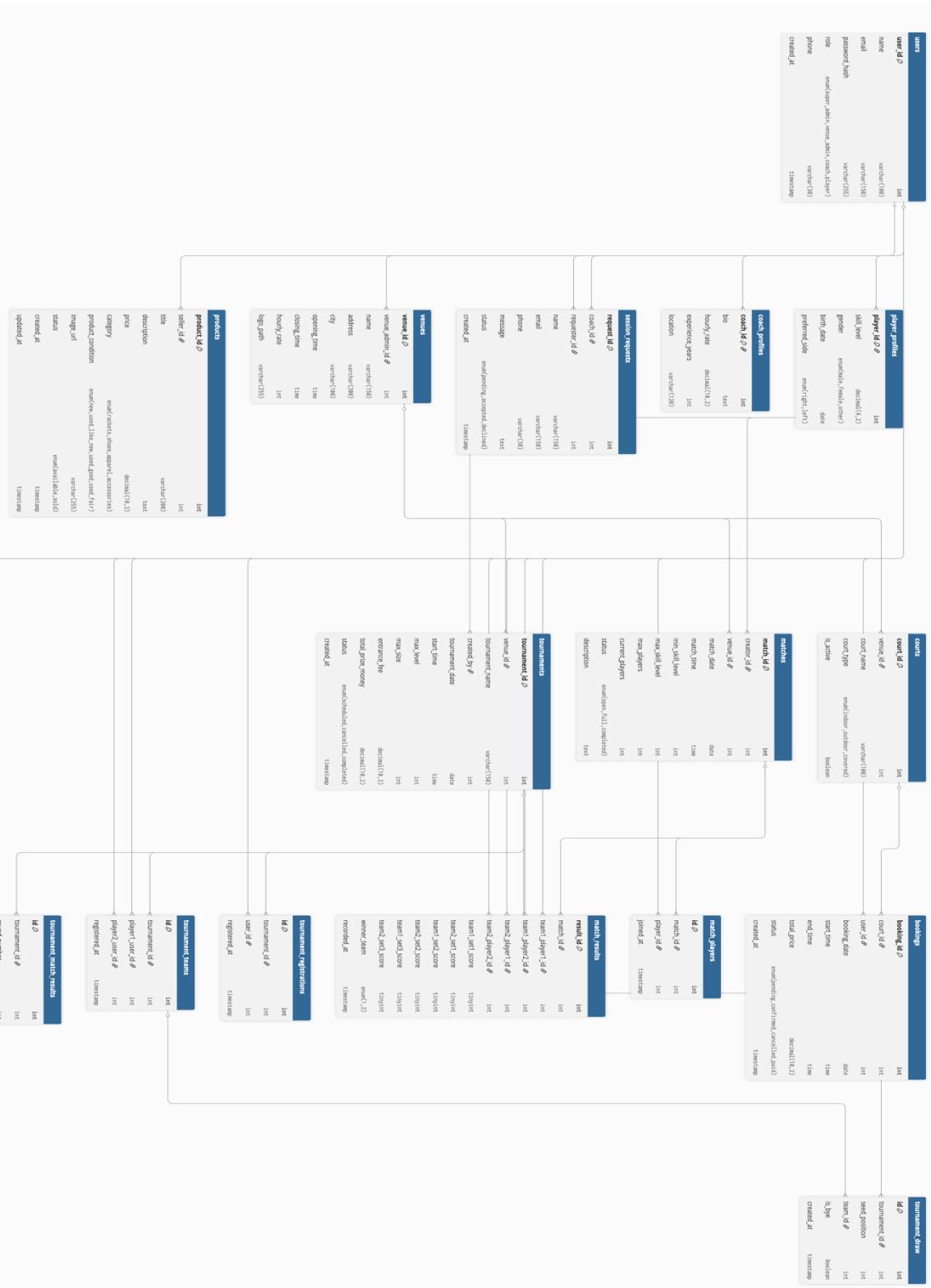


→The following state diagram shows all the states that a **PadelUp** user encounters in the marketplace till he sells or buys a padel product



4. Data Design (ER Schema Diagram)

https://dbdiagram.io/d/ERD_PADELUP-69486f464bbde0fd74f209d0



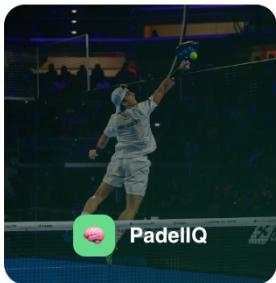
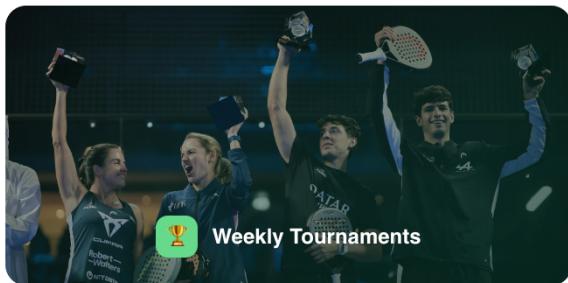
5. User Interface Design

→Index page

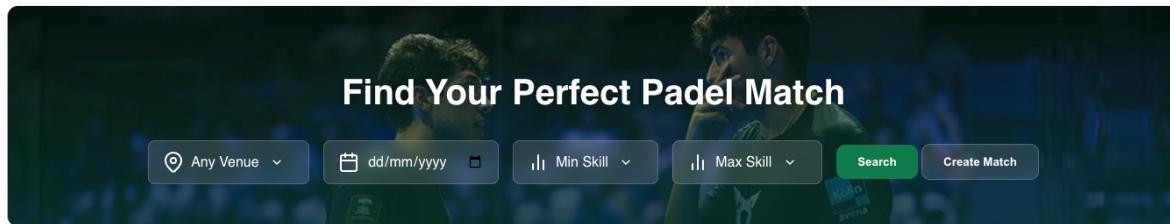


Everything you need to LEVEL UP

Connect with players, book your next match, buy Padel Gear
ALL IN ONE PLACE.



→Matchmaking page



📍 SR Padel
📅 Mon, Dec 1 at 12:19 AM

Skill Level
7 - 7

Created by: Yaya

Leave

1/4 Players

This screenshot shows a padel match creation page. It displays the location (SR Padel), date (Mon, Dec 1 at 12:19 AM), skill level (7 - 7), and creator (Yaya). A red "Leave" button is visible, and the status indicates 1/4 Players.

→Tournaments page

Weekly Tournaments

Find and join padel tournaments happening near you.

Search by name or location... All Categories dd/mm/yyyy Find Tournaments

Level 5 December 16, 2025

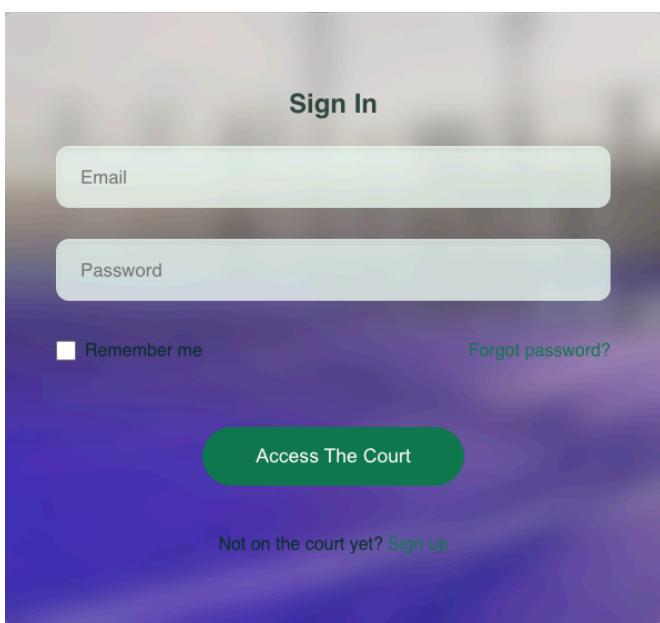
PB2
SR Padel, Cairo

Fee	Prize	Start	Slots
\$494.00	\$2,000.00	20:35	0 / 4

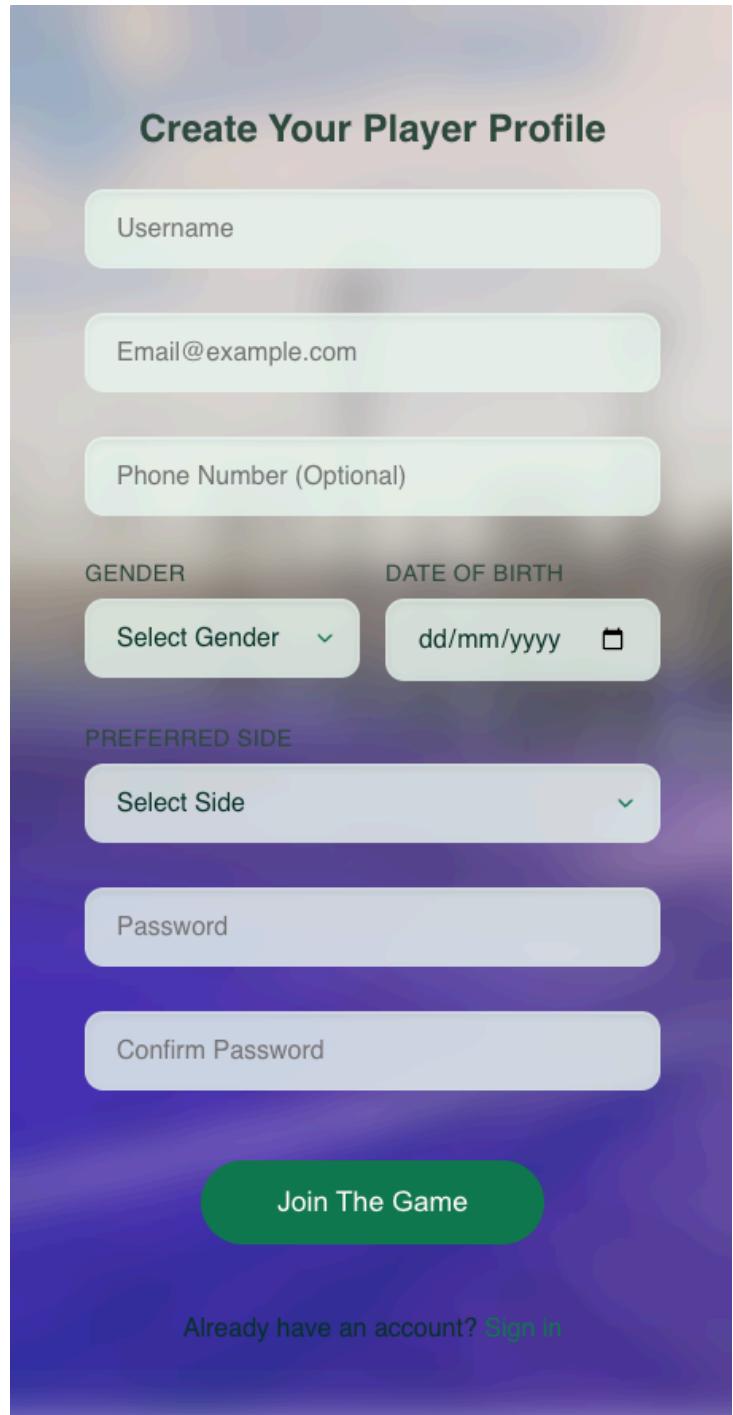
[View Tournament Draw](#)

This screenshot shows a tournament listing for "PB2" at SR Padel, Cairo. The tournament starts on December 16, 2025, at 20:35. It has a fee of \$494.00 and a prize of \$2,000.00. There are 0 out of 4 slots available. A "View Tournament Draw" button is present.

→SignIn/SignUp pages

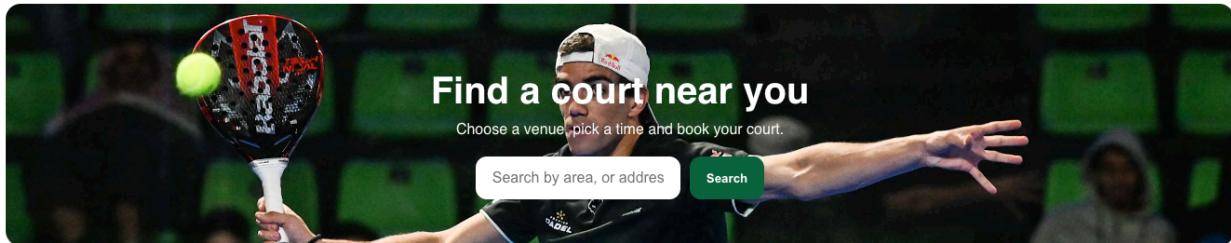


The SignIn page features a "Sign In" header at the top. Below it are two input fields: "Email" and "Password". A "Remember me" checkbox is located to the left of the "Email" field, and a "Forgot password?" link is to its right. A large green button labeled "Access The Court" is centered below the input fields. At the bottom, a message reads "Not on the court yet? Sign up" next to a "Sign up" link.



The Create Your Player Profile page has a "Create Your Player Profile" header. It includes fields for "Username" and "Email@example.com". There is also a "Phone Number (Optional)" field. Below these are sections for "GENDER" and "DATE OF BIRTH", each with dropdown menus. A "PREFERRED SIDE" section with a dropdown menu follows. Further down are fields for "Password" and "Confirm Password". A large green button labeled "Join The Game" is at the bottom. A "Sign in" link is located at the very bottom.

→Court booking and venues page



SR Padel
tagamo3, Cairo

HOURS
11:20 AM - 11:21 AM

RATE
\$250/hr

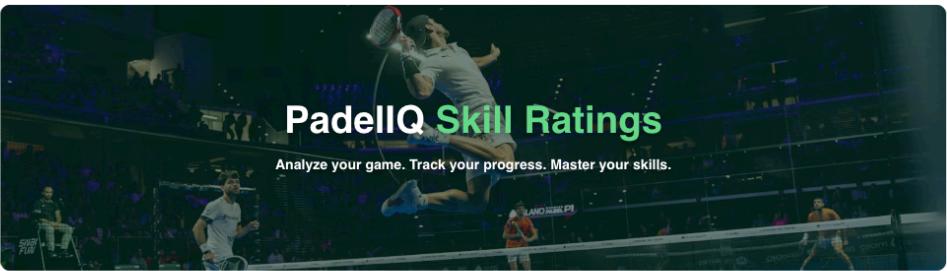
Book Court

SR Padel
tagamo3, Cairo

Court 1

Tue 23 Dec	Wed 24 Dec	Thu 25 Dec	Fri 26 Dec	Sat 27 Dec	Sun 28 Dec	Mon 29 Dec	Tue 30 Dec
12:00 AM							
	1:00 AM						
		2:00 AM					
			3:00 AM				

→PadelIQ page



The dashboard features a banner at the top with the text "PadelIQ Skill Ratings" and "Analyze your game. Track your progress. Master your skills." Below the banner are two main sections: "Recent Match History" and "Recent Tournament Results".

Recent Match History: A table with columns for DATE, OPPONENT, SCORE, and RESULT. It displays the message "No recent matches found."

Recent Tournament Results: A table with columns for DATE, OPPONENT, SCORE, and RESULT. It displays the message "No tournament activity found."

Performance Stats: A section containing four cards: Win Rate (0%), Loss Rate (0%), Tournaments Won (0), and Matches Played (0).

CURRENT SKILL LEVEL: Beginner
0.00 / 7.00

Based on your PadelUp skill level updates from matches and tournaments.

→Coach Finder page



The page has a header "Find Your PadelUp Coach" with the subtext "Get personalized training from our range of certified coaches". Below the header is a search bar with the placeholder "Search coaches by name..." and a "Search" button.

A coach profile card is displayed, featuring a pink square with the initials "MS". The profile information includes:

Mo Said
new cairo
certified ept coach

View Profile – EGP 800.00/hr

7. Project Plan

→ The work flow of the project was completed through 3 distinct phases

Phase 1) Front End and functionalities brainstorming

During this phase we focused on having good and pleasing UI design , this was presented clearly during phase 1 discussion. This phase of the project was very important because it is what lead us to phase 2 so it had to be perfectly implemented to avoid going back and applying changes later on.

We also focused in this phase on the idea and functionalities of padelup. We decided all our functionalities in during early development stages which also made the rest of the project go very smoothly.

Phase 2) Back-end and functionalities

In this phase we focused on the back end side of the project. We removed all placeholders that were done during the prototyping phase and made everything functional.

But before doing that we also focused on our database design and how our tables would look like and how they are related to each other.

Phase 3) Documentation and SSD

Phase 3 was completed in parallel with phase 2 we worked on both at the same time to keep clear and organized work structure

8. Task Distribution

PADELUP TASKS

TASK	Assigned to	Status
<input type="checkbox"/> T0) MVC structure and routing	Yehia	Done
<input type="checkbox"/> T1) Admin page and DB design	Yehia / Omar A	Done
<input type="checkbox"/> T2) Court booking	Yehia	Done
<input type="checkbox"/> T3) Tournaments	Yehia	Done
<input type="checkbox"/> T4) MatchMaking	Omar alaa	Done
<input type="checkbox"/> T5) Marketplace	Omar alaa	Done
<input type="checkbox"/> T6) Skill level	Omar alaa	Done
<input type="checkbox"/> T7) PadellQ	Yehia/Omar A	Done
<input type="checkbox"/> T6) Coach Finder	Omar akram	Done
<input type="checkbox"/> T8) Email logic	Natalie	Done
<input type="checkbox"/> T9) Email implementation where needed	Natalie / Omar Alaa	Done
<input type="checkbox"/> T10) Documentation	ALL	Done