

COMP 3059 – Capstone Project I

Software Requirements Analysis and Design Assignment

Group T07 - Sports Up

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1.0 Introduction

Our "Sports Up" platform is a web and mobile application designed to connect sports enthusiasts with local matches and venues streaming sports events. Through software requirements analysis and design, this document defines the system's functionalities, business context, and design goals, guiding development to ensure alignment with project objectives.

1.1 Purpose

This document outlines the high-level requirements for "Sports Up," detailing what the system will accomplish for end users, local businesses, and other stakeholders. Its purpose is to provide developers, testers, and stakeholders with a clear understanding of system capabilities and constraints.

1.2 Scope

In Scope

The "**Sports Up**" platform is designed to connect users with local sports activities and venues, focusing on community engagement and business promotion. The following functionalities and systems are included within the scope of this project:

1. Core Functionalities

- **Player System:**
 - **Match Discovery and Filtering:** Users can search for local matches and filter by criteria such as location and skill level. This feature supports players in easily finding nearby games suited to their preferences.
 - **Team Creation and Joining:** Allows users to create teams, join existing matches, and track skill levels, promoting community involvement and making it easier for players to connect.
 - **Player Profiles:** Profiles include skill level and other relevant attributes, aiding in skill-based matchmaking and encouraging social interaction among players.
- **Watcher System:**
 - **Venue Search and Event Listings:** Enables users to find nearby venues broadcasting sports events, displaying event details like match schedules and promotions.
 - **Seat Reservations:** Watchers can reserve seats at venues, offering convenience for users and helping venues manage attendance.
 - **Promotion Visibility:** Venue owners can post promotions visible to watchers, attracting customers to their events and supporting local businesses.

2. User Modules

- **Free and Premium Access:**

- **Basic Access (Free Users):** Access to core functions, such as match discovery and venue information.
- **Premium Features:** Advanced filters, customized notifications, and exclusive event access for paid users, providing value for subscription-based users and supporting the app's monetization model.

3. Advertising and Venue Support

- **In-App Advertising:** Venue owners and sponsors can advertise within the app, increasing business visibility and supporting local economic engagement.

4. Notification System

- **Real-Time Notifications:** Users receive alerts for upcoming matches and venue events, ensuring they stay informed on activities relevant to their interests.
- **Customizable Alerts:** Premium users can customize notifications for specific match types, venues, or other user-defined preferences.

5. External Integrations

- **Google Maps API:** Integration with location services for match and venue discovery, improving usability and making it easy for users to find nearby sports events.

Out of Scope

To maintain focus and ensure timely project delivery, the following elements are not included in the current scope of "Sports Up":

1. **Live Streaming of Events:** Direct streaming of sports events would require additional infrastructure, rights, and support, which is beyond the current scope.
2. **E-commerce and Ticketing Services:** Sales of sports merchandise or tickets for large-scale sports events are excluded, as they require extensive e-commerce functionality beyond the app's core purpose.
3. **Advanced AI-Based Recommendations:** While basic filtering is provided, complex AI-driven recommendations for sports events based on user behavior are not included.
4. **In-Depth Analytics and Insights for Users:** Users will not have access to in-depth analytics of their performance or event attendance.
5. **Global Expansion:** The initial release is limited to local sports events within a specific region. Expansion to global locations or multi-language support is out of scope for this version.

Benefits, Objectives, and Goals

Project Benefits

- **For Users:** "Sports Up" offers a centralized platform for finding and joining local sports events, building connections with other sports enthusiasts, and accessing promotions at local venues.
- **For Venue Owners:** The platform provides a new marketing channel to reach a sports-focused audience, helping to drive foot traffic through promotions and seat reservations.
- **For Sponsors:** Sponsors gain visibility to a target audience through in-app advertising, supporting brand engagement within a sports-centric environment.

Project Objectives

1. **User Engagement:** Facilitate user interactions by providing features that help players connect through matches and teams, while enabling watchers to discover and reserve venues for sports streaming.
2. **Local Business Promotion:** Support local businesses by offering promotional tools for venue owners, encouraging partnerships and fostering local economic activity.
3. **Revenue Generation:** Introduce a premium subscription model and in-app advertising to create sustainable revenue streams, ensuring the platform's longevity and growth potential.

Project Goals

1. **Develop a Functional Prototype:** Deliver a prototype that includes all in-scope features to demonstrate the app's core capabilities and provide a foundation for future iterations.
2. **Enable Business Visibility:** Position the app as a tool for venue owners and sponsors to reach a sports-focused audience, supporting local engagement and expanding business opportunities.
3. **Provide a User-Friendly Experience:** Ensure that all users can easily navigate the app, find relevant information, and access sports events or promotions seamlessly.

2.0

System Overview

Our platform is a mobile and web-based application intended to serve sports enthusiasts and local businesses. It will include functionalities like user registration, real-time notifications, venue management, and communication features. The app will leverage external APIs, such as Google Maps, to help users locate events and venues.

2.1 Project Perspective

The "Sports Up" platform is a new, self-contained system designed to cater to the growing demand for localized sports communities. Unlike existing platforms, it is not a follow-up or replacement for any previous systems. It will offer unique functionalities that are currently lacking in other sports-related platforms, such as seamless event discovery, venue bookings, and interactive features for both players and watchers. This system fills a gap in the market by providing a dedicated space for local sports enthusiasts and businesses to interact and engage.

2.2 System Context

The "Sports Up" platform addresses the issue of fragmented access to local sports events and streaming venues. Many sports fans and athletes face difficulties finding up-to-date information on nearby events, available pitches, or live-streamed sports. By integrating all these services into one platform, "Sports Up" provides a streamlined solution that enhances the experience for users and supports local businesses. This solution fosters a more connected and engaged sports community, enabling users to quickly find, join, or watch local sports events while helping businesses gain exposure and manage event bookings efficiently.

The system will also enable businesses to manage their sports venues, organize events, and attract players and watchers through targeted in-app advertising. Users will receive notifications about upcoming events, promotions, and new features, ensuring continuous engagement with the platform.

2.3 General Constraints

Performance Constraints: The platform will be required to handle a large number of simultaneous users, especially during peak event times. Therefore, the system must be scalable and responsive.

Privacy and Data Protection: As the platform will store personal data such as user profiles and event histories, ensuring robust security measures are in place to protect user data is critical.

Compliance with Local Regulations: The system must adhere to relevant local laws regarding data privacy, advertising, and user consent, particularly in different regions.

Cross-platform Compatibility: Since the platform is designed to work on both mobile and web, the system must ensure compatibility across different devices and browsers.

Real-time Notifications: To ensure smooth communication, the system must reliably handle real-time notifications about event changes, new venues, and promotions.

2.4 Assumptions and Dependencies

Assumptions

1. Technical Implementation:

- It was assumed that integrating third-party APIs (such as Google Maps) would be straightforward and require minimal customization. However, these integrations may involve more complex configurations or additional costs.
- The team assumed that a single API or integration layer would suffice for both player and watcher functionalities, but different systems may require separate API solutions or custom development.

2. User Needs and Behavior:

- We assumed that users primarily want to find places to play or watch sports. However, users might also expect additional features like social media integration, friend invites, or personalized recommendations.
- The assumption was made that players would be interested in casual, non-competitive matches, whereas some users may seek more organized or skill-level-based competition.

3. Business Partnerships:

- We assumed that local businesses would be highly interested in collaborating for promotions and seat reservations. In reality, some businesses may not see immediate value or may have existing commitments to other promotional channels.
- It was assumed that sponsorship negotiations would be straightforward, but there may be legal and financial complexities that require more negotiation than anticipated.

4. Revenue Model:

- The project assumed that a subscription-based premium user model would be feasible and attractive to users. However, users may not perceive enough value to pay for premium features initially.
- It was assumed that in-app advertising would generate sufficient revenue without detracting from user experience. However, excessive ads might discourage users or require fine-tuning to balance user experience and revenue.

5. Scalability:

- It was assumed that the app could handle user activity within the initial target region without additional infrastructure. However, if demand grows quickly, scaling the app may require additional server capacity and budget.

6. User Privacy and Security:

- It was assumed that compliance with basic data privacy regulations would be straightforward, but additional measures may be necessary depending on user feedback or future privacy legislation.

Dependencies

1. **Business and Sponsorship Relationships:**
 - **Business Partnerships:** Success of the Watcher System depends on partnerships with local venues (pubs, sports bars). A lack of interested businesses could limit the feature's availability and user value.
 - **Sponsorships:** Securing sponsors is essential to fund initial development and marketing efforts. Delays or lack of interest from sponsors could impact the app's launch and promotional reach.
2. **Active User Base:**
 - **User Engagement:** For the platform to succeed, it depends on a consistent and active user base to maintain sports events and venue listings. Low user participation could reduce the value of the Player System and limit the effectiveness of notifications and team formation.
3. **API and Technology Services:**
 - **Google Maps and Location Services:** The app relies on external APIs (e.g., Google Maps) for venue and match location services. API usage limits, updates, or changes in service could affect core functionalities.
 - **Payment Gateway for Premium Features:** Successful integration with a payment provider is essential for implementing the premium subscription model. Any issues with the payment gateway could delay premium feature rollout or limit monetization.
4. **Compliance and Legal Standards:**
 - **Data Privacy Compliance:** Compliance with data privacy regulations (e.g., GDPR) is critical for handling user data securely. Any changes in legislation or additional compliance requirements could impact development timelines.
 - **Liability for User Safety:** Since players meet in person, there may be legal considerations for user liability, particularly if users are injured during activities. Clarifying liability and implementing disclaimers depend on legal counsel and may delay deployment.
5. **Infrastructure and Server Capacity:**
 - **Server Capacity and Reliability:** The app requires reliable server hosting to support real-time functionalities and user notifications. Infrastructure limitations could impact performance, especially if the user base grows quickly.
 - **Notification and Messaging Services:** The app relies on real-time notifications for matches and reservations. Any limitations or issues with notification services (e.g., push notifications) could disrupt the user experience.
6. **Marketing and Promotion:**
 - **Effective Marketing Campaigns:** The app's success depends on reaching a broad audience through marketing efforts. Any delays in promotional activities or lack of engagement from target users could impact the platform's growth and viability.

3.0 Functional Requirements

3.1 Functional Requirements or Features

Feature #1: User Registration and Authentication

- **Introduction:** Allows users to create accounts, log in, and manage profiles.
- **Inputs:** Username, password, email.
- **Processing:** Validate user details, create records, and manage sessions.
- **Outputs:** Confirmation of account creation or login status.

Feature #2: Match Search and Filtering

- **Introduction:** Enables players to search for local matches filtered by location and skill level.
- **Inputs:** Location, skill level.
- **Processing:** Query database for matches based on filters.
- **Outputs:** List of matches.

Feature #3: Venue Listings and Promotions

- **Introduction:** Allows venue owners to list sports streaming events and promotions.
- **Inputs:** Event details, venue info.
- **Processing:** Store and update venue details.
- **Outputs:** Display venue promotions.

Feature #4: Real-Time Notifications

- **Introduction:** This feature enables users to receive real-time notifications about upcoming matches, venue events, or team invitations.
- **Inputs:** User preferences for notifications, event details (e.g., match time, location).
- **Processing:** The system checks user preferences for notifications.
- **Outputs:** Push notifications or in-app notifications informing users of upcoming matches, events, or invitations.

Feature #5: Team Creation and Chat Functionality

- **Introduction:** This feature allows players to create teams, invite members, and communicate through an in-app chat function.
- **Inputs:** Team name, member invitations, chat messages.
- **Processing:**
 - The system creates a team profile with selected details.
- **Outputs:**
 - Confirmation of team creation and member invitations.
 - A chat interface for team members to communicate and organize matches.

3.2 Use Cases

3.2.1 Use Case #1: Search for Local Matches

- **Actors:** Player
- **Description:** Allows users to search for nearby sports matches.
- **Preconditions:** User must be logged in.
- **Postconditions:** User views a list of matches that meet their search criteria.

3.2.2 Use Case #2: Reserve Seats at a Venue

- **Actors:** Watcher
- **Description:** Allows users to reserve seats for an event at a local venue.
- **Preconditions:** User has selected a venue.
- **Postconditions:** Reservation confirmation is displayed to the user.

3.2.3 Use Case #3: Create a New Match

- **Actors:** Player
- **Description:** Allows players to create a new match event, specifying details such as location, skill level, and date.
- **Preconditions:** The player must be logged in and have an active profile.
- **Postconditions:** The new match is saved and visible to other users in the match listings.

3.2.4 Use Case #4: Receive Real-Time Notifications

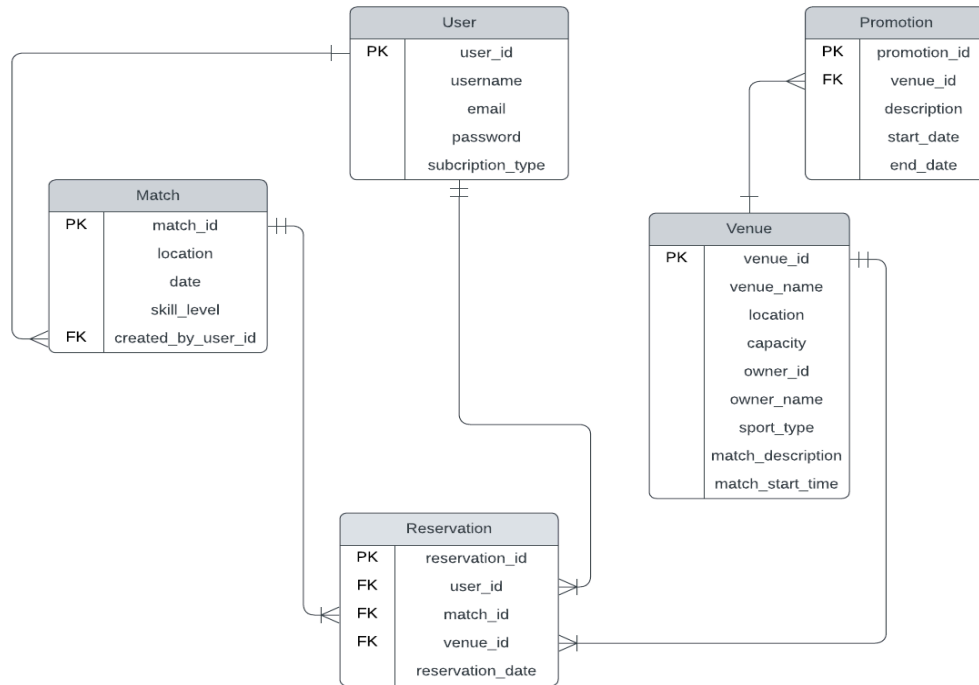
- **Actors:** Player, Watcher
- **Description:** Allows users to receive real-time notifications for events such as upcoming matches, promotions, or team invitations.
- **Preconditions:** Users must be logged in and have notification preferences set up.
- **Postconditions:** User receives a notification with relevant information about the event.

3.2.5 Use Case #5: Post a Promotion

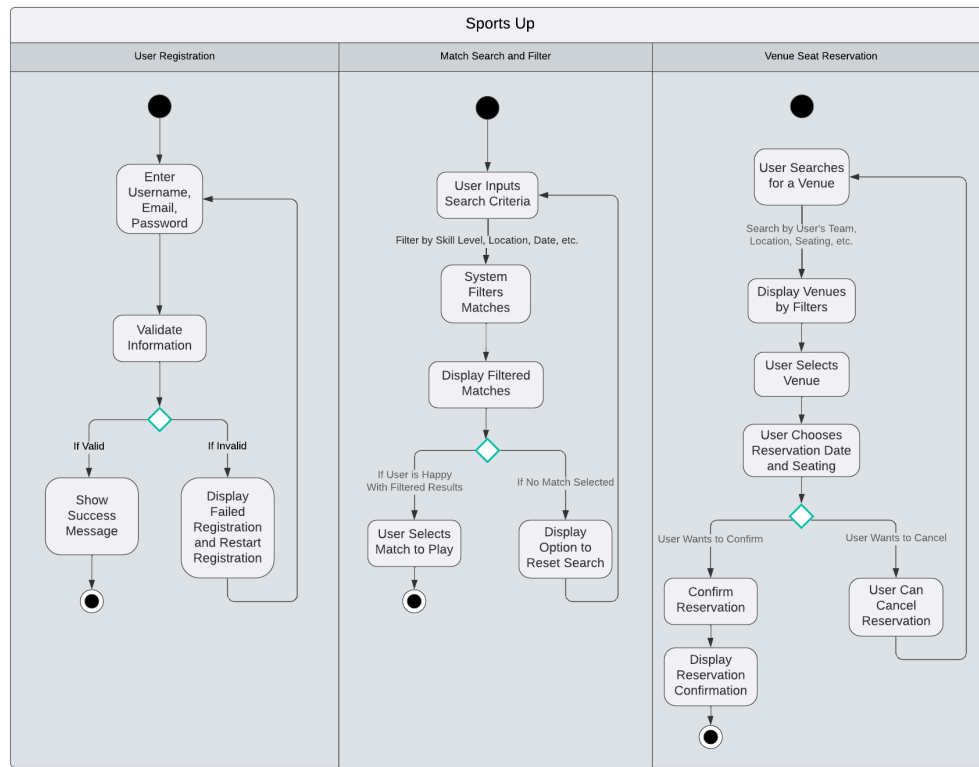
- **Actors:** Venue Owner
- **Description:** Allows venue owners to create a promotion for an event, which will be displayed to users on the platform.
- **Preconditions:** Venue owner must be logged in and have an active venue profile.
- **Postconditions:** Promotion is visible to all users who can view the venue's profile and event listings.

3.3 Data Modelling and Analysis

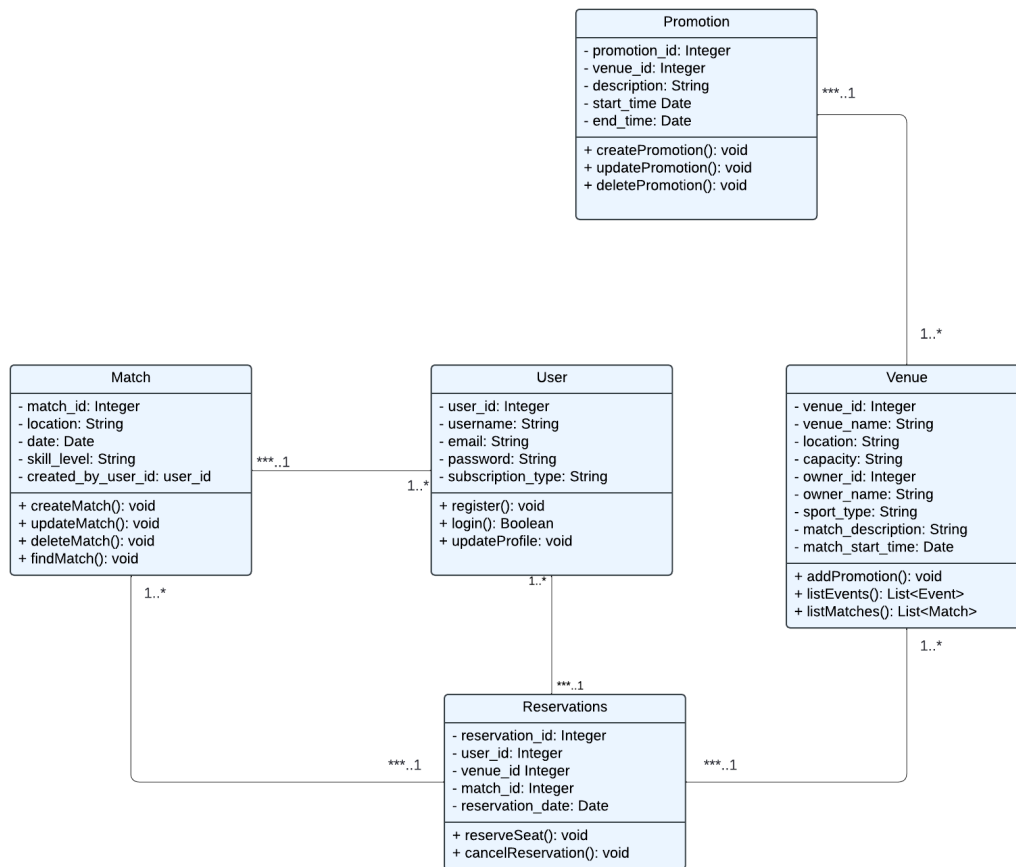
- Normalized Data Model Diagram



- Activity Diagrams

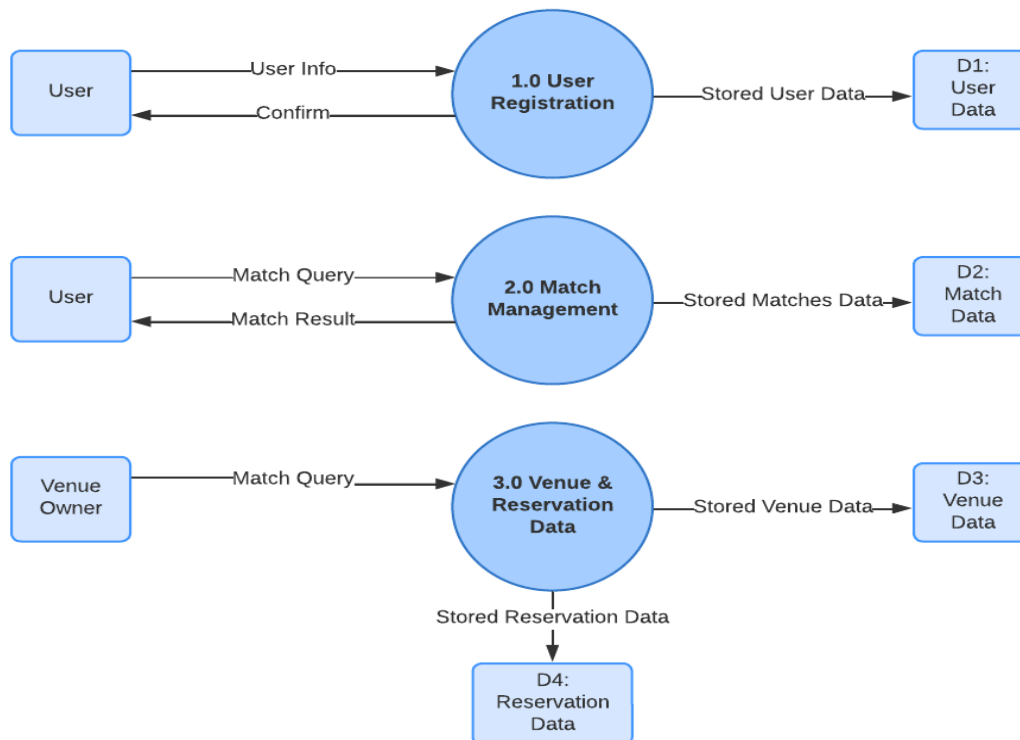


- UML Class Diagram



3.4 Process Modelling

- Data Flow Diagram



4.0 Non-Functional Requirements

Performance: The app should load within 3 seconds and handle up to 100 concurrent users.

Reliability: The app must provide 99% uptime for essential services, like notifications and match search.

Availability: The system should be accessible 24/7, with scheduled downtime for maintenance.

Security: Implement password hashing, data encryption, and secure APIs to protect user data.

Maintainability: Codebase should be modular to allow updates to features like venue listings without affecting other components.

Portability: The app should be compatible with iOS, Android, and major web browsers.

5.0 Logical Database Requirements

Database Requirements: The system will use a relational database to store user data, matches, venues, and promotions.

Data Retention: User data will be stored for the duration of account activity, with an option for users to delete their accounts.

Data Integrity: Ensure foreign key constraints and data validation for all entities to maintain database integrity.

6.0 Other Requirements

6.1 Legal and Compliance Requirements

User Liability and Safety Disclaimer:

A liability disclaimer is required in the terms and conditions, clarifying that **Sports Up** is not responsible for any injuries, accidents, or liabilities that may occur during user-organized events.

6.2 Business Requirements

Partnership Agreements:

The app requires formal agreements with local venues and businesses to enable them to post promotions and stream sports events on the platform. These agreements should cover:

1. **Promotion Terms:** Clearly define what businesses are allowed to advertise.
2. **Revenue Sharing:** If applicable, set terms for revenue-sharing from in-app promotions or paid listings.

Monetization Strategy:

1. Implement a premium subscription model that provides users with enhanced features, such as advanced filters, customized notifications, and exclusive match access.
2. Enable in-app advertising for local businesses, generating revenue through sponsored listings and featured promotions.

7.0 Approval

Project Role	Name	Signature	Date
Team Lead	William Cham	William Cham	11/08/2024
Developer	Marcus Quitiquit	Marcus Quitiquit	11/08/2024
Developer/Marketing	David Lubwama	David Lubwama	11/08/2024
Developer/Designer	Merve Coskun	Merve Coskun	11/08/2024
Developer	Kadir Cinar	Kadir Cinar	11/08/2024