A Final Project Report On

Tournament Fantasy Management system

Submitted in the Partial Fulfillment of the
Requirements for the Degree of Bachelor of Software Engineering Awarded
by Pokhara University

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We hereby declare that this project work entitled **Tournament Fantasy Management system** is based on our original work. All concepts, data, code, and any other work from external sources have been properly cited and referenced in accordance with the guidelines provided by School of Engineering, Pokhara University

We owe all the liabilities relating to the authenticity and originality of this project work and project report.

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SUPERVISOR'S RECOMMENDATION

This is to certify that this project report entitled **Tournament Fantasy Management system** prepared and submitted by the below listed team of students in partial fulfillment of the requirements of the degree of Bachelor of Software Engineering awarded by Pokhara University, has been prepared and completed under my supervision.

I hereby recommend the same for acceptance by the School of Engineering, Pokhara University.

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EXTERNAL EXAMINER'S RECOMMENDATION

The undersigned certified that they have evaluated this project report entitled **Tournament Fantasy Management system** submitted by **Sanket Karki, Sulav Acharya, Suraj Adhikari** and their oral presentation for partial fulfillment of the degree of Bachelor of Computer Engineering and recommended to the School of Engineering, Pokhara University for acceptance of this project work.

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ABSTRACT

The **Tournament Fantasy Management system** is a mobile-based SaaS platform designed to facilitate fantasy sports management for football tournaments. The system provides a comprehensive solution for tournament administration and user participation in fantasy sports leagues. Built using React Native and MongoDB, the platform offers score updates, user-friendly interfaces for both administrators and players, and customizable tournament management features. The system addresses the need for a specialized fantasy sports platform focused on smaller tournaments without access to automated data feeds, incorporating manual score updates through an administrative dashboard while maintaining leaderboard functionality.

Key Words: *Fantasy Sports, Sports Analytics, Mobile Application, Score Management*

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ABBREVIATIONS

API	Application Programming Interface
AWS	Amazon Web Services
GCP	Google Cloud Platform
IDE	Integrated Development Environment
JWT	JSON Web Token
OAuth	Open Authorization
SaaS	Software as a Service
SQL	Structured Query Language
UI/UX	User Interface/ User Experience

CHAPTER: 1
INTRODUCTION

1.1 Background

Fantasy sports let fans become virtual team managers; they pick real players to create their own dream teams and score points based on how those players do in real matches. It is like a game within a game, turning watching sports into an exciting, interactive experience for everyone. While popular platforms like Fantasy Premier League are made for big leagues, local tournaments such as those at Pokhara University (like PUCC and sports meets) do not have affordable or easy-to-use fantasy options. Organizers also struggle with manually updating scores and standings, which can be confusing and slow. With this platform, viewers will feel engaged and like they are participating, making them encouraged to watch and attend all games.

Smaller tournaments, such as those organized by local clubs, schools, or community centers, also often struggle to manually track scores, updating standings, and updating them online in real time. Moreover, existing platforms can be overly complex and expensive for smaller tournaments, making them inaccessible or unsuitable for these events.

This project will build a simple, user-friendly online fantasy sports platform designed just for smaller tournaments. It will make tournament management, score updates, and fan engagement much easier for organizers, players, and viewers, helping everyone enjoy and follow local sports more actively.

1.2 Problem Statement

In small tournaments organized by communities, or universities, there is always a lack of audience and fan engagement making it less interesting for organizers and players. If the fans engage in an interactive platform making them feel engaged and participating to win some prize, there will be a rise in public response for these tournaments. There is a need for a solution that allows tournament organizers to simply set up and manage fantasy leagues for smaller groups of competitors. This project seeks to provide a user-friendly SaaS-based fantasy sports platform that empowers tournament organizers, supports smaller

and local competitions, and provides a smooth experience for fantasy players. When we talked to local tournament organizers and sports fans, they told us about the problems they face. Current platforms are either too expensive for small tournaments, or paid services for users. Small tournaments also lack a service to track scores, and tables. Organizers struggle to set up leagues, and players find the platforms hard to use and less flexible. Based on this feedback, we decided to create a simple, SaaS-based fantasy sports platform. It will help with smaller competitions and give players an easy and fun experience. Our solution will empower organizers to easily set up and manage fantasy leagues, especially for small tournaments, while offering players an intuitive and customizable experience, also a solution to solve their score tracking problems, and introducing fans to a new way of enjoying sports.

1.3 Objectives

1.3.1 General Objectives

- Create a flexible fantasy sports platform for small and large tournaments and to provide seamless user experience for both administrators and players.

1.3.2 Specific Objectives

- To implement a secure, **role-based user authentication** and **authorization** system for the backend using JSON Web Tokens (JWT) to manage access control for different user types (administrators and participants).

- **To implement a user-friendly mobile application** using React Native, ensuring cross-platform compatibility.
- **To enable administrators to customize tournament settings** and manage player registrations.
- **To implement robust security measures** to protect user data and prevent unauthorized access.

1.4 Application

The Tournament Fantasy Management system can be applied to a wide range of tournaments:

- **Community-level Tournaments**: Ideal for football leagues, club events, neighborhood competitions, and small-scale sporting festivals.
- **Educational Institutions:** Useful for managing college and university sports leagues, inter-school tournaments, and alumni events, providing a centralized platform for score tracking and league management.
- **Corporate and Workplace Leagues:** Perfect for companies hosting internal sports competitions, team-building tournaments, and charity events.
- **Small-Tournament Organizers:** A valuable technology for smaller tournaments to maintain accurate scorekeeping, manage league tables, and simplify event administration.
- **Sports Associations:** Regional associations can utilize the platform to promote local talent, organize consistent competitions, and keep accurate records.

By accommodating these diverse use cases, the platform can engage a broad audience, fostering the development of local sports communities and enhancing the overall tournament experience.

1.5 Project Features

The Tournament Fantasy Management system is designed with a comprehensive set of features to facilitate seamless fantasy sports experiences for users and effective tournament management for organizers. The platform supports score updates, player management, flexible league setups, and detailed leaderboards, catering to a wide variety of competition scales. These features can be divided into two main categories: user-focused features for fantasy players and admin-focused features for tournament organizers.

1.5.1 User Features

- **User Registration and Login:** Secure user authentication and profile management.
- **Team Creation and Management:** Build personalized fantasy teams within budget constraints.
- **Player Selection:** Choose players based on their performance and potential.
- **Score Updates:** Track live scores and updates to your team's performance.

- **Leaderboard and Rankings:** View your team's position on the leaderboard and compare it with others.

1.5.2 Admin Features

- **Tournament Creation and Management:** Set up tournaments, define rules, and manage player registrations.
- **Score Management:** Manually input scores for matches that lack automated data feeds.
- **Leaderboard Generation and Maintenance:** Generate and update real leaderboards.
- **Prize Distribution:** Manage prize pools and distribute rewards to winners.
- User Management: Manage user accounts, permissions, and roles.
- **Analytics and Insights:** Track players, tournament performance, and platform usage.

1.6 Feasibility Analysis

1.6.1 Economic Feasibility

Initial Development Costs:

The project's initial costs include development for core infrastructure, server setup for hosting and data storage, and thorough testing and deployment to ensure stability. Ongoing maintenance and support will cover updates, security, and user assistance.

- Development costs (infrastructure)
- Server infrastructure
- Testing and deployment
- Maintenance and support

Revenue Potential:

As a SaaS-based platform, major source of revenue will be through tournaments but, we learnt from other literature review that SaaS also require other sources of revenue that can be generated through a subscription model for premium features, tournament registration fees, and advertisements. Sponsorship deals and targeted ads present additional opportunities for a steady income.

- Subscription-based model
- Tournament registration fees
- Advertising opportunities

1.6.2 Technical Feasibility

Technology Stack:

- Frontend: React Native for cross-platform mobile app development
- Backend: Node.js and Express.js for server-side logic and API development
- Database: MongoDB for flexible data storage and retrieval
- Cloud Platform: AWS or Google Cloud Platform for scalable infrastructure

Development Tools:

- Git for version control
- Visual Studio Code and Android Studio for development environment
- Postman for API testing

1.6.3 Operational Feasibility

- Mobile-first approach ensures widespread accessibility
- Intuitive user interface reduces learning curve
- Manual data entry system suitable for tournaments of all sizes
- Scalable architecture for future growth

1.7 System Requirement

1.7.1 Software Requirement

Development Environment

- **Node.js:** v16 or higher
- **React Native CLI:** For project setup and management.
- **Android Studio or Xcode:** For native app development and debugging.
- **MongoDB:** For database operations
- **Git:** For version control
- **Code Editor:** Visual Studio Code, Sublime Text, or Atom

Production Environment

- **Mobile Devices:** iOS 12+ and Android 8+
- **Cloud Platform:** AWS, Google Cloud Platform, or Azure
- **Internet Connectivity:** Reliable internet connection
- **Web Browser:** For web-based administration

1.7.2 Hardware Requirement

Development:

- Development machines with minimum 8GB RAM
- Modern processors (Intel i5/AMD equivalent or higher)

Production:

- Cloud servers with appropriate scaling capabilities
- Database servers with sufficient storage
- Backup systems

CHAPTER: 2
LITERATURE REVIEW

2.1 Fantasy Sports Platforms

The fantasy sports game has reached a remarkable turn, with the likes of Fantasy Premier League (FPL) and Dream11 having literally tens of millions of subscribers across the globe [1]. They allow users to create virtual rosters their real-life athletes compete with others and gain points based on the players' results. Such platforms, however, are mainly focus in big leagues and professional sports only [1,2].

2.2 Fantasy Sports Platforms in Nepal

Team11 Nepal is currently the leading fantasy sports platform in Nepal. It offers a platform for users to create virtual teams of real-life athletes and compete against other users based on their performance [11]. While Team11 Nepal has made significant strides in the Nepali market, there is still room for improvement and innovation.

Our proposed fantasy sports platform aims to surpass existing platforms like Team11 Nepal by offering the following advantages:

Simplified Tournament Management: A user-friendly interface for tournament organizers to create, manage, and track tournaments.

Customizable Tournament Formats: Flexible options for tournament formats, scoring systems, and prize pools.

2.3 Mobile App Development

The recent growth of mobile technology has resulted in an unprecedented upsurge in mobile application developments. The front-end frameworks have strong solutions such as React Native for cross-platform mobile application development. In the case of React Native, a developer needs to develop the codebase of an application once and can deploy on both iOS and Android platforms, which means resource utilization and time consumption is drastically reduced [3]. It also provides:

- Cross-Platform Development
- React Native provides near-native performance.

- Reduced development time
- Consistent user experience across platforms
- Cost-effective for small development teams [6]

2.4 Real-time Data Processing

Real-time data processing is important in keeping information current and for retaining user interest. Real-time communication technologies like WebSocket and Socket.IO help to enable the server to immediately push updates to clients when a game score changes or the leaderboard gets updated, among other things [4]. Socket.IO, built on top of WebSocket, provides additional features such as fallback options for older browsers and built-in event handling, making it a reliable choice for real-time applications.

2.5 SaaS Platforms

Software as a Service (SaaS) has revolutionized the way software is delivered and consumed. By providing software on a subscription basis over the internet, SaaS eliminates the need for on-premises software installations and maintenance. This model offers numerous advantages, including cost-effectiveness, scalability, and accessibility.

Key Benefits of SaaS:

- **Cost Savings:** Because SaaS providers handle infrastructure, maintenance, and upgrades, there are fewer capital costs, which translates to lower operational costs.
- **Scalability:** SaaS solutions can scale to meet the demands of businesses that experience rapid growth.
- **Accessibility:** Users access SaaS applications from any location that can support Internet access.
- **Fast Deployment:** SaaS applications may be quickly deployed, reducing time to market.

As the scope of studies remains narrow for SaaS platforms in fantasy sports, there have been many studies conducted to understand the effects of SaaS on various industries. For example, [9] explores factors that affect the adoption of SaaS in small and medium-sized enterprises. [10] discusses the security challenges and best practices for SaaS providers.

2.6 SaaS in Nepal

While the adoption of SaaS in Nepal is still in its initial stages, it has gained significant momentum in recent years. Despite the growing interest in SaaS, several **challenges** hinder its widespread adoption in Nepa[12]:

Limited Digital Infrastructure: Insufficient digital infrastructure, particularly in rural areas, can limit the accessibility of cloud-based services.

Security Concerns: Concerns about data security and privacy can deter organizations from adopting cloud-based solutions.

Lack of Technical Expertise: A shortage of skilled IT professionals can hinder the effective implementation and management of SaaS solutions.

However, these challenges also present significant **opportunities** for SaaS providers:

Addressing the Digital Divide: By providing affordable and accessible SaaS solutions, providers can help bridge the digital divide in Nepal.

Developing Niche SaaS Solutions: Identifying specific needs of Nepali businesses and individuals can lead to the development of tailored SaaS solutions.

Collaborating with Local Partners: Partnering with local organizations and businesses can help SaaS providers navigate the unique challenges of the Nepali market.

Local Examples of SaaS Adoption:

While specific academic research on SaaS adoption in Nepal might be limited, we can observe its impact through local examples:

eSewa: A leading digital payment gateway in Nepal, offering a range of financial services through a cloud-based platform.

Khalti: Another popular digital wallet in Nepal, leveraging cloud technology for secure and efficient transactions.

Various Ed-tech Platforms: These platforms utilize SaaS models to deliver online courses and educational content.

SaaS has the potential to transform the way businesses and individuals operate in Nepal. By addressing the challenges and capitalizing on the opportunities, SaaS providers can contribute to the country's digital transformation and economic growth.

CHAPTER: 3

Methodology

3.1 System Development Lifecycle (SDLC) Model

Agile methodology is used for the SDLC of this project. Agile methodologies represent an iterative approach to project management focused on flexibility, collaboration, and continuous improvement [7]. Unlike traditional linear methodologies, Agile breaks projects down into smaller, fixed time-boxed iterations—termed as sprints. This allows for rapid development, frequent feedback, and the ability to easily adapt to changing requirements. Key Agile principles include emphasizing individuals and interactions, working software at the top of each iteration, customer collaboration, and responding to change [7]. Also, using Agile will allow us to achieve faster time to market and higher quality.

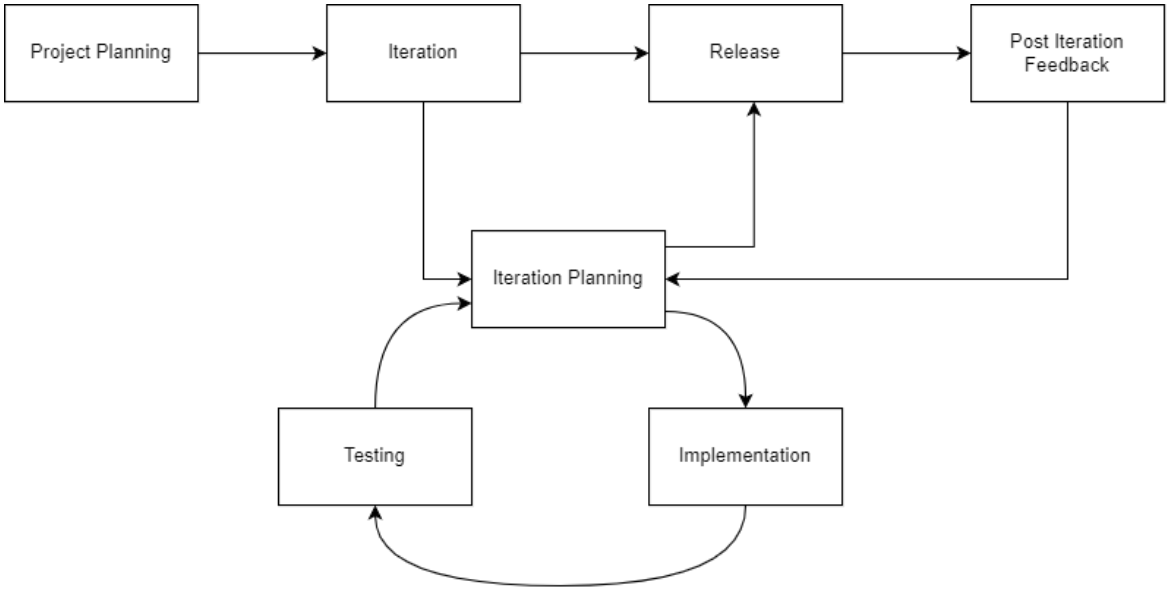


Figure 3.1 Agile Methodology

3.2 System Design and Modeling

3.2.1 System Diagram

The system diagram identifies the big picture of the Tournament Fantasy Management system. The system authenticates the users and admins once the login or signup is completed, and thus it acts as an entry point to their respective functionalities. A user can join a tournament, create their fantasy teams, view leaderboards, and update their profile. The Sequence Diagram represents the interaction once a user logs in or signs up. For an admin, the system provides extra controls to manage the tournament process. Admins can create new tournaments, register players, and manage scores.

For users;

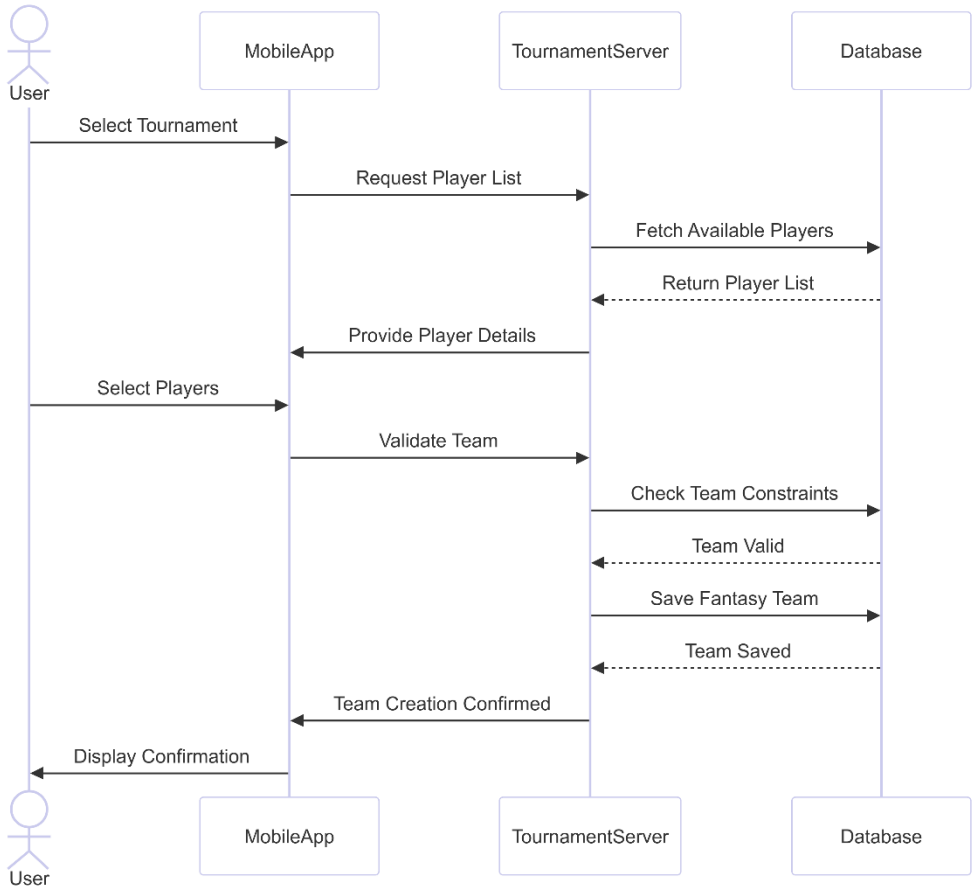


Figure 3.2: System Diagram of Tournament Fantasy Management system (for Users)

For admins;

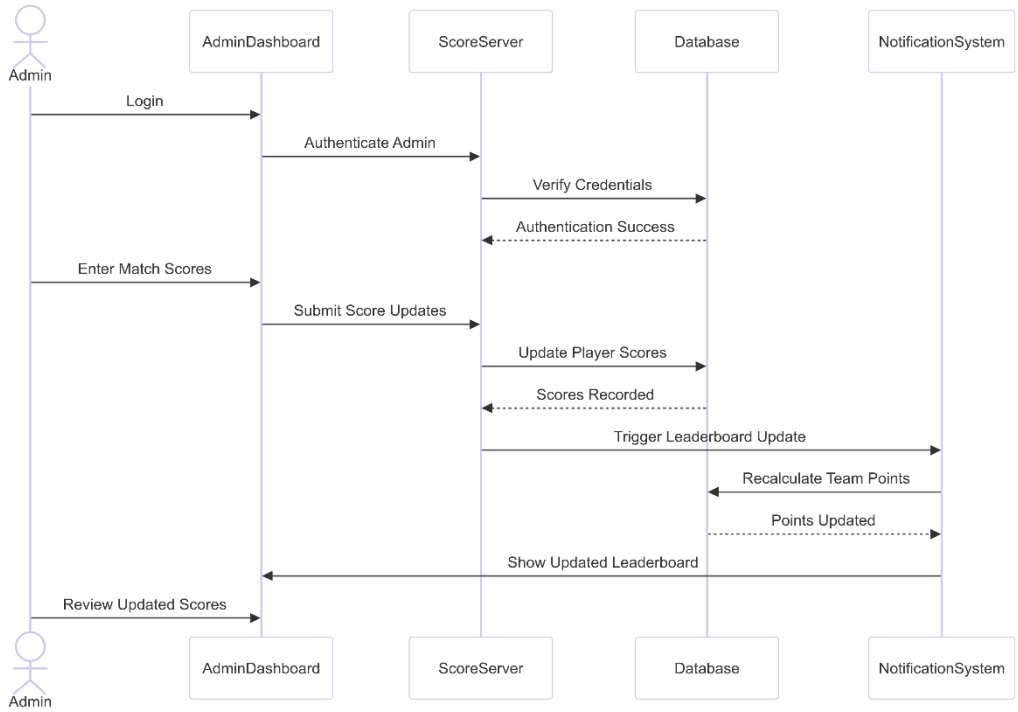


Figure 3.3: System Diagram of Tournament Fantasy Management system (for admins)

3.2.2 Block Diagram

The block diagram represents the architecture of the Tournament Fantasy Management system, detailing the interactions between various components. At the **front-end** layer, React Native is used for cross-platform mobile app development, with Expo CLI providing the development environment and Redux handling state management across the app. The **backend** layer consists of Node.js for server-side processing, Express.js for API development, and Socket.io to enable communication for live score updates and leaderboard changes. Data is stored in **MongoDB**, with Mongoose ODM providing an efficient system for interacting with the database. **Authentication** is managed using JWT (JSON Web Tokens) for secure, token-based authentication and OAuth for third-party login integration, allowing users to access the platform seamlessly. The flow of data and actions between these components ensures a cohesive system that enables users to interact with the fantasy leagues while maintaining secure data handling and smooth performance.

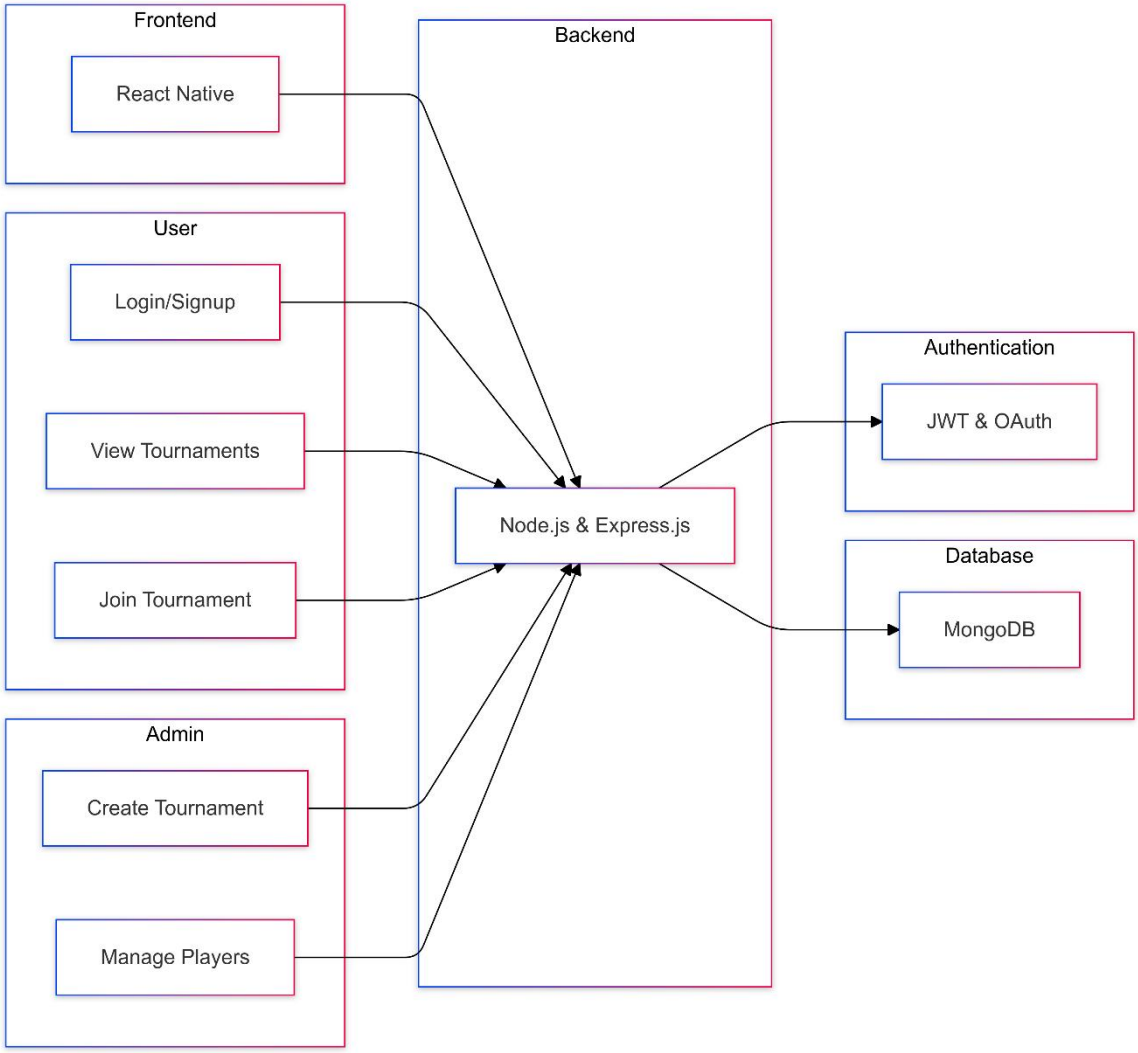


Figure 3.4: Block Diagram for Tournament Fantasy Management system.

3.2.3 ER Diagram

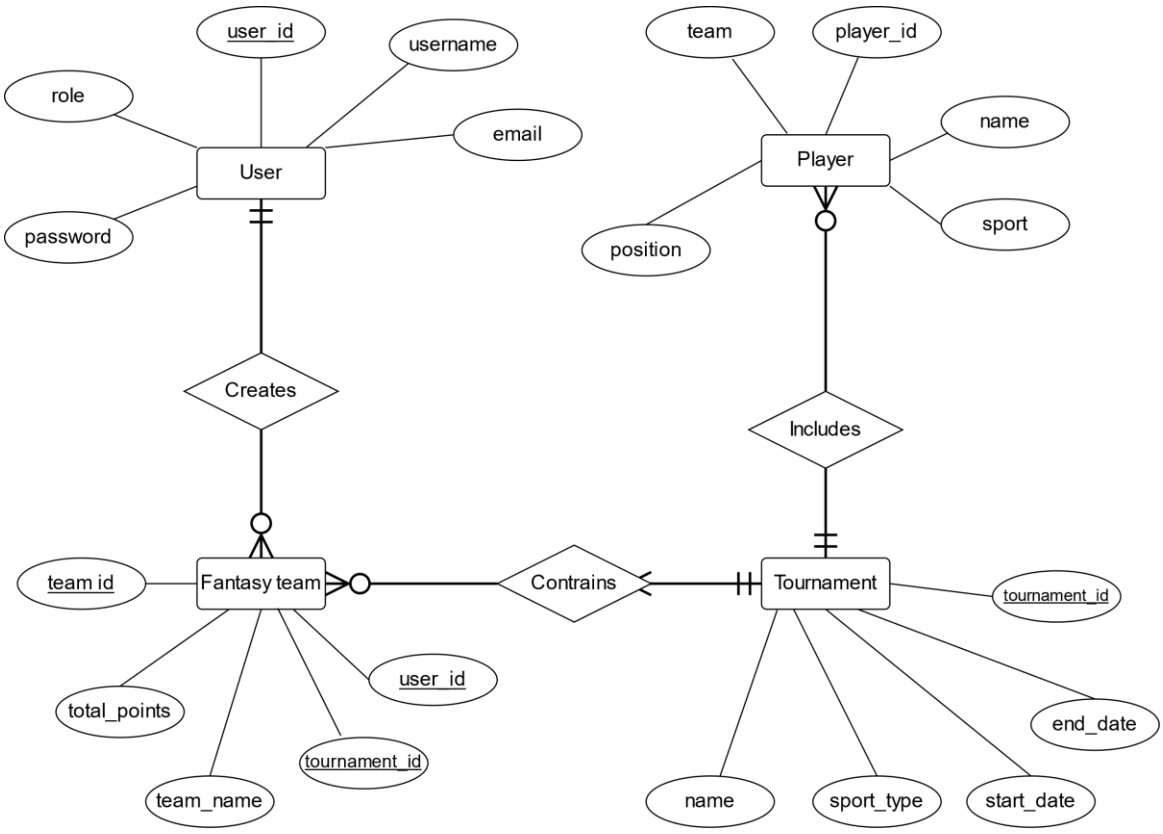


Figure 3.5: ER Diagram for Tournament Fantasy Management system.

3.2.4 Use Case Diagram

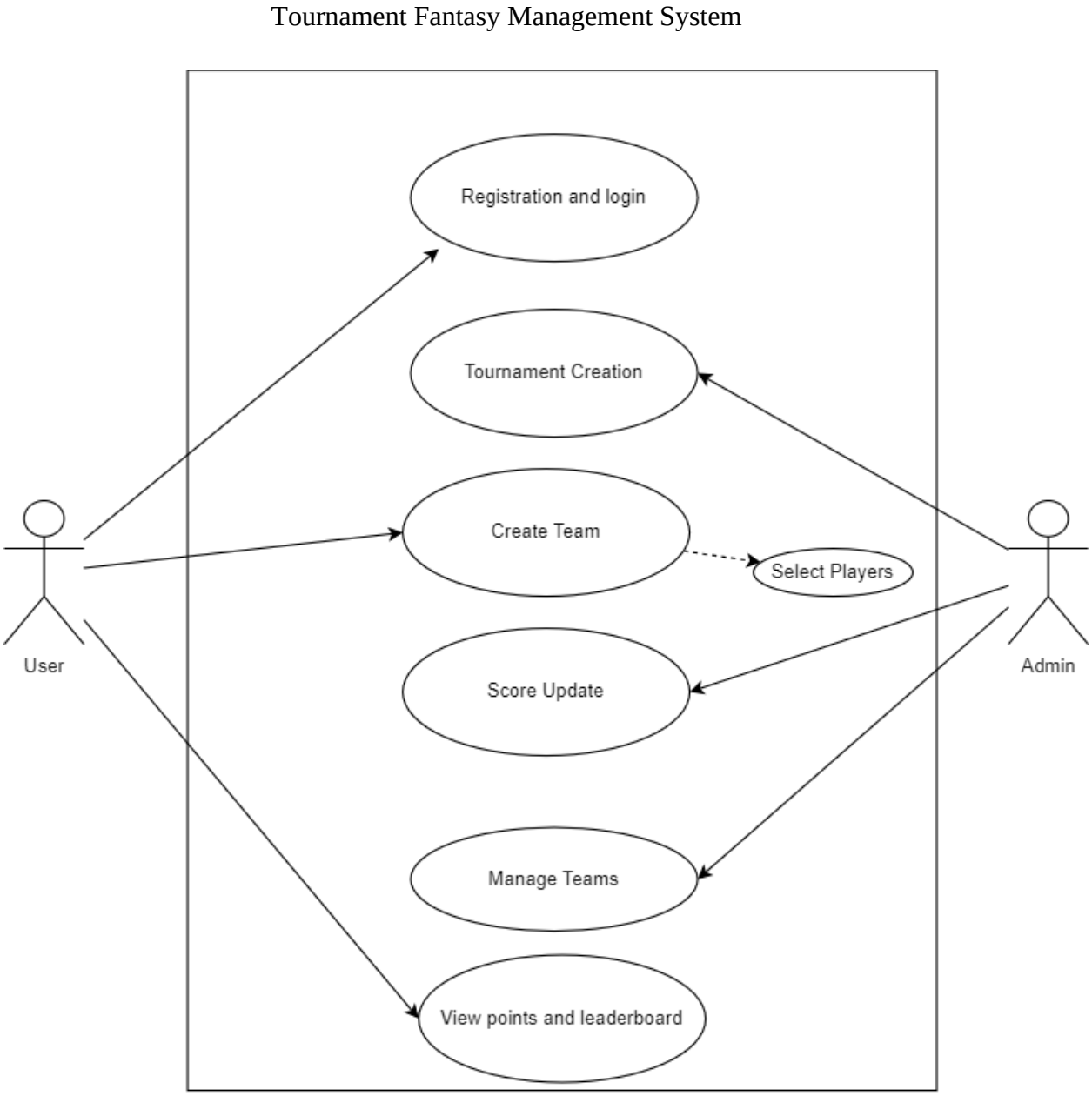


Figure 3.6: Use Case of Tournament Fantasy Management System

CHAPTER: 4

Result and Evaluation

4.1 Result

The Tournament Fantasy Management mobile application was successfully developed and completed, fulfilling the project's objectives as a dedicated fantasy sports platform for smaller tournaments. The application, built using **React Native** for cross-platform compatibility (iOS and Android) and supported by a **Node.js/Express backend with MongoDB**, provides seamless and engaging experience for both tournament administrators and fantasy participants directly on their mobile devices. It directly addresses the need for an accessible, user-friendly solution for managing fantasy leagues and tracking scores in community, university, and similar small-scale sporting events.

4.1.1 Core Functionalities

The final mobile application delivers a comprehensive set of features aligned with the project objectives:

- **Secure User Authentication & Role-Based Access**: Users can securely register, log in, and manage their profiles. Role-based access control ensures administrators have distinct privileges for tournament management compared to regular participants.
- **Comprehensive Tournament Management:** Administrators can easily create, configure (setting rules, scoring parameters, team budget/size, transfer windows), and manage tournaments from start to finish.
- **Fantasy Team Creation & Management**: Participants can create fantasy teams by selecting real players within budget constraints and managing their squads throughout the tournament (e.g., making transfers during defined windows).
- **Cross-Platform Compatibility**: Application compatible for iOS and Android were successfully developed and deployed.
- **User-Friendly Interface:** The final UI/UX design focuses on intuitiveness and ease of use for both technical and non-technical users, simplifying navigation and task completion.

4.1.2 System Performance

Testing confirmed the mobile application and backend infrastructure perform efficiently and reliably:

- **App Performance:** The React Native application demonstrated smooth performance, quick load times, and responsive navigation on both iOS and Android test devices.
- **Backend Scalability:** The MongoDB database and Node.js backend proved capable of handling the data load and concurrent user requests simulated during testing, suitable for small to medium-sized tournaments.
- **Cross-Platform Consistency:** The application provided consistent user experience and feature set across both iOS and Android platforms.
- **API Responsiveness:** Backend APIs responded quickly to requests from the mobile application, contributing to a fluid user experience.

4.1.3 User Feedback and Response

User Acceptance Testing (UAT) involving target users (administrators and players) yielded positive feedback:

- **Mobile Convenience:** Users highly value having a dedicated mobile app, praising the ability to manage teams, check scores, and interact with the league anytime, anywhere.
- **Ease of Use:** Both administrators and participants found the mobile interface intuitive and easy to learn, fulfilling the objective of a user-friendly platform.
- **Admin Simplification:** Administrators appreciated the streamlined process for tournament setup and score management compared to manual methods.
- **Cross-Platform Accessibility:** Positive feedback was received on the availability and consistent experience of both major mobile operating systems.

4.2 Evaluation

The Tournament Fantasy Management mobile application was evaluated against its specific objectives using a combination of functional testing, performance analysis, usability testing (UAT), and code review.

4.2.1 Testing Methods

A comprehensive testing strategy ensured the quality and robustness of the mobile application and backend:

- **Unit Testing:** Testing individual components and functions in both the React Native frontend and Node.js backend.
- **Integration Testing:** Verifying interactions between the mobile app, backend APIs, and the MongoDB database.
- **End-to-End (System) Testing:** Testing complete user flows within the mobile app (e.g., register -> create team -> view scores -> check leaderboard).
- **User Acceptance Testing (UAT):** Target users performed real-world scenarios on different mobile devices.
- **Performance & Load Testing:** Simulating concurrent users interacting with the backend via the app to test stability and responsiveness.
- **Mobile-Specific Testing:** Testing on various iOS and Android devices and OS versions, checking for UI consistency, handling interruptions (calls, notifications), and network condition variability.
- **Security Testing:** Basic checks for authentication, authorization vulnerabilities, and secure data handling (as per objective 1.3.2).

4.2.2 Evaluation Metrics

The evaluation confirmed the successful achievement of project objectives:

- **Objective Fulfillment:**

- **Backend System:** MongoDB backend successfully implemented for efficient data management. (Objective 1.3.2)
- **Mobile Application:** User-friendly React Native app delivered, ensuring cross-platform compatibility. (Objective 1.3.2)
- **Real-Time Updates:** Real-time score and leaderboard updates successfully implemented and functional within the app. (Objective 1.3.2)
- **Admin Customization:** Administrators can effectively customize tournament settings and manage registrations via the app. (Objective 1.3.2)
- **Security:** Robust security measures for authentication and data protection implemented. (Objective 1.3.2)

- **Usability:** UAT feedback confirmed high usability and user satisfaction with the mobile interface.
- **Performance:** The app met performance expectations for load times and responsiveness; backend handled simulated load efficiently.
- **Cross-Platform Success:** The application functioned correctly and consistently on tested iOS and Android devices.
- **Reliability:** The system demonstrated stability and consistent real-time data delivery during testing phases.

4.2.3 Identified Limitations

While the project successfully met its objectives, potential areas for future enhancement include:

- **Score Input Automation:** Integrating with third-party sports data APIs could automate score inputs, further reducing administrator effort and potential for manual error, which has no use-case for small to medium tournaments but will be useful for large tournaments.
- **Offline Capabilities:** Enhancing the mobile app with basic offline access (e.g., viewing team, last known scores/leaderboard) could improve usability in low-connectivity situations.

- **Push Notifications:** Implementing more granular push notifications (e.g., match start times, significant score events, editing team reminders) could boost engagement.
- **Expanded Sport Support:** Adapting the platform to support sports beyond the initial focus (e.g., Football).
- **Advanced Admin Analytics:** Providing administrators with more detailed in-app analytics on user engagement, player performance trends, etc.
- **In-App Social/Community Features:** Adding chat channels per league or comment sections to foster interaction between participants.
- **Adding mini-league:** Adding mini-league where friend groups can compete amongst themselves which is useful for tournaments with large no of users.
- **Web Version**: Web version for diverse cross-platform compatibilities.

4.3 Overall User Experience:

The Tournament Fantasy Management mobile application delivers an accessible, engaging, and user-friendly experience tailored to the needs of smaller tournaments. By providing core fantasy league management and real-time updates directly within a native mobile interface for both iOS and Android, the platform effectively solves the problems of low engagement and lack of suitable tools identified in the problem statement. Administrators gain a simplified management tool, while participants benefit from the convenience and excitement of managing their fantasy teams and following tournament progress anytime, anywhere. The final product successfully empowers local sports communities with a modern, mobile-first fantasy sports solution.

CHAPTER: 5

Conclusion and Future Works

5.1 Conclusion

The primary goal of this project was to develop and implement an accessible and user-friendly mobile fantasy sports platform, the Tournament Fantasy Management System, specifically designed to enhance engagement and simplify administration for smaller tournaments often overlooked by mainstream platforms. Following the planned development phases outlined mid-project and utilizing React Native for cross-platform mobile development (iOS and Android), supported by a Node.js/Express backend and MongoDB database, the project successfully delivered a comprehensive mobile application. The platform empowers tournament organizers with tools for easy setup and management, while providing participants with an intuitive and engaging interface for creating teams, tracking scores in real-time, and competing on dynamic leaderboards – fulfilling the technical and feature objectives set forth.

The project successfully met its core objectives, progressing from foundational elements to advanced features, followed by comprehensive testing and deployment preparations as planned. Key deliverables included secure user authentication, role-based access control, and flexible tournament configuration, all within a mobile application. Emphasis was placed on creating a seamless user experience optimized for mobile devices. The successful implementation demonstrates the significant potential of tailored mobile solutions to boost fan engagement, streamline administration, and elevate the overall experience of local and community-level sporting events, directly addressing the issues outlined in the problem statement.

5.2 Limitations

While the Tournament Fantasy Management System provides a robust mobile solution achieving its primary goals, certain limitations were identified during development and final evaluation. Currently, the platform's score updates rely on administrator input via the app. While functional and improved from the basic tracking at midterm, this lacks the full automation possible through direct data feed integration. The platform is also initially

focused on Football, limiting its immediate applicability to tournaments involving other sports.

Furthermore, the application currently exists only as a mobile application (iOS and Android). While this caters effectively to mobile-first users and achieves the cross-platform mobile goal, it lacks a corresponding web-based interface, potentially limiting access for users who prefer or require desktop management or participation. The system also lacks integrated social features like chat or forums for direct participant interaction beyond the competitive structure. Finally, advanced analytical tools for deeper insights into player performance or user engagement patterns were outside the scope of the final implemented features. These limitations represent opportunities for future enhancements to broaden the platform's capabilities and user base.

5.3 Future works

To build upon the successful foundation of the Tournament Fantasy Management mobile application and address the identified limitations, several future developments are proposed:

- **Web Version:** Develop a full-featured **web application** counterpart to the mobile app. This would provide cross-platform compatibility beyond mobile, offering administrators a potentially more convenient interface for complex setup tasks and catering to users who prefer accessing the platform via desktop or laptop browsers.
- **Mini-Leagues:** Implement a **"mini-league" or "private league" feature**. This would allow users within a larger tournament to create smaller, private groups (e.g., among friends, colleagues, or specific teams) to compete directly against each other, enhancing social competition and scalability for tournaments with many participants.
- **Automated Score Integration:** Integrate with reliable third-party sports data APIs to enable fully automated, real-time score fetching and updates. This would significantly reduce the administrator workload and eliminate potential manual entry errors.
- **Multi-Sport Support:** Expand the platform's architecture to flexibly support various sports beyond the initial focus, allowing organizers to use the system for a wider range of tournaments.

- **Enhanced Push Notifications:** Implement more granular and timely push notifications for key events like match starts, score updates, transfer deadlines, and league messages to further boost user engagement.
- **Advanced Analytics Dashboard:** Develop more sophisticated analytics tools for administrators (e.g., tracking user activity, popular player picks) and potentially for participants (e.g., detailed player statistics, performance trends).
- **In-App Social Features:** Incorporate features like league-specific chat channels or discussion forums to foster community interaction among participants.
- **Payment Gateway Integration:** Explore integrating secure payment gateways to facilitate organisers to purchase the service, optional paid tournament entries or premium features, opening potential monetization avenues, as initially considered in the potential revenue streams.

REFERENCES

A. K. Mishra, R. K. (2015). Factors influencing SaaS adoption in SMEs: An empirical study. *International Journal of Information Management, 35*.

Dream11. (n.d.). (Dream Sports) Retrieved from https://www.dream11.com/

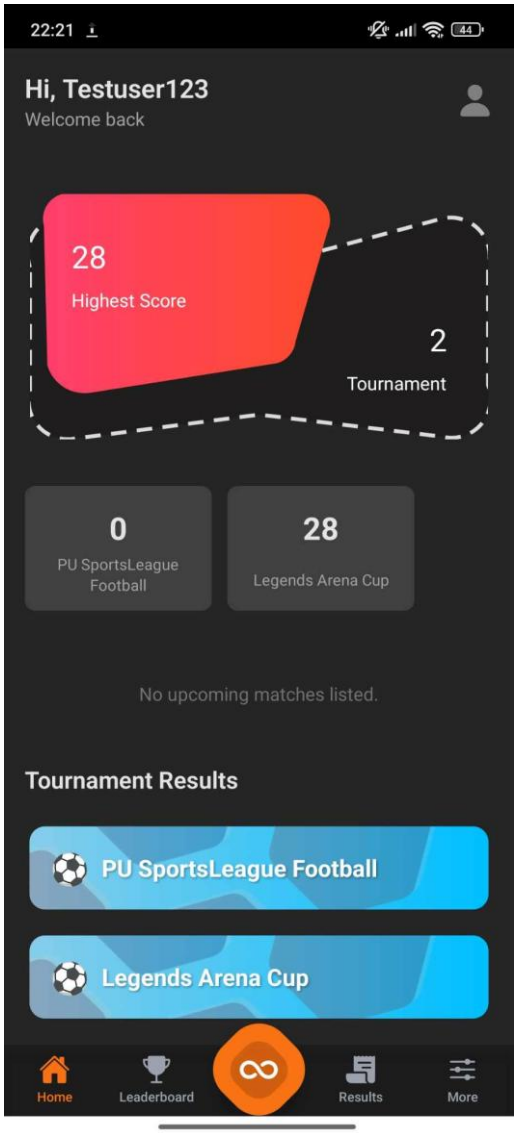
Elliott, S. J. (2018). *React Native: Learning React to Build Mobile Apps.* Apress.

Fantasy Premier League. (n.d.). (English Premier League) Retrieved 11 20, 2024, from Premier League: https://fantasy.premierleague.com/

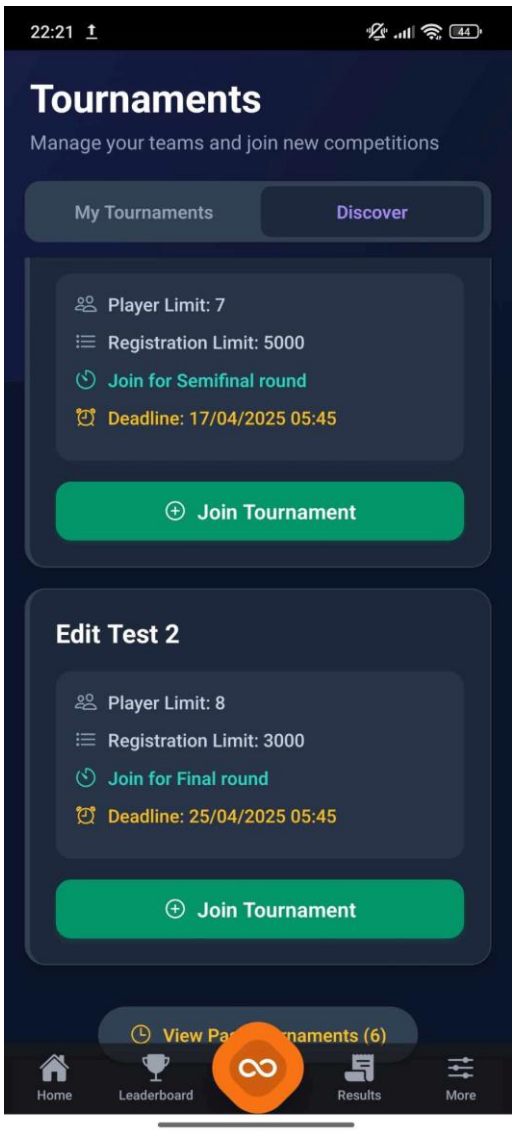
Garcia, A. &. (n.d.). *Cross-Platform Mobile Development: A Comparative Study.*

MongoDB NoSQL database. (n.d.). Retrieved 11 20, 2024, from 10gen.com: http://www.mongodb.org

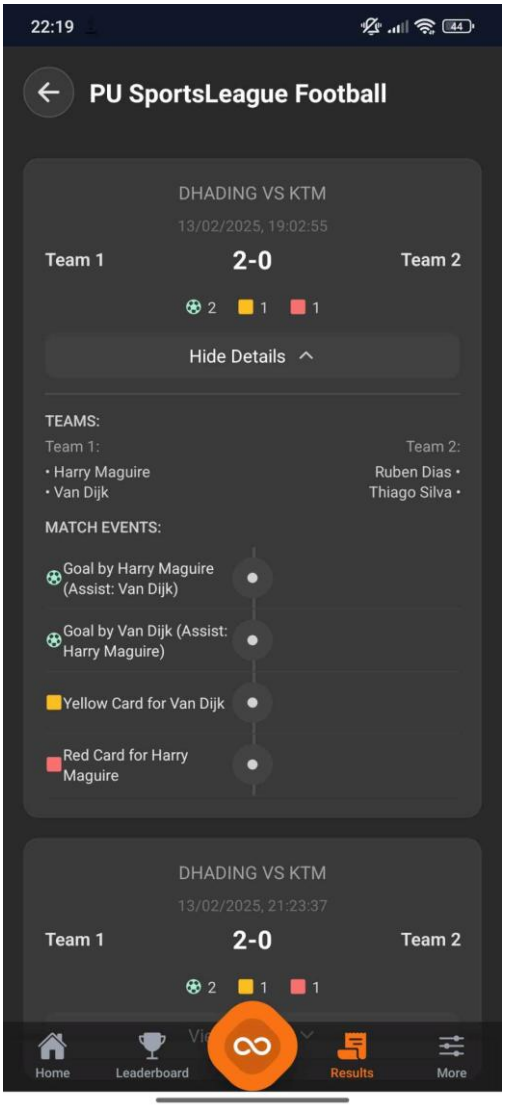
APPENDIX



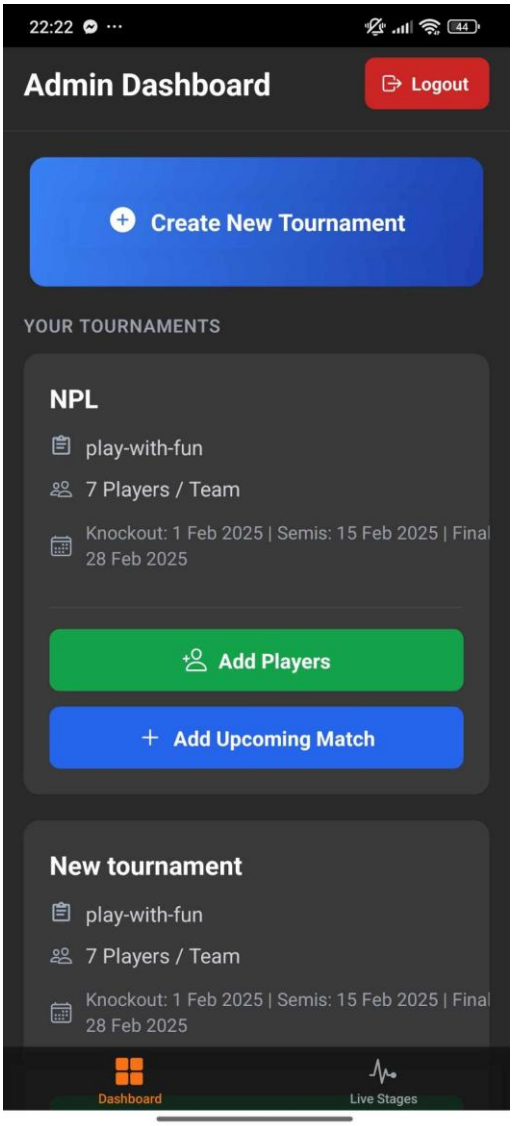
Annex 1: Home Page of user portal of Tournament Fantasy Management System



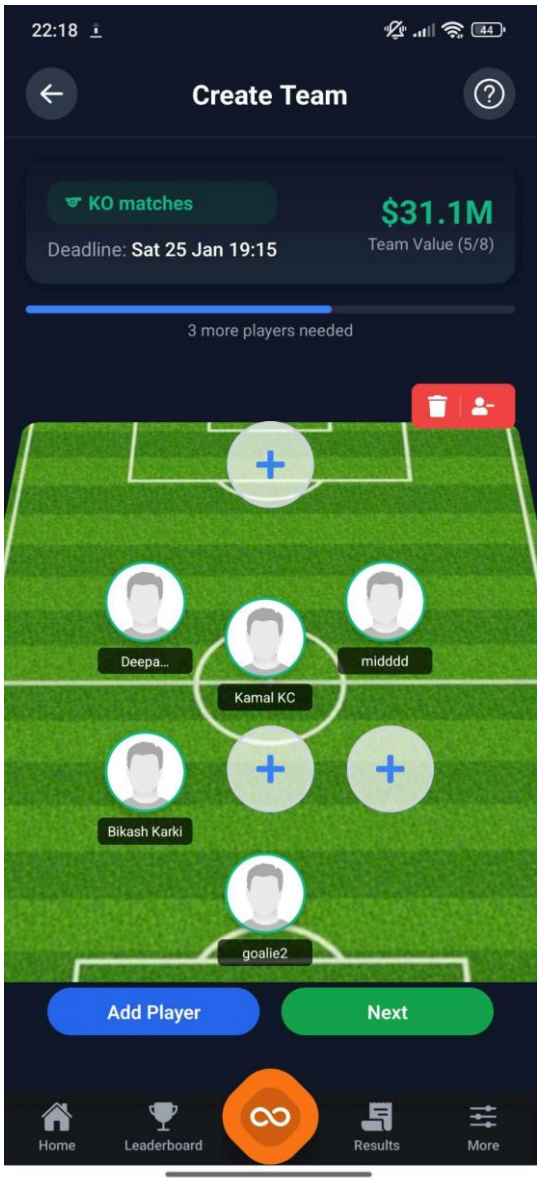
Annex 2: Add tournament page of admin portal.



Annex 3: Results page of Tournament Fantasy Management System



Annex 4: Create tournament page of Admin portal of Tournament Fantasy Management System



Annex 5: Create Team of User portal of Tournament Fantasy Management System

Annex 6: Viewpoints of User portal of Tournament Fantasy Management System