TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

THAPATHALI CAMPUS

A Project Proposal

On

NPL Fantasy League

Submitted by:

Ninamhang Kulung	(THA079BCT023)
Prabesh Babu Adhikari	(THA079BCT026)
Suprem Khatri	(THA079BCT047)

Submitted to:

Department of Electronics and Computer Engineering

Thapathali Campus

Kathmandu, Nepal

January, 2026

ACKNOWLEDGEMENT

We would like to express our sincere gratitude to the **Department of Electronics and Computer Engineering, Thapathali Campus,** for providing us with the opportunity to develop this DBMS subject project titled "NPL Fantasy League." This project allowed us to practically apply the concepts of database design, normalization, and system modeling learned during the course.

We are deeply thankful to our respected course instructor **Er. Rajad Sakya** for their valuable guidance, constructive feedback, and continuous support throughout the development of this project. Their suggestions and encouragement helped us to clearly understand DBMS concepts and implement them effectively in a real-world system.

Ninamhang Kulung (THA079BCT023)
Prabesh Babu Adhikari (THA079BCT026)
Suprem Khatri (THA079BCT047)

Table of Content

1. INTRODUCTION

A fantasy league is an online game in which participants act as managers of virtual sports teams. Users draft real professional athletes to form their squads and earn points based on the players' actual performances in real-life matches. The team that accumulates the highest total points wins the fantasy league. Fantasy leagues are available across various sports such as football, basketball, baseball, and cricket, with Fantasy Premier League being one of the most popular platforms. These leagues enhance viewer engagement by adding excitement, anticipation, and strategic involvement to live sporting events.

The Nepal Premier League (NPL) is a professional Twenty20 cricket league in Nepal, organized by the Cricket Association of Nepal. Established in 2024, the league features eight franchise teams representing provinces or major cities. Within just two seasons, NPL has attracted a large audience and generated significant enthusiasm among cricket fans nationwide. During the tournament period from November to December, Nepalese cricket fans actively engage in NPL-related discussions. Introducing a fantasy league for NPL will further increase fan engagement, popularity, and overall interaction with the tournament.

The NPL Fantasy League will be developed as a web-based platform featuring a visually appealing and user-friendly interface. Users will be able to register and log in to the application, select upcoming matches, and build fantasy squads by choosing players from both competing teams. Squads must include players from different roles and remain within a predefined budget, with player values based on their auction prices. After each match, users will earn points according to the real-life performance of their selected players.

The platform will use React for the frontend to deliver a dynamic and interactive user experience, while Django will power a robust and well-structured backend. All application data will be stored in a relational database using PostgreSQL.

2. OBJECTIVES

i. To build a interactive web application for NPL fantasy league.

ii. To design a well structured database for NPL fantasy league using PostreSQL.

3. ENTITY RELATIONSHIP DIAGRAM

3.1 Key Relationships

- Each team can have multiple players, while each player belongs to one team.
- Each match is played between two teams.
- Each match includes multiple players, and a player can participate in multiple matches.
- MatchPlayer acts as a junction entity connecting matches and players, indicating whether a player is part of the playing XI.
- Each MatchPlayer record is associated with a single PlayerStats entry that stores the player's performance in that match.
- Each user can create multiple fantasy teams, while each fantasy team belongs to one user.
- Each fantasy team is created for a specific match.
- Each fantasy team consists of multiple players, and a player can be selected in multiple fantasy teams.
- FantasyTeamPlayer serves as a junction entity between fantasy teams and players, including captain and vice-captain roles.
- A fantasy team's total points are calculated based on the aggregated real-life performance of its selected players.

3.2 ER Diagram Description

The ER diagram above represents the initial database structure for the NPL Fantasy League platform. It outlines the core entities—such as users, teams, players, matches, fantasy teams, and player statistics—along with their attributes and relationships necessary to support fantasy cricket functionality.

This design enables essential features including user authentication, real-time match tracking, fantasy squad creation, and point calculation based on actual player performances. By separating match participation (MatchPlayer) and statistical performance

(PlayerStats), the schema ensures accurate and flexible tracking of player data across matches.

Additionally, the use of junction tables such as FantasyTeamPlayer allows for scalable many-to-many relationships while supporting fantasy-specific rules like captain and vice-captain selection. Although this schema provides a strong foundation for the fantasy league system, it represents an initial design. As development progresses, additional entities and attributes such as point rules, leaderboards, transfer history, notifications, and administrative controls may be introduced to support enhanced functionality and scalability.

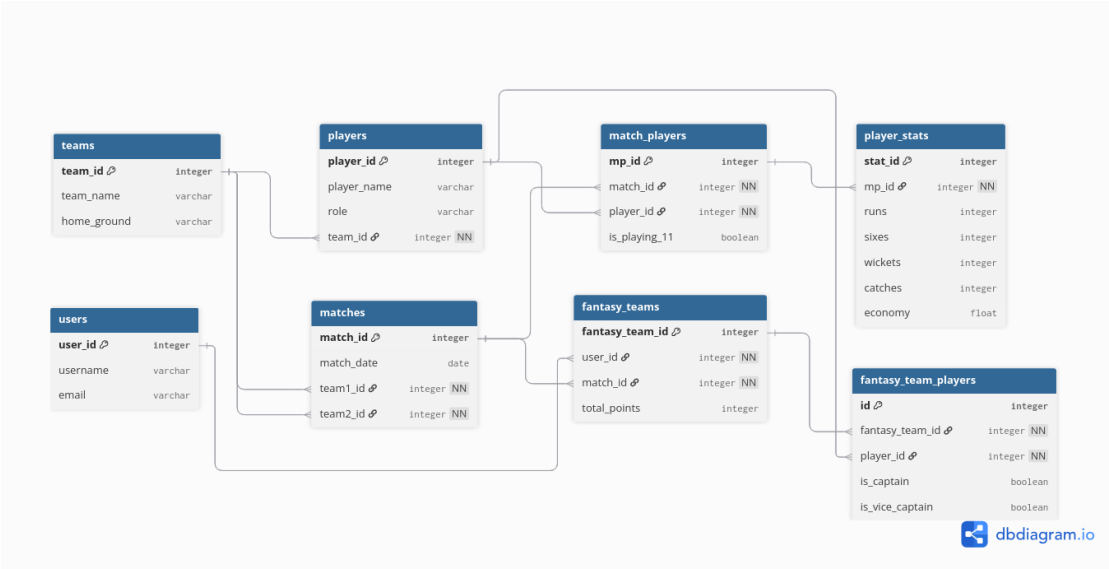

Figure 1: ER Diagram

4. TOOLS AND TECHNOLOGIES

4.1 Backend

- Django Framework
- Rest_Framework for RESTful api and serializer
- PostgreSQL as the relational database system
- JWT for authentication and session management.

4.2 Frontend

- React.js for building user interface
- Axios for API communication
- CSS or Tailwind CSS for styling

4.3 Deployment

- Render or Vercel for hosting frontend
- pythonanywhere for hosting backend
- PostgreSQL hosted on cloud or local server

4.4 Version Control and Collaboration

- Git for version control
- Github for repository and collaboration

4.5 Other Tools

- Db diagram for designing ER diagram
- Visual Studio Code(VS code) as the primary code editor
- pgAdmin4 for PostgreSQL

5. FEATURES AND PAGES

5.1 Fantasy League Management

i. User Dashboard

- Secure user registration and login functionality
- View upcoming and ongoing NPL matches
- Create and manage fantasy teams for selected matches
- Track fantasy team performance and total points in real time

ii. Fantasy Team Creation Page

- Select a specific match to build a fantasy squad
- Choose players from both competing teams
- Role-based player selection (batsman, bowler, all-rounder, wicketkeeper)
- Budget constraint enforcement based on player auction values
- Assign captain and vice-captain for bonus points

iii. Points & Performance Page

- View player-wise points earned based on real match performance
- Automatic point calculation using predefined scoring rules
- Display detailed statistics such as runs, wickets, catches, and economy
- Match-wise fantasy team performance breakdown

5.2 Match and Player Management

i. Match listing page

- Display match schedule with teams and match dates
- Show match status (upcoming, live, completed)
- Enable fantasy team creation before match deadline

ii. Player Information page

- View player profiles with roles and team affiliation
- Display historical performance and fantasy points

5.3 Admin Panel

- Manage teams, players, matches, and user accounts
- Perform CRUD operations on all core entities
- Assign players to teams and matches
- Update player statistics after matches

5.4 Responsive and User-Friendly Design

- Clean and intuitive user interface for seamless navigation
- Built using React for a dynamic and interactive frontend
- Consistent styling using modern CSS frameworks

5.5 Scalability and Maintainability

- Well-structured relational database design
- Supports future extension such as mobile apps or additional roles
- Easy to maintain due to normalized tables and modular system design

6. EXPECTED OUTCOMES

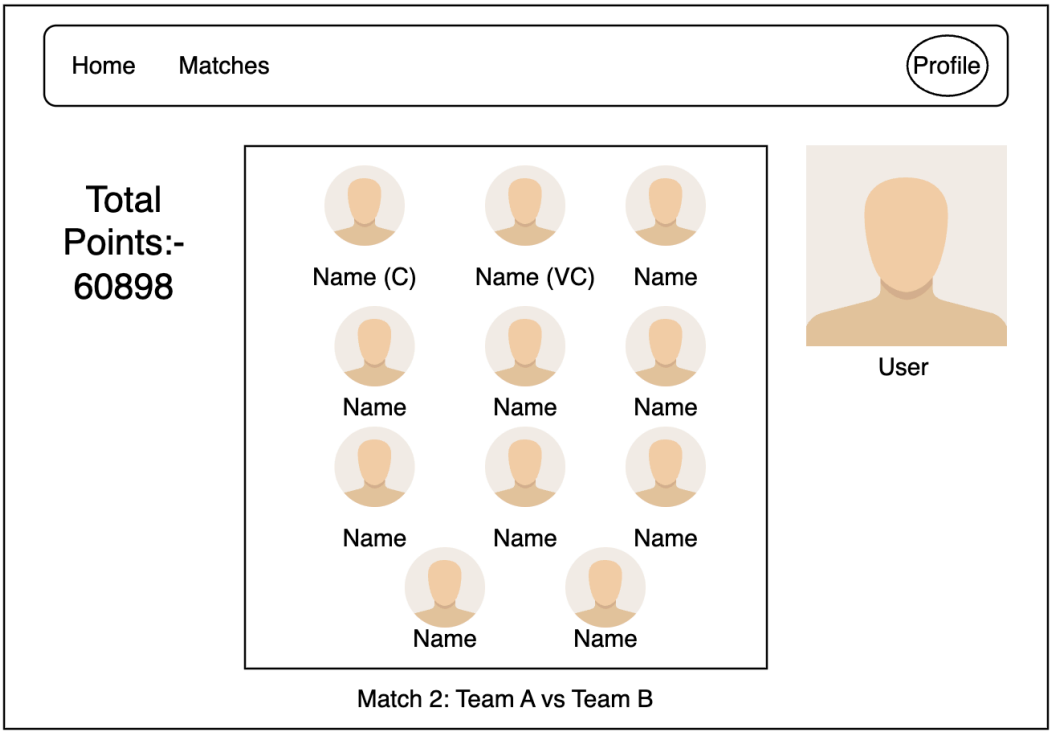

Figure 2: Home Image

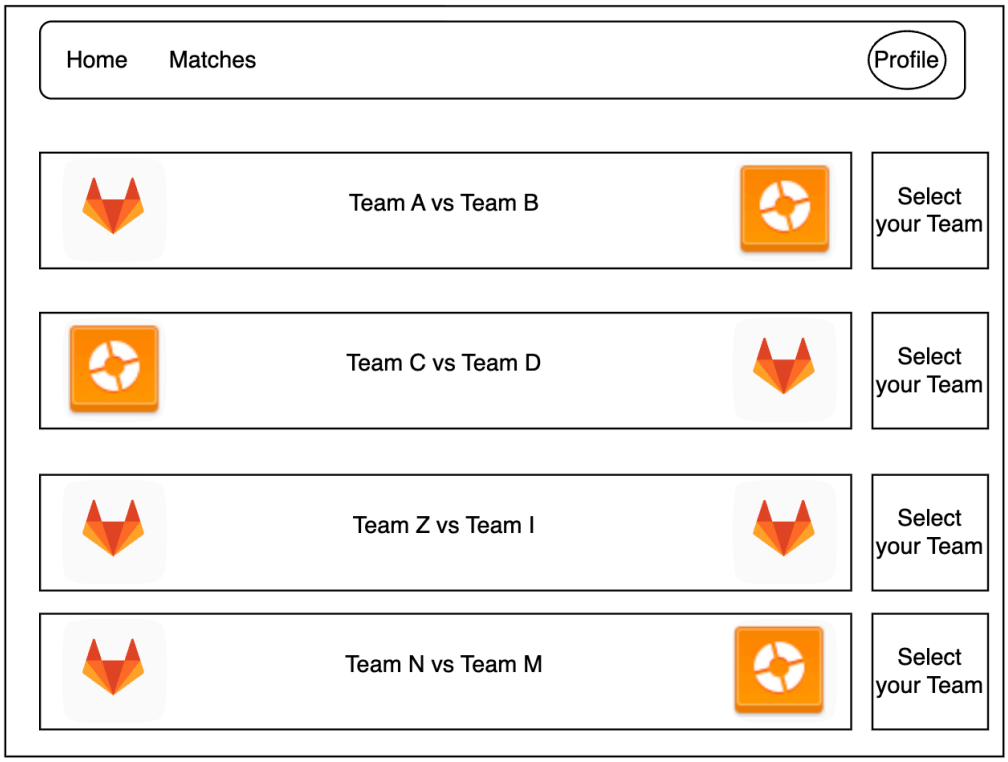

Figure 3: Fantasy Team

7. Future Enhancements

7.1 Live Match Integration

Integrate live match data APIs to provide real-time score updates, player performance tracking, and instant fantasy point calculation during ongoing matches.

7.2 Advanced Scoring and Bonus Rules

Introduce customizable and advanced scoring systems, including bonus points for milestones such as half-centuries, five-wicket hauls, strike rate, and economy-based rewards.

7.3 Private Leagues and Contests

Allow users to create private leagues and invite friends, enabling head-to-head competitions and community-based fantasy contests.

7.4 Push Notifications and Alerts

Provide notifications for match start times, squad deadlines, player injuries, match results, and fantasy team performance updates.

7.5 Detailed Analytics and Insights

Add analytical features such as player form analysis, performance trends, and predictive suggestions to help users make informed decisions.

7.6 Mobile Application Support

Develop native mobile applications for Android and iOS to improve accessibility and provide a smoother user experience.

7.7 AI-Based Team Suggestions

Utilize machine learning algorithms to recommend optimal fantasy teams based on historical performance, pitch conditions, and opponent analysis.