

Sports Complex Management System

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Abstract

The Sports Complex Management System is a web and mobile-based platform designed to streamline the management of sports equipment and live sports events within a college campus. It allows students to request and return equipment, join specific sports clubs, and view real-time match scores. Admins can manage inventory, approve requests, update scores, post announcements, and track student participation for university team selection.

User Roles and Permissions

- **Student:** View equipment, request/return items, join clubs, view live scores, view announcements.
- **Admin:** Manage inventory, approve requests, schedule matches, post announcements, manage clubs and selections.
- **Scorer:** Input and update live match scores.
- **Viewer (Optional):** Access live scores and announcements without login.

Functional Requirements

- Equipment inventory and issuance system
- Role-based authentication (student/admin/scorer)
- Live scoring for ongoing matches
- Match scheduling and results history
- Sports club join/leave system
- Club member management and university team selection
- Announcement system for event notifications and updates

Non-Functional Requirements

- Mobile and web support
- Real-time updates using WebSockets or Firebase
- Clean and responsive UI (Flutter and React)
- Secure access control and data protection

System Modules Overview

1. Equipment Management

Students can request sports equipment. Admins approve or deny requests. Inventory updates are automatic.

2. Live Scoring System

Admin or scorer inputs match scores. Scores are pushed in real-time using Socket.IO/Firebase.

3. Club Enrollment System

Students browse and join clubs. Admins manage members and select participants for university teams.

4. Announcement System

Admins post general or club-specific announcements. Students receive updates on their dashboard or via push notification.

System Flow

Student Flow

Login → ViewEquipment → RequestEquipment → JoinClub → ViewScores&Announcements

Admin Flow

Login → ManageInventory → ApproveRequests → ScheduleMatch → InputScores → PostAnnouncement

Scorer Flow

Login → SelectMatch → UpdateScore → SystemBroadcastsUpdate

Database Tables Overview (Simplified)

- users(id, name, email, role)
- equipment(id, name, quantity, status)
- issue_requests(*id, student_id, equipment_id, status, date*)*matches(id, team1, team2, datetime)*
- scores(id, match_id, details)
- clubs(id, name, description)
- club_members(id, club_id, student_id, status)
- announcements(id, title, content, type, created_by, date)

Technology Stack

- **Frontend:** React.js (Web), Flutter (Mobile)
- **Backend:** Node.js + Express
- **Database:** MySQL/PostgreSQL
- **Real-time:** Socket.IO or Firebase
- **Notifications:** Firebase Cloud Messaging
- **Deployment:** Vercel, Netlify, Railway, or Render

Conclusion

This system will automate and digitize the college's sports complex operations, allowing efficient management of resources, improved communication via announcements, and effective tracking of student participation for team selections.