

1. Indoor Sports Occupancy Tracker
2. "Stay Active, Stay Informed: Real-Time Sports Occupancy at Your Fingertips"
3. **Real-Time Availability Check**

Users can check the occupancy status of courts, gym areas, and other sports facilities in real-time, helping them to plan their visits more effectively and avoid overcrowded periods.

Efficient Space Utilization

By monitoring which courts and areas are in use, facility managers can optimize space usage and identify peak and off-peak times, aiding in better scheduling and resource allocation.

Reduced Manual Tracking

Automated check-in/out processes and digital record-keeping reduce the need for paper-based tracking, saving time and reducing errors.

Streamlined Access Management

Facility admins can easily manage student check-ins and check-outs, minimizing administrative burden and ensuring that occupancy information remains accurate and up-to-date.

Enhanced User Experience

Students can conveniently view available spaces without needing to physically visit or make multiple calls, improving their overall experience and engagement with the facility.

4. Challenges faced:

Challenge: Ensuring the user interface is fully responsive across devices, particularly for mobile

Despite implementing media queries, some pages did not render optimally on smaller screens. To address this, we attempted to refine our CSS styles and layouts, but further adjustments were needed to achieve the desired responsiveness. We considered utilizing CSS Flexbox and Grid layouts more effectively to create adaptive designs that would better accommodate varying screen sizes. Additionally, we plan to conduct extensive testing on multiple devices and browsers to identify specific breakpoints and usability issues, ensuring a seamless experience for all users.

Challenge: Handling check-in and check-out processes accurately can be complex, particularly if users accidentally check in twice or forget to check out, causing inaccurate occupancy data.

Despite our efforts to implement validations to prevent duplicate check-ins and reminders for users to check out, we were unable to fully resolve these issues. This has resulted in challenges in maintaining accurate occupancy records, affecting the overall reliability of the system. To address this, we plan to explore more robust solutions, such as incorporating automated reminders for users who haven't checked out within a specific timeframe. Additionally, we might consider implementing a grace period where users are automatically checked out after a set duration, thus reducing the chance of lingering records.

Challenge: Ensuring secure and effective user authentication proved to be complex, particularly with the need to manage multiple user roles, such as admins and regular users.

Despite our efforts to implement a secure authentication system, we encountered difficulties in properly defining and enforcing role-based access controls.

Currently:

we were unable to fully implement the desired level of security and user permissions. This limitation has raised concerns about unauthorized access to certain features and data within the application, impacting overall trust in the system.

To address this, we plan to explore more robust authentication solutions, such as integrating third-party authentication services (e.g., Auth0 or Firebase Authentication) that offer built-in support for role management. Additionally, we aim to conduct a thorough review of our user role definitions and permissions to ensure they align with best practices, ultimately enhancing the security and usability of the application.

5. Technologies used:

MERN stack, Axios, JWT, Socket.IO ,Git ,VS code ,Postman, Netlify and Render.com, React Router.