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Turf Tracker Application

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Abstract: ***To solve the Sports venues booking problems, Turf Tracker Application is designed, combining the experience of the existing online booking systems, the main methods and the major ideal of building these systems in different cities. The basic functions of the system are designed according to the general requirement analysis, including user's registration and login, online sports venue booking, personal center and database construction. The development of the system used Java programming language, J2EE for backend development, Spring Boot (a Web platform development technology), MySQL database processing technology, ReactJS for frontend and Visual Studio Code. The system has accomplished such functions as online Turf booking, view user bookings, add grounds, add indoor court and view grounds/court. The tests of the system are run in good conditions. The use of the system has made up for the current luck of sports venues management, solved the problems of the online booking of sports venues, improved the efficiency of the venues and meet the needs of efficient use of the venues.***

I. INTRODUCTION

Develop a user-friendly web application for booking sports turf facilities. Enable facility managers to manage field availability, schedule maintenance, and track reservations. Allow coaches and players to view available time slots, make reservations, and receive notifications.Incorporate real-time updates and notifications to keep users informed about field status. Enhance communication between stakeholders to prevent conflicts and ensure seamless facility usageThe TMS provides real-time visibility into task statuses, deadlines, and priorities. Enhanced accountability ensures that team members are aware of their responsibilities, leading to better task management and on-time delivery.

1) *Easy Access to Ground/Courts Details:* One of the advantages of our system is easily available ground data to the user. It is only a matter of few clicks and all the required information about a ground venue, from various cities, can be available on the screen.
2) *Improved Efficiency:* Using website enables the processes automated to mean that the processes will be taken care of mechanically without any human intervention and this will instantly ensure improved efficiency.
3) *Easy to Book Sports Venue Booking:* It gets very easy to book the Sports venue because of very simplified UI design.
4) *Data Security & Retrieve-ability:* All the important data is stored on the server or cloud, keeping it safe. Since web site works on logins, data security is becoming an on-issue offering data access based on the role of the user and ground owner.

II. LITERATURE REVIEW

Many venues used the reservation machines to make a booking in Shanghai World Expo in 2010. The State Grid Pavilion and other venues also launched online booking systems [1]. Dai Xiao Jing and other scholars designed a Turf Tracker Application based on .NET [2], which has realized the basic function of venues online booking. They also developed a booking and detection system of sports venues, based on the three-tier architecture theory of the Internet of things(IOT) [3], but it failed to make detailed demands analysis and function design.

Wei Honglei's article about the network service management platform system of college sports venues involved in a module of reservation center system [4], which has realized the function of users to booking venues at any time. Zhang Huai and other scholars also covers a booking module in the design of a stadium management system [5]. Overall, current literature related to this study are less. Moreover, the design schemes of reservation system and realization technology are various. The imbalanced use of college sports venues resources has not been completely solved now. So lots of researches about the online booking system of college sports venues are seriously needed.

III. PROPOSED WORK

The proposed system aims to address the needs and challenges faced in turf management by introducing a comprehensive Turf Tracker Application. The system's primary purpose is to facilitate effective turf management practices, enhance turf quality, and streamline maintenance operations.

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The system will provide real-time monitoring of turf conditions, including factors such as moisture levels, compaction, temperature, and grass health. Sensors and data collection devices will be utilized to gather accurate and reliable data.

Data Analysis and Insights: Collected data will be analyzed to provide valuable insights into turf performance trends, potential risks, and areas for improvement. Advanced analytics algorithms will be employed to identify patterns and correlations in the data.

The system will feature proactive alerting mechanisms to notify turf managers of any abnormalities or risks detected in turf conditions. Alerts can be customized based on user preferences and predefined thresholds.

Based on the analysis of turf data and insights provided by the system, maintenance activities such as watering, mowing, fertilization, aeration, and pest control will be scheduled and optimized for maximum efficiency and effectiveness.

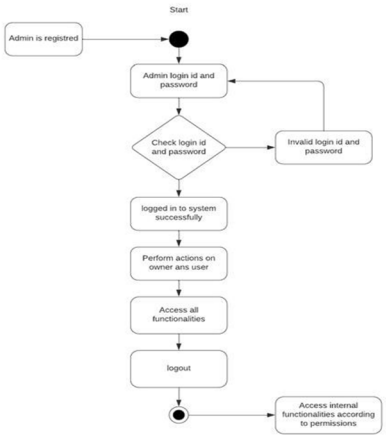
Decision support tools will be integrated into the system to assist turf managers in making informed decisions regarding maintenance strategies, resource allocation, budgeting, and long-term planning.

The system will feature a user-friendly interface accessible via web and mobile platforms, allowing turf managers to easily view turf data, receive alerts, and access analytical tools from any location.

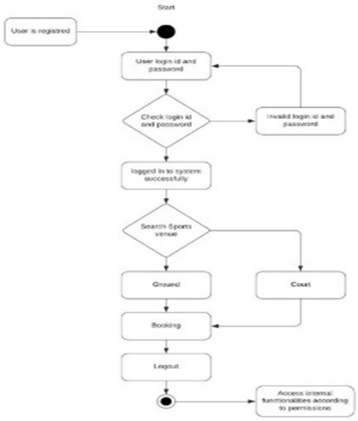
Customization and Scalability: The system will be designed to accommodate the unique needs and requirements of different turf management scenarios, including sports fields, golf courses, parks, and landscaping projects. It will also be scalable to handle varying levels of complexity and size.

IV. ACTIVITY DIAGRAMS

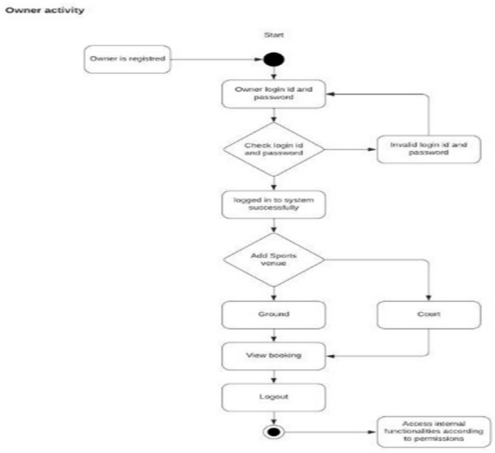
A. *Admin Activity*



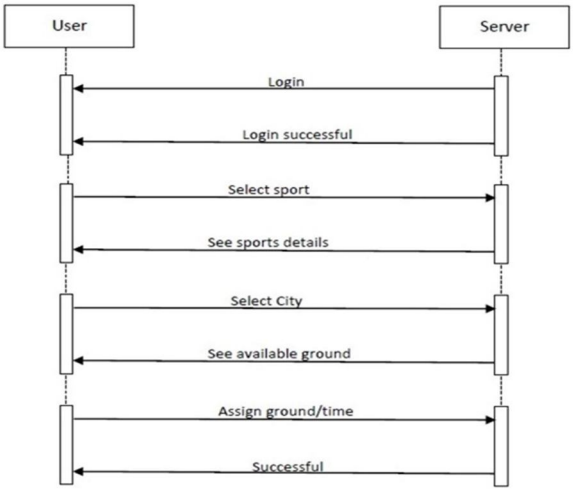
B. *User Activity*



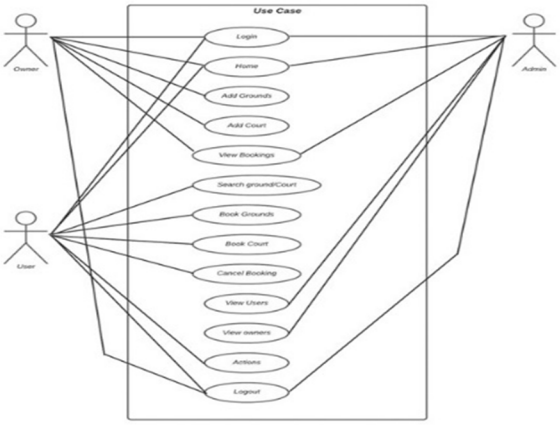
C. Owner Activity



D. Sequence Diagram



E. UML Diagram



V. CONCLUSION

Turf Tracker Application this project Sends message reminders to owners and users whenever slots are booked, canceled or rescheduled. And your users can easily and securely authenticate themselves by linking their existing service by using a password. Turf booking can be done just by sitting at home, Saves time (availability of all ground at single platform). Easy to access the system anywhere and anytime.

Turf Tracker Application involves various factors that contribute to its overall cost estimates. The complexity of features, technology stack, development team, data integration, UI/UX design, testing, maintenance, marketing, regulatory compliance, and market analysis all play significant roles in determining the budget required for the project.

Careful consideration and planning are essential to ensure that the application meets the needs of turf managers effectively while being financially viable. Investing in robust features for risk assessment, proactive alerts, data analysis, and decision support can enhance turf management practices and contribute to improved turf health and quality.

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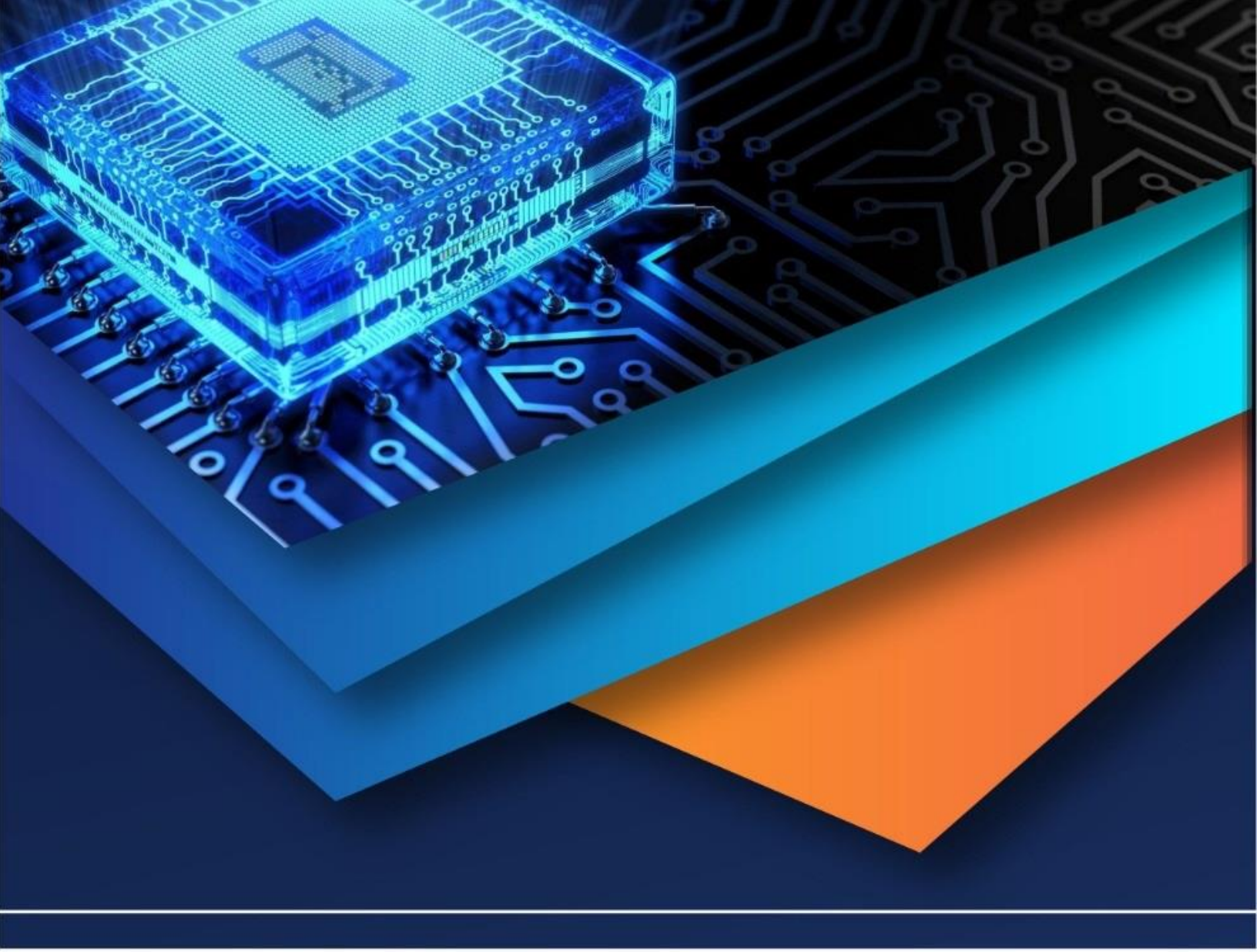
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