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Empowering sports enthusiasts and facility owners: An online sports field booking system for Bhutan

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Abstract

With the country's growing interest in games and sports, it is observed that there is a need for efficient sports field management. This project introduces an Online Sports Field Booking system, with an aim to have efficient sports management. The study identified the challenges posed by manual data recording and the absence of a centralized system. Therefore, our web-based solution which utilizes the Laravel framework, PHP, and MySQL for efficient backend operations aims to overcome these challenges. It employs an iterative development approach, the system allowing users to effortlessly check real-time field availability, search based on criteria such as field name and location, and effortlessly book sports facilities. Through iterative cycles of analysis, design, implementation, and evaluation, the project successfully overcame challenges, reducing risks and ensuring a high-quality system. This initiative not only addresses the growing demand for sports facilities in Bhutan but also aligns with the nation's technological progress, offering a user-friendly platform for both sports enthusiasts and facility owners/managers. By providing real-time updates and customer support, the Online Sports Field Booking system contributes to optimizing facility usage and enhancing overall customer satisfaction, and ultimately promoting an improved and connected sporting community in Bhutan.

Keywords— Bhutan, Facility Management, Iterative Development, Laravel Framework, Online Sports Field Booking, Web-Based Solution

1 Introduction

In an era dominated by digital transactions and online services, sports management is experiencing a transformative shift towards digitalization. Bhutan, as a technology-embracing nation, stands composed to capitalize on this trend by enhancing accessibility to sports facilities through innovative online solutions. Previous efforts in this domain have highlighted the growing demand for efficient sports field management and the flow in health-conscious lifestyles and growing interest in sports have led to an increased demand for well-equipped sports fields.

However, the lack of a centralized system and the manual recording of field bookings have posed significant challenges for both sports enthusiasts and facility owners in Bhutan. Despite Bhutan's enthusiasm for sports and technological progress, challenges continue in effectively connecting sports enthusiasts with available facilities. The absence of a centralized platform creates difficulties in accessing real-time information on field availability, hindering the optimization of sports facility usage and frustrating potential users. There exists a system namely; Tsem User and KayDee Futsal but both of these systems lack core functionality and efficiency. As for the Tsem User it lacks functionality since the user is not able to sign up for the system. Likewise, the KayDee futsal is a web-based platform but it lacks efficiency since the focus is specifically only on futsal, not any other sports. And this platform is only for the particular owner. Moreover, the location of the field and field details are left unknown to customers.

To address these challenges, our project introduces an Online Sports Field Booking system personalized to the unique needs of Bhutan. The Online Sports Field Booking (OSFB) system is a web-based application that caters to sports enthusiasts and field owners throughout Bhutan. This platform offers convenience and efficiency by allowing users to access services and register with various field owners across the country. Users can view and book sports fields at their preferred time and location, eliminating the need for manual booking processes.

Using the robust Laravel framework, alongside PHP and MySQL technologies, the iterative development method was adopted to create an all-in-one user experience. The iterative development process employed in creating this solution involved breaking down complex problems into manageable parts, leading to a robust and adaptable system. Through a careful process of analysis, design, implementation, and evaluation, the team precisely made a platform that empowers users to effortlessly navigate and book sports facilities in real time.

The culmination of our efforts is reflected in the achievement of a comprehensive Online Sports Field Booking system that transforms the way Bhutanese sports enthusiasts interact with sports facilities. By providing a user-friendly interface, real-time availability updates, and robust customer support, our platform not only simplifies the booking process but also raises a sense of community among sports enthusiasts. Moreover, our project emphasizes the importance of integrating technology to optimize resource utilization and enhance overall customer satisfaction in sports management.

In summary, our work represents a significant step towards bridging the gap between sports enthusiasts and facility owners in Bhutan, offering a scalable model for sports management solutions in similar contexts worldwide. As we embrace the digital age, the integration of innovative technologies in sports management emerges as a fundamental driver of community engagement, health promotion, and societal well-being. This research holds relevance for the wider research community by showcasing the effective implementation of a web-based solution tailored to the specific needs of a region experiencing a flow in sports interest.

2 Related Work

In Bhutan Sports, Baseline Survey conducted in 2010 [1], it was revealed that the majority of sports fields in Bhutan are reserved manually by individuals due to the absence of a dynamic booking platform. The survey also highlighted the need for additional infrastructure facilities to support sports, as well as the initiation of coaching and skills development programs and the organization of sports through the establishment of sports clubs and associations. Also, [2] reported that Tenzin Sports Complex (TSC), the only private sports complex in Bhutan located in Serbithang, has gained recognition since its opening to the public in August of the previous year. TSC boasts an indoor FIFA-certified futsal Astroturf, which has been generating substantial income for the complex since 2019. However, this survey indicates that private and popular venues receive more recognition compared to others that go unnoticed.

In the face of contemporary challenges, sports have become an irreplaceable element in upholding

public health. [3] shows that the significance of exercise as a fundamental support for public health is gaining growing relevance in the sphere of increasingly busy lifestyles and unbalanced diets. As per [4], Bhutan has been showing keen interest in sports with wholehearted support from organizations such as the Bhutan Olympic Committee (BOC). Despite the considerable number of facilities being constructed; while some are in the planning stage, Bhutan currently lacks online platforms for efficiently accessing those facilities. There are minimal online platforms in Bhutan, such as KayDee Futsal [5]. However, this system primarily offers only basic features like displaying rates, timing, arena details, and location details. Furthermore, it lacks diversity in its offerings, focusing solely on futsal field booking. Notably, they lack advanced functionalities such as automated facility booking and online payment processing which are actually crucial features for efficiency and user satisfaction. Hence, we have created this Online Sports Field Booking (OSFB) system that not only supports online booking of the facilities but also provides a diverse range of options for various fields, ensuring a comprehensive solution to meet user satisfaction.

Initially, the team aimed to develop a mobile app, but developing an app for cross-platform seems to be difficult for deploying in a short duration as learned in [6]. Therefore, this system was developed as a web-based application using the Laravel framework of PHP programming language along with the MySQL database. According to [7], Laravel is an open-source web application framework, written in the PHP programming language, renowned for its simplicity and built-in features beneficial for managing common online application development requirements.

3 Methodology

The methodology incorporated was iterative methods, which is also known as the iterative process or iterative design. It is a problem-solving approach that involves breaking down complex problems into smaller, manageable parts and solving them through a series of iterations. It is characterized by repetitive cycles of analysis, design, implementation, and evaluation, with each iteration building upon the previous one. The Online Sports Field Booking (OSFB) system is a web-based application, developed using an iterative method as represented in Figure 1.

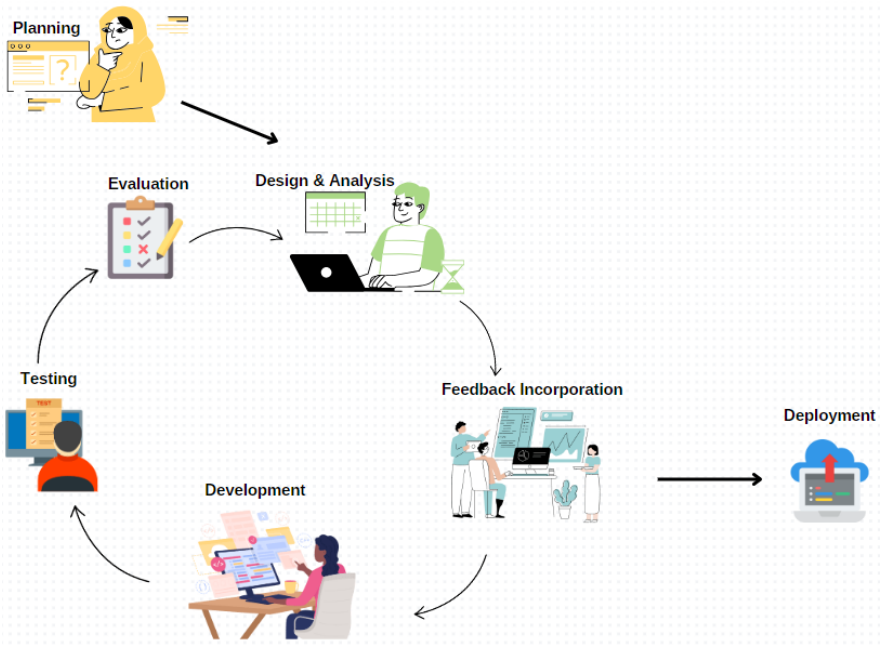


Figure 1: Iterative process

The team first did findings on the existing systems, then analysis was done to find concrete

solutions that suit the project objectives. After the analysis, the existing system was subjected to an iterative approach for the development process. Each iteration was built upon the previous one, allowing for continuous improvement and flexibility of the system.

In the analysis phase, the requirements were collected and analyzed. From the analysis, the reports went through the design phase where the team created a use case diagram as shown in Figure 2 representing the interaction between the system and users.

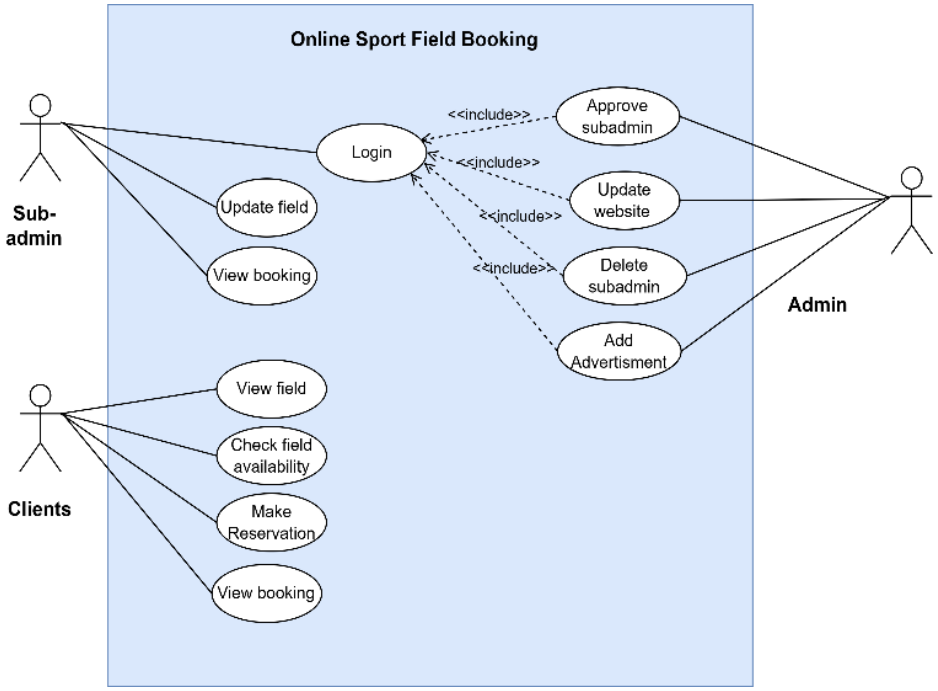


Figure 2: Use Case Diagram

This system is developed using the Laravel framework where MySQL was employed as a database. The database was designed in the design phase as depicted in Figure 3 with five entities and their attributes.

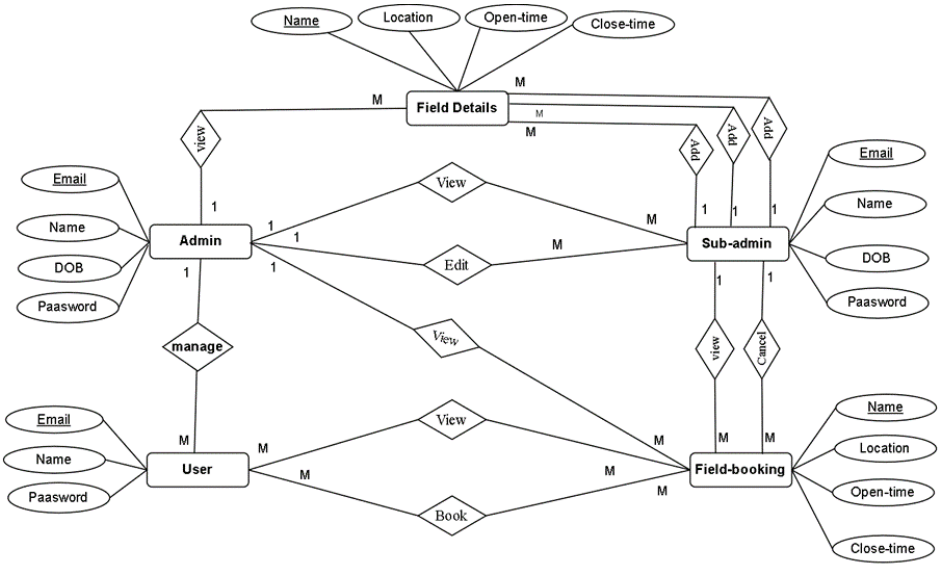


Figure 3: ER-Diagram

4 Result

The Online Sports Field Booking system provides booking facilities for various fields under different owners. It enables users to conveniently book various sports fields owned by different individuals or organizations. The system offers an integrated platform for field owners to manage their properties. Owners can update availability, set prices, and monitor bookings through a dedicated dashboard as shown in Figure 4.

Field Name	Name	Dzongkhag	Gewog	Sport	Price(Nu)	Action
JNEC Sport Complex	Dreamy	Samdrupjonkher	Dewathang	Basketball	1000	View
Changjalu Sport Center	Karma Jigme	Thimphu	Olokha	Basketball	2000	View
Bhutan Badminton Federation	Benetia Gurung	Thimphu	Babena	Bedminton	5000	View
Tensung Ground	Thinley Namgyel	Chukha	Phentsholing	Tennis	5000	View
Karma Sport Center	Chencho Chimi	Trongsha	Nubi	Tennis	2000	View

Figure 4: Field Management Dashboard

The system also simplifies the booking process, allowing users to easily select their desired field, date, time slot, and duration. The system shows real-time availability updates to ensure that users can make informed decisions when securing their preferred slots and make hassle-free bookings as shown in Figure 5.

Email	Phone	Sport	Open	Close	Description	Action
05210248.jnec@rub.edu.bt	17926349	Basketball	08:00	18:00	For 2 hours match We charge Nu:1000	Book

Booking Information

Name: karma
Date: 2023-05-29
From: 13:00:00
Till: 15:00:00

Name: Karma
Date: 2023-05-29
From: 16:00:00
Till: 18:00:00

Figure 5: Booking Page

5 Conclusion

The Online Sports Field Booking system offers a promising solution to the challenges faced in managing and promoting sports field bookings in Bhutan. By leveraging modern technology and the extensive adoption of online services, this system modernizes the process of reserving and managing sports facilities. Through real-time availability updates and user-friendly interface design, the system seeks to enhance convenience and accessibility for both sports enthusiasts and facility owners. Developed using the Laravel framework and employing methodologies such as an iterative approach, the system optimizes the utilization of sports facilities and improves overall customer satisfaction. Further, the system can be made more dynamic in the process of booking where an owner can cancel the booking depending on the condition, update the facilities information in addition to field information and a payment system can also be integrated.

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