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BADMINTON COMMUNITY: A PLATFORM CREATED FOR BADMINTON ENTHUSIASTS

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Abstract

With the realization that most badminton enthusiasts have the same problems in locating a playing partner, scheduling a game and sharing information, badminton community sites are constructed to remedy these problems. Badminton is a very popular sport in Malaysia and most other places, but there is no centralized system to match players with skills like them, their location, and their availability. Conventional mechanisms like the chat groups or the informal networks end up in poor coordination and low participation in communities.

To address these problems, a badminton dedicated community platform that it shall propose in this project is an option that would enable users to sign up, send updates, make connections with other players, and book matches, as well as second-hand badminton gear sales. Discussion forums are also present in the platform in a bid to facilitate communication and exchange of experiences. This system will contribute to the general communication process in the badminton community and help to organize matches and find interlocutors more conveniently.

The technologies with the help of which the project is created include Spring Boot, Vue, MySQL, and Node.js. It will give a friendly web software that can enhance real time updates and that will help the user of the software to make their badminton engagement more efficient. With streamlined browsing capabilities and excellent

backend procedures, the consumer can enhance their involvement, server time, and generate better lines of social contact in the badminton environment.

The platform gives power to its users to explore a new form of taking charge of the interactions with their sports practice, making it healthier and connected to others. The system provides an entire digital experience that corresponds to the interests of badminton lovers through visualizing schedules, detailing user interactions, and even listing equipment.

1.0 INTRODUCTION

As the culture of healthy living forms up and sports are gaining momentum, this simple recreational and social activity is getting into sport now by day more people are joining badminton. Badminton is popular in Malaysia and most other countries because it is extremely affordable and accessible to a large range of individuals in terms of entry cost and age. Nonetheless, within the popularity of the sport, various issues continue to confront numerous badminton players in terms of coordinating of matches, matching partners, and availability of credible means in equipment provision and the transfer of expertise. The traditional method of communication is only across ad-hoc chat groups or off-line arrangements; these are not efficient and unstructured.

To take care of such matters and assist with the flourishing community of players, badminton community platforms were created. Here, individuals can sign up, state their skills level and availability and are matched automatically with the right partners. Moreover, members can participate in forums, discussions, announcements of games routes, buy, and sell second-hand equipment in a familiar environment. This makes it much more organized, interactive and fun.

Community platforms of badminton are normally designed on mobile applications or web platforms allowing the users to enjoy services any time anywhere. They lower the barriers to the process of team formation, organizing an event, and exchanging equipment making the overall user experience easier and encouraging an

active approach to the sport. These platforms offer a great solution to the problem of badminton enthusiasts who have one common space to play games and, consequently, decrease the excesses of time-consuming manual organization and promote a regular schedule of playing.

These systems particularly come in handy in case of urban settings where the players are not necessarily acquainted with one another. The support of real-time updates, notification systems, resourceful interfaces help the players to plan the matches faster, boost their performances in badminton and increase their social network. The possibility of searching either by region, time, or level makes the site compatible and stimulates long-time use.

This project is based on the proposal of creating the badminton community web platform based on Spring Boot, Vue.js, MySQL, and other newer technologies. This is to aim at providing flexible, interactive, and secure space where the user gets to be involved in the sport, managing their badminton related activities and letting them interact with individuals of the same interest. By the digital transformation of the project, the convenience and quality of the community badminton experience are to be improved.

2.0 LITERATURE REVIEW

More than 300 million badminton athletes in the world (WBF, 2021), and the digital space where they should be attracted using mobile applications must suggest the features of real-time communication, community building, and the possibility of offline activities. Despite this, studies (Sports Community Insights, 2023) indicate that 62 percent of the customers are unsatisfied with the existing platforms, especially in their matchmaking and second-hand trading features. More advanced types of technologies, such as real-time scheduling, partner suggestions involving artificial intelligence or virtual interaction features are suggested to raise the satisfaction of the user (Interactive Sports Technologies, 2023).

BadmintonCentral is a badminton-specific forum community. It has highly enriching categories of discussion, tournament update as well as sharing of files. Nonetheless, it does not have real-time event scheduling in addition to user profile matching, and inbuilt trading systems. It even has old interface, which is an obstacle to interaction.

MeetUp helps one to establish sports groups and local events. It provides the user with easy-to-use interfaces and communication tools and is good to use in basic organization. However, it is general and does not have main features like match makers skill level and second-hand trade facilities.

ShuttleTime was a product developed by BWF concentrating on educational material pertaining to badminton coaching. It provides videos, trainers and beginners lessons and materials. However, it still does not support social networking features, does not allow its users to establish events, and does not offer modules to trade, so it is not very favourable when it comes to community-building.

3.0 METHODOLOGY

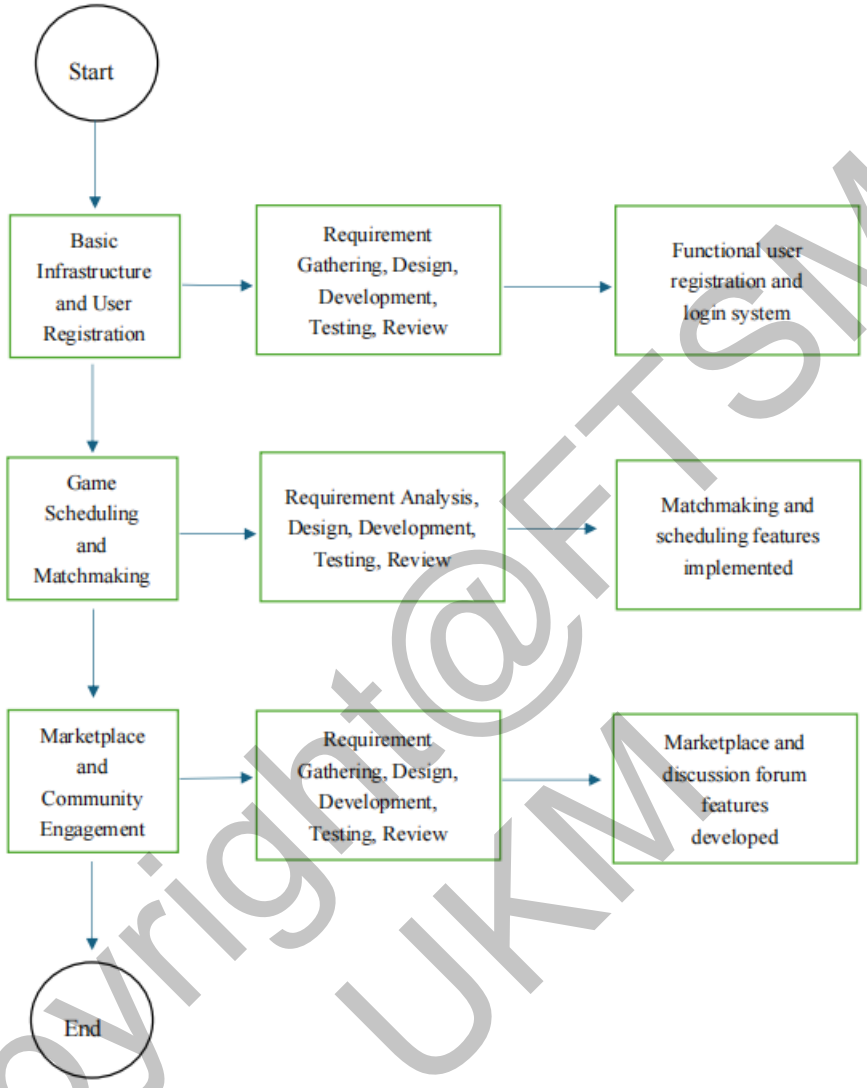

Figure 1.1 BADMINTON COMMUNITY Flowchart

As shown in Figure 1.1 BADMINTON COMMUNITY Flowchart the development of the Badminton Community Platform will occur in an iterative development cycle – iteration development cycle was selected based on flexibility to accommodate changing requirement and user feedback. This approach ensures that the development team is able to develop, test and enhance the platform in phases hence providing users with the best platform. The iterative model encompasses successive cycles, and each cycle is expected to create a set of features or enhance existing ones

4.0 TESTING

4.1 FUNCTIONAL TESTING

The functional testing was implemented to ascertain whether all modules of badminton community platform were doing what they are expected to do and that they abandoned the system requirements. Unit testing confirmed that the remaining main functions, namely user registration, login, profile management, posting, match scheduling and equipment listing, were all functional and ended with no errors. The tests conducted on integration ensured that there are no glitches on the interactivity with the different modules such as message posting, comment publishing, and matching with users.

The system testing encompassed the entire user paths, which included joining the discussion forums, making bookings, viewing teammate details and exchanging them on a second-hand list of equipment. The test cases were run without hitches and modules communicated well both with backend and frontend parts.

In addition to this, target users of badminton players and club members were used in acceptance testing. They scanned the precision, usability, and the navigation of the interface of the application. The functional stability of the platform and its conformity with the expectations of the users in a real-life environment were confirmed since all 20 predefined test cases were successful.

4.2 NON-FUNCTIONAL TESTING

Non-functional testing was aimed at testing the system along performance, security, usability and compatibility. Performance testing showed that the web application had responsive load time during the usage time concurrently, particularly at the peak, where the web application was experiencing post submissions and search requests. The connection to the database behind was also optimized to allow frequent requests with the least delay.

Security was verified by usage of sessions and administrative access limits and verification of accounts. The credentials of logging in were also encrypted and features to moderate content and behaviour of users were also incorporated.

Testing of usability showed a high level of user satisfaction, especially in the clear design, the easy navigation system and the real-time notification mode. Match reminding, itinerary of team-mates, and systematic formats of postings were a favourite among the users.

Compatibility testing has been successful to ensure that it functions well with the major web browsers and devices, that is, desktops, tablets, and smartphones. This country has no layout inconsistencies and data rendering problems. In general, the system met all the non-functional requirements in accessibility, responsiveness, and user-cantered approach design.

4.3 TESTING AND RESULT

The test was done on a laptop with Windows 11 installed that uses an Intel Core i7 processor, 16 GB of RAM memory and a 512 GB SSD. Both the chrome and Firefox browsers were tested to ultimate compatibility and responsiveness. The backend framework, frontend, and the database selection were Spring Boot, Vue.js, and MySQL respectively when deploying the application. This was done on this environment to simulate real-life usage conditions to verify stability, responsiveness and real time interaction with a user.

With the successful login using a registered email and password, the system will confirm the identity and redirect them to the main dashboard of the company. In this case, there is an opportunity to surf discussion topics, preview tournament games, and respond to messages in the community. By use of authentication, we can assert that our personal data such as the information in the user profile and records of posts after the data is properly retrieved, are displayed correctly even over multiple sessions and devices.

By pressing the Post button user can create new posts on the forums and specify the title, description and choose tags like a location or a game type. RESTful API accepts data to the backend and calls it as an update to the database with interface updating automatically without a refresh. A user can also comment, like or delete posts according to the permission and this will make interaction of the badminton fans be in real time.

Besides, the system enables users to reserve match events, find teammates, and explore second hand badminton equipment. Entered data is kept safely and automatically presented, which proves the successful work of data handling and user engagement processes. As per the results, the badminton community site platform performs its ultimate goals of streamlined interaction, information sharing and responsive performance in terms of different devices with different user types.

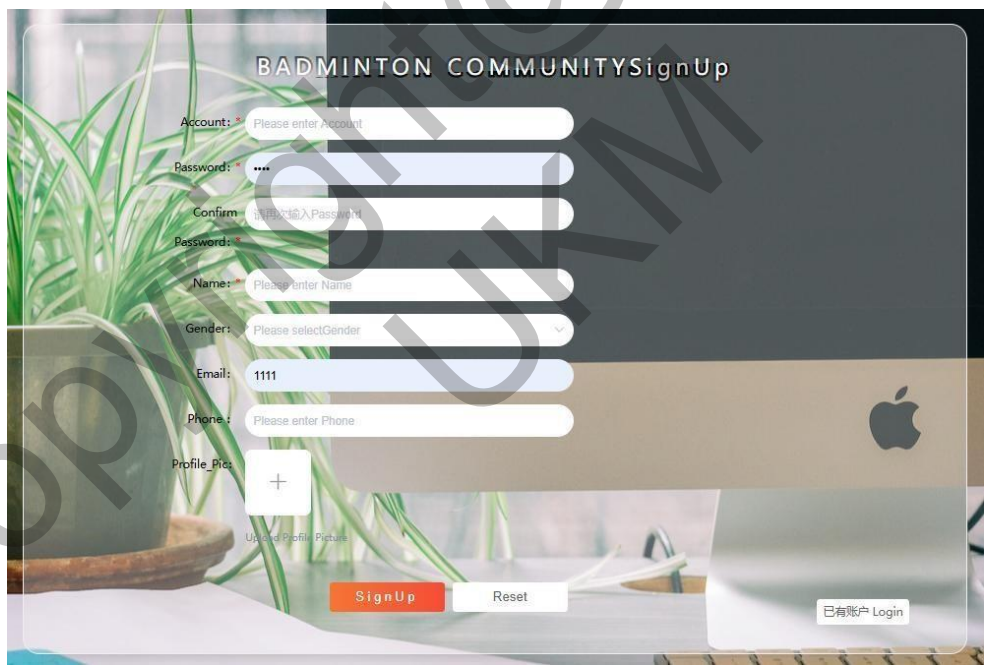

Figure 1.2 User registration interface

From Figure 1.2 User registration interface we can see new users can register through this interface. Account, Password, Confirm Password, and Name are mandatory items during registration. Other options are optional and will not affect registration.

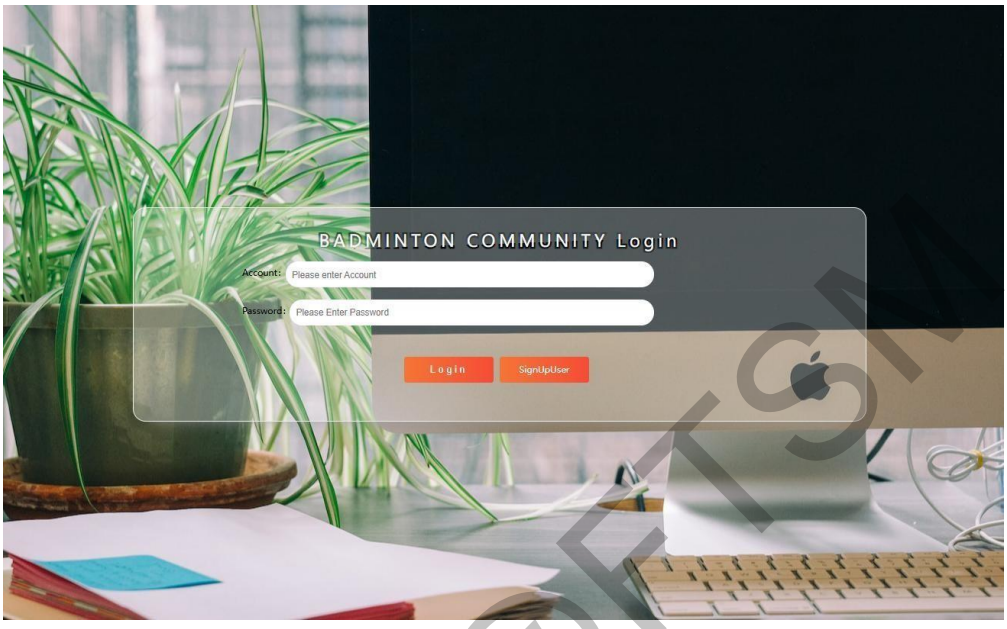

Figure 1.3 User login interface

In this Figure 1.3 User login interface, users can log in by entering Account and Password.

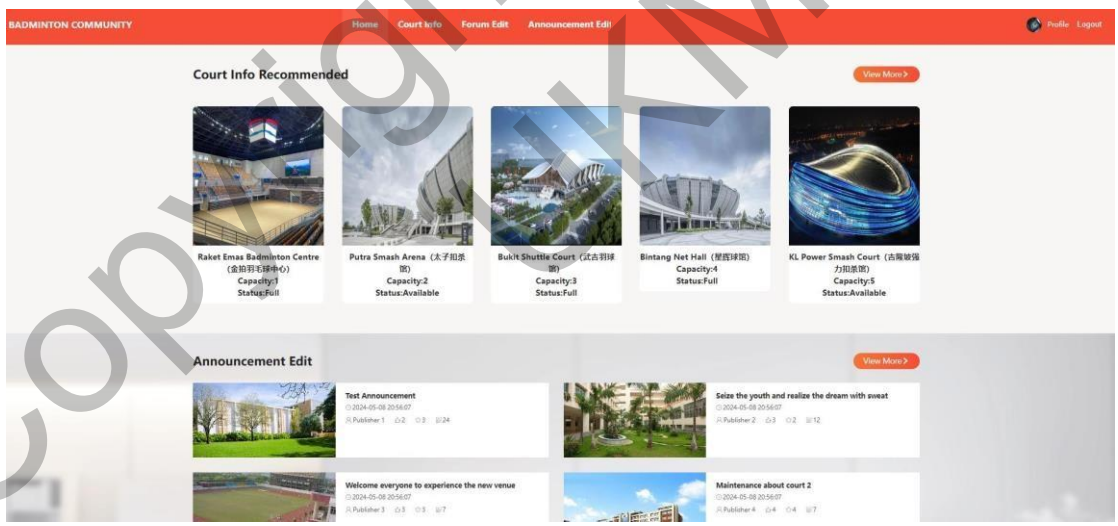

Figure 1.4 Main user interface

The Figure 1.4 Main user interface is the homepage of the Badminton Community platform, featuring two main sections: "Court Info Recommended" and "Announcement Edit." It displays a selection of recommended badminton courts with basic details like name, capacity, and status, as well as recent announcements posted by users. The layout

includes navigation options, profile access, and "View More" buttons for extended content browsing.

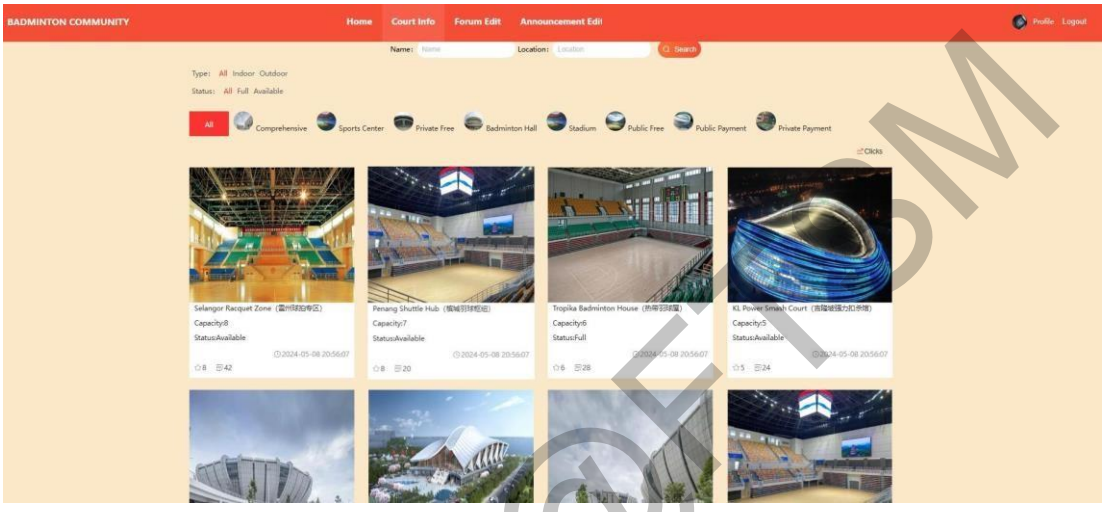

Figure 1.5 Venue General Interface

The Figure 1.5 Venue General Interface is the Court Info page of the Badminton Community web page, where several badminton courts are shown using a card type design. It has a top menu bar, user profile availability, and the filtering of types, status, name, and location. The users can see the images of the venues, the name, the capacity, whether the venue is available, the timestamps, likes, and comments posted. Quick filtering is done using category icons, which is based on the type of venue, and a search bar is present, which performs a keyword-based search. It has been structured in such a way that the page can be browsed easily, important details in the court can be retrieved easily and the user can like and comment on it.

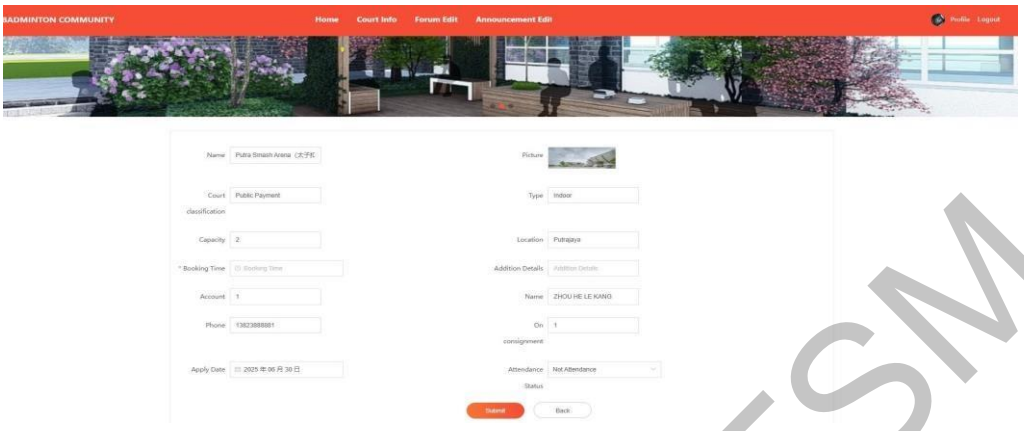

Figure 1.6 Venue reservation interface

The Figure 1.6 Venue reservation interface is their court booking submission page named Badminton Community. It enables the filling of details like the name, classification, type, capacity, location, booking time, name of the applicant, phone number and attendance status of the courts. It includes a picture preview of the place, and a user can submit or back out using the buttons at the bottom.

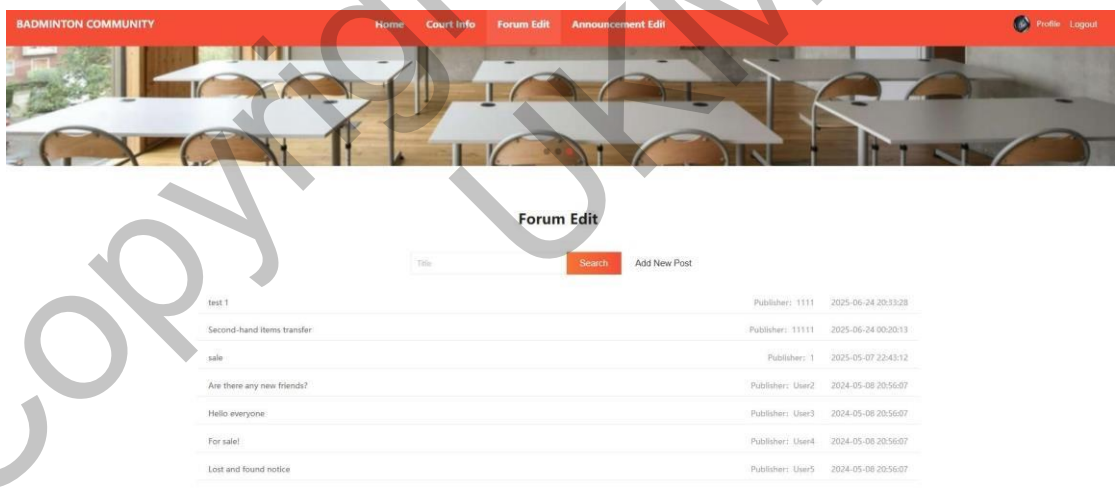

Figure 1.7 Forum interface

The Figure 1.7 Forum interface is forum portion of the Badminton Community facility. It enables the users to read, search, and publish the post. The page community will show the available titles of discussions and that of the publisher and the time of posting with the capability of us interacting with each other, updating each other, searching mates and second-hand goods.

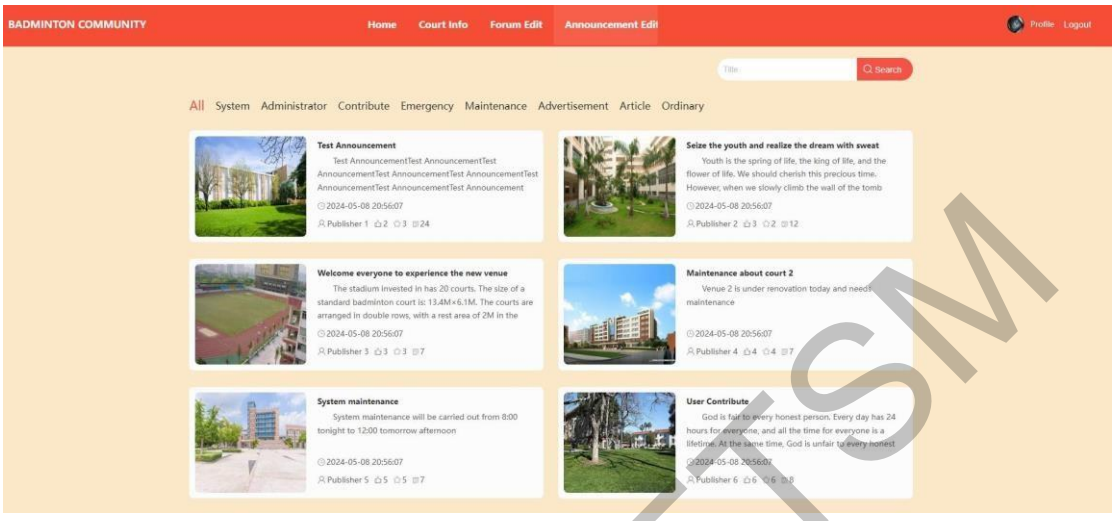

Figure 1.8 Announcement interface

The Figure 1.8 Announcement interface is the Announcement page of the Badminton Community site where members can read and view categorized announcements under System update, maintenance, contributions and general articles. In every post, there is a picture, a title, and a summary, as well as a timestamp, publisher name, and interaction data such as likes, comments, and views. Top filters consist of viewing the announcements by category or by their title.

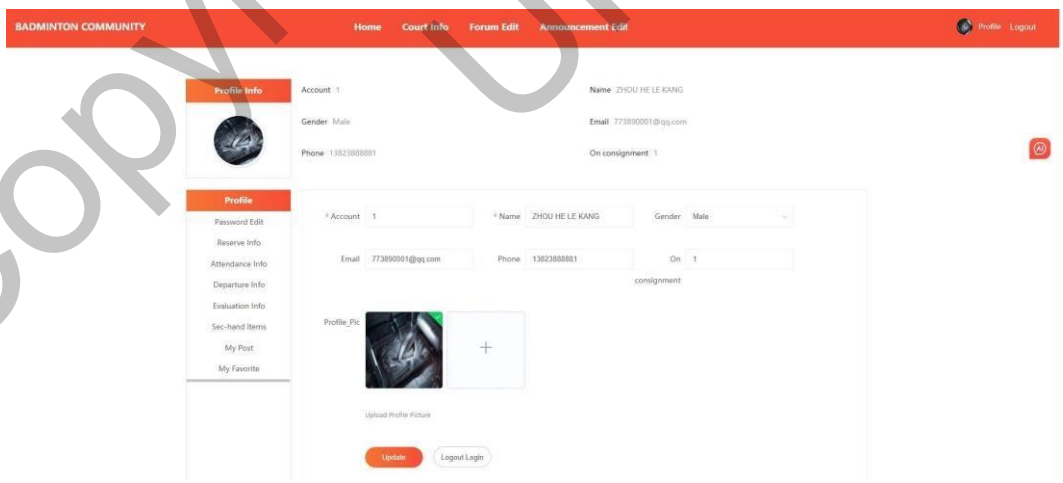

Figure 1.9 Personal information interface

The Figure 1.9 Personal information interface is the user profile management page of the badminton community website. The page displays the user's personal information, including account number, name, gender, email address and phone number, which can

be modified by the user through the edit below. The user can edit or upload a profile photo and change the consignment status.

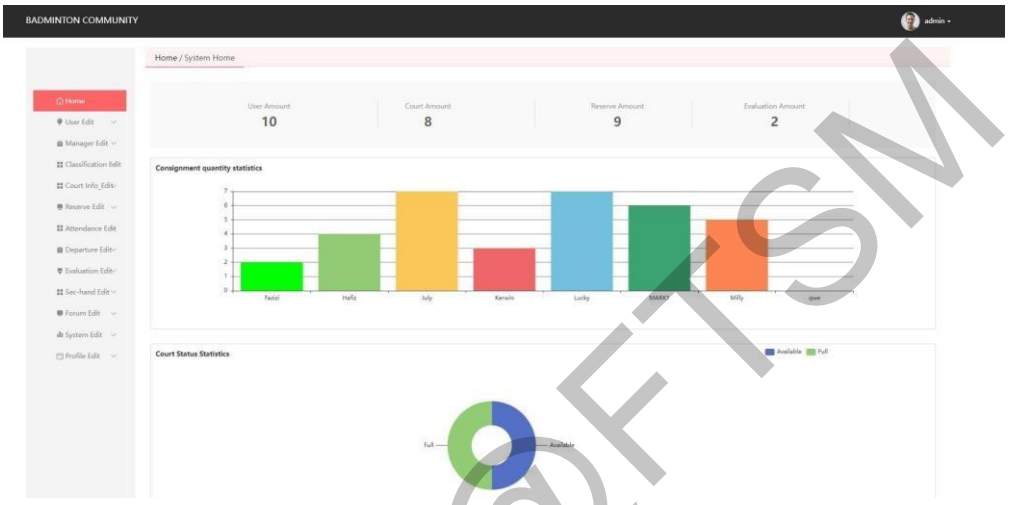

Figure 1.10 Administrator's main panel

The Figure 1.10 Administrator's main panel is the Badminton Community System Management Panel. It provides an overview of key metrics such as the number of users, number of courts, bookings, and reviews. Below it is a bar chart showing consignment statistics for each user, and a pie chart showing the distribution of badminton court status (available and full).

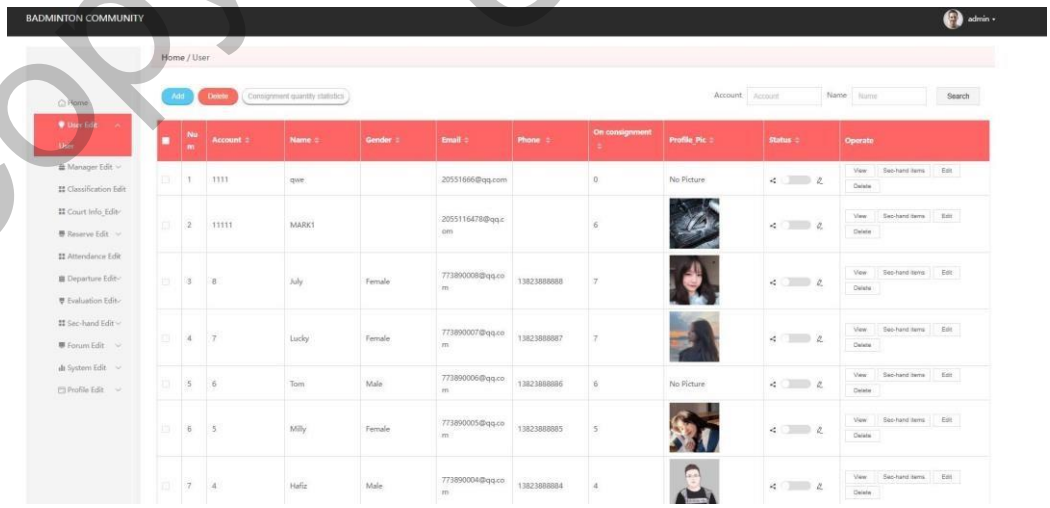

Figure 1.11 Management user information interface

The Figure 1.11 Management user information interface is the user management interface of the badminton community management system. It displays a list of all registered users and their information, including account, name, gender, email, mobile number, consignment quantity, avatar, setting status, and operation buttons (view, edit, delete, and second-hand items). Administrators can search users by account or name, add or delete users in batches, and view consignment quantity statistics.

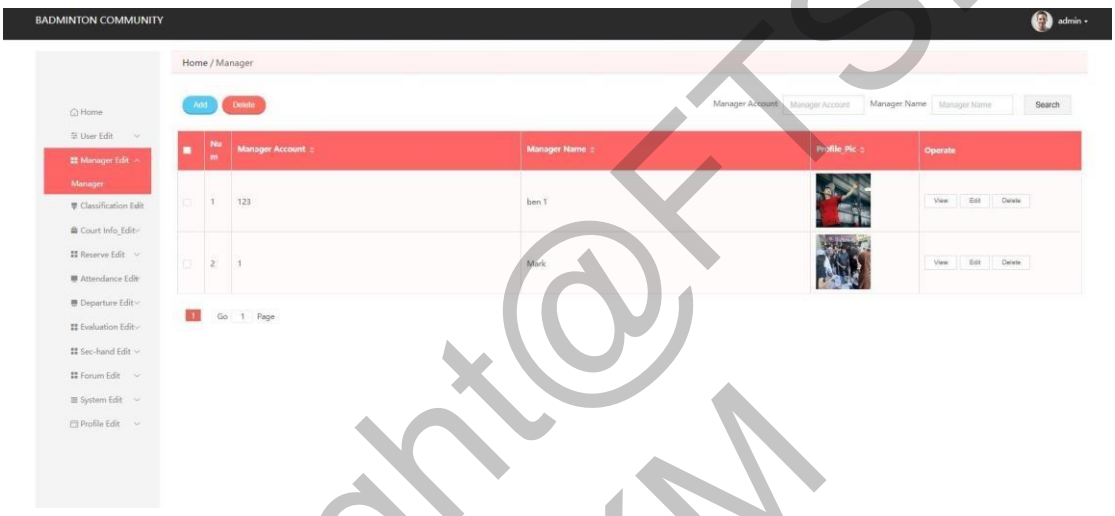

Figure 1.12 Manager Information Interface

The Figure 1.12 Manager Information Interface is the administrator management portal of badminton community management system. Here administrators can view, add, edit or delete administrator accounts. Each administrator has an account, a name and avatar displayed in the table and the table gives an operation button to view, edit or delete them.

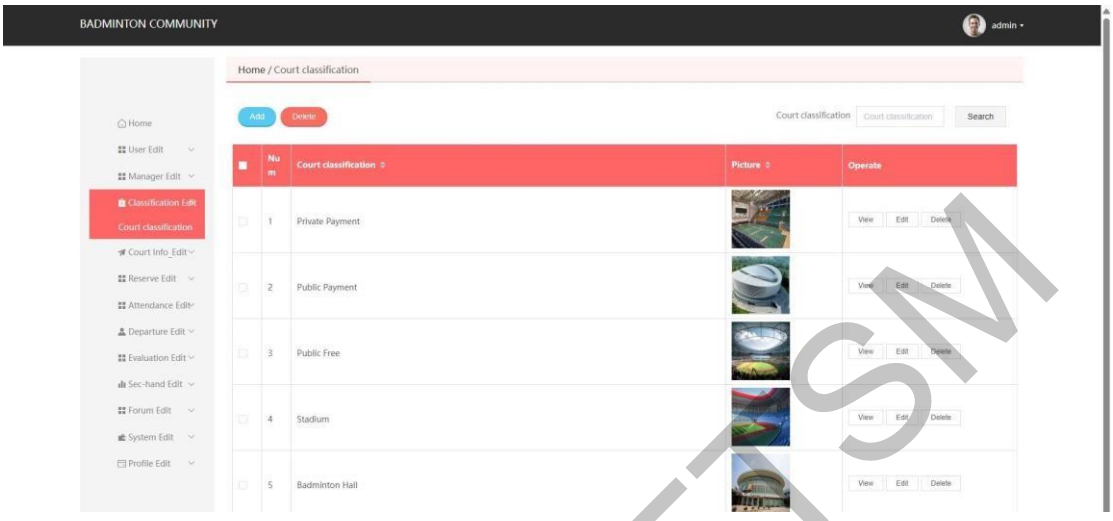

Figure 1.13 Site classification management interface

The Figure 1.13 Site classification management interface is the interface of Venue classification management at the badminton community system. Administrators are able to categorize and modify venues and keep them. These types of classification are the following: " Private Payment ", " Public Payment ", " Public Free ", " Stadium " and " Badminton Hall ". Every category has a relevant picture and offers the possibilities to view, edit and delete.

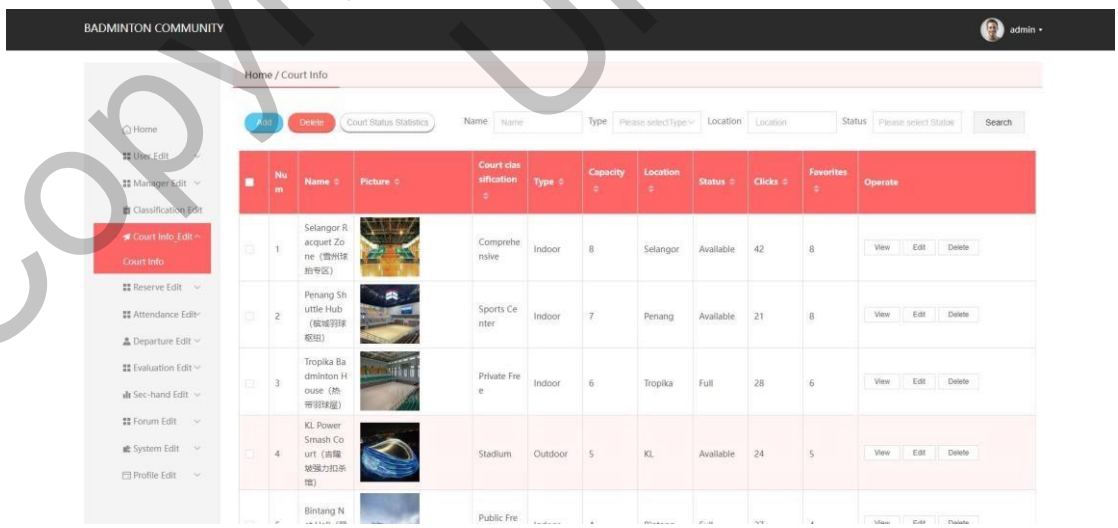

Figure 1.14 Site information management interface

The Figure 1.14 Site information management interface is a badminton community venue information management interface that is employed to control detailed information of

all badminton venues in the backstage. The interface contains the count, name, drawing, category, type (Indoor/Outdoor), capacity, location, current status (Available/Full), views (Clicks) and favourite (Favourites) of every venue and has the options of View, Edit and Delete.

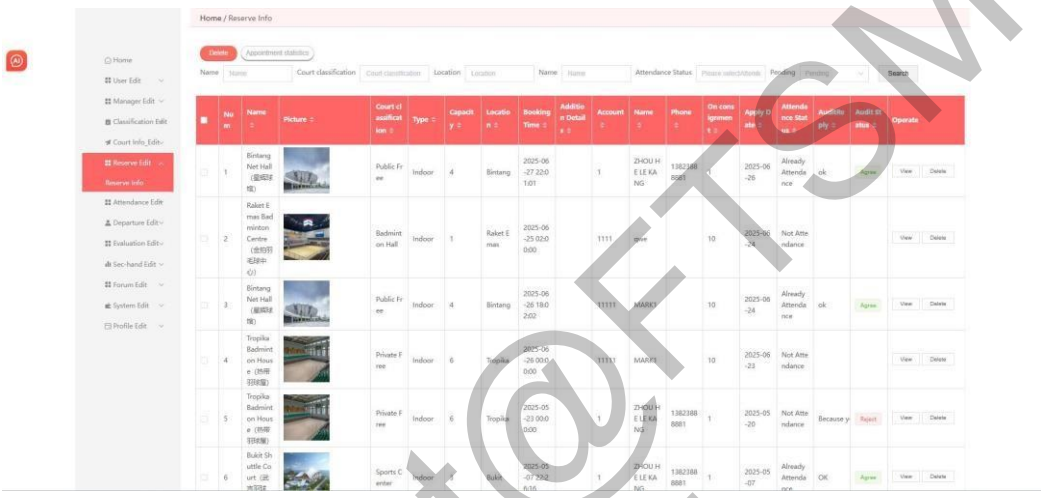

Figure 1.15 Venue reservation information management

The Figure 1.15 Venue reservation information management is the badminton system reserve Info management page and in this page the administrators may view courts reservation records and can manage it. In every entry, the booking number, court name and type, number of capacities, location, time of booking, user account and name, contact numbers, consignment goods, date of application, attendance status, audit response, and approval status are reflected. The interface is based on filtering with many criteria which can be court type, location, and attendance status. The right side contains buttons which support management operations such as viewing or deleting records.

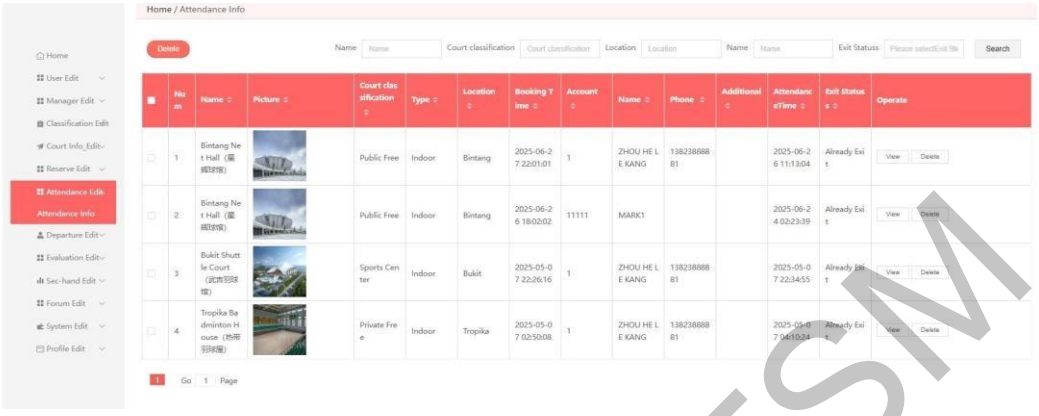

Figure 1.16 Attendance Information interface

The Figure 1.16 Attendance Information interface is the Attendance Info screen of a system known as Badminton Community. It shows the attendance of the users to the booked courts with some details like the court name, classification, type, position, the time of the booking, the time of the attendance, account details of the user, phone number, and exit status. The page can filter by different fields and enable the privileged user to view or delete certain records assisting to keep a proper record of what the user did and what areas of the facility were used.

Figure 1.17 Evaluation Info interface

The Figure 1.17 Evaluation Info interface is the Badminton Community system Evaluation Info interface. It shows the user comments on court bookings containing the name of the court, its category, its location, booking and review time, the username to the account, phone number, and the level of satisfaction.

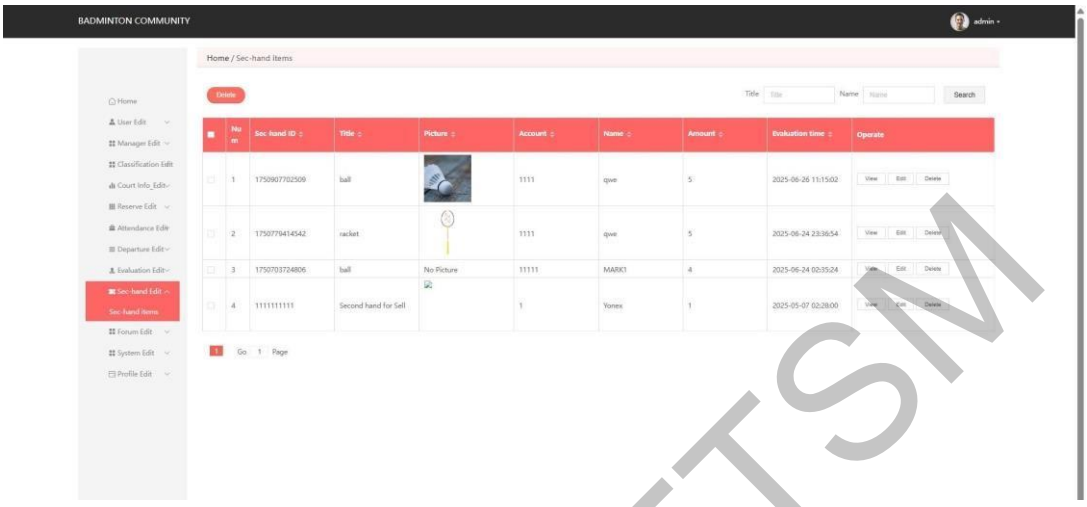

Figure 1.18 Second-hand interface

The Figure 1.18 Second-hand interface is Sec-hand Items interface in the community system of Badminton. It enables the user to handle second-hand product advertisements including shuttlecocks and rackets, which will contain the data involving the item ID, the title, the picture, the seller account and name, the price and the evaluation time. Admins have an opportunity to see, modify or remove listings, and searches are also provided to find influential posts quickly.

5.0 CONCLUSION

The project has been able to design a user-based badminton community site that suits both badminton users of all calibres. The system fosters effective organization of the match, smooth communication using forums and sharing of the second-hand equipment advertisements easily. The application is developed on Spring Boot, Vue.js, MySQL and Node.js, and organized according to MVC design pattern and focused on modularity, maintainability, and scalability of further development.

Some of the strengths that are evident in the platform include user-friendly navigation, content updates in real-time as well as fluidity across various devices. The capability of the match scheduling, posting comments, and matching players enables a user to respond to the posts in a more active manner and plan badminton activities within

a short period. The combination of the forum activities and trade sections introduces the element of community involvement, which makes the badminton world closer.

But there are limits to the system. At present, it exists exclusively as web-based solutions and lacks dedicated mobile devices. It also does not have real-time chats or notification, something which can be used to enhance user involvement. Also, the presence of moderation tools and content reporting buttons is scarce, which may adversely impact community management with an increase in the number of users.

In the future, it might be improved with mobile app (Android and iOS) releases, live chat system, user rating and verification to avoid scammers, and third-party APIs that allow searching of venues based on location. Such additions will focus on increasing user confidence, expanding access, and assisting in the mission of the platform to feature a fully digital hub of badminton fans.

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Finally, I would like to thank my family (that I love so much) who always loved, supported and understood me. This is because of their support which motivated and provided me with the energy to see it through to the end.

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