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## **MOBILE APPLICATION DEVELOPMENT FOR BOOKING A FOOTBALL STADIUM: A CASE STUDY OF BRIDGE 914 FOOTBALL STADIUM**

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### **Abstract**

The objectives of this research were to study the demand for mobile application for booking a football stadium and develop a mobile application for booking a football stadium. This is a research and development. The researchers collected data about users' demand and developed a mobile application for booking a football stadium by using Android Studio, Xampp, and Database Browser. In order to collect data of users' demands, the researchers selected 30 samples by convenience sampling. Research tool was questionnaires which was generated by the literature review and related research. The stages of the research compose feasibility, analysis, system analysis, and development. The research result was found as follows: 1) The study analyzed data of samples' needs of the running applications. Topics that users demand the most is you want the system to the application layer to book a football stadium process quickly and easily. They also want a system of application for booking a football stadium with football stadium's data release. 2) The development of the system will record the reservation of the football stadium rental time, resulting in the operation of the stadium reservation management system can make the stadium reservation of administrators and users very convenient and fast.

**Keywords:** Mobile application development, Booking, Football stadium

## **Introduction**

Currently, the football stadium business is growing, resulting in an increase in the number of football stadiums for rent today, more than a hundred are scattered throughout the Bangkok area and its vicinity area. Consumers have more choices for deciding on a course by considering various important factors in terms of the stadium, time, attractive price, and location of the stadium and the promotion of marketing or promotions (Post Today, 2008). Therefore, these businesses are currently competing hard by using the above strategies to attract players to use the service and to book the rental time of the football stadium of the customer, the lessor will record the time reservation information in the logbook, which often causes problems in checking and searching the rental time reservation information, causing delays and the possibility of data errors, as well as the risk of data loss.

Therefore, researchers proposed to apply the existing technology to develop a football stadium reservation system which users can choose and book football stadium through the application. The researchers utilized MySQLite for database storage and Android Studio for application development. Researchers improved the management system by developing a football stadium rental time reservation system that results in more convenience and speed.

## **Research Objectives**

Objectives of this research were to study users' demand in booking for a football stadium and develop a mobile application for booking a football stadium appropriately.

## **Related Concepts and Theories**

### **Mobile Applications**

Mobile applications are the development of applications for mobile devices such as mobile phones, tablets, and the program will help meet the needs of consumers and also encourage phone users to use more easily.

### **Types of mobile applications**

The application of mobile will be applied to businesses and organizations that are emerging today, as well as to meet the needs of users to be as convenient as possible through smartphones. Types of mobile application are as follows: 1) mobile application for real estate, it is use to collect customer information, reservation, etc. 2) mobile application for tourism, regarding tourism, hotels, tour companies, can view accommodation reservation information, including MICE groups that can create a system for registration, payment, conferences, seminars, and exhibitions, 3) mobile application for restaurant, the restaurants provide modern food menu with advanced technology, 4) mobile application for retail or wholesale, regarding the sale of goods and services in retail and wholesale, or sales through agents, salespeople, etc. 5) mobile application for education, the application can support education of educational institutions, libraries, training centers, preparation of teaching materials, etc. 6) learning management system mobile application for healthcare, regarding medical, public health remote consultation, 7) mobile application for logistics, and 8) mobile application for government, regarding presentation of information, activities of various agencies in terms of more modern and interesting format.

### **Football**

Football or soccer is a team sport played between two teams of 11 players using a ball. The goal is to score by using your feet to get the ball into the opponent's goal. In normal play,

the goalkeeper is the only player who can use his hand or arm on the soccer ball, with the exception that he is not allowed to go outside the penalty area or box. The other players will use their feet to kick the ball to the desired position, sometimes using their body or head to intercept the ball in mid-air, with the team that can bring the ball into the opponent's goal more than the winner if the score is equal, but in some games where the score is tied in normal time, the winner must be called extra time and/or a penalty shootout depending on the rules of the tournament.

The modern rules of play are compiled in England by the English Football Association. In 1863, the Football Rules were created as a guideline for the current international football to be regulated by FIFA. The World Cup, which is held every 4 years.

### **Football in Thailand**

Football is the most popular sport in Thailand, having entered Thailand during the reign of King Rama V in 1897. On June 23, 1925, it was the first Asian country to become a member of FIFA, but it was a team that had not achieved any level of success in the past. However, having participated in hosting the 2007 Asian Cup, in the past, Thailand did not support professional footballers very much. From 2009, Thai professional football began to be alert because the Asian Football Confederation set regulations for each club to be registered as a juristic person, but there were clubs of state-owned enterprises that could not adapt, so the team had to be disbanded or sold. After the Thai Premier League 2009 began. More fans began to come to watch the game in the stadium. The salary of the players is higher, the management of each club is better, the Thai league has gradually developed to a level, resulting in the return of footballers who have gone abroad to play abroad because the remuneration is not much different. However, the national team's performance is the opposite because it takes time to adapt because in an era when our home league is not yet prosperous, footballers have a lot of time to prepare the team. But nowadays, there is hardly much time because the club calls for training for matches. Therefore, the players need time to adapt, but it is considered that Thai football has developed by leaps and bounds because after only 2 years, fans have turned to cheer for the team in their province more. The team spread more to other provinces, resulting in localism, which is why Thai football fans came to watch more and more football league games in the 1st and 2nd divisions. The public is more interested in watching the Thai national football team because Sico - Kiattisak Senamuang, who was the coach of the Thai national team from 2013 to 2017, was able to lead the Thai national team to win the gold medal at the SEA Games. The 2014 Suzuki Cup was also a success, which was also the first in 12 years.

### **Relevant Research**

Borwornpod Jindachuen (2012) developed an artificial grass football field management system. It was found that the system can fully manage the artificial grass football field business in all subdivisions for the artificial grass football field business. The staff of various departments of the stadium can manage their work well and the operators can analyze various data to plan and manage the artificial grass football field business effectively in the future.

Wanrueporn Yossakdacharoen, Thanyarat Thaosrivichai and Jesada Suksriwilaiikul (2011), students of Applied Computer Science, Faculty of Science, King Mongkut's University Thonburi have conducted a project on a mobile phone reservation and food ordering program for Android system. This program consists of two main parts: a) Restaurant Management Section, which allows restaurant staff to provide menu information and arrange tables for

customers who have made reservations, and b) Table Reservation and Food Ordering Section, which runs on Android mobile phones.

Suchada Palachaipiromsil (2015) studied the trend of mobile application usage, in which the trend of using mobile devices such as smartphones has increased dramatically in recent years, which is the result of the development of mobile applications and mobile phone technology from phone manufacturers, especially the development of mobile applications of various companies that compete to compete for one of the mobile application markets. As a result, many leading mobile phone companies have turned their attention to developing applications on mobile phones, believing that there will be a significant increase in download rates.

### **Research Methodology**

This is research and development. The researchers collected data about users' demand and developed a mobile application for booking a football stadium by using Android Studio, Xampp, and Database Browser.

#### **Population and samples**

In order to collect data of users' demands, the researchers selected 30 samples by convenience sampling method. Research tool was a questionnaire which was generated by the literature review and related research.

#### **Research Operation Stages**

There were 10 steps of the research operation as follows:

Step 1: Study the reservation problem of the football stadium to discuss with the project advisor and determine the target audience.

Step 2: Determine the topic to be studied to create the application.

Step 3: Research and related research. It is a detailed study of the concept of mobile application concept, football concepts and related research.

Step 4: Determine and plan the project scope, application access scope, scope of membership, and admin section scope.

Step 5: Collect user requirement data related to the issue or requirement defined in the Problem or Demand Determination stage from a trusted source. It collects comprehensive information to cover the problem or need, which makes it possible to summarize the solution or meet the need more completely.

Step 6: Study, analyze and design the application structure before starting the process of creating a mobile application for booking the Bridge 914 Football Stadium. The data is analyzed using a data flow diagram (Context Diagram and Dataflow Diagram), while the design uses Adobe Photo shop CS6 to show an overview of the entire workflow from the beginning to the end of the application.

Step 7: Develop the system The system development group has used Android Studio to develop the application according to the designed format.

Step 8: Verify the validity of the application. After the trial application is successful, the researcher has tried and checked the initial accuracy by verifying the accuracy of the stadium reservation and the display of the application. After ensuring that the application can be used well, the researcher presented the application to the stadium owner.

Step 9: Install the application on Android Studio to deploy the application.

Step 10: Evaluate whether the project has achieved its objectives or not, whether the application can be used in practice in order to use the results to increase quality and effectiveness.

## **Research Results**

### **General information**

The results of the analysis of the respondents' personal data in this study, which the number of 30 samples can be classified according to the following variables:

Gender: it was found that most of the respondents were male, 17 people, accounting for 56.7 percentages, and 13 women, accounting for 43.3 percentages.

Ages: it was found that most of the respondents were 26-30 years old, accounting for 10 people, accounting for 33.3 percentages, followed by 9 people aged 18 - 20 years, accounting for 30 percentages, and 21-25 years old, 9 people, accounting for 30 percentages, and 2 people under 18 years old, accounting for 6.7 percentages, respectively.

Status: it was found that most of the respondents had marital status, 12 people, accounting for 40 percentages, followed by 9 people with single status, accounting for 30 percentages, and 9 people with non-divorce status, accounting for 30 percentages, respectively.

Education level: it was found that most of the respondents had the highest level of education, namely 14 students with a bachelor's degree or 46.7 percentages, followed by 9 students with a bachelor's degree or less (30 percentages) and 7 students with a postgraduate level (23.3 percentages), respectively.

Frequency of football playing: it was found that most of the respondents had 1–2 hours/day playing time, 24 people, or 56.6 percentages, followed by 3–4 hours/day, 3 people, or 22.2 percentages, and more than 6 hours/day, 3 people, accounting for 22.2 percentages, respectively.

Football playing time: it was found that most of the respondents had a time to play football from 6.00 to 12.00 p.m. There are 21 people (70 percentages), followed by 6.00 – 12.00 p.m. (morning – noon) 3 people (10 percentages), and 12.00 – 6.00 p.m. (noon – evening) 5 people (16.7 and 12.00 – 6.00 p.m. (night – morning) 1 person or 3.3 percentages, respectively

### **User requirements for mobile application for booking a football stadium**

Based on the analysis of the application user demand questionnaire in booking the football stadium via mobile phones, smartphone, with a questionnaire from 30 samples, it was found that:

1. The application should be easy for users to use to book a football stadium. Users can access the reservation schedule information and status of user's booking easily. It should not be complicated.

2. The application users want the location of the stadium to be displayed to know the location of the stadium and how to get to the stadium.

3. Application users want to have a login system to easily access the application where users can log in conveniently.

4. Application users want to have a fast processing of field reservations in order to use the application to book the football stadium through a mobile phone, smartphone.

5. The users of the application want to have a secure stadium reservation. Information and details about users are checked to use the application to book the stadium safely via mobile phones and smartphones.

6. The application user wants the application to book the football stadium to be processed accurately and accurately in order to ensure that users can use the application to book the football stadium via mobile phone, smartphones

7. The application users want to have a football stadium reservation with a press release, football stadium promotions, and football stadium competition news so that users can be aware of the news and have reliable information when booking the football stadium.

8. The users want the stadium booking application to have reliable information to book the football stadium in order to use the application to book the football stadium via a mobile phone.

9. Users want the football stadium booking application to have a football stadium reservation to facilitate the reservation of the football stadium between the football stadium owners with seamless data display.

### System Design

The system needs to be analyzed operating procedures of the original system. After that, researchers collect the requirements in the new system and bring them to the study and analyze using various tools such as data flow diagram, Entity Relationship Diagram (ER Diagram), and analyze the system design for data input and output. These tools will support us to understand the system process clearly.

### Application Development

#### 1. Member registration page

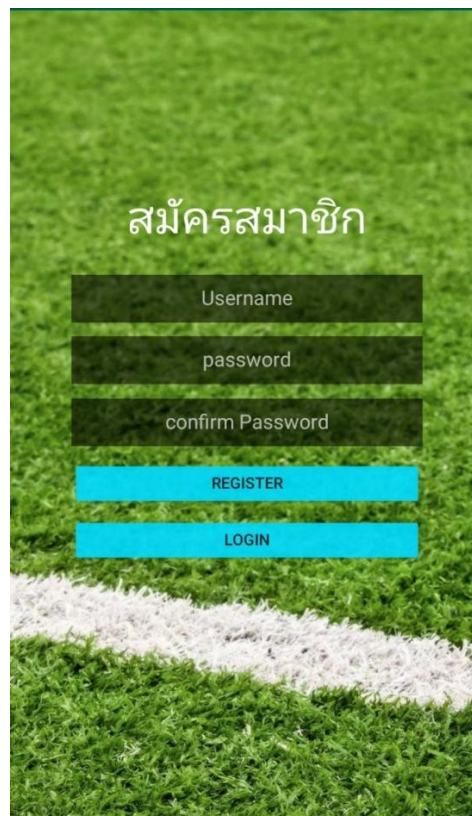


Figure 1: Member registration page

Users who are not yet members can register to access the application from this page. When a user registers (user), fill in the Username and Password, Confirm Password, and press Register, the system will authenticate whether the user is authorized to access this section or not. If so, the user can enter the stadium reservation management system.

## 2. An example of a selection for a football stadium

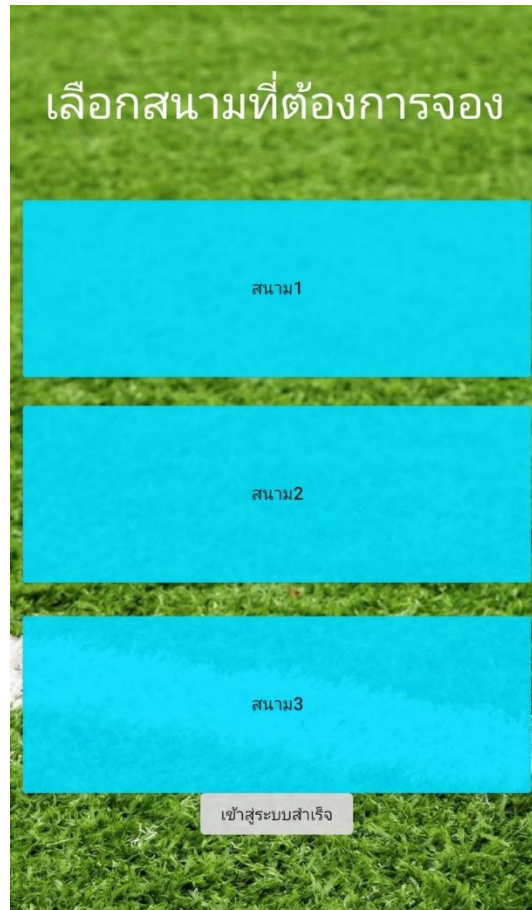


Figure 2: Display the screen to select the football stadium that the user wants to book.

Once the authentication has been completed, the screen will take the user to the overall information page of the course. This will show the entire stadiums and will give the user the option to access the booking arrangements. When clicking the field button, the screen will display all the stadium information, 3 stadium from this page.

### 3. Detail of booking for a football stadium

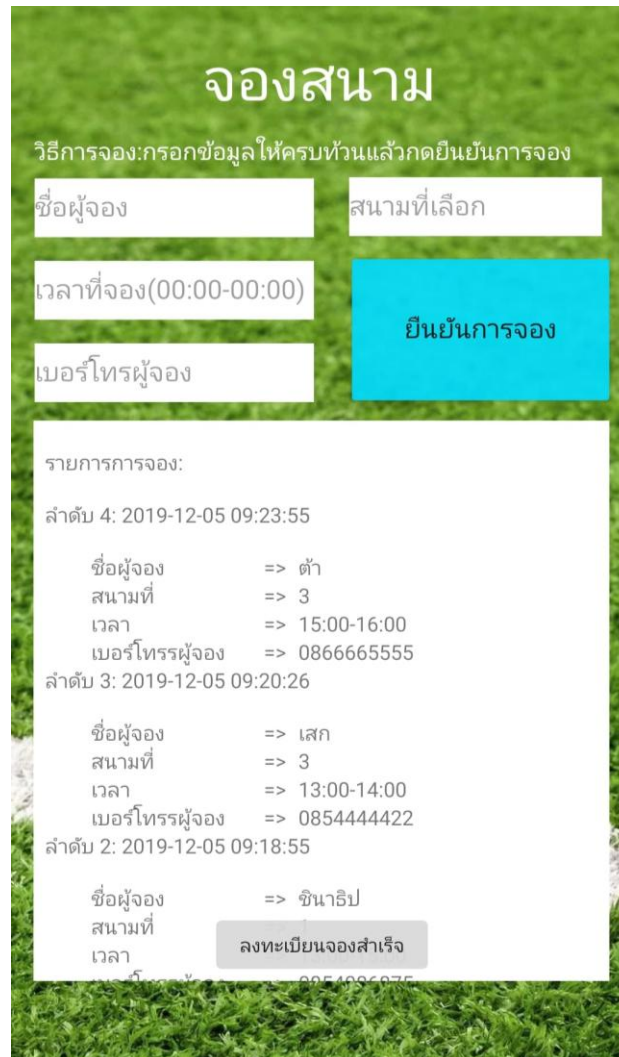


Figure 3: Display the user's successful booking registration screen

## Summary and discussion

### Summary

The purpose of this research on the development of a mobile application for booking a football stadium is to study the booking problem of a football stadium and to design and develop a football stadium booking application.

The researchers used convenience sampling from a sample of 30 people who responded to the questionnaire. Results of the data analysis study of application user needs in booking the football stadium via smartphone, mobile phones, it was found that the needs of application users to book the stadium via mobile phones, smartphones. The topic that users most want is that you want the system of the application to book the stadium to process conveniently and quickly. The overall average is 4.00, with a standard deviation of 1.083, which is very agreeable. The overall average is 3.93, with a standard deviation of 1.172, which is very agreeable. The lowest average is that you want the system of the application to have an easy

and convenient login with an average of 3.60, and a standard deviation of 1.351, which is very much in agreement.

The developer used the existing technology to develop a football stadium reservation system through the application for football stadium reservation by using My SQLite to create a database storage system and Android Studio to make the application. Admins and Users, who can manage stadium reservations, browse football stadium information and browse booking information, and football stadium booking summary. For the user's part, they will be able to view booking information and reserve a football stadium. The development of the system will record the reservation of the football stadium rental time, resulting in the operation of the stadium reservation management system can make the stadium reservation of administrators and users very convenient and fast.

### **Discussion**

The application is easy to use for field booking applications. Users can access the reservation schedule information and status of booking a football stadium easily. This is in line with the research of Wanrueporn, Yossakdachoen, Thanyarat Thaosrivichai and Jesada Suksriwilakul (2011), students of Applied Computer Science, Faculty of Science, King Mongkut's University Thonburi have conducted a project on a mobile phone for seat reservation and food ordering on Android system.

According to the study, application users want to have an application to book a football stadium with accurate and accurate processing in order to ensure that users can use the application to book the football stadium via mobile phone, smartphone. This is in line with the research of Kitti Suprae and Meechai Lohakarn (2014) who conducted research on the development of applications for system-based learning, Android Operations in Digital Image Processing for the Bachelor of Education and Industry Program from the study of documents and research related to the creation and performance of applications. In summary, the Computer Technology Department is an application that can be developed for management services, enhancing cognition and skills in the application of Java commands, which can provide application users with effective use.

### **Suggestions**

#### **1. Suggestion for the use of research results**

From the development of a football stadium reservation management system for users to make stadium reservations. It is convenient to meet the needs of users. The system developer must also develop the system to be used effectively. Therefore, they can actually add, delete, and edit the data and edit the work data in case of various errors.

#### **2. Suggestion for further study**

From this study, it was found that there are some people in Prachuap Khiri Khan province who do not like to consume coffee. The researcher would like to suggest further study as follows:

1) It is recommended to conduct a study with other populations/sample groups in different places such as occupations to study whether there is a difference between those presented in this study. The results can be used to determine the strategy for the football stadium rental business.

2) It is recommended to study other variables that may be related to the variables being studied, such as badminton courts, fitness courts, to see if there is a difference from that presented in this study, and to compare whether they are consistent or different. As a result, the

strategy of building a football stadium gym can be tailored to meet the needs of the customer group.

3) Descriptive statistics should be used and multivariate statistics should be used. (Multivariate Statistics) to analyze in order to obtain different and reliable study results.

### **Acknowledgement**

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