

Smartphone Application for Badminton sports community

Nizirwan Anwar¹, Eric HendroAsali², Heryanto², Teddy Budiyanto², Willy Hendyan² and Harco Leslie Hendric Spits Warnars³

¹Faculty of Computer Science, Esa Unggul University, Jakarta, Indonesia

²Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia

³Computer Science Department, BINUS Graduate Program – Doctor of Computer Science, Bina Nusantara University, Jakarta, Indonesia

*nizirwan.anwar@esaunggul.ac.id

Abstract. Nowadays, there are so many people in Indonesia particularly young people who are interested in playing badminton, but at the end of the day, this game will make boring for young people particularly with the booming of the smartphone game. Literally, it will make the young generation too lazy for outing activity or doing sports and busy with their digital technology, particularly their smartphone. Obviously, we are interested in using the mobile application which can be used to bridge the boring of doing sports mainly badminton sport, wherewith this mobile application is not just only for field badminton or coach booking, but can extend their friendship and community in positive ways. Hopefully, with this mobile application not just only booking for Badminton fields, but beyond that, there will be a mobile application that supports the fans of the badminton sports community when can know each other from different places and make friendship and competition among the members. At the end of the day, we hope this mobile application will support young people to stay away from trouble and drug and to have a positive life with the sport, particularly badminton sport as Indonesian's favorite sport.

1. Introduction

Everyone use technology is now a day, technology makes us feel better and more efficient in doing something, but with technology, every people are not interested in doing the sports activities anymore because they find another E-sport[13]. With technology, they become lazier and do not want to play outside with anyone, so to make every people more active, we want to make a badminton app. We are building an app that will integrate the badminton field staff and the person who wants to play badminton and applicable to find the right coach and the coach for finding their skills' market.

Hopefully, with this mobile application, people can easily book the badminton field, finding a coach, easy for the coach to find a market that needs their badminton skill [12]. Moreover, they do not need to go to the badminton field to book it, they need to open our app and check the field is available or not in our apps, and if the field is available, they can book it [15]. We also have the tournament features and find couch features in our app, so if someone wants to join the tournament, they can find the tournament in our apps to join it, and if someone wants to find a coach or personal trainer badminton to increase their skill, they can also find it in our apps[14].



2. Previous and current literature

In Indonesia, there have been recognized mobile apps allowing us to order Food, Rides, Movie Tickets, etc and there has never been an app allowing us to rent and book a playing field, finding coach, or coach to offer their sport's skill. It has been known that teenagers who like to spend their time playing sports are found to be Healthier and has overall higher Energy Level when compared to those who rarely play sports; sports also can be used as a coping mechanism for stress and anxiety in teenagers[4][5]. Not only that, with the rise of the Internet and smartphones, it is easier for avenue's owner to promote their Avenue. With the recent uprising of Sport Tourism, advertising Avenue through an App is a sensible choice [16]. Sports Tourism is an act of Tourism that focuses on Sports Activities, and many marketing organizations are already targeting Sports Tourism, this is a chance for avenues to ride on the early waves of Sport Tourism[7][8].

The problem arises when “What if all of the fields are booked already?”, or “How much does this place charge each hour?” are two but part of many common questions [17] [18]. Not only that, many places are still using manual entry with pen and paper for their Journal; this allows for a possible wrong data entry, lost documents, ineffective scheduling. In this short paper, we are trying to pose a possible solution to these problems [1][2]. With how accurate Calorie Tracking has become, players would also be able to track burned calories using wearable smartwatches that will accurately track how much movement they have made, and this should have motivated Teenagers more to work out [3].

Although there has not been any implementation of this kind of service before, it has been implemented before and successfully [11]. Zhengzhou University uses Online Booking Systems for its Tennis Hall. The implementation of this improves the efficiency of their venues. The only difference is that this paper will have a more significant scope than Zhengzhou University [6]. There has been an attempt to build a system for reserving Airplane Tickets, although it is different from the theme of this paper, it is still close enough that we can use it as a reference when building a reservation system[9][10].

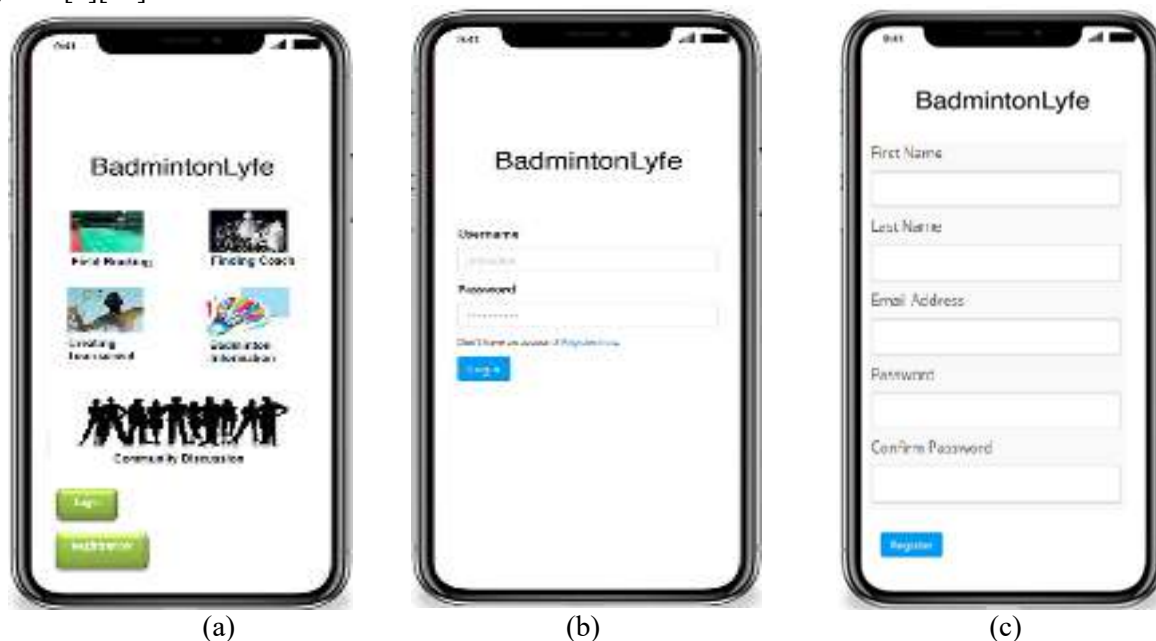


Figure 1. (a)Main menu User Interface; (b) Login Page Menu; (c) Registration Page Menu

3. Design modeling

The design of this smartphone application for Badminton Sport community will be carried on using diagrams such as use case diagram, activity diagram and class diagram, where the Use case diagram to show the process which can be run in the mobile application, whilst the activity diagram shows the detail activity for each use case activity and class diagram to shows the database model design with

content the table database. Moreover, the User Interface (UI) is used to shows the appearances of the mobile application and each use case activity.

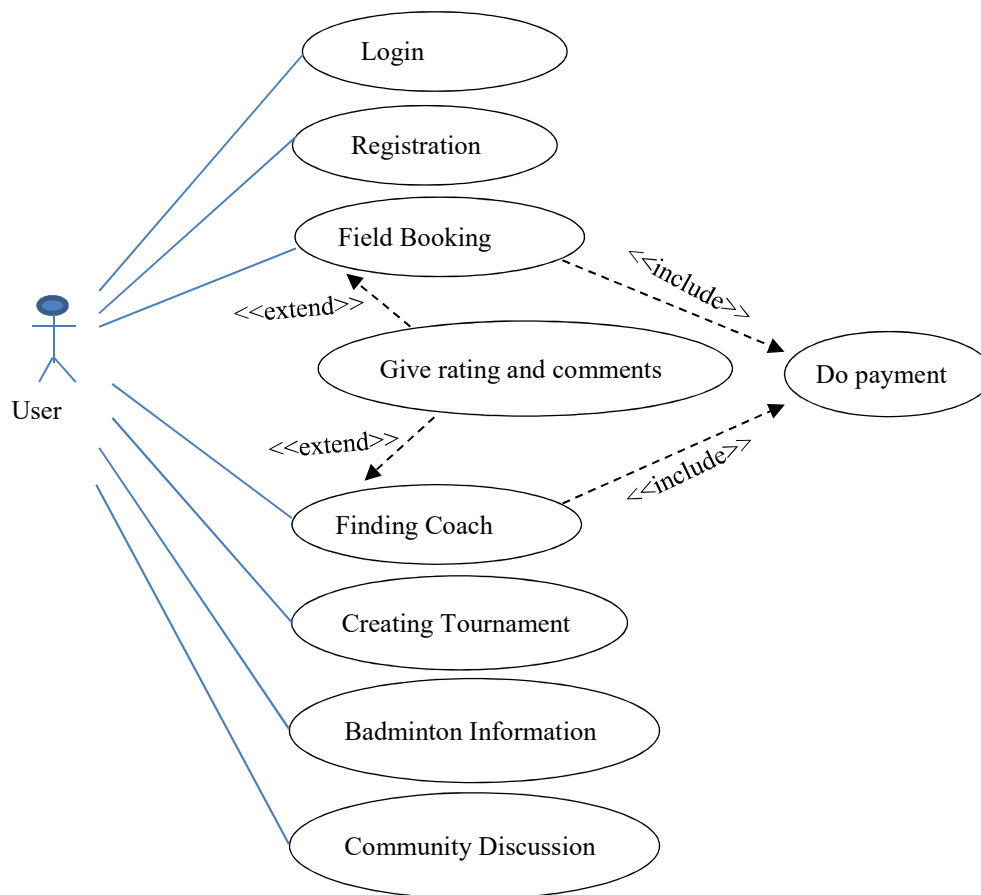


Figure 2. Use case diagram of Smartphone application for Badminton Sport community

This smartphone application for Badminton Sport community has main menu UI as can be seen in figure 1(a) where the content of selection menu has 7 options as seen in use case diagram in figure 2 with 7 use case activities such as Login, Registration, Field Booking, Finding Coach, Creating Tournament, Badminton Information, and Community Discussion.

3.1. Login

Use case activity login as seen in figure 2 has User Interface as seen in figure 1(b) and the detail activity diagram can be seen in figure 3 where the user needs to enter their data such as username and password. If the username and password were registered in table user of the database and the entered password is the same then it will give access but will be denied for access when the user name and password are not the same.

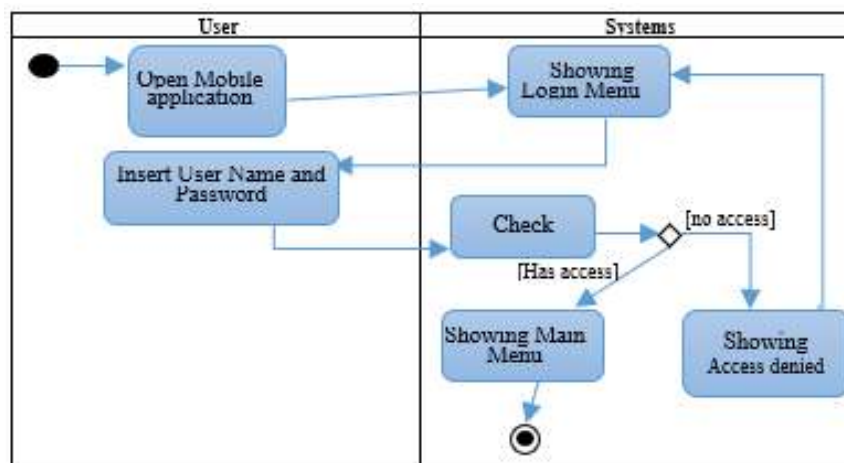


Figure 3. Activity diagram of Login Activity

3.2. Registration

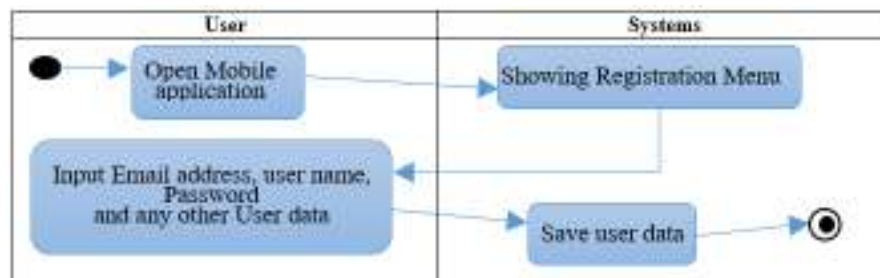


Figure 4. Activity diagram of Registration Activity

Use case activity registration as seen in figure 2 has User Interface as seen in figure 1(c) and the detail activity diagram can be seen in figure 4 where the user needs to enter their data such as username and password, Name, Address, Gender, Date of Birth and so on. This process will input to table user as seen in the class diagram in figure 9.

3.3. Field Booking

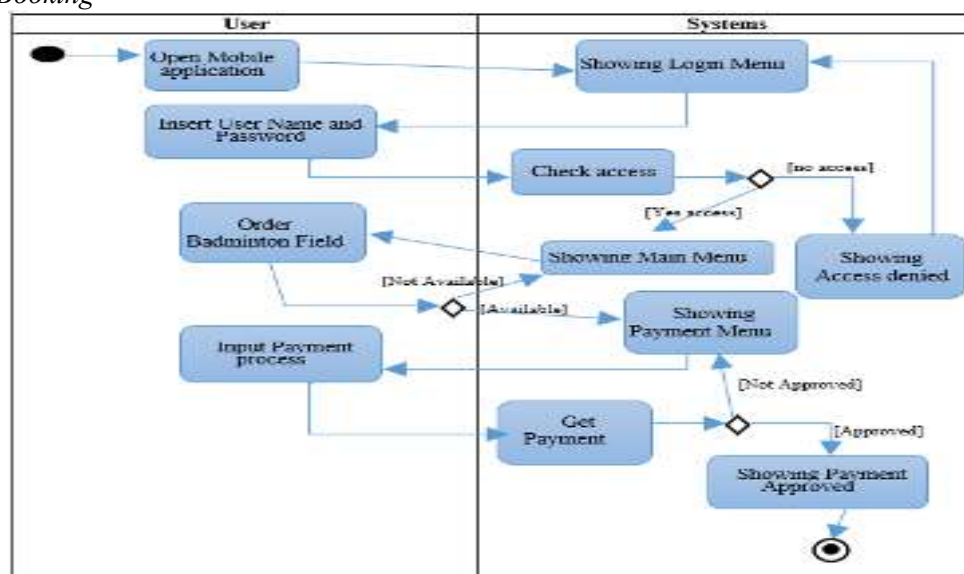


Figure 5. Activity diagram of Field Booking Activity

Use case activity Field booking as seen in figure 2 has User Interface as seen in figure 7(a) and the detail activity diagram can be seen in figure 5 where the user should choose the location of the field and the field and the system will show the available day and pay per hour for using the field. The class diagram in figure 9 shows the table such as Field and postcode to show the content information regarding the field and field postcode location. If user agrees with the payment then the user can do the payment as the UI can be seen in figure 7(b) where the user can choose the way to do the payment. The Field booking transaction will create record in tables such as daily booking and payment as shown in class diagram in figure 9. After using the field then the user can give the score and rating to the services of using the field and will create a record in table SCORCOM in class diagram in figure 9.

3.4. Finding Coach

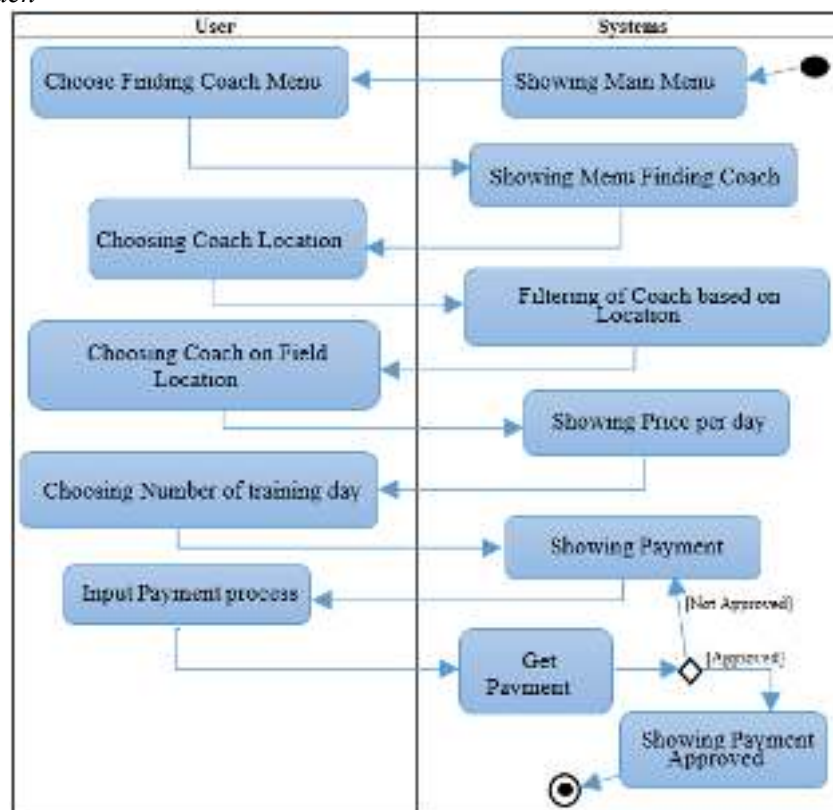


Figure 6. Activity diagram of Finding Coach Activity

Use case activity Finding coach as seen in figure 2 has User Interface as seen in figure 7(c) and the detail activity diagram can be seen in figure 6 where the user should choose the location of the coach and the list of coach, gender of the coach and the system will show the available day and pay per hour for each coach. The class diagram in figure 9 shows the tables coach and postcode to show the content information regarding the coach and coach postcode location. If user agrees with the payment then the user can do the payment as the UI can be seen in figure 7(d) where the user can choose the way to do the payment. The Finding coach transaction will create record in tables such as coach booking and payment as shown in class diagram in figure 9. After Getting badminton training from the coach the user can give the score and rating to the coach's services and will create a record in table SCORCOM in class diagram in figure 9.

3.5. Creating Tournament

Use case activity creating tournament as seen in figure 2 has User Interface as seen in figure 8(a) where the user with their team can be allocated to run the tournament but the finishing this activity is not yet to be done so why there is no table in class diagram in figure 9. This activity will benefit this mobile application where the user can create a tournament and invite his colleagues to join with the tournament and invite every user member which interest in order to extend their badminton skills and friendship.

3.6. Badminton Information

Use case activity badminton information as seen in figure 2 has User Interface as seen in figure 8(b) where this is as admin features to spread news and information regarding badminton and in order to engage and educate the badminton to the users. Since this activity part of admin then we do not yet to design the table database.

3.7. Community Discussion

Use case activity community Discussion (forum) as seen in figure 2 has User Interface as seen in figure 8(c) as medium among the user and with the admin to talk any issues with the application and badminton activities. Particularly for the admin will help them in order to make their mobile apps become more better and easy to use for their user. The user can raise a threat to the forum and each raising threat in forum will create a record in table thread including date and time as shown in class diagram figure 9. Moreover, each user can give their comments regarding each thread and every comment for each thread will be recorded in table Forum which records their comment including date and time when they give the comments.

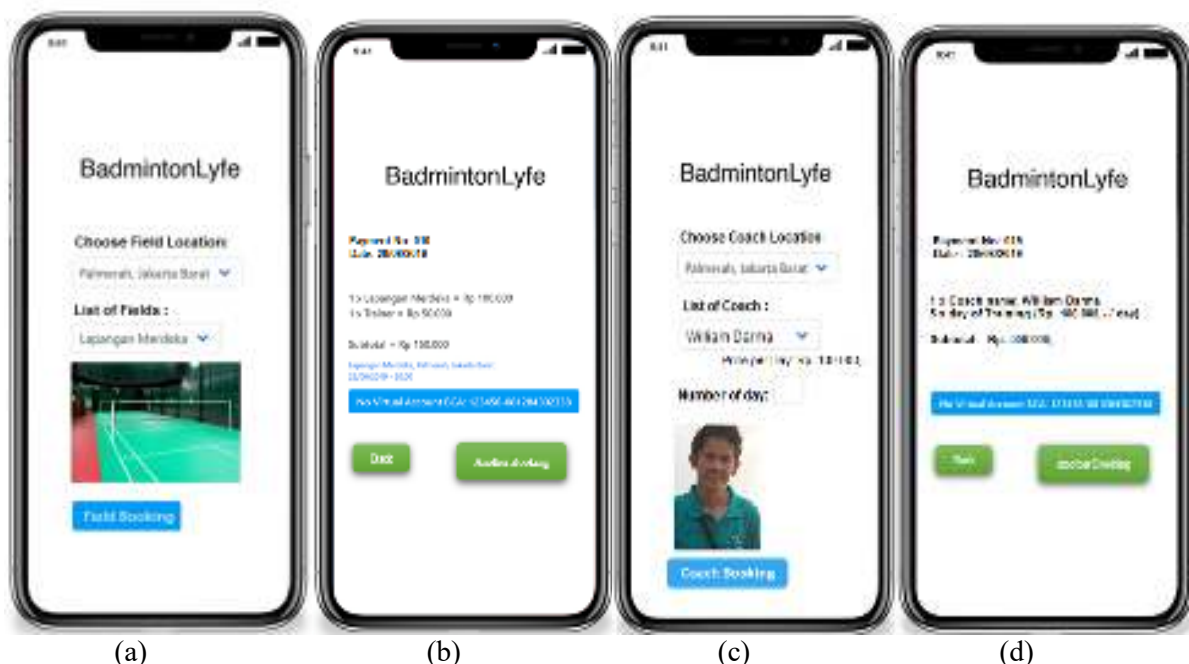


Figure 7. (a)Booking Field Page Menu UI; (b) Booking Field Payment Page Menu UI; (c) Finding Coach Page Menu UI; (d) Finding Coach Payment Page Menu UI



Figure 8. (a)Creating Tournament Page Menu UI; (b) Badminton Information Page Menu UI; (c) Community Discussion Page Menu UI

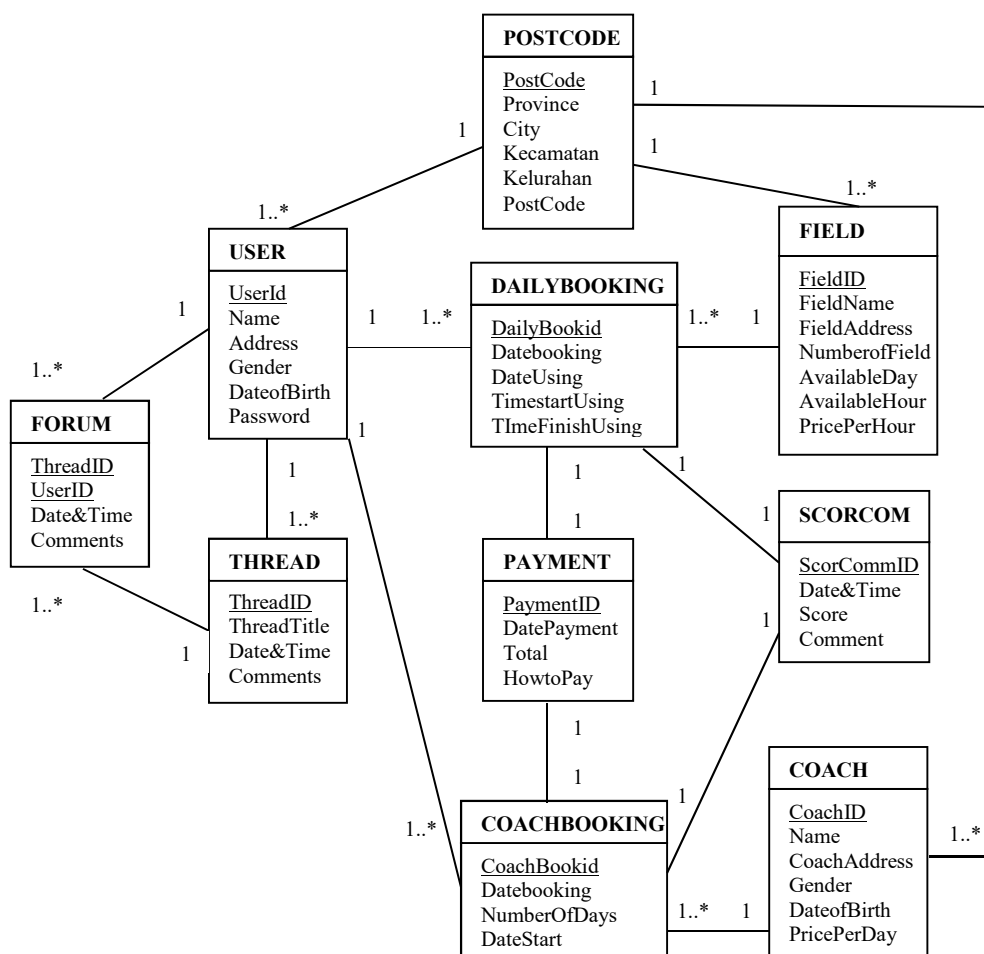


Figure 9. Class diagram of Smartphone application for Badminton Sport community

The class diagram in figure 9 shows the model database design for this smartphone application for badminton sports community which content 10 tables database and this model database design is still need to extend in order to capture such as use case activities like tournament and information and of course some tables database for admin purposes. The functional for each table in this class diagram has been discussed in each explanation for each use case activity explanation. This mobile app is not yet finished some systems like to entry as coach, entry field information should be carried on as well.

4. Conclusion

Creating a smartphone application for badminton sports community will help the community itself and the people who want to extend their skills and friendship among the badminton sport's lovers. Moreover, this mobile app as other alternatives income for people who have badminton field and easily can advertise their field allocation and using with this mobile app. Furthermore, for badminton coach it is easy for them to become the other income in order to find the right market regarding their badminton skills and indeed this is can make easily as well for users to find the right badminton coach as suit with their need.

At the end of the day, hopefully this mobile apps will give the contribution to the society where people and particularly for young people do not spend their precious time in gadget or mobile phone only and to make this mobile app will interact new friendship among the similar favorite hobbies, particularly in Badminton Sports. In order to make this mobile app become more better, inviting businesses to advertise their product and goods will as opportunity to raise the income and connect this app to e-commerce apps give more benefit by using reward and point to be expensed in the e-commerce partners.

References

- [1] A. Sunarya and J. Sutrisno, "Sistem Informasi Penyewaan Lapangan Bulutangkis dan Penjualan Perlengkapan Maestro Angkasa" in, *Idealis*, vol 1, no. 1, pp.358 – 362, Mar 2018.
- [2] H. Gunawan and Y. Anggianto, "Pemanfaatan Teknologi Mobile Untuk Pemesanan Lapangan Berbasis Android (Studi Kasus: Orion Sport Center Purwokerto)", *MA*, vol. 7, no. 2, pp. 24-, Dec. 2016.
- [3] M.A. Case, H.A. Burwick, K.G. Volpp and M.S. Patel, "Accuracy of Smartphone Applications and Wearable Devices for Tracking Physical Activity Data" *JAMA*, vol. 9, no.3, pp. 1-9, 2015.
- [4] J. B. Pasternak, "Cognitive Scripts, Anxiety, and Styles of Coping with Stress in Teenagers Practicing Sports" *Journal of Human Kinetics*, vol. 65, pp.261 – 271, Dec 2018.
- [5] C. Charlotte, A. Hille, and M. Lechner, "Mozart or Pele? The effects of Teenagers Participation in Music and Sports", in CEPR Discussion Paper No. DP 10556.
- [6] L. Can, L. Junjie, H. Cao, and M. Zhan. "Design and Implementation of Online Booking Systems of University Sports Avenue." *MATEC Web Conf*, vol. 100, Mar 2017.
- [7] R.W Clark, "An Exploratory Study of How Destination Marketing Organizations Pursue the Sports Tourism Market" *Journal of Destination Marketing & Management*, vol. 9, pp. 184 – 193, Sep 2018.
- [8] T. Newman, J. Peck and B. Wilhide, "Social Media in Sports Marketing," 1st Edition, Jan 2017.
- [9] H. haris, M. Arfiansyah, and E. Nuraini, "RANCANG BANGUN APLIKASI RESERVASI TIKET PESAWAT ONLINE BERBASIS ANDROID," *Cerita*, vol. 2, no. 2, pp. 142-150, Apr. 2018.
- [10] A.S. Honggowibowo and T. Sediarte, "Sistem Reservasi Pesawat Terbang Berbasis Web", *Jurnal Fakultas Hukum UII*, vol. 3, no. 1, pp. 142-150 2005.
- [11] M. Phomsoupha and G. Laffaye, "The Science of Badminton: Game Characteristics, Anthropometry, Physiology, Visual Fitness and Biomechanics", *Sports Med*, vol. 45, pp. 473-495, 2015.

- [12] M.I. Shahril, J. Jani and N. Salimin, "Performance Assessment Instrument (PAI) Model for Badminton Based on Teaching Games for Understanding (TGfU)", *Advanced Science Letters*, vol. 23, No.1, pp. 160-165, 2017.
- [13] Y. Wang, M.Chen, X.Wang, R.H.M. Chan and W.J. Li, "IoT for Next-Generation Racket Sports Training", *IEEE Internet of Things Journal*, vol. 5, Issue 6, pp. 4558-4566, 2018
- [14] M.H. Idris and S.Z. M.Hashim, "UTM Sports App Mobile Application", *UTM Computing Proceedings Innovation in Computing Technology and Applications*, 2017.
- [15] Z. Falomir, J.A. Ortega, N. Martinez, and H. Guesguen, "e-Gibalec: Mobile application to monitor and encourage physical activity in schoolchildren", *Journal of Ambient Intelligence and Smart Environments*, vol. 9, no. 5, pp. 595-609, 2017.
- [16] B. Cvetkovic, V. Janko, A.Gradisek, M. Lustrek, T. Kajtna and B. Strumbelj, "Mobile Application to Stimulate Physical Activity in School children", *12th International Conference on Intelligent Environments (IE)*, 14-16 Sept. 2016.
- [17] G.A. Ginja, "Applications of Virtual Reality in the Practice of Para-Badminton", *20th Symposium on Virtual and Augmented Reality (SVR)*, 28-30 Oct. 2018.
- [18] C.Z. Shan, "SENSOR-BASED ASSESSMENT USING MACHINE LEARNING FOR PREDICTIVE MODEL OF BADMINTON SKILLS, Thesis of Faculty of Electrical Engineering, Universiti Teknologi Malaysia, May 2018.