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RESEARCH ARTICLE

Design and Development of KPRI RSCM Employee Presence Attendance Application Using Android-Based QR Code

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Abstract
RSCM KPRI Services Cooperative is a cooperative that operates in 2 initial tasks, namely providing loans to members with light services and carrying out the distribution of basic goods from the government to members of each company or agency. make attendance. attendance attendance is part of the most important role in every body of work. Where attendance is one of the main supports that can motivate and support all work activities to be carried out in it, using the finger print system in attendance at the Cooperative office which is in the Dr. Cipto Mangunkusumo National General Hospital (RSCM) environment is very at risk of being exposed to various kinds of virus, and one of them is the Corona Virus which is still a pandemic, so that the KPRI RSCM Service Cooperative innovates in the employee attendance system by using a presence system using an Android-based QR Code, so that cooperative employees can take attendance using their personal cell phones. explains how to use the designed application system, namely the KPRI RSCM Employee Presence Application. It is hoped that this application can make it easier for employees to make attendance, and the Personnel section can more easily monitor the attendance of their employees utilizing the Android system as a tool or attendance system that makes it easier for companies and employees, especially at the KPRI RSCM Service Cooperative so that it reduces contact that can cause risk of exposure to the coronavirus.

Keywords
Presence; Employee; QR Codes; Android Based.

1 | INTRODUCTION

As information and communication technology advances more rapidly, there will arise a need for fast information that will be needed by individuals to corporate agencies, even the need for fast and accurate communication is also very much needed to provide original data, especially in a corporate agency [1][2]. We can get fast and accurate access in mobile technology, which is currently connected to the internet [3][4]. Mobile technology itself is technology in mobile phones or commonly called smartphones (smart phones) which are digital [5][6]. With this technology, all users can be integrated with each other to be able to communicate and share information anywhere, anytime, when connected to an internet network [7][8][9]. Currently there are also many mobile devices with various operating systems as evidence of the advancement of information and communication technology, for example the Android operating system [10][11].

The QR code attendance application is a system that utilizes QR code (Quick Response Code) technology to record and store someone's attendance data. In this application, someone will scan the QR code located at the presence location, so the application can record that they are present. The QR code presence application is part of the industrial revolution 4.0, also known as the digital era. The industrial revolution 4.0 brought major changes in the way businesses and organizations work, including in terms of managing human resources [12]. The QR code attendance application provides a more efficient and easier solution for monitoring and recording employee absences [13], thereby facilitating HR management and speeding up business processes. With the QR code presence application, the attendance process becomes faster and more accurate, and can be done in real-time. This helps companies to reduce costs and speed up processes, so they can focus on more important tasks and accelerate their business growth. In conclusion, the QR code presence application is part of the industrial revolution 4.0 which helps companies manage human resources and simplify business processes. This proves that technology can help companies overcome challenges and accelerate their business growth.

The formulation of the problem in this study is to use the finger print system in attendance at the Cooperative office which is in the Dr. National Central General Hospital environment. Dr. Cipto Mangunkusumo (RSCM) is very at risk of being exposed to various kinds of viruses, and one of them is the Corona Virus which is still a pandemic, so the KPRI RSCM Service Cooperative innovates in the employee attendance system by using the android system as attendance presence, and using a QR Code based on android, so that cooperative employees can take attendance using their personal smartphones. The aim of the research is to utilize the android system as a attendance tool or system that makes it easier for companies and employees, especially at the RSCM KPRI Service Cooperative so as to reduce contact that can cause the risk of exposure to the corona virus, this attendance system also aims to make it easier for staffing to monitor performance in the aspect of attendance, and also to implement an android-based application system at the KPRI RSCM Service Cooperative. And it is hoped that the KPRI RSCM Service Cooperative will be more advanced in the digital field or other programs.

2 | BACKGROUND THEORY

Presence technology using Android today is a system that makes it possible to track and record someone's presence using an Android device such as a smartphone or tablet [14]. This is done using GPS, NFC, QR code, or other location technologies available on Android devices. The Android presence application allows users to check-in and check-out easily, and presence data can be sent and received in real-time. This is very useful for companies and organizations that want to follow employee absences and schedules quickly and accurately. Some of the features often found in presence Android applications include setting schedules, attendance records, reports, notifications, and integration with the payroll system. Some applications also allow users to request leave or apply for absences within the application. Overall, Android attendance technology helps companies and organizations save time and money by making attendance processes more efficient and accurate.

Android-based QR code presence technology is a system that utilizes QR (Quick Response) codes to track and record a person's presence [15][16]. In this technology, users must scan the QR code attached to the presence location using the camera on their Android device [17][18]. After the QR code is read, the system will verify the location and time, and record the user's presence [19]. Several Android-based QR code presence applications provide features such as; Generating a unique QR code: Each presence location can have a different QR code, making it easier to manage and monitor attendance. Location verification: The system can verify the user's location when checking in, thus ensuring that attendance can only be made from the correct location, Attendance reports: The application provides detailed attendance reports, including check-in and check-out times, location and attendance status, and Integration with the payroll system: Presence data collected can be easily forwarded to the payroll system to simplify the payroll process. Android-based QR code attendance technology is very useful for companies

and organizations that want to take attendance quickly and easily. This also helps ensure accuracy and transparency in the attendance process. The application of an Android-based QR code attendance application in hospitals can be done in the following way:

a) Presence application installation: Hospital staff can download an Android-based QR code attendance application and install it on their device.
b) QR code creation: Each room or department in a hospital can have a different QR code. Officers can create a QR code for each location that you want to create a presence for.
c) Verify location: When the officer checks in, the application will verify the location and ensure that they are in the correct presence location.
d) Check-in: Officers can check-in by scanning the QR code attached to the presence location. The application will record the check-in time and location.
e) Attendance reports: The application will store attendance data in the form of reports that can be viewed and evaluated by the hospital.
f) Integration with the payroll system: Presence data collected can be forwarded to the hospital payroll system to simplify the process of paying salaries.

The application of an Android-based QR code attendance application in hospitals helps save time and money by making the attendance process more efficient and accurate. This also helps to ensure that hospital staff work according to a set schedule and ensure good quality service to patients.

3 | METHOD

The place of this research is in the KPRI RSCM Services Cooperative building which is located at Jl. Chemistry no 12 C Rt 011 Rw 001 Pegangsaan, Menteng District, Central Jakarta 10430. The RSCM KPRI Services Cooperative Office is located in the Dr.Cipto Mangunkusumo National General Hospital (RSUPN), and this research was conducted from February to March 2022. The research stage consists of:

a) Observation
   Observations made during February and March 2022 at the RSCM KPRI Service Cooperative. Based on the observations made, information was obtained regarding: A brief history of the KPRI RSCM service cooperative, organizational structure, systems or business processes that are running
b) Interview
   Interview conducted with Dessy Dwi Tresnowati as part of the HR (Human Resources) KPRI RSCM Service Cooperative on March 7 2022 which took place at the KPRI RSCM Service Cooperative office. There are several questions that the author gives to get the necessary requirements in the design of this Android-based attendance application.
c) Library Studies
   Literature study is carried out by studying theories, books and articles and journals related to information systems, research methodology, programming [20]. The author also collects data from internet sites related to research.

The research method used in designing employee presence applications using use cases, activity diagrams, and sequence diagrams is as follows:

a) Needs Analysis: The first step is to do a needs analysis to determine the features needed in the employee presence application. This analysis is carried out through interviews and observations of the current attendance process, as well as identifying existing problems and challenges [21][22].
b) Use Case Design: After knowing the needs and problems, the next step is to create a use case design to describe the interaction between the presence application and the user. Use cases will help determine the flow of the system and ensure that the features needed are included in the application design [23].
c) Design Activity Diagram: The next step is to design an Activity diagram to describe the interactions between activities in the system and determine the process flow. Activity diagrams will help in understanding how the application works and ensure that each activity is well coordinated [24].
d) Design Sequence Diagram: Design Sequence diagrams can be used to describe interactions between objects in the system and ensure that each object works as expected. Sequence diagrams will assist in understanding how each object works together and ensures that each object has clear duties and responsibilities [25].
e) Implementation and Testing: After the use case designs, Activity diagrams, and Sequence diagrams have been completed, the next step is to implement an employee presence application based on these designs. After

implementation, the application will be tested to ensure that the application works as expected and meets user needs.

By using this research method, the design of the employee attendance application will be more structured and ensure that the application meets the needs and expectations of users. This method also helps in ensuring that the application works properly and efficiently.

4 | RESULT

In Figure 1, the use case for employee attendance starts with the employee being absent, then being absent, then the admin records the attendance list, which will then make a report on the employee attendance list and report it to the director.

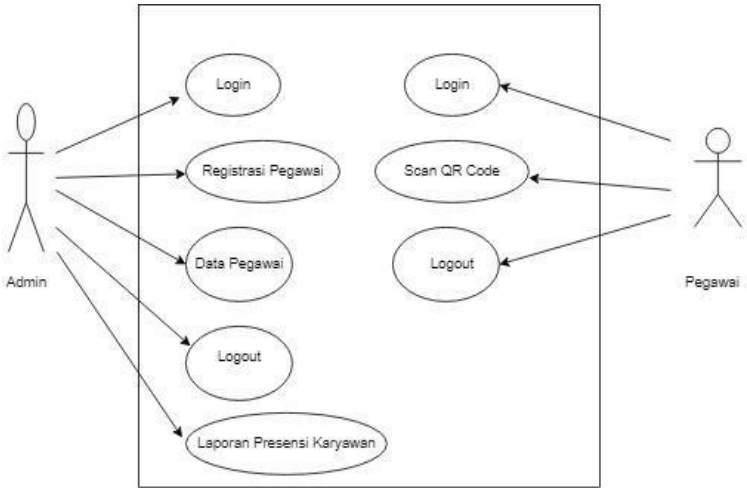


Figure 1. Use Case Diagram

In Figure 2 below is an activity diagram of the attendance presence application. The image illustrates a series of flows from activities, and is used to describe activities that are formed in an operation so that it can also be used for other activities such as use cases or interactions.

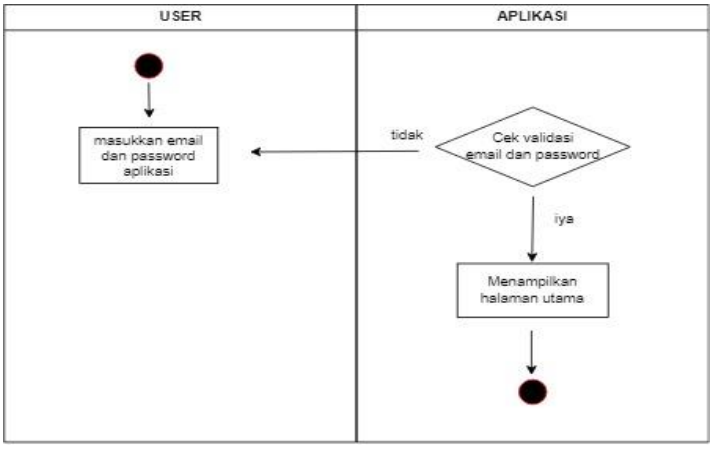


Figure 2. Activity diagram of attendance application.

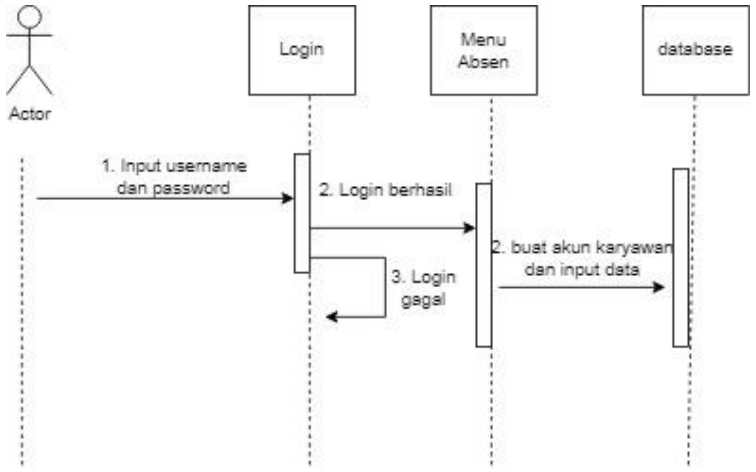


Figure 3. Sequence Diagram.

In Figure 3 above is a Sequence diagram or sequence diagram in the attendance presence application which has the function to find out the sequence of events from the application that can produce the desired output, and can also describe data flow in more detail.

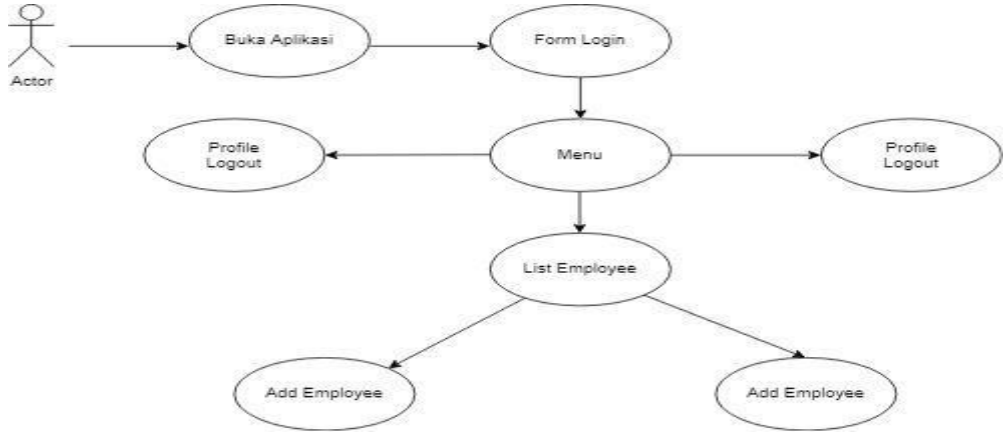


Figure 4. Admin Account Presence Collaboration Diagram

In Figure 4 above you can see a collaboration diagram for the presence of an admin account, starting from the admin/Personnel Staff opening the application then a login form appears then after successfully logging in to the main menu display, then the admin/personnel staff opens the employee list menu and the menu contains the add employee menu and the next step is the admin/personnel staff can edit and delete employee data, after that there is a profile menu to see the profile of the admin account and a logout menu to exit the application.

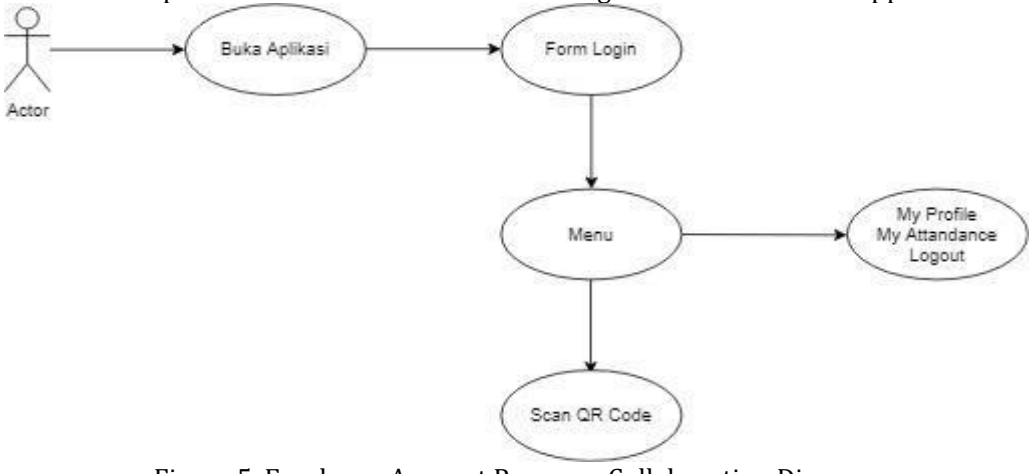
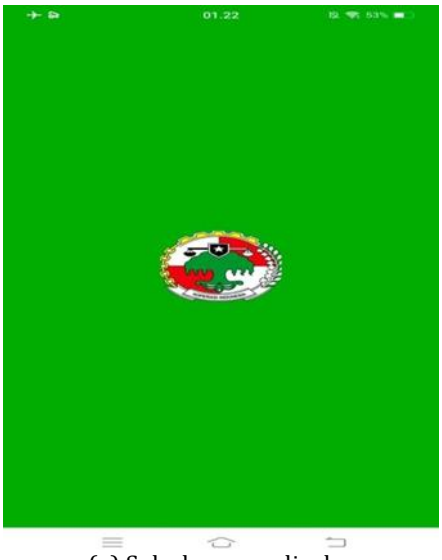


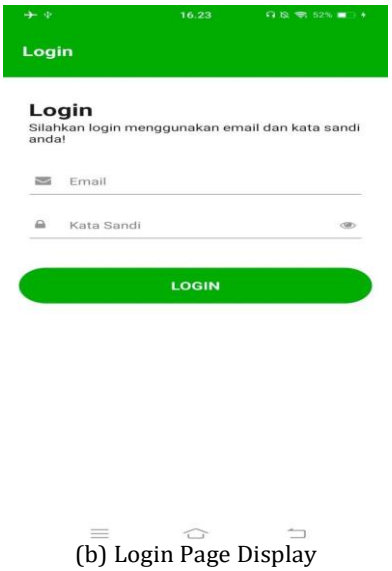
Figure 5. Employee Account Presence Collaboration Diagram

In Figure 5 above you can see the employee opens the application then a login form appears to fill in the email and

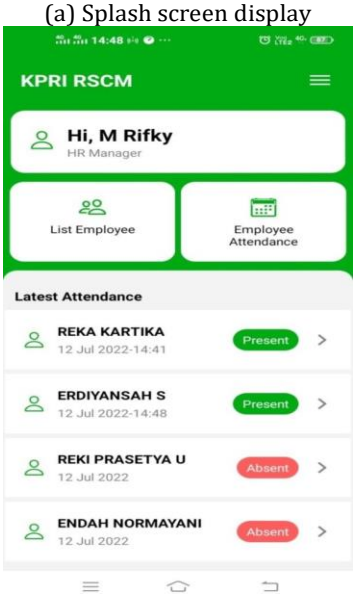
password, after successfully logging in the main menu appears, and there is a Scan QR Code menu to check attendance. Then there is the My Profile Menu which contains account data, after that there is the My Attendance menu which contains attendance history or attendance list, then there is the logout menu to exit the application. Figure 6.a is the initial appearance of the application. When the icon is clicked, a display appears with a green background with the cooperative logo in the middle. The image is also the appearance of the application before entering the login menu. In Figure 6.b, the employee presence login page has 2 labels, namely the email label, password, 2 buttons, namely Login. The following is an overview of the KPRI RSCM employee attendance login application. On this login page the account is divided into two, namely the admin account which is useful for adding and creating employee accounts, and the two employee accounts that have been created by the admin. In Figure 6.c is the main display on the admin account that has successfully logged in (entered) into the application, the page shows the results, namely the last list of employees who took attendance. In Figure 6.d is the display of added employees in the admin, there are 6 labels namely Name labels, Employee Identification Number (NIP), Email, Password, Phone (phone number), Address and 1 Add Employee button. The following is an overview of the Add Employee Menu Design on the KPRI RSCM Presence Presence application.



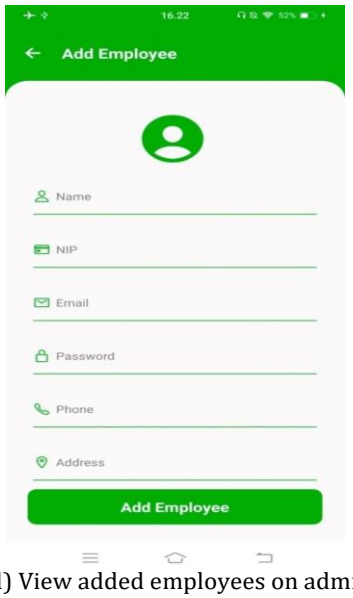
(a) Splash screen display



(b) Login Page Display



(c) Main View on Admin

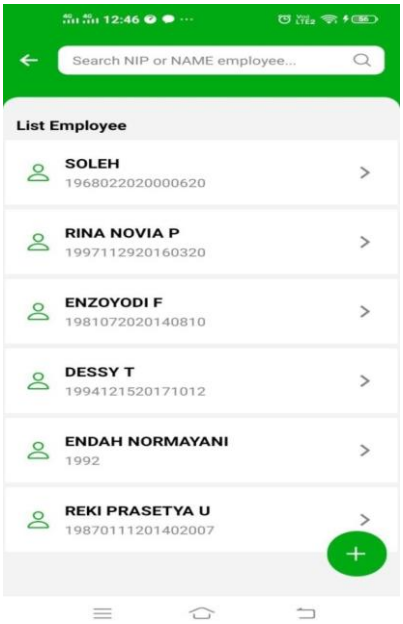


(d) View added employees on admin

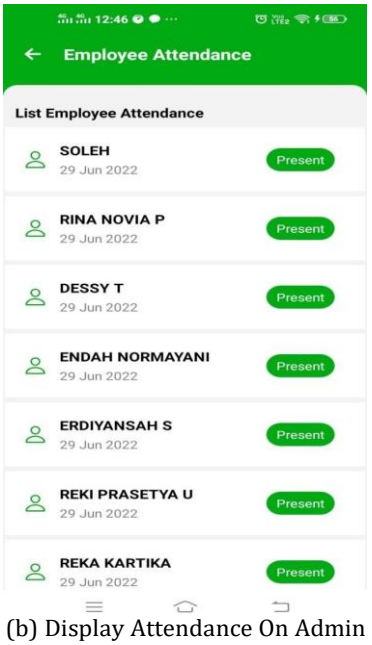
Figure 6. Application View

Figure 7.a shows the Employee Attendance menu, which is a menu that displays the results of employees who have taken attendance and employees who have not taken attendance (didn't come to work). In figure 7.b is the Employee Attendance menu, which is a menu that displays the results of employees who have taken attendance

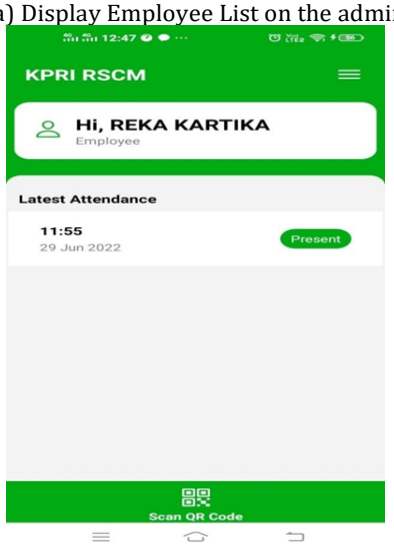
and employees who have not taken attendance (did not come to work). In Figure 7.c is the main view of the employee account which shows the last page of employee attendance. In the picture, it can be seen that if the employee has scanned the barcode to register for attendance, it will appear and there is the word "Present" in green. And also in the picture above you can see there is a button that says "Scan QR Code" which functions for employees to take attendance. Figure 7.d shows the employee process when scanning a barcode to perform attendance or attendance lists. The employees scan the barcode when they come and when they go home. In Figure 7.e, the menu display for employees has 3 labels, namely Profile, Attendance List, Logout for employees. In Figure 7.f is a profile page which contains employee biodata consisting of Name, NIP, Position, Email, Phone, and address. The contents of the biodata are data that is inputted by the admin. In Figure 7.f is the appearance of the attendance menu for employees, this page displays a list of attendance for employees consisting of Hours, Dates, and attendance.



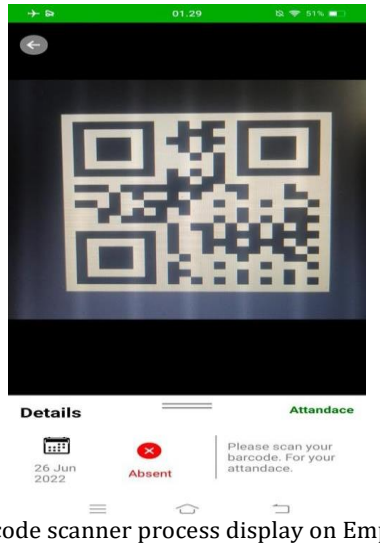
(a) Display Employee List on the admin



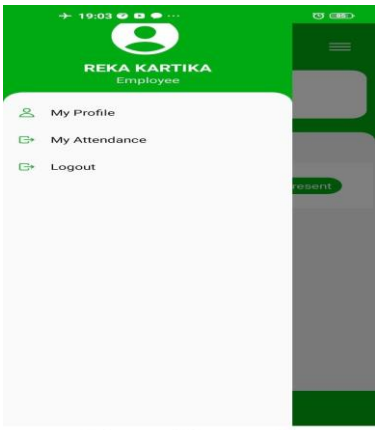
(b) Display Attendance On Admin



(c) Main View of the Application on Employees

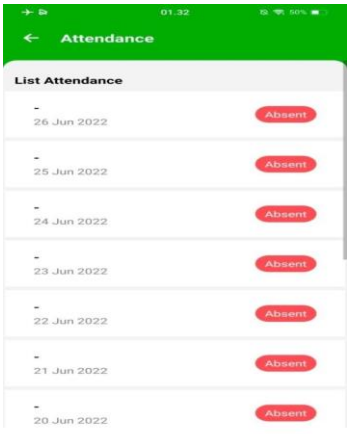


(d) Barcode scanner process display on Employees



(e) Menu Display On Employees

(f) Profile view on employees



(g) Display of Attendance Menu on Employees

Figure 7. Advanced Application View

5 | CONCLUSIONS AND FUTURE WORK

An Android-based employee attendance application using a QR code can simplify the employee attendance process and increase system efficiency. This application allows employees to take attendance by scanning the QR code located at the attendance location, so the application can record that they are present. This application also makes it easier to manage employee attendance data and makes stored attendance data more accurate and can be accessed anytime and anywhere. The implementation of QR code technology in this application helps KPRI RSCM in simplifying business processes and accelerating business growth. Thus, the design of the KPRI RSCM employee attendance application using an Android-based QR code is an efficient and useful solution for overcoming challenges in human resource management. This application proves that technology can help companies overcome challenges and accelerate their business growth. In the future, the QR code presence application will continue to grow and enter a new, more sophisticated and innovative stage. Here are some things that are expected to happen in the future of QR code presence applications:

a) Integration with other technologies: The QR code presence application will be integrated with other technologies such as artificial intelligence (AI), internet of things (IoT), and blockchain. This allows companies to take advantage of these technologies and create more efficient and secure attendance systems.
b) Use of biometrics: The use of biometrics such as facial recognition, fingerprints and irises will become a more popular choice in QR code presence applications. This allows companies to ensure the validity of attendance data and make attendance processes safer and easier.
c) Data monitoring and analysis: The QR code presence application will offer more sophisticated data monitoring and analysis features. This enables companies to analyze employee attendance data and make informed HR decisions.
d) Remote access: The QR code presence application will offer remote access, so that employees can take attendance from anywhere and at any time. This simplifies the attendance process and helps companies to

expand their business scope.

In conclusion, the future of QR code presence applications will be marked by increased security and efficiency of attendance systems, as well as integration with advanced technologies such as AI, IoT, and blockchain. This helps companies to speed up business processes and overcome challenges that arise in HR management.

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