

Android-Based Attendance Application at PT. Solusi Hidup Mandiri (SHM)

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Abstract

This research aims to design and build an Android-based attendance application. The research method used is a qualitative method. The data collection methods in this research are (1) data documentation, (2) observation, (3) interviews, and (4) questionnaires. In this research, the system development method used is a prototype with the system design using UML (Unified Modeling Language) which consists of use case diagrams, activity diagrams, sequence diagrams and class diagrams. The software used in designing and implementing the system uses XAMPP as a web server, MySQL as a database, Visual Studio Code as a web design editor and Android Studio as an Android application design editor. The Android-based attendance application includes attendance, absence, absence history, and permit applications. The score obtained from the usability testing results is 93% and is in the "Strongly Agree" category. The application has been tested so that an application that runs well is obtained.

Keywords: UML, Attendance, Android, Prototype

1. Introduction

Attendance is one of the changes that must be made because attendance is one of the pillars and plays an important role for the company to support all company activities. In this attendance company has a very important role to know the presence of employees who work in the office so that the boss knows the presence of employees in the company. With the attendance application for employees, it can reduce fraud during attendance. companies can reduce administrative work [1]. PT. Solusi Hidup Mandiri (SHM), is one of the property development companies that still implements attendance using a WhatsApp application, which is a chat application to confirm the attendance of their employees. Since the attendance process in the company is still manual, it makes it more difficult to collect data because you have to see each name in the employee data. The number of employees with different departments in a company that uses a manual attendance system is less effective and efficient. This can lead to time manipulation and other violations. The computer as a data processing tool can make the employee attendance system automatic, because employee discipline greatly supports the success of a company in achieving its goals. The problem formulation that the author can draw from the background described above is how to design an Employee Attendance Application at Pt. SHM Based on Android? In order for this research to be more focused and directed, but to achieve optimal results, the research was carried out with problem restrictions focusing on making android-based applications, this research was conducted at PT. Solusi Hidup Mandiri, the data to be managed is only employee data of PT. Solusi Hidup Mandiri, the programming language used is Kotlin and MySQL database, the design uses the UML model and the Android version used is minimum API 21: Android 5.0 (lollipop).



2. Research Methodology

2.1. Attendance

Attendance is a list of habitual patterns of absence from an employee's duties before coming to work. Attendance has a very important function for employees, one of which is to assess the level of craft of an employee. In addition, attendance is also used to determine the employee's clock-in and clock-out times, and it is used in the calculation of overtime[2].

Other opinions, Attendance can be said to be a collection of attendance data that is part of the reporting activities in an institution. Attendance is related to employee's responsibility in work, employees who are present on time and not late when they come to work can be said to have a disciplined nature [3].

Different definitions, attendance is a data collection activity to determine the number of participants in an event or activity. Any activity that requires information about participants will certainly take attendance [4].

Based on the opinions of experts, the researcher concludes that attendance or attendance card is a document that records the attendance hours of each employee in the company. The attendance record of an employee can be in the form of an ordinary attendance list, it can also be in the form of an attendance card filled in with a timekeeping device.

2.2. Android

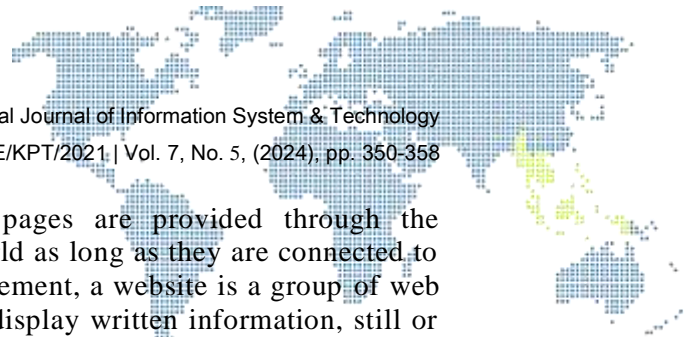
Android is an operating system that is now popular in the smartphone market today [5]. Other opinions, Android is a free and open source operating system. In order for developers to create custom applications that can run on Android devices, Android provides an open platform. Initially, a start-up company called Android Inc. that produced software for mobile phones was acquired by Google Inc. The Open Handset Alliance, a group of 34 hardware, software, and telecommunications companies, was then formed to develop Android. Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia are just a few examples [6]. Different definitions, Android is an open source operating system based on Linux with an open platform for developers to create new applications. Thus, it can be concluded that Android is an operating system or operating system that is open source and is used on mobile devices (smartphones) today [7].

2.3. Class Diagram

According to Ade Hendini (2016), a class diagram is a link between classes and a comprehensive description of each class in a system design model, displaying the guidelines and obligations of entities that control the behavior of the system [8]. Class diagrams also show properties, methods, and class boundaries, as well as connections between related objects. Classes, relationships, generalization and aggregation, attributes, operations, visibility, and the level of access of external objects to operations or attributes are often included in class diagrams. Multiplicity or cardinality are terms used to describe how classes relate to each other.

2.4. Website

The web is a collection of web pages that have been published on the Internet network and have a URL (Uniform Resource Locator) domain that can be accessed by any Internet user by entering the address [9]. Claims that the most widely used HTTP-based online application is the web. The web, which is a system in which information in the form of text, sound, or images stored on a web server is presented in the form of hypertext, is basically a collection of pages that function to convey technical information. Users can access available web pages using active text known as hypertext [10].



Different definitions, Website information pages are provided through the Internet, so they can be accessed all over the world as long as they are connected to the Internet network. According to the above statement, a website is a group of web pages that are part of a domain and are used to display written information, still or moving images, animation, sound, or a combination of the above [11].

According to the above-mentioned experts, the Web is an application consisting of multimedia content (text, photos, animations and videos) that adheres to the HTTP (Hypertext Transfer Protocol) protocol and requires a browser to access.

2.5. Hypertext Preprocessor (PHP)

Hypertext Processor or PHP is a server-side programming language that is used in HTML pages during web development. By using PHP, the web can be made dynamic, making it easier and more effective to maintain the website. PHP is free software available through the official website <http://www.php.net> and is openly distributed and licensed. C is the language used to create PHP [12].

Other opinions, PHP is a programming language that can be inserted into HTML. PHP is often used to create dynamic websites, meaning that PHP can create a display based on user requests, for example, it can access a database and display it on a web page. PHP is also often used to create a CMS. Although PHP and HTML are intertwined, there are some differences. The idea is that PHP is used to handle data from the server side to create a dynamic web display, while the HTML code is intended to be the initial foundation of the web layout framework [13].

From some of the above opinions, the author concludes that PHP is a server-side scripting language designed specifically for building websites. PHP is known as a server-side programming language because it is processed on a server computer, although it can also be used as a standard programming language.

2.6. Xampp

In Apache Friends, XAMPP is the most popular PHP development environment that distributes Apache completely free and easy to install with MariaDB, PHP and Perl. The XAMPP open source package is organized to be very easy to install and use.

Other opinions, Describes Xampp as a program that provides a software bundle in one package. Apache, PHP, and MySQL web servers can be automatically installed and configured by installing Xampp. It is automatically installed and configured by Xampp [14].

claims that XAMPP is a collection of many applications and is free software that supports various information systems. The Apache HTTP server, MySQL, and language translators created in the PHP and Perl programming languages are all included in XAMPP, which runs as a standalone server (localhost).

Based on the above, the author concludes that XAMPP is an application that can be used as a local server to run a website [15].

2.7. Prototype Model

The prototyping model approach is used when the user only specifies the broad objectives of the software without specifying the input, processing, and output requirements, and the developer is uncertain about the effectiveness of the algorithm, the suitability of the operating system, or the design of the required human-machine interface [16].

2.8. Black Box Testing

The testing process focuses on reducing errors that occur when the application runs and testing the quality of the application. System testing consists of testing the

functionality and quality of the application. Function testing is used to check whether the functions performed are working properly. System quality testing is used to check whether the system created is suitable for use. Testing is done using black box testing.

Black box testing is a technique in which units or modules are simply run or executed and then observed to see if the results match the expected business processes. In other words, black box testing is user testing. Customers who order software usually participate in software testing using a black box approach. From this, you can learn what the client wants from the software, such as whether they want to see changes or how the software works to gain a better understanding [17].

3. Result and Discussion

3.1. Analysis of the Running System

Analysis of the system used at PT. Solusi Hidup Mandiri (SHM) uses Microsoft Excel as the attendance database and also uses the WhatsApp application as the employee attendance. The running system of the facilities and infrastructure inventory information system can be seen in Figure 1. below.

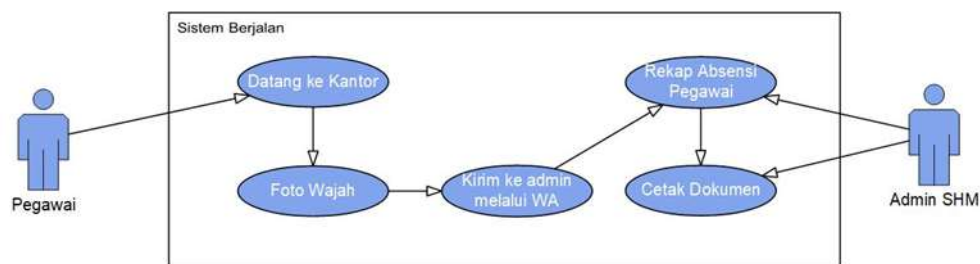


Figure 1. Uses Case Diagram of the running system

3.2. Analysis of Proposed System

The proposed system analysis in this study can be seen in Figure 2. below.

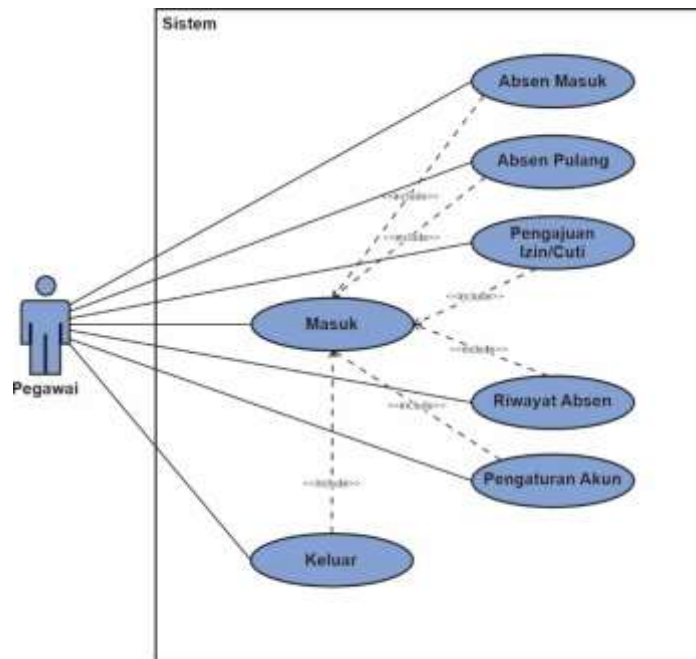


Figure 2. Use Case Diagram of the proposed system on android

The explanation of Figure 2. is that in the android application employees can access login, clocking in, clocking out, applying for permission / leave, recap attendance, account settings, about accounts, and logout.

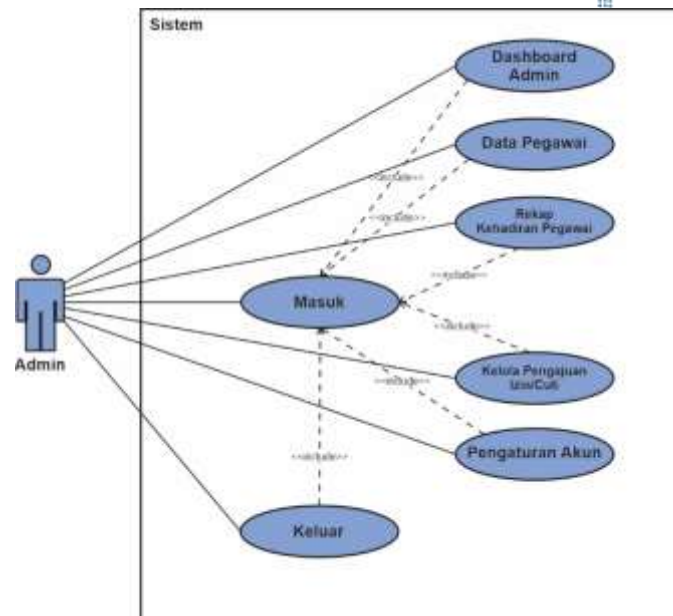


Figure 3. Use Case Diagram of the proposed system on the website

The explanation of Figure 3. is that the admin uses a web application where the admin can manage user data, employee attendance recap, manage permit / leave applications, employee data, about the application, and exit.

3.3. Relationship Table

A relation table is a relationship between one set of entities and another.

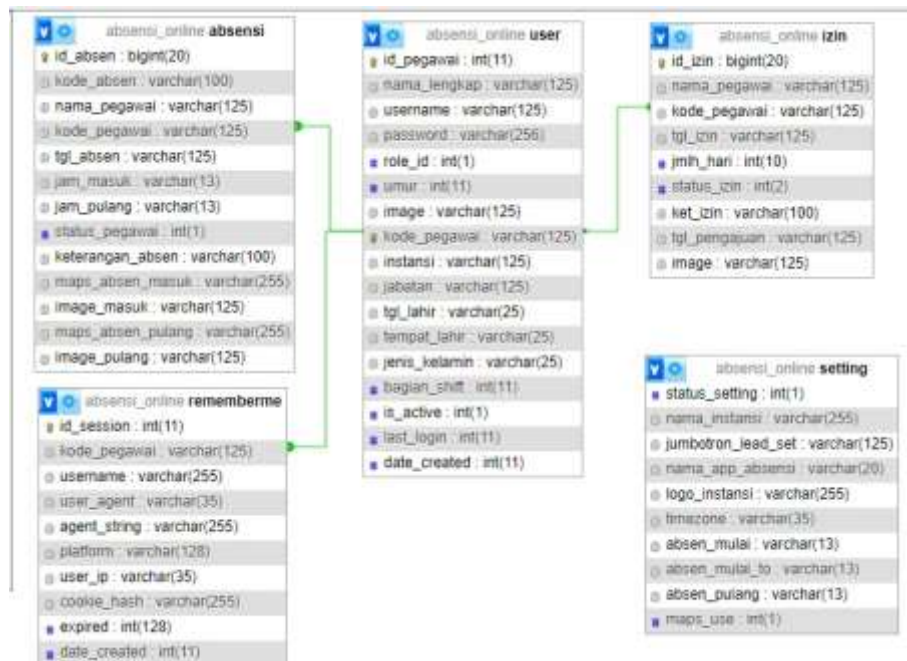
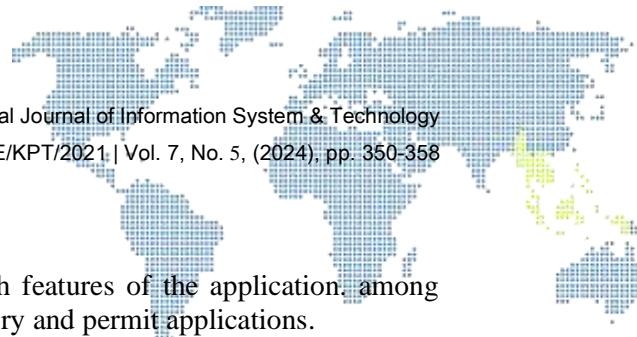


Figure 4. Relationship table



3.4. Interface Implementation

a) Main View

In Figure 5 above, displays user info along with features of the application, among them are attendance, return attendance, absence history and permit applications.



Figure 5. Main view

b) Clock-in Menu

In Figure 6 above, displays the absence menu that has a location photo feature, location coordinates and auto-filled time as well as the addition of a description and send button.



Figure 6. Clock-in menu

c) Clocking out Menu

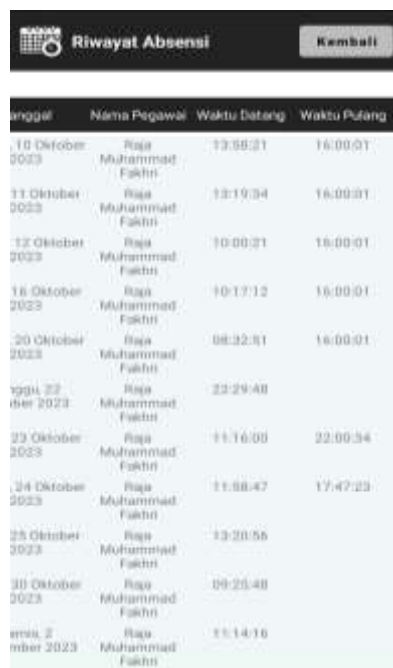
In Figure 7 above, displays the absent home menu which has a photo feature, auto-filled location and time and a send button.



Figure 7. Clocking out menu

d) Attendance History Menu

In Figure 8 above, displays information about attendance history. there is information on the date, employee name, arrival time and return time.



Tanggal	Nama Pegawai	Waktu Datang	Waktu Pulang
10 Oktober 2023	Raga Muhammad Fakhri	13:55:31	16:00:01
11 Oktober 2023	Raga Muhammad Fakhri	13:19:34	16:00:01
12 Oktober 2023	Raga Muhammad Fakhri	10:00:21	16:00:01
16 Oktober 2023	Raga Muhammad Fakhri	10:17:12	16:00:01
20 Oktober 2023	Raga Muhammad Fakhri	08:32:31	16:00:01
22 Oktober 2023	Raga Muhammad Fakhri	22:29:48	
23 Oktober 2023	Raga Muhammad Fakhri	11:16:00	22:00:34
24 Oktober 2023	Raga Muhammad Fakhri	11:58:47	17:47:23
25 Oktober 2023	Raga Muhammad Fakhri	13:20:56	
30 Oktober 2023	Raga Muhammad Fakhri	09:25:48	
31 Oktober 2023	Raga Muhammad Fakhri	11:14:16	

Figure 8. Attendance history menu

e) Permit Submission Menu

In Figure 9 above, displays the license submission menu, which includes a date selection feature, the number of days to submit a license, a description of the license and a send button.



No	Tgl Pengajuan	Tgl Izin	Jumlah Hari
1	Kamis, 12 Oktober 2023	Rabu, 4 Oktober 2023	2
2	Sabtu, 16 Oktober 2023	Rabu, 18 Oktober 2023	2

Figure 9. Permit submission menu

f) Dashboard Admin

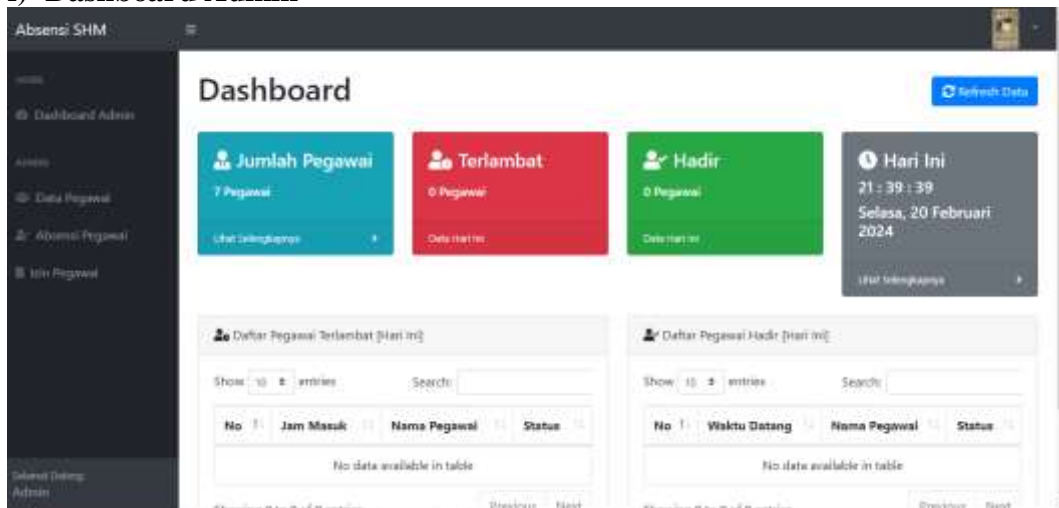


Figure 10. Dashboard

4. Conclusion

Employee Attendance Application at Pt. SHM Android-based is designed using UML models which include activity diagrams, sequence diagrams, class diagrams. Attendance is done directly through the android application by utilizing the camera and location features that can be known by the admin where the position is when doing attendance. Based on the results of the usability assessment, the percentage of feasibility obtained is 93% which is in the "Very Feasible" category.

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