Android Based Mobile Attendance System Application Online for on Site Engineers at PT. ZYX Indonesia

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Abstract—As the development of technology almost everything can be done to use android, android is a Linux-based operating system with a system of open source. To develop an android application is also less because there have been many tools already full code or guide. PT. ZYX Indonesia on all Site engineers have already complimented Android smart phone. Attendance System now still uses a web base and need more time to do the attendance, such as the need to open the laptop, web browser login, enter the page absent recently could do absent. In this case, the study attendance system will be designed with the android application. This application will facilitate an engineer for absent because the user interface is very easy when directly connected to the login timeout page attendance. Facilitate the management of a company to monitor employee attendance and check location when employees are working.

Keywords – Attendance System, Android, Web Base.

I. INTRODUCTION

Android is a Linux-based operating system that is officially released in 2007. Android user interface is a direct manipulation using touch motion similar to that of real actions, like sliding, knocking, and pinching to manipulate the screen. Android is an operating system with open source, android allows the software to be modified freely and in distribution by the owner, wireless operators, and development. Along with the development of technology, application on Android can already base online and can be accessed anywhere long as it’s been recovering secular of data.

Based on the fact the market a lot of brands using the android OS because in addition to open source has many developers. The same case in PT ZYX Indonesia, for any Site Engineer, gave facilities be Android-based gadgets to support employee performance as used to communicate quickly.

The problem at this time is the management of the company can not monitor when the attendance using the Web base and for employees take longer time when using the Web base, with the Android application facilitates the management of the company to monitor employee activity and make it easier for employees to be absent.

To support technology advances and employee productivity will make Android Based Mobile Online Attendance System Application for on Site Engineers that can be used practically by employees such as when want to absent no longer need to open a web browser and enter the destination page but by opening the application and simply pressing the attendance and all data will be recorded automatically so that makes it easy for employees and administrators. This paper focuses on the attendance system by using an Android operating system and the administrator will check detailed information in web-based technology.

Different from previous method attendance is the administrators can monitor the real situation with a photo and current location during the employee works. The company management has the track record that stores on a database to check real attendance employees because they are site engineers. This attendance based system can be adapted for various other scenarios also, such as offices. It is cost-efficient and has to be maintained only once or twice in a year[1].

II. METHODOLOGY

A. System

The system is the unity that is composed of many components or sub system oriented to achieve a particular goal. A system can perform its intended task with various performance rates [2].

B. Attendance System

The system is a unified effort consisting of parts that are associated with each other are trying to reach a destination within a complex environment.
Absent is not the entry of an employee at the time workdays, consent, due to illness, leave of absence, or alpha. The attendance system is the system of tacking the attendance of the student based on presence in the class [3]. After attendance, the system stores data on a centralized database[4].

C. Android

Android is a software platform and operating system for mobile devices, based on the Linux kernel, and developed by Google and later the Open Handset Alliance. It allows developers to write managed code in the Java language, controlling the device via Google-developed Java libraries. There are over 300 million Androids in use and over 850,000 devices activated every day. Android is one of the most used mobile operating systems with a market share of 48% and Over 400,000 applications available in Google play store[3].

D. Tools

The eclipse will be used for development because it is a multi language software development environment comprising a base workspace and an extensible plug-in system for customizing the environment.

Structured Query Language (SQL): This is a language specifically designed with databases in mind. SQL is the database tool that will be used for this project because there is a need for a database, adding new data, maintaining data, and also retrieve selected parts of the project. [5].

It is crucial to have adequate tool support for multi platform application development. Since two versions of an application are developed, the development environment logically consists of three IDEs: two platform-specific IDEs and one for developing the PIP. Thus, it is very likely that a combination of several tools is used for multi platform application development. We configure a custom multi platform application development environment by composing platform-specific IDEs and tools as suggested in [6].

E. Design Method Application

Rapid application development (RAD) is an approach to information systems (IS) development which is much discussed in the practitioner literature. However, there is comparatively little research data on this topic. This paper forms a report of the results of a multi disciplinary research project which has been studying this development approach for the last three years. Several people see RAD as a complete approach to information systems development in that it covers the entire life cycle, from initiation through to delivery. This method seems particularly directed at melding standard development issues such as project management, quality assurance, and software testing with the exigencies of rapid development[7].

Rapid Application Development techniques to mitigate time loss [8].

For this picture describe the RAD method, as follow:
- First will create planning terms for identifying goal and information terms. Aims to detail specification planning and where the application is made.
- The next step is between employee or user and who create a build system. This step will find match goals between the two and will run if there are changes.
- Implementation for introduction new system to a user, aims user know to used and operation this application.

Design System

In this case study author designing building Android-based applications to do attendance officers are mobile using mobile phone android, the system uses 1 piece of a computer, internet, and mobile data access Android as the simulator program. Where the computer as a server, mobile as a medium where the application will be installed and access data on the internet as a media liaison of the phone as a client with the server computer over a network. System development using the application of one form following the development of Industry 4.0 is the Internet of Things, utilizing an existing server to be developed that previously used Web base to Android application.

The following illustration image when the user uses the android application to absent and should be connected to the internet network, internet network here could either be wireless or packet data. Computer servers here as storage or storage of the database of the system, where attendance data, the user of data and units stored. So that the client
can be connected to the server computer, then used the internet as a network connection. After a client is connected to the local network and are located in a radius of work system, then the client can perform data input employee ID that contains the absences, the ID of the unit, the date, the hour, the status (input or output) into the database.

Use Case

Based features of design attendance system that have been made at in the previous stage, then it can be described use-case diagram of the system is as follows:

![Use Case Diagram](image)

The following of picture description:
1. The system has 3 actors associated with another system function, like Admin and Employee. Admin has authenticate for registration, update, and attendance. While for employee-only login, take attendance and view detailed information of attendance.
2. The system has 5 functions, the following:
   - Registration of employee: when there is a new employee admin will be must registration can do attendance.
   - Update of an employee: when employee incorrect fill or forget to take attendance admin can be updated on the system.
   - Report attendance employee. Admin will be report attendance every day forgiven to leadership.
   - Take attendance: Employee must fill shift today the contains a selection of working hours, fill description if needed and must take a photo at the site.
   - View the attendance information: After clear take attendance, an employee gets view detailed information.

Flow System

At this stage, the system design will be done in the form of system flow to show the course of the program generally. System Flow is a great help in making an application. Because in addition to showing the course of the application program- sand users, system flow also shows the database required by the application, will describe with this picture.

![Flow System](image)

For flow system describe task Admin, Employee, and System, as following:
1. Admin Task is only input data employee to a system (maintenance data), that contains is table employee and table detail attendance.
2. Employee Process first login until the finish, when employee login can process verification what this username has access to entry application if success can get notification login success. The employee must choose shift, input shift, fill Column note, and take a photo to make sure that employees already visit. Next click Column "save" in a case to be saved on Database. Task employee is clear.
3. System Support admin and employee, connect the function table so that the application runs. In this application using UML. The data will be stored on the database system, this application will help the administrator to view the attendance yearly/monthly date wise, etc, according to users' needs [9].
III. RESULTS AND DISCUSSION

System implementation Testing application (software) is a critical element of quality assurance software and represents the principal study of the specification program consists of input-output. The test focuses on testing the front-end application (client service android) and report from the back-end (web service). Before opening, this application users must be connected to the Internet for the activities to be stored on the database.

A. Interface Implementation Front-end

This front-end interface implementation showing look of the application made to the android device by the design of a design that has been made before. One APK file contains all the contents of an Android app and is the file that Android-powered devices use to install the app [10]. The login form is an initial page that users see. On this page, there is a field username, password, and login button.

When an employee fills in a username and password, the system synchronizes to the database to ensure and give the employee access rights. Employees who already have an ID and are registered by an administrator who can log in. That also login to the system to show attendance and report all these tasks [3].

Images describe the employee design interface. You can see the employee information that is the full name, the status of EOS (site engineer), e-mail, and employee ID. Employees must ensure that all data displayed is appropriate including the type of attendance.

The selection of working hours should be adjusted to the job engineer work, there are 3 options: 09.00-18.00, 08.00-17.00, and 10.00-19.00.

Make sure the employee's advance is appropriate in the box provided, there are several camera functions:
- Ensure employees are up to the job site
- Monitor the situation where the employee's workplace
- See the neatness following the ethical work on the company.

Captions must be filled according to the job description at that time. After all the data appears to be correct, the user can press the "SAVE " button so that all the filled data is stored in the database.

B. Interface Implementation Back-end

This back-end interfaces implementation showing look of applications created for the web service by the design of a design that has been created and more detailed information than the front. Administrators can get more detailed information about the attendance of PT. ZYX Indonesia employees.
This login page is the home page of the administrator if you want to do a data processing system. On this page, there is a field username, password, and login button. If the username and password match will go to the home page, as follow :

On the home page as shown in the image above will be shown menu including menu absences, forum activity, task plan application, and HRMS (Human Resource Management System). In the dashboard, some charts can see the activities of the employees who have attended. This paper only focuses on report attendance system to get more detail employee information, the administrator can choose absences to access, as follow :

The picture above is after the employee performs the presence in the system. On the page as there are field shifts, descriptions, and key absences as seen in the picture above. On this page, there is more detailed information such as name, job, e-mail, and delay status of attendance. The following data absent all employee, as display in Figure 10.

In this capture will be visible to any employee who has already made a presence according to the hour and attendance status. On the system that is created, if the employee does not use photos then it is considered absent. This is a request from personnel so that all employees work on the site. IP usage can also be seen to ensure the location where employees do attendance.

The integrity of data is very important because integrity ensures that any unauthorized attempts to modify data being transmitted or stored will be detected [11].

I get data attendance, an admin will export to excel useful for report absent. the following data attendance in Excel :

The list of developed through Android application is synchronized and can be exported to Excel format, aims to facilitate the personnel section to calculate employee attendance.

IV. CONCLUSION

Android application will make it easy for site engineers to attend because of no need for an open laptop, connect to the internet, open web browser, enter URL page, choose absent, and new could attendance. When engineers open Android phones and then open applications get access to attendance.

With this Android app, employees can save time and facilitate accessing the attendance system. The time it takes to turn on a laptop until it goes to a web page long enough then an employee opens a presence via Android. In this paper all employees of PT. ZYX Indonesia is already a facilitated laptop and Android smart phones.

This application creation is one way to overcome the site engineers working from home, an administrator can see where site engineer location by using IP address, it is an advantage.
For development Android makes is easy because on the previous web application and already uses UML because already familiar at world programming and detail, for example, use activity diagram, use case, and sequence diagram. The programmer only translates code to android application. In general, the attendance system can be maintained in two ways like manually as well as automatically. Manual attendance may be considered as a time-consuming process. Automatic Attendance System is better to solve all the issues of a traditional process[12].

V. RECOMMENDATION

This is the first version Android application made by PT. ZYX Indonesia. After full implementation to the employee will be developed again features such as a time reminder attendance that aims to prevent employees not forgetting to do a presentation on the system.

The design and user interface must be developed to improve employee communication with the application. Developing so that the application can work faster considering the current Android is the fastest operating system update version.

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