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WFH Online Presence Application Using Mobile-Based Fingerprint and Face Recognition (Case Study: PT. Toko Damai Sejahtera Rengat City)

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Abstract: Attendance is a data collection activity to determine the number of attendances at an event or activity, where an office activity can be said to be going well if there is employee discipline in carrying out its work, besides that attendance also has an important role in determining the performance and quality of the employees themselves. The development of increasingly advanced smartphone use can be used to easily monitor employee attendance processes, the use of mobile and web applications is said to be more effective and efficient because of the ease in accessing and retrieving information, with this application of face recognition and fingerprint technology can also be used as attendance media as a substitute. signatures and to avoid fraudulent absenteeism by other employees, such as sending accounts and passwords to other employees whose positions are far from the office environment, you can use the GPS feature on the smartphone as a marker for the location of the attendance user and use the face detection feature to avoid fraud.

Keywords: *Smartphone, GPS, Fingerprint, Face Recognition, Absence*

1. INTRODUCTION

The pandemic has limited employee productivity by dividing employee work time into 2 shifts, a week at home and another week at the office. Productivity certainly greatly influences a company's performance, so this must be paid attention to and maintained. Applications can be used in various fields. One of them is the WFH online attendance application which will certainly help employees make it easier to attend from home. This of course requires the right tools to prevent falsification of data by employees. The tools used are very familiar and of course every employee has them, namely a smartphone that has a fingerprint sensor and also GPS as a tool for tracking the employee's home location.

2. LITERATURE REVIEW

As consideration and to enrich the literature in this research, the author presents several previous studies that have been studied as references in the analysis of this research. In [1] conducted research with the title "Creating a Fingerprint Attendance Program for the Warehouse Department of PT. Puji Surya Indah". Basically, it is aimed at helping employee productivity by monitoring employee performance through their attendance. for example, do they always show up on time, do they often work overtime, and so on. However, appropriate

tools are also needed to prevent falsification of data by employees. For example, if you use a timestamp machine, company employees can falsify their attendance data by entrusting their attendance cards (to be stamped) to their colleagues, with the help of an attendance tool that uses fingerprints.

According to [2-4] conducted research with the title "Designing a Presence Information System Using Fingerprints for Karawang Regency Civil Servants" which aims to be able to find out employee discipline early, namely with a control system that functions to control absenteeism, even though absenteeism does not represent all that with absenteeism. good means that the employee has a good work ethic, but at least to start with the discipline of coming to work on time and leaving on time with the help of private fingerprints. Refer to [3-5] conducted research with the title "Analysis of the Application of Fingerprint Attendance in State Civil Servants in the Samarinda Ilir District Office, Samarinda City" which aims to describe and analyze the Application of Fingerprint Attendance in State Civil Servants in the Samarinda Ilir District Office Samarinda City with a research focus, namely work productivity, time efficiency, paperless, providing information, and inhibiting factors in the Implementation of

Fingerprint Attendance in State Civil Apparatus at the Samarinda Ilir District Office, Samarinda City.

In [6-8] conducted research with the title "Design and Implementation of a Student Attendance System Using a Microcontroller-Based Fingerprint" which aims to create an attendance system with the implementation of a portable microcontroller with a fingerprint which will later be used in the Jena Achmad Yani University information system. Discussion in [9-10] conducted research with the title "Designing a Lecture Attendance System Using Radio Frequency Identification (RFID)" which aims to support the smooth running of the academic lecture process at UNIKOM so that it can run effectively and regularly. From some of the journals above, it can be concluded that the use of digital attendance can make it easier and discipline users, so that at the Damai Shop in Rengat city, a attendance application is needed to make it easier for employees to take attendance from home during a pandemic like this and make it easier for managers to monitor employee performance through presence and increase employee discipline.

3. METHODOLOGY

In preparing this research, the author used the waterfall method. The waterfall method carries out the software development process sequentially, where progress is seen as continuing to flow downward (like a waterfall) through the phases of planning, modeling, implementation (construction), and testing. In its development, the waterfall method has several sequential stages: requirements (needs analysis), system design (system design), Coding & Testing, Program Implementation, maintenance [11].

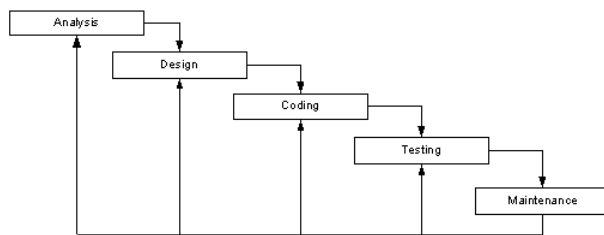


Figure 1. Waterfall method process

Data collection was carried out using 2 sources, namely data from interviews and observations and data from literature studies. In research, the stages of the research process apply certain scientific methods and techniques in order to collect data systematically. The interview was conducted with one of the employees of PT Toko Damai Sejahtera in Rengat City. Then observations were carried out directly on employees, in this case observing the method used during the attendance process which is usually carried out during a pandemic. This observation also looks at whether the application that will be designed will suit the needs and also the availability of devices that will be used as attendance media later, such as smartphone specifications [12].

3.1 System Planning

System behavior modeling is created using use case diagrams to describe the relationship between actors and the system.

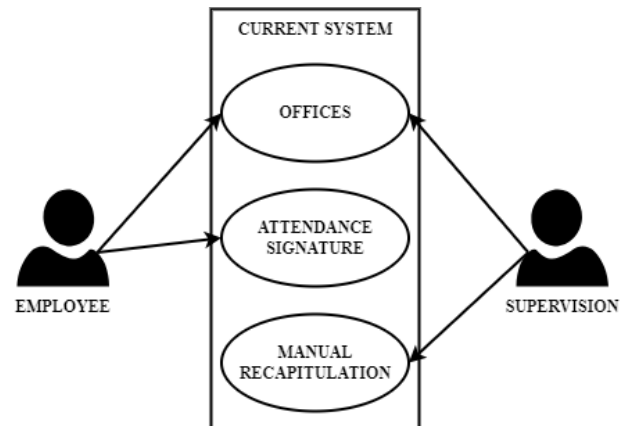


Figure 2. Use case diagram system

Designing the overall system flow diagram is the process of depicting step by step how sample test data is transmitted within the system. The following is an overview of the system workflow design [13].

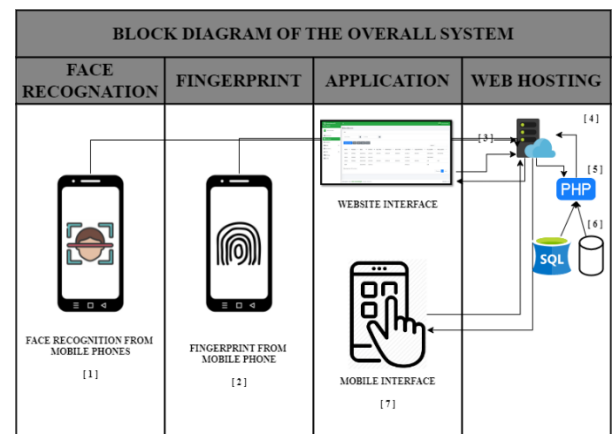


Figure 3. Overall system block diagram flow

The way the presence application is created is that when the application is run it will immediately be directed to the initial appearance of the presence application. Presence is done by attaching your fingerprint to the smartphone fingerprint. Then, if the fingerprint is correct, the next process is to read the location via the smartphone's GPS. If the location data is incorrect, the attendance process cannot be carried out. Then, if the location data is correct, the attendance data will be entered into the server database, all data will be displayed on the presence information system website interface which can only be accessed by the admin [14].

This is a flowchart program explains how the attendance process is carried out using several methods, such as using a camera for face detection and using fingerprints for fingerprint authentication as well as choosing a location before taking attendance [15].

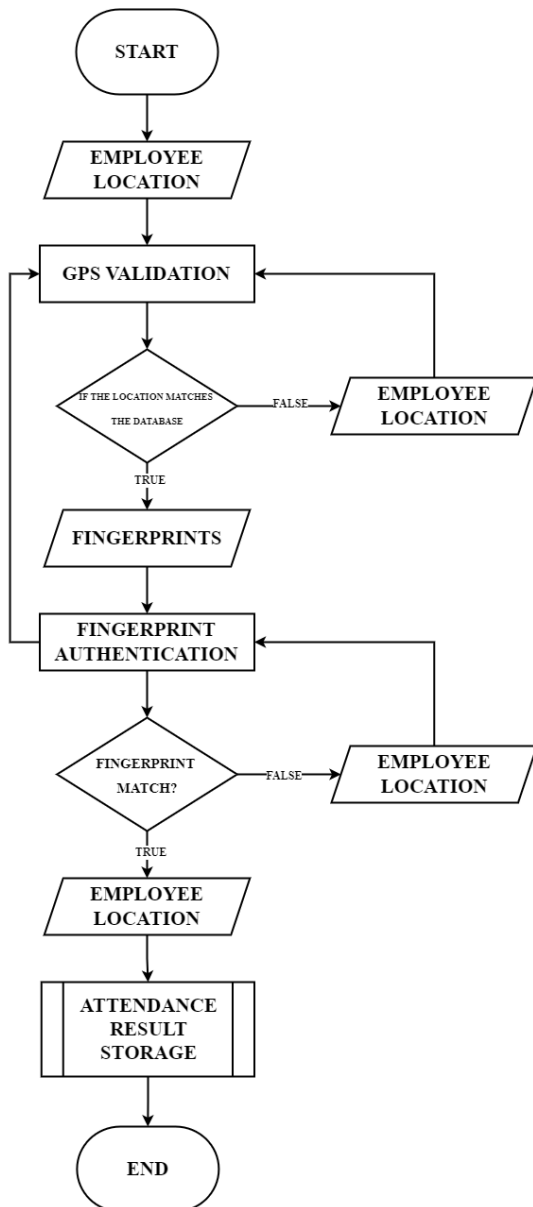


Figure 4. Flowchart attendance process

3.2 Display Design

The check-in form display is a form that functions to perform presence using your face, fingerprint and GPS when entering and leaving the office according to the schedule specified on the web server.

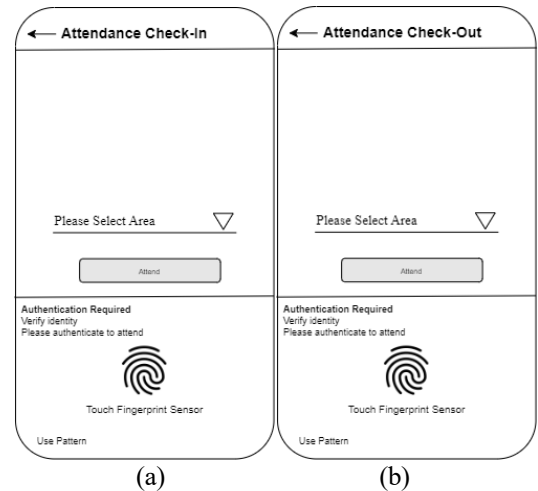


Figure 5. Display form (a) check-in (b) check-out

Attendance output display, the data displayed is the result of attendance carried out by employees through an application with a series of processes so that the data can be entered into the web server or absentee output page, this absentee output is printed in CSV, PDF and Excel formats [16].

Attendances Attendance Fingerprint (Toko Damai)									
Name	Date	In Time	Out Time	Work Hour	Over Time	Late Time	Early Out Time	In Location	Out Location
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Figure 6. Attendance output display

4. RESULTS AND DISCUSSION

The results of this research are in the form of a web-based application and will be tested using the black box testing method. Black box testing is carried out in the form of testing the functions of each page.

The check-in process where the 1st process is the main check-in display, the 2nd process selects the attendance location, the 3rd process presses the attend button when you want to take attendance, the 4th process incorrect face verification, the 5th process faces verification Correct, the 6th process is fingerprint authentication and the 7th process is display when all attendance processes are successfully carried out

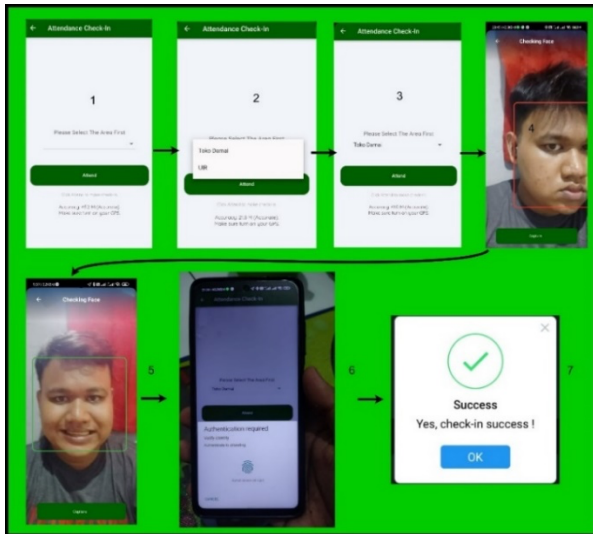


Figure 7. Attendance process page

The Absence Data Output page contains an attendance output display from the input in the application when employees enter and leave attendance

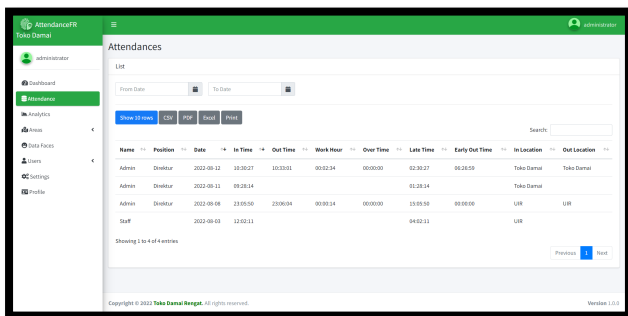


Figure 8. Attendance putput page

Anti-fake GPS is a test feature for detecting the use of third party applications when entering and leaving attendance at different locations.

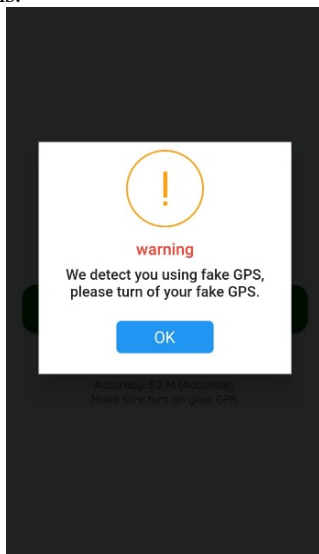
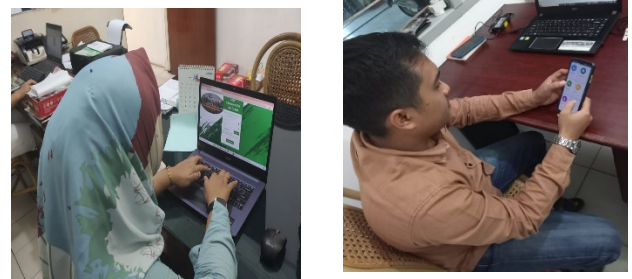


Figure 9. Anti-fake GPS notification

This test aims to see how effective and accurate the application will be used as an attendance media for PT Toko Damai Sejahtera employees.



(a) (b)
Figure 10. Use of the web administrator (a) staff used (b) use of the attendance application by staff

5. CONCLUSION

Based on the results of the web-based furniture sales promotion application design, it can be concluded as follows: This system can make it easier to monitor employee performance and can minimize fraud. This attendance system using barcodes, GPS, fingerprints and facial detection can be implemented well. The results of system testing by 20 respondents obtained 86.6% so that this application can help employees carry out attendance during the pandemic and is suitable for implementation at PT Toko Damai Sejahtera, Rengat city.

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