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Location-Based Employee Attendance Application Development Universitas Pembangunan Nasional "Veteran" Yogyakarta

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Abstract

The development of information technology has now been widely used to facilitate, accelerate, and streamline work. The presence system that is still being applied is a type of precession using on-site presence. When viewed from a special point of view, lecturers have a weakness because they have to come to the location of the biometric machine. The new technology of attendance system using location (LBS) is an alternative solution for some employees, especially lecturers who often have scheduled in the field. Even though it is not on campus, this location-based presence is able to capture the position of employees during attendance. The truth data is matched with a warrant from the leadership for the correctness of the employee's path. The result of this research is that location-based employee attendance applications have been developed. With the location-based attendance system that is integrated with the official letter system (SIRADI), employees who have difficulty coming to campus locations to do fingers can still get their rights in a position when the online presence is doing other tri dharma activities.

Keywords: Presence, System Integration, Location-based Service

I. INTRODUCTION

I.1. Background

The development of information is currently growing rapidly, almost all services are created to facilitate humans. One form of this convenience is the ease of obtaining someone's spatial data. This service can be used to find out the location of an employee/employee in real-time in order to improve work ethic and minimize any fraud that can be committed by employees that have been regulated in attendance management.

Teaching staff, such as lecturers, need attendance to see that the workload of the lecturer is as written in the Letter of the Director-General of Higher Education No. 3298 / D / T / 99 dated 29 December 1999 has been fulfilled (Letter of the Director-General of Higher Education, 1999). Attendance can also be a benchmark for granting honoraria to lecturers as regulated in Law Number 14 of 2005 Article 52. Currently, UPN "Veteran" Yogyakarta uses a biometric attendance machine. This

presence machine has several weaknesses, including being prone to distortion caused by dirt to the use of prosthetic organs (Rosyadi, 2015). In academic and student activities, attendance data collection activities are routine. In general, this is done by signing an attendance sheet (Assa'idah, 2013).

In a company requires policies, especially the level of employee discipline. The discipline of employees is the main benchmark in seeing employee performance based on their presence in the company (Mulyandi, Rachman, & Dini, 2014). Based on attendance data, a company must have an employee attendance system that can regulate employee attendance based on obligations, prohibitions, and sanctions if an employee's obligations are not obeyed or violated (N.F, Anggriana, & Soeliman, 2017). This is comparable to the three important roles of information systems for organizations according to Alter (Alter, 1992), quoted from Kadir (Kadir, 2003), namely:

a) Participate in the implementation of tasks.
b) Link planning, workmanship, and control in a subsystem.
c) Coordinating and integrating subsystems.

With the current COVID-19 outbreak, at least the presence of presence is important. Administrative activities that are actually carried out face-to-face, must be carried out online and must be proven by the position of the employee's presence through location-based services. Based on several existing references, this study focuses on the development of a location-based presence system. This system will take the coordinates of the employee's position and will also be integrated with the staffing system for employee master data.

I.1.1. Formulation of the problem

From the above background, the formulation of the problem in this study is

1. How do you create a location-based service employee attendance system using Google Maps?
2. How do you integrate the attendance system with the staffing system?

I.1.2. Benefits of Research

The benefits expected from this research are

1. Make it easy for employees to make attendance based on location without having to go to campus.
2. Improve administrative services, especially for lecturers.

I.1.3. Research purposes

The purpose of this research is to develop a location-based employee attendance information system (LBS).

II. LITERATURE REVIEW

II.1. System

Quoted from the Enterprise Information System, O'Brien and Marakas (O'Brien & Marakas, 2007) define that the system is a collection of several interconnected components, clear boundaries of tasks and functions of each part that work together to achieve one goal. The definition of a system according to Jogiyanto (Jogiyanto, 2006) is a collection of elements that interact to achieve certain goals. This system describes the facts of events such as places, things, and people that actually happened. Some of the characteristics of the system (O'Brien & Marakas, 2007) are:

a) Limitation
   A description that shows what is included in the system and which is outside the system.
b) Environment
   Everything that is outside the system.
c) Input
   Resources or everything that comes from the internal system and is consumed and manipulated by the system.
d) Output
   Resources that are the result of the system.
e) Process
   Activities or processes in the system that inform inputs into outputs.
f) Control
   A process of monitoring and managing the subsystems in carrying out the process.
g) Feedback
   An assessment mechanism or provide input on what has been processed.

II.2. Information

Understanding information according to Kenneth C. Loudon (Loudon, 2016) is data that has been processed into a form that is useful and can be used for humans. Meanwhile, according to Jogiyanto (Jogiyanto, 2006), information is data that has been processed into a form that is more useful for those who receive the information. Information itself can be in the form of messages, voices, data to have meaning and can provide input to strategic policymakers. Information is the knowledge that is communicated. The information itself has the following characteristics (Fatta, 2007):

a) That information can be true or false.
b) Information is New.
c) Information can be in additional form.
d) Information can be used for correction.
e) Information reinforces existing information.

II.3. Information Systems

The information system according to Hall (Hall, 2001) cited by Kadir (Kadir, 2003) is a series of formal procedures in which data is grouped, processed into information, and distributed to users. In fact, the information system does not have to involve Information Technology (hardware). Before technology, information systems run manually without using a machine or computer. Information systems that use technology or computers are called computer-based information systems. But in practice, the existence of hardware cannot be separated from the information system. Some examples of information systems are:

a) Academic information system
b) New student information system

c) Personnel information system
d) Ticket reservation information system
e) Tourism information system, and so on.

II.4. Location-Based Service

Location-Based Service is an information service that can be accessed via a mobile device using a mobile network, which is equipped with the ability to take advantage of the location of the mobile device (Jogiyanto, 2006). There are 2 types of services that can be used in the use of location-based services, namely using GPS or A-GPS. From these two services, the user's position will be obtained in the form of longitude and latitude coordinates. Location-Based Services can also be seen in terms of the services provided, such as Reactive Location-Based Services and Proactive Location-Based Services.

III. RESEARCH METHODOLOGY

III.1. Research Methods

The research method used as a flow to obtain primary and secondary data is

1. Study of literature
   This stage is the stage of gathering information and literature needed to make a final project management application, an integration scheme with SADEWA. The information and literature used include systems, information, information systems, scientific papers, final assignments, and theses in the study program.
2. Interview
   This stage is carried out to obtain information about how to reference the final project management system is in several universities by authorized academic staff.

III.2. Systems Development Methodology

The development methodology that will be used in this research includes the waterfall method used in designing software development (Pressman, 2012). The method image is presented in Figure 1 below:

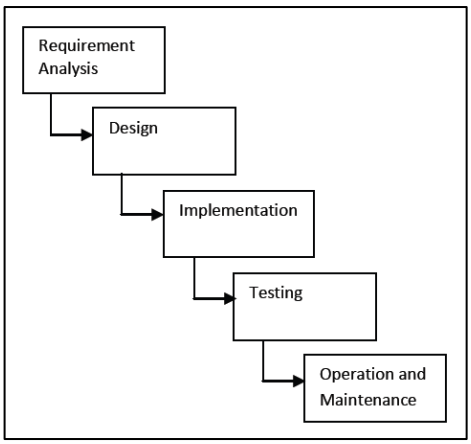

Figure 1 Waterfall concept

The stages of the waterfall method :

1) Needs Analysis Stage
At this stage, it begins to determine the services, limits, and system objectives are determined in consultation with the system user. These requirements are then defined in detail and serve as system specifications.
2) System Design Stage
The system design process divides the requirements into a hardware or software system. This activity determines the overall system architecture. Software design involves identifying and describing the basic software system abstractions.
3) Program Code Writing / Implementation Stage
At this stage, software design is related to a series of programs or program units.
4) Program Testing Phase
The program unit is tested as a complete system and the system is said to be good. System testing is done in a black box. The testing phase carried out is the alpha test and beta test.
5) Maintenance stage
The final stage in the waterfall model. The finished software is run and maintained. Maintenance includes fixing errors that were not found in the previous step.

III.3. Role User

Here are some user roles that were built in this study:

a) Admin
Admin conducts the monitoring process of the presence that has been done by employees.
b) Lecturer / Employee
Lecturers/employees carry out a location-based service presence process.

III.4. Flow chart

1. Flow chart Employees

Figure 2 shows the flow of information used by employees when using applications and making attendance. First, the employee logs in first then go to the presence menu, checks in, checks out and can see the location of the employee's whereabouts.

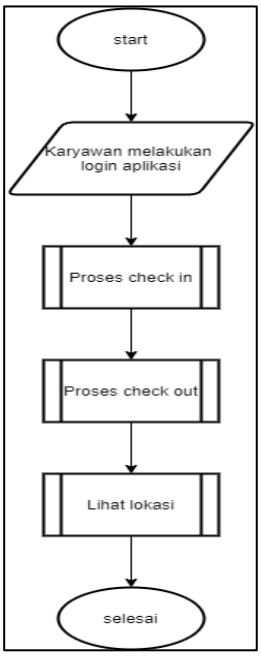

Figure 2 Flow chart Employees

2. Flow chart Admin

Figure 3 shows the flow of information in processing the attendance data of each employee. Admin can update attendance data and can see the location of employees at the time of attendance.

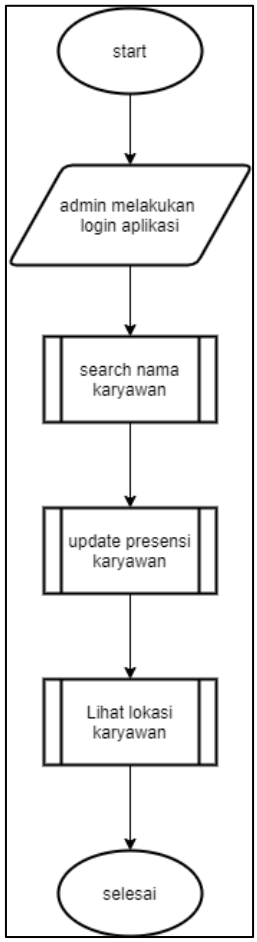

Figure 3 Flow chart Admin

III.4. Database Design

Based on data availability analysis, the database design is as in Figure 4 below.

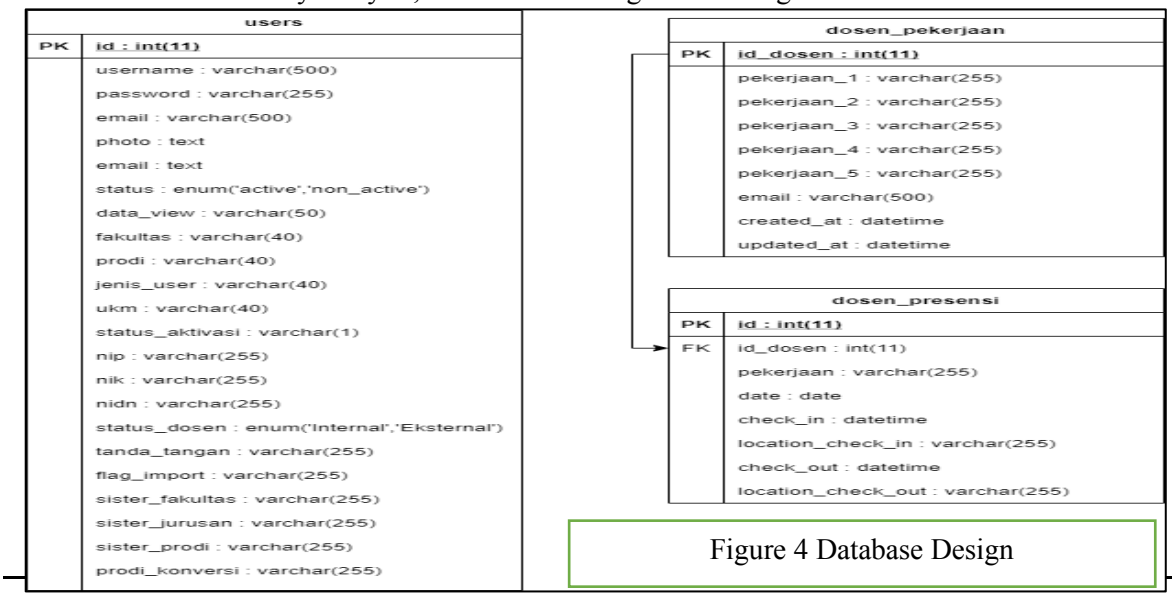

Figure 4 Database Design

IV. FINDING AND DISCUSSION

IV.1. Results of User-Side Systems (Lecturers)

1. Lecturer Login Page

Figure 5 shows the page used by the lecturer to carry out the login process. The lecturer accesses the address https://sadewa.upnyk.ac.id/login and log in using the previously created NIDN and password.

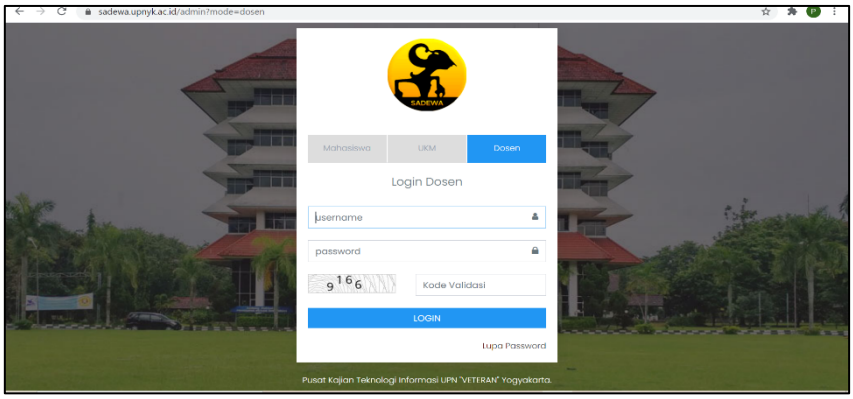

Figure 5 Lecturer Login Page

2. Attendance page

In figure 6 is the start page on the presence menu. This page is used to perform the attendance process from check-in to check out. Lecturers can access this page by clicking the attendance menu.

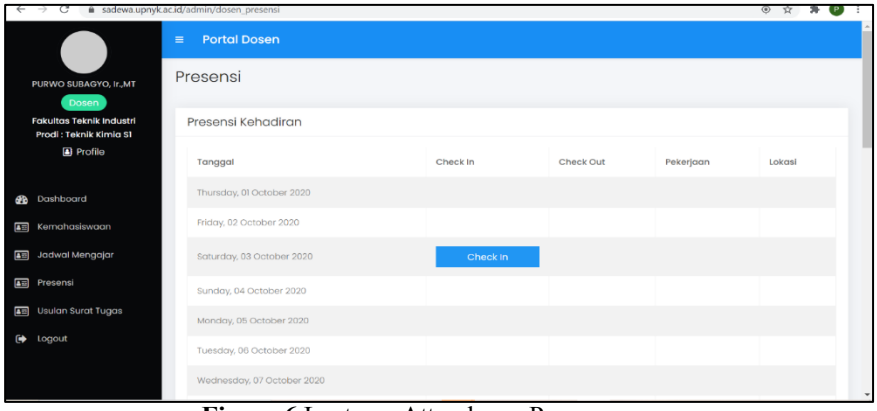

Figure 6 Lecturer Attendance Page

3. Check-In page

Figure 7 is the form that appears when pressing the check-in button. In this form, lecturers are required to fill in the work to be carried out on that day, a maximum of 5 jobs listed. After that, you can click the check-in button.

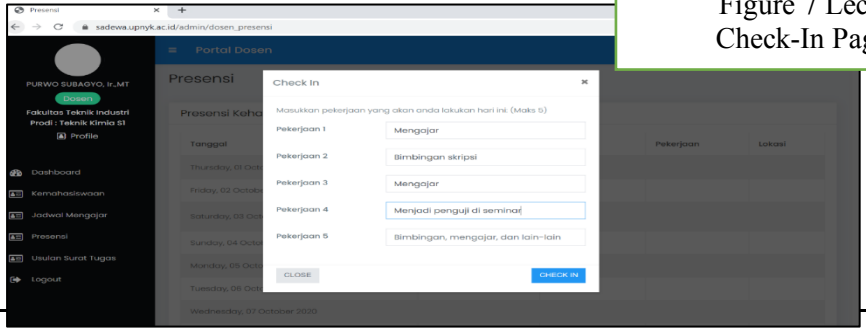

Figure 7 Lecturer Check-In Page

4. Check Out page

Figure 8 is the form that appears during the checkout process. In this form, it is expected to mark a checklist on the list of work that has been completed on that day. Then save the job information when finished marking by clicking the 'Save Changes' button.

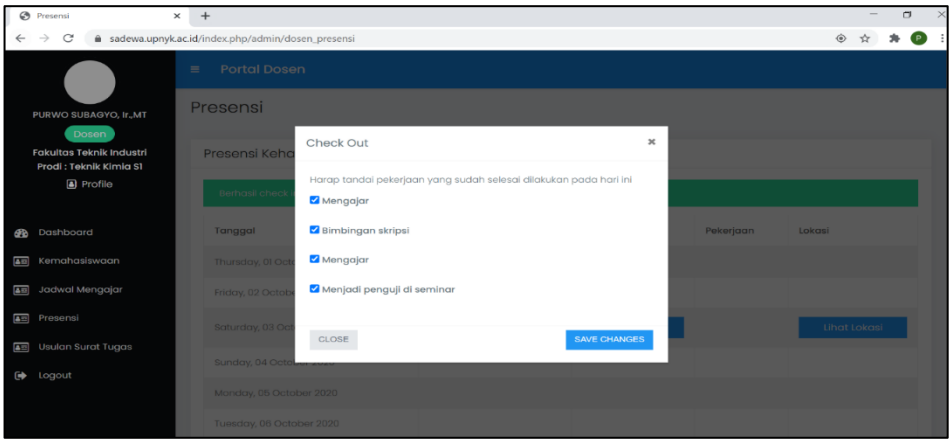

Figure 8 Check Out page

5. Page View Locations

Figure 9 is a page to see the location at the time of presenting on that day.

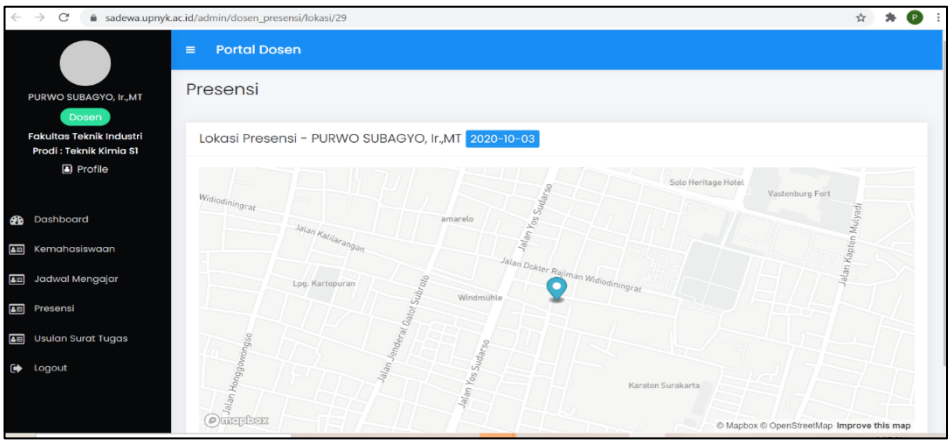

Figure 9 Page View Locations

IV.2. Admin Side System View

1. Attendance List page

After the admin logs in, which is the same as the lecturer user, the admin can monitor the presence of lecturers and employees by accessing the 'Presence' menu and the 'Daily Presence' sub-menu. In figure 10 is the presence page in the admin. The admin can filter the list by entering the name of the lecturer/employee, month, and school year.

The admin can also edit attendance data, but the only data that can be changed is the work data that has been completed. Meanwhile, the name, date, and time of check-in/checkout, and the location cannot be changed.

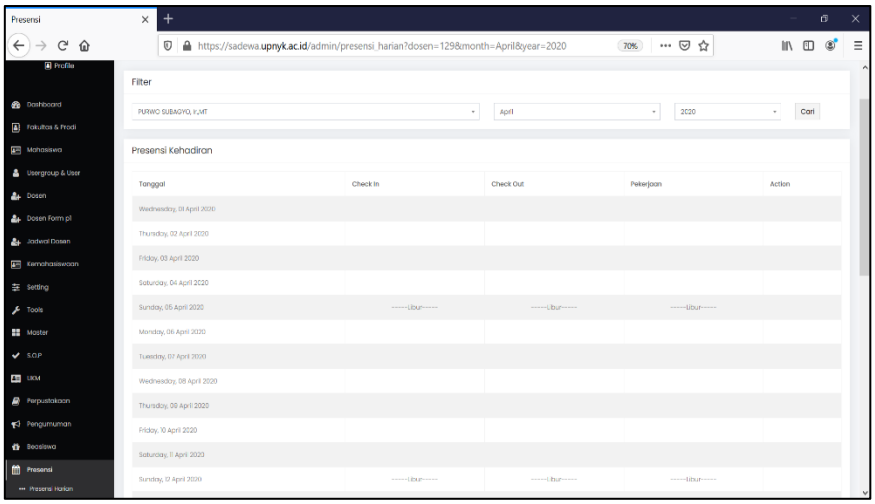

Figure 10 Attendance List page

V. CONCLUSION AND FURTHER RESEARCH

Attendance is one of the routine activities of employees at each institution. There are several models of presence in use today, such as the finger, face, ID number-based presence with web-based, mobile, or local position technology. Recording attendance (presence) at work is important to support the performance of an agency or a company. Attendance is also important when used for reports on the calculation of an employee's meal allowance because this attendance information can be a problem when the recording is not good or incomplete. The result of this research is an application that can monitor and know the location of employees during attendance so that work activities during the pandemic can still be carried out properly. Institutions must have a location-based employee attendance information system so that each employee can be monitored for their last position, especially for lecturers who are mostly outside the campus for the sake of implementing tri dharma.

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