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Online Presence System Using Geolocation and Digital Signature at the Rejang Regency Defense Office

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ABSTRAK

Perkembangan teknologi informasi sekarang ini sudah menjangkau ke semua bidang, baik dalam bidang keamanan, bidang pendidikan, dan bidang perkantoran, serta segi-segi kehidupan manusia lainnya. Kebutuhan informasi yang akurat, tepat dan cepat dalam menyajikan data yang sangat lengkap merupakan salah satu tujuan penting, untuk ini smartphone berperan aktif dalam segala bidang dan akan mempermudah pekerjaan manusia. Salah satu penilaian dalam kinerja pegawai adalah absensi. Saat ini sudah terdapat sistem absensi berbasis Finger Print yang sudah berjalan di Kantor Pertanahan Kabupaten Rejang Lebong akan tetapi masih terdapat masalah dalam abasensi, di mana karyawan yang sedang bertugas di luar kota / lapangan sulit melakukan absensi dikarenakan absensi hanya bisa dilakukan di kantor. Maka dari itu dibuatlah Sistem Presensi Online Menggunakan Geolocation Dan Digital Signature Pada Kantor Pertanahan Kab. Rejang Lebong sebagai solusi dari permasalahan tersebut. Sistem ini dibuat menggunakan metode Rapid Application Development (RAD). Metode analisisa data dalam penelitian ini yaitu Analisis Deskriptif: Merangkum karakteristik data presensi secara umum, Analisis Penggunaan Digital Signature: Mengukur sejauh mana karyawan mengadopsi dan menggunakan digital signature, Evaluasi Akurasi Geolocation: Mengukur ketepatan lokasi yang diberikan oleh system, Analisis Pola Kehadiran: Mengetahui pola kehadiran karyawan, Uji Keamanan Digital Signature: Memastikan keamanan dan integritas digital signature, Analisis Kepuasan Pengguna: Mengevaluasi kepuasan pengguna terhadap system, dan Analisis Integrasi Digital Signature dan Geolocation: Menilai kontribusi integrasi kedua fitur tersebut pada keberhasilan system. Setelah dilakukan pengujian maka dapat dipastikan bahwa system yang telah dibuat dapat bekerja dengan baik.

ABSTRACT

The development of information technology has now reached all fields, both in the security sector, education sector, and office sector, as well as other aspects of human life. The need for accurate, precise and fast information in presenting very complete data is one of the important goals, for this smartphone plays an active role in all fields and will make human work easier. One of the assessments of employee performance is absenteeism. Currently there is a Finger Print-based attendance system that is running at the Rejang Lebong District Land Office, but there are still problems with attendance, where employees who are on duty outside the city/field find it difficult to attend because attendance can only be done in the office. Therefore an Online Presence System was created using Geolocation and Digital Signature at the District Land Office. Rejang Lebong as a solution to this problem. This system was created using the Rapid Application Development (RAD) method. The data analysis methods in this research are Descriptive Analysis: Summarizes the general characteristics of attendance data, Digital Signature Usage Analysis: Measuring the extent to which employees adopt and use digital signatures, Geolocation Accuracy Evaluation: Measuring the accuracy of the location provided by the system, Attendance Pattern Analysis: Knowing the pattern employee attendance, Digital Signature Security Test: Ensuring the security and integrity of the digital signature, User Satisfaction Analysis: Evaluating user satisfaction with the system, and Digital Signature and Geolocation Integration Analysis: Assessing the contribution of the integration

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of these two features to the success of the system. After testing, it can be confirmed that the system that has been created can work well.

1. INTRODUCTION

The development of information technology has now reached all fields, both in the security sector, education sector, and office sector, as well as other aspects of human life. The need for accurate, precise and fast information in presenting very complete data is one of the important goals, for this smartphone plays an active role in all fields and will make human work easier. From this progress, a change will occur, currently the world is experiencing a revolutionary process in the application of computer technology which is called digitalization.

With the existence of so many Android smartphones nowadays, it is possible for several companies to update their attendance systems using Android smartphones. Because it is easier to operate and you can take attendance anywhere so you don't waste much time. A system is also needed that can be used to make it easier to record the attendance of a company and a system that is easy to apply in its use. If a company switches to using an Android smartphone for its attendance system, the company only needs to prepare a server to control/manage incoming data and set entry and departure times. And you also need a WIFI or internet network to connect your Android smartphone to the server.

The Office of the Ministry of Agrarian Affairs and Administration / National Land Agency (ATR/BPN) is one of the government offices operating under the auspices of the Ministry of the Republic of Indonesia. One of the assessments of employee performance is absenteeism. Currently there is a Finger Print-based attendance system that is running at the Rejang Lebong District Land Office, but there are still problems with attendance, where employees who are on duty outside the city/field find it difficult to attend because attendance can only be done in the office. This will certainly affect leave, performance and even employee salaries.

The Finger Print based attendance system that is already running can only be used by employees at the head office. Employees who are working in the field must take attendance at the head office first and then go to the field, while employees who are out of town cannot take attendance, this is very difficult. Therefore, it is necessary to have an Android-based attendance system as a solution to this problem, where with this attendance system employees can make attendance more easily, quickly and efficiently.

The context of digitalization and developments in information technology has provided great opportunities to improve traditional attendance systems to become more sophisticated and integrated. The use of digital signatures becomes relevant in overcoming authentication and security challenges in recording employee attendance. Digital signatures ensure the validity of electronic signatures, provide a high level of security, and reduce the risk of manipulation of presence data. Tripathi, N., & Tripathi, P. (2012). Digital Signature for e-Governance: Issues in Indian Perspective. International Journal of Computer Applications, 56(14), 16-21.

Apart from that, the use of geolocation or web-based location is a solution to ensure the presence of employees at their proper location. The Rejang Lebong District Land Office, which has a certain geographic area coverage, can optimize geolocation technology to monitor the whereabouts of employees in the field or office with high accuracy.

The creation of this online attendance system is also in line with the current digital transformation in the public service sector. By adopting advanced technology, the Land Office can increase time efficiency, reduce administrative costs, and provide a better work experience for employees. Implementation of this online attendance system can also support the move towards more transparent and accountable governance in human resource management.

Taking this background into account, it is hoped that the development of an online presence system with digital signature and geolocation at the Rejang Lebong District Land Office can be a progressive step in increasing operational efficiency, increasing data security, and supporting digital transformation in public services in the land sector. Boswarva, K. (2015). Location-based services and the privacy dilemma. Computer Law & Security Review, 31(2), 190-201. Based on the explanation above, it is necessary to carry out research on "Online Presence Systems Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong".

Employee Presence System Based on Digital Signatures and GPS Location by Abdi Rahim Damanik, Dedy Hartama, & Indra Sumarno. This research aims to make the attendance process easier for employees, maintain authentication of the authenticity of documents as a whole, and implement GPS Location which is useful for finding and storing location data for each employee when conducting online attendance.

Design and Development of an Area-Based Employee Presence Application Using Geolocation Muhammad Bambang Firdaus, Gubtha Mahendra Putra, Muhammad Wisdan Pratama Putra, Nariza Wanti Wulan Sari, M. Khairul Anam, and Eva Yumami (2023). This research aims to develop an Android attendance system application that is able to overcome the shortcomings of the manual attendance system and prevent fraud in modifying time. The method used in website and Android development is the Prototype model.

2. METHOD

This research was conducted at one of the government agencies, namely, at the Office of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, Land Office, Rejang Lebong Regency, Bengkulu Province, which is located at Jalan S.Sukowati No. 64 Curup. The following is the methodology used in creating an Online Presence System Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong:

Data analysis method

1. Descriptive Analysis: Summarizes the general characteristics of presence data.
2. Digital Signature Usage Analysis: Measuring the extent to which employees adopt and use digital signatures.
3. Geolocation Accuracy Evaluation: Measuring the accuracy of the location provided by the system.
4. Analyze Attendance Patterns: Find out employee attendance patterns.
5. Digital Signature Security Test: Ensures the security and integrity of digital signatures.
6. User Satisfaction Analysis: Evaluate user satisfaction with the system.
7. Digital Signature and Geolocation Integration Analysis: Assess the contribution of the integration of these two features to system success.

The combination of this analysis can provide a holistic picture of the effectiveness and acceptance of online attendance systems in the land office environment.

Data Collection Methodology

- Interview method: This method is implemented to find out what problems are being faced and what is needed in the attendance application at the Rejang Lebong District Land Office.
- Observation method: This method is implemented to collect data and information by reviewing and observing directly how the system is running and trying to solve the problems, and is applied to an attendance application at the District Land Office. Rejang Lebong.
- Literature study method: This method is carried out by studying literature theories and books and service provider websites related to the final project object as a basis for this design.
- Literature study method: The literature study used in this writing is a literature study resulting from scientific work, detailed studies of similar literature.

System Development Methodology

The system development method that will be used in this writing is using an object-oriented method with the Rapid Application Development (RAD) development model which has the following stages (Kendall and Kendall, 2010) Analysis Requirements, Workshop Design, and Implementation.

a. Requirements Planning discusses: company overview, current system, proposed system and identification of user and system needs.
b. RAD Workshop Design (RAD Workshop Design) discusses: designing systems with Unified Modeling Language (UML), creating database design plans, creating interface designs and creating layout designs.
c. Implementation discusses: programming, testing and system results.
   This system development method uses UML (Unified Modeling language) notation while the diagrams used in this research are, Use Case Diagram, Activity Diagram, Class Diagram and Sequence Diagram.

3. RESULT AND DISCUSSION

Result

In developing this system, UML (Unified Modeling Language) notation is used, while the diagrams used in this research are Use Case Diagrams, Activity Diagrams, Class Diagrams and Sequence Diagrams. Use Case Diagrams graphically describe the behavior of application software and provide an overview of the application software from the user's perspective of the application software. The following is a Use Case Diagram for an Online Presence System Using Geolocation

and Digital Signature at the District Land Office. Rejang Lebong. When the user (employee) clicks on Employee Data Entry, a form will appear which the user must fill in starting from the date and time of absence, NIP, name, position, location and signature. Meanwhile, when the user clicks on Employee List, a list of employee names and positions will appear.

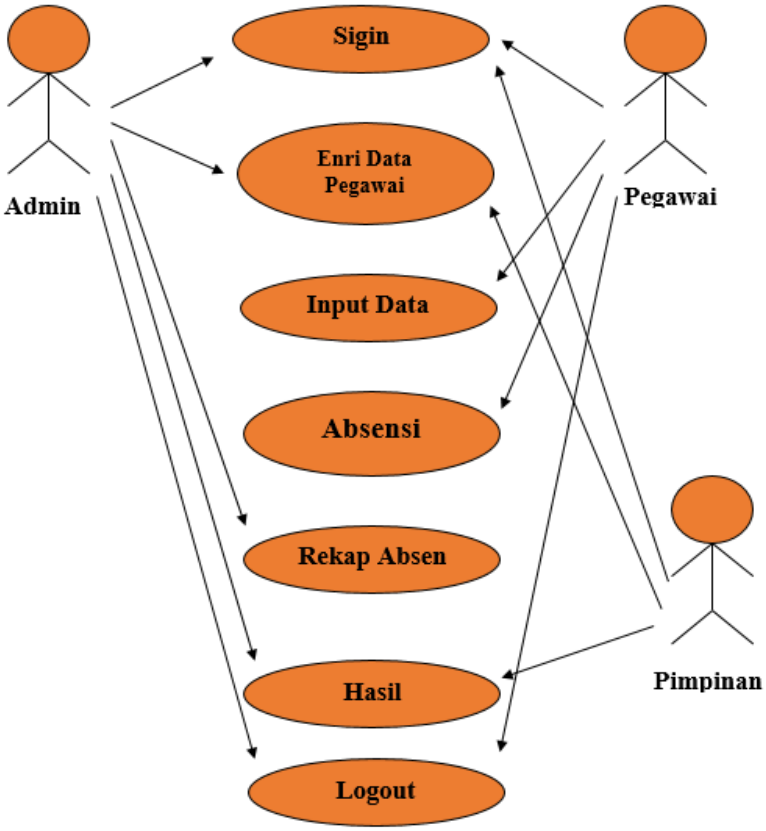


Figure 3 Use Case Diagram

Activity Diagrams are used graphically to depict a series of business process activity flows or use cases. The following is the Activity Diagram of the Online Presence System Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong.

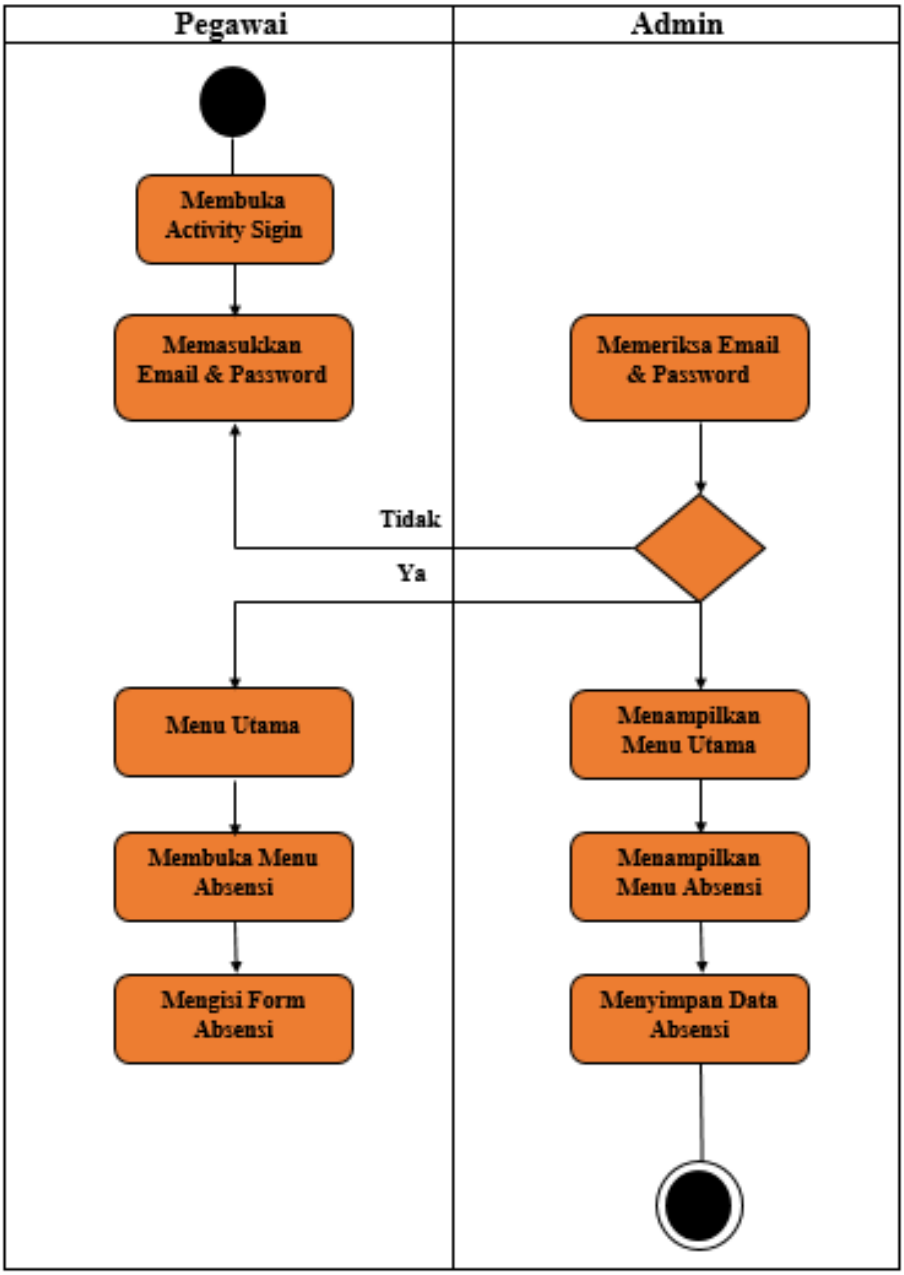


Figure 4 Activity Diagram

This class diagram shows the class objects that make up the system and also the relationships between these class objects. The following is a Class Diagram for an Online Presence System Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong.

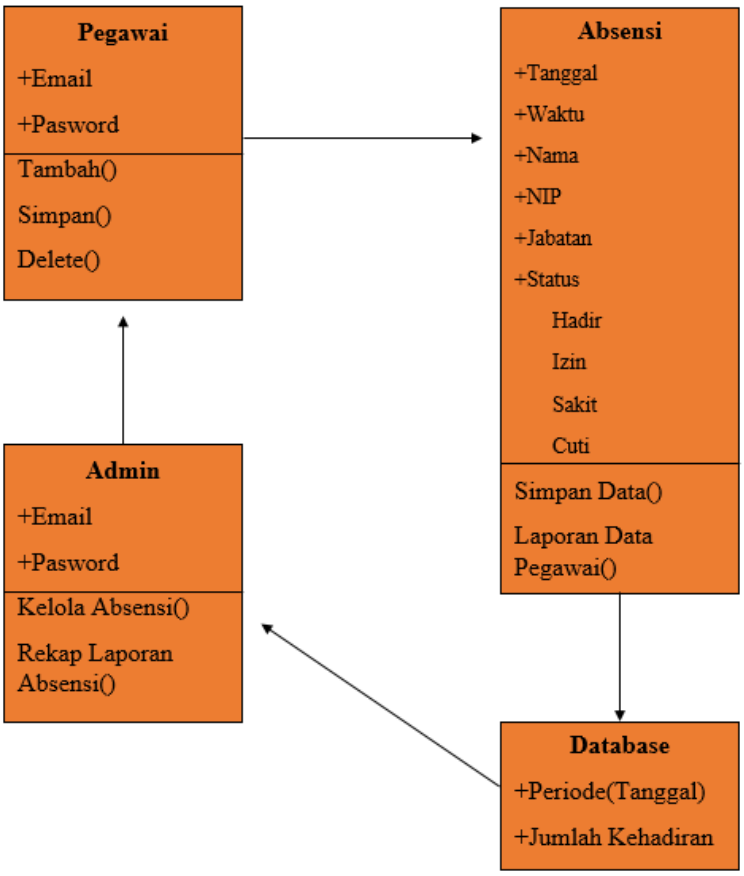


Figure 5 Class Diagram

Sequence Diagrams illustrate how messages are sent and received between objects and sequences, explaining the interactions of objects arranged in a time sequence. The following is the Sequence Diagram of the Online Presence System Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong.

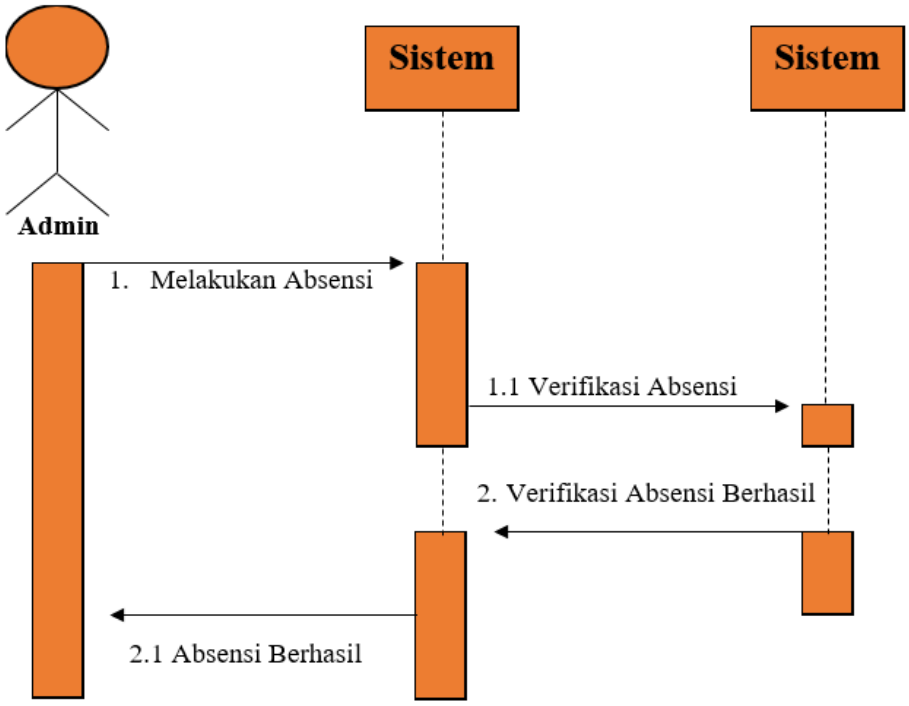


Figure 6 Sequence Diagram

The Workflow (Flow Chart) used in the Presence System Using Geolocation and Digital Signature at the Rejang Lebong Regency Government Office is as follows:

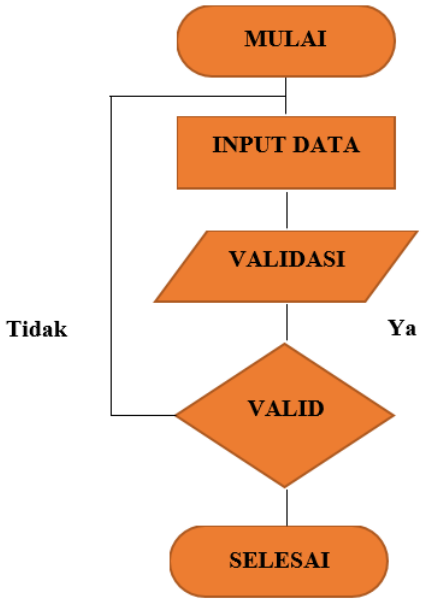


Figure 7 Workflow (Flow Chart)

System Overview explains the Online Presence System Using Geolocation and Digital Signature at the District Land Office. Rejang Lebong is in the form of an interface design for the pages on the system, the interface design is as follows:

Login/Sign In and LogOut Page Design

When the link is opened for the first time, a sign in display will appear where the user must register using a Google account to be able to access. In the Log Out display the user can log out or change accounts.

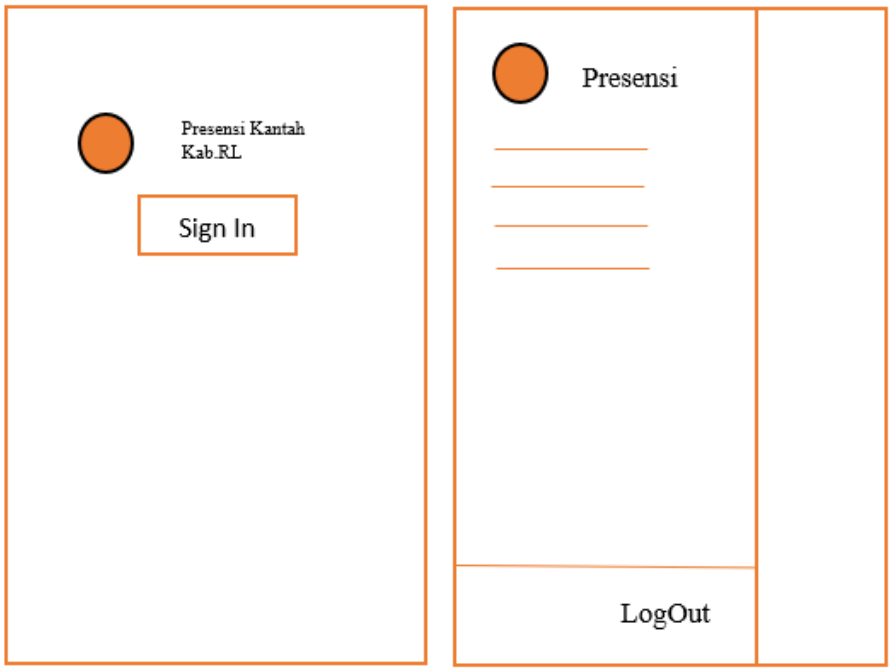


Figure 8 Sign In and LogOut Page Design

Main Page Design
After signing in, the main page will appear with a display like the image above.

Figure 9 Main page design

Presence Data Design
When the user clicks the Add icon, a form page will appear where the user must enter attendance data.

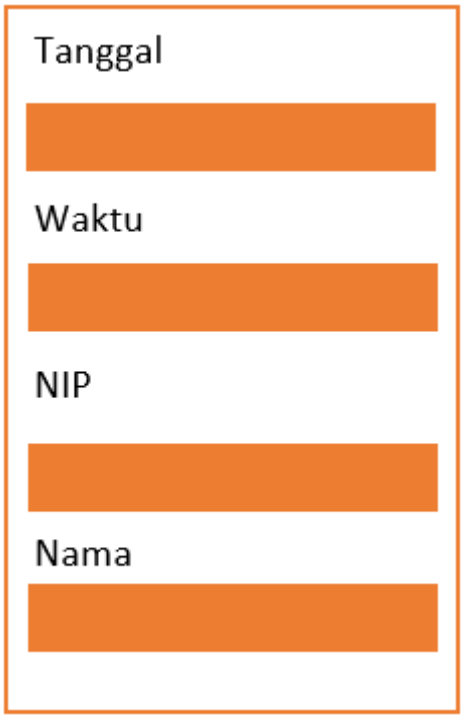


Figure 10 Presence Data Design

Presence List Design
When the user clicks on the attendance list menu, a display will appear containing the employee's name and employee position.

Figure 11 Draft Employee List

Monitoring and Evaluation

At this stage, the results of the implementation of the Online Presence System interface design using Geolocation and Digital Signature at the District Land Office will be presented. Rejang Lebong which has been built. This interface design is divided into several pages, including the Log In/Sign In Page, Main Page, Attendance Data Page, and Attendance List Page.

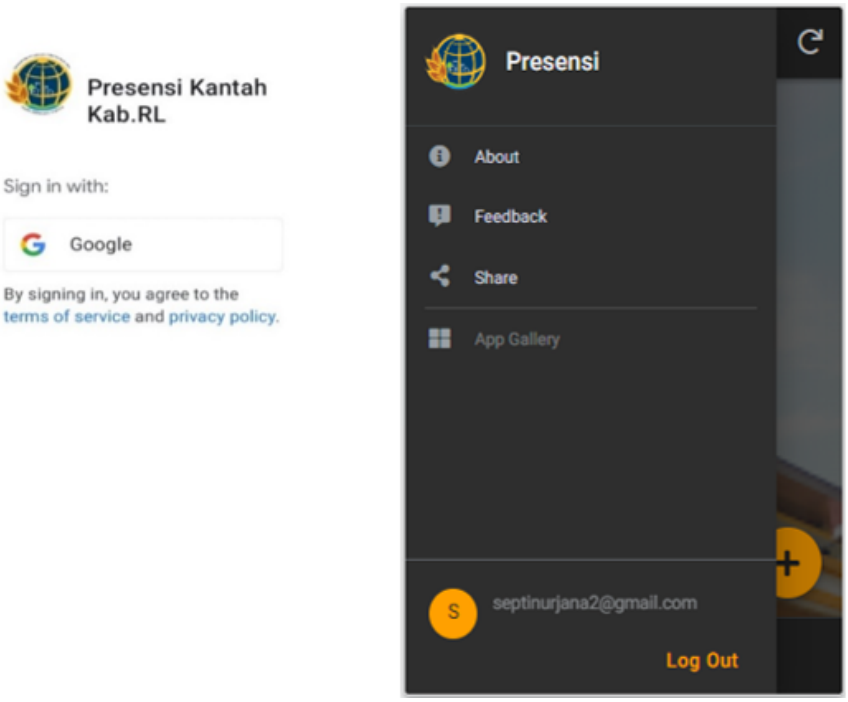


Figure 12 Log In/Sign In and Log Out pages

Every user who wants to access the Online Presence System application using Geolocation and Digital Signature at the District Land Office. Rejang Lebong must sign in on this page using a Google account. On the LogOut page, users can log out or change accounts.

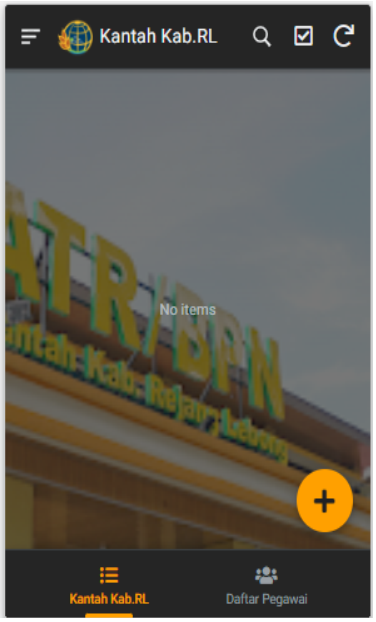


Figure 13 Main page

This main page describes the available menus such as attendance data, employee list, and so on.

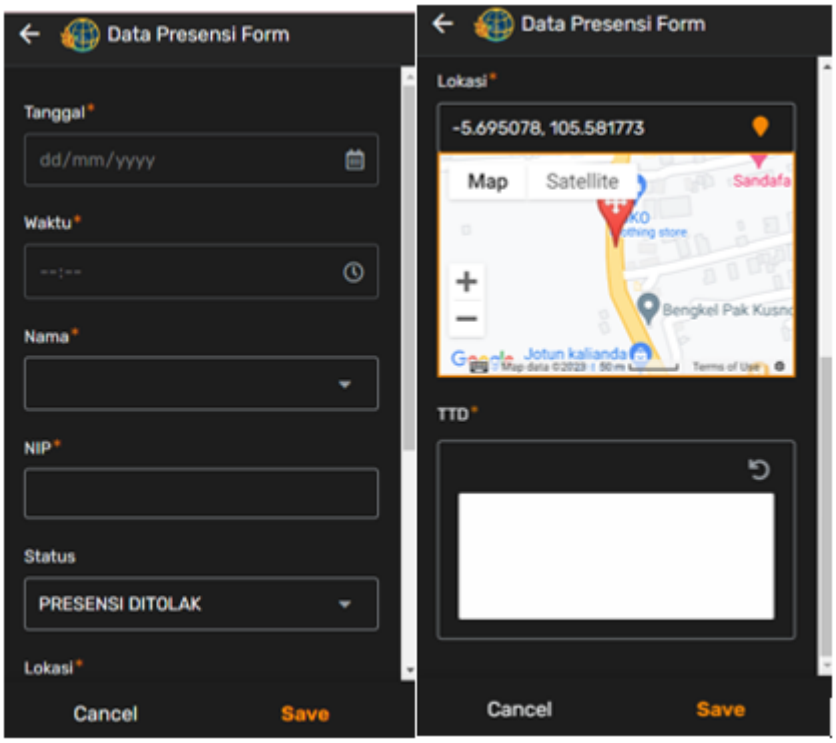


Figure 14 Presence Data Page

The Presence Data page describes the data that must be filled in by the user/employee which includes date, time, name, NIP, status, location and signature (TTD). On this page the user must fill in all data without exception correctly.

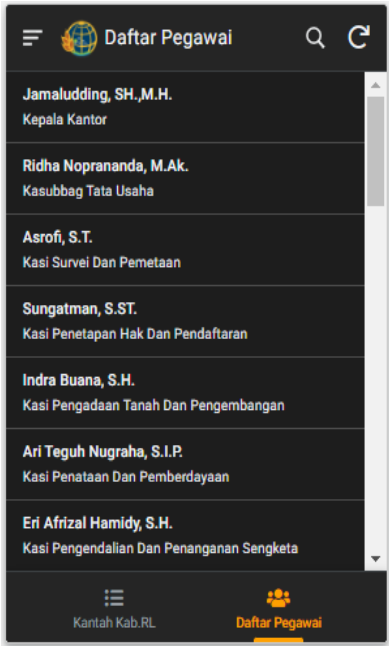


Figure 15 Attendance List

The Employee List page displays an employee list menu consisting of employee names and positions. This page can only be seen by users because the list of employee names and employee positions is data that has been input by the admin and can only be changed by the admin.

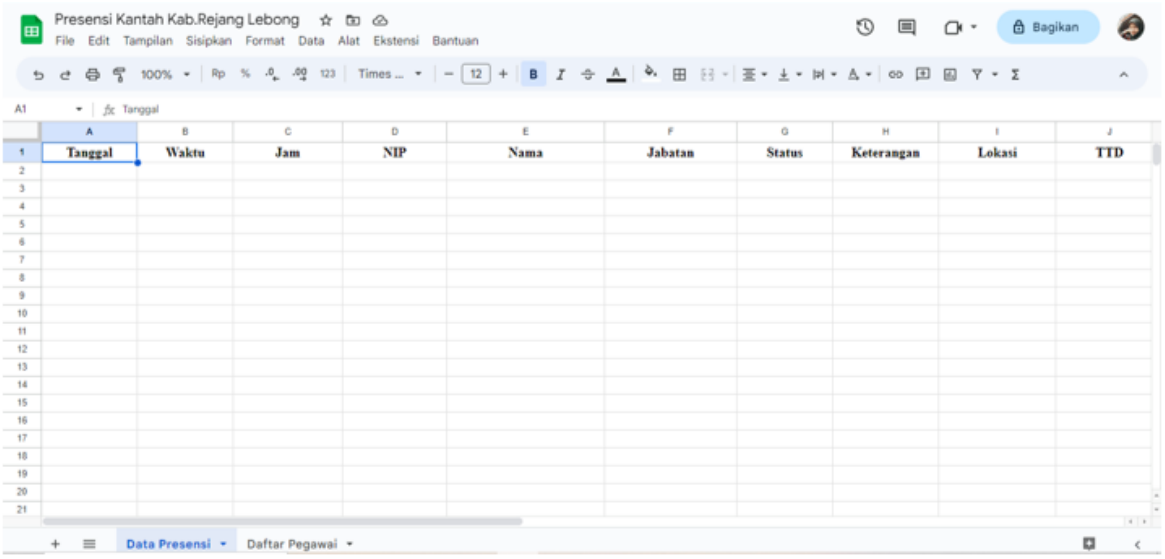
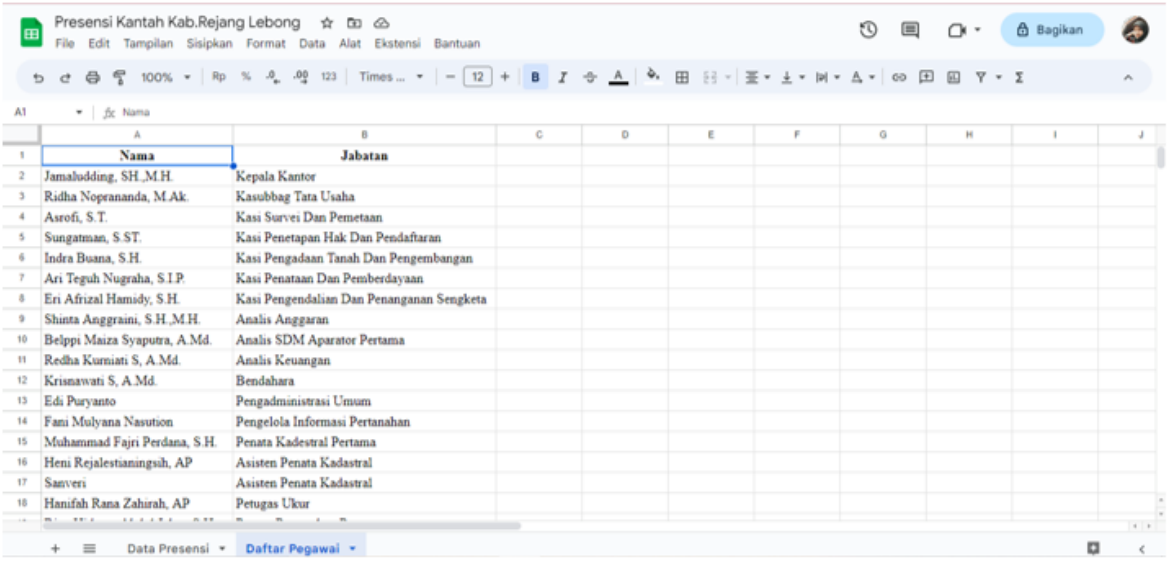


Figure 16 Presence Data Database

Figure 16 is a display of the Presence Data database which contains attendance data input by the user (employee) starting from Date, Time, Hour, NIP, Name, Position, Status, Description, location and TTD will be displayed and saved on the page the database. Meanwhile in Figure 17 is a display of the Attendance List database which contains employee names and positions. In this research, SpreadSheet acts as a database in the system being developed.



Nama	Jabatan
Jamaluddin, SH.,M.H.	Kepala Kantor
Ridha Nopranda, M.Ak.	Kasubbag Tata Usaha
Asrofi, S.T.	Kasi Survei Dan Pemetaan
Sungatman, S.ST.	Kasi Penetapan Hak Dan Pendaftaran
Indra Buana, S.H.	Kasi Pengadaan Tanah Dan Pengembangan
Ari Teguh Nugraha, S.I.P.	Kasi Penataan Dan Pemberdayaan
Eri Afrizal Hamidy, S.H.	Kasi Pengendalian Dan Penanganan Sengketa
Shinta Anggraini, S.H.,M.H.	Analis Anggaran
Belppi Maiza Syaputra, A.Md.	Analis SDM Aparator Pertama
Redha Kurniati S, A.Md.	Analis Keuangan
Krisnawati S, A.Md.	Bendahara
Edi Puryanto	Pengadministrasi Umum
Fani Mulyana Nasution	Pengelola Informasi Pertanahan
Muhammad Fajri Perdana, S.H.	Penata Kadestral Pertama
Heni Rejalestianingsih, AP	Asisten Penata Kadastral
Sanveri	Asisten Penata Kadastral
Hanifah Rana Zahirah, AP	Petugas Ukur

Figure 17 Presence Data Database

4. Discussion

Employee Presence System at the District Land Office. Rejang Lebong was created using AppSheet as system development software, and using SpeadSheet as the database. The method used in creating this system is an Android-based Location Based Service or Location Based Service System (LBS) where the service is in the form of geographic information which is accessed using a cellular telephone via a cellular network connection to map the location precisely. Meanwhile, the system development method in this research is the Rapid Application Development (RAD) method. To be able to access, users must log in/sign in using a Google account and attendance can only be done at specified hours.

5. CONCLUSION

After conducting the trial, it was discovered that the Employee Presence System at the District Land Office. The Rejang Lebong that has been made has worked well. With this research, it will be easier for employees who work outside the office to take attendance because they don't need to come to the office first but can immediately take attendance on the spot and with this research, the duties of TU staff employees will also become lighter because they don't need to go back and forth to provide manual attendance every day.

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Boswarva, K. (2015). Location-based services and the privacy dilemma. Computer Law & Security Review, 31(2), 190-201

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