Design And Development Of A Web-Based Attendance Information System Using Qr Code Technology

Muslim[1]*, Ajun Ramadani[2], Fachrid Wadly[3]
Universitas Pembangunan Panca Budi

Keywords:
Design, Information System, Attendance, QR Code

***Correspondence Address:**
imoesliemchan@gmail.com

Abstract: The attendance system is a system used to record the presence and absence of a person at an agency or how the process of recording an attendance is carried out, while attendance is a document that records the attendance hours of each worker or student. Obtaining attendance data manually certainly has many shortcomings. Some of these shortcomings include invalid data caused by incorrect data, loss or damage to existing data. Moreover, doing it in the traditional way using sheets of paper as an attendance medium, of course this paper media is susceptible to damage. Related to this, the basis for the idea of creating a web-based attendance information system emerged by utilizing QR Code (Quick Responsive Code) technology which can minimize problems with manual attendance systems. The results of the study are in the form of a web-based attendance information system design using QR Code. A web-based attendance information system utilizing QR Code technology is expected to help many parties in managing the attendance system to be more effective and efficient.

INTRODUCTION

Computer science is a field of study that studies the theories, principles, and applications related to information processing and computer systems. It covers various aspects, such as hardware, software, algorithms, data structures, and programming techniques. The main goal of computer science is to understand how computers and information systems work and how to develop solutions to various problems through the use of computer technology.

An attendance system is a system used to record the presence and absence of a person at an agency or how the process of recording an attendance is carried out, while attendance is a document that records the hours of attendance of each worker or student. Obtaining attendance data manually certainly has many shortcomings. Some of these shortcomings include invalid data caused by incorrect data, loss or damage to existing data. Moreover, doing it the traditional way using sheets of paper as an attendance

medium, of course this paper media is susceptible to damage. Related to this, the basis for the idea of creating a web-based attendance information system emerged by utilizing QR Code (Quick Responsive Code) technology which can minimize problems with manual attendance systems. The results of the study were in the form of a web-based attendance information system design using QR Code. A web-based attendance information system utilizing QR Code technology is expected to help many parties in managing the attendance system more effectively and efficiently.

RESEARCH METHODS

Research is a systematic and structured process conducted to obtain knowledge or solutions to a problem. In the context of this research, the research stages consist of the stages that are passed through in the completion of the research. Whatever the stages of the research, they can be seen in the following figure 1.

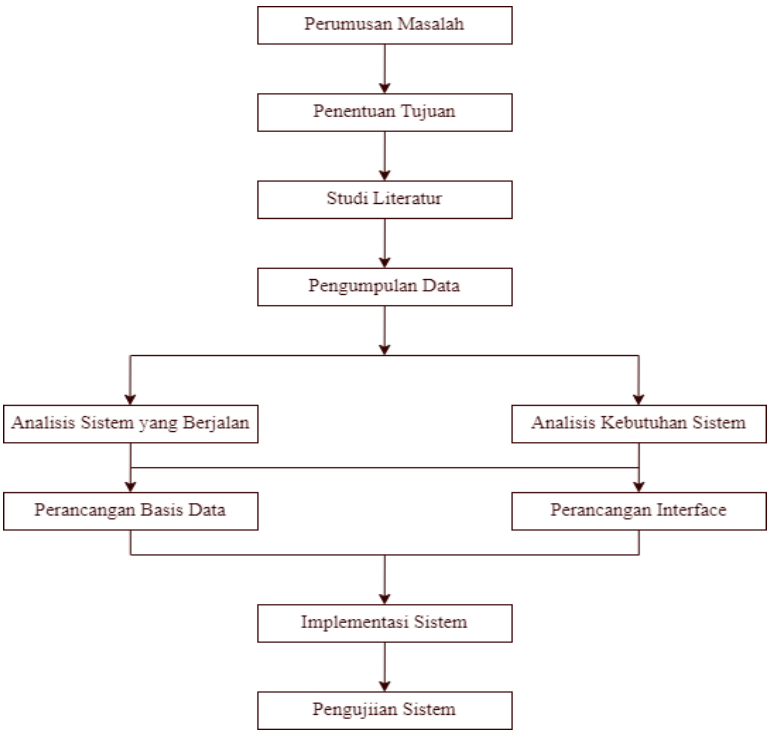

figure 1. Research Stages

This research activity is carried out through several stages as in Figure 1. The expected goal of this research is the existence of a web-based attendance information

system design using QR Code that can help many parties in managing the attendance system to be more effective and efficient.

The following are some steps that need to be taken to obtain optimal results results:

1. Problem formulation is the determination of the problem to be solved.
2. Determination of objectives is the direction of the research to be carried out and determines the direction of the application to be built.
3. Literature review is a search for sources related to the problem topic. Sources can be obtained from books, e-books, articles, journals, or the internet that can help in finding materials related to the method.
4. Data collection is carried out by interviewing interested parties to obtain the necessary data.
5. System analysis of several attendance systems that have been used and are currently running with the aim of comparing and identifying deficiencies in these systems, so that they can be used as a reference for the analysis and design of a better information system.
6. System requirements analysis is the determination of problem-solving techniques and identification of what is needed to build a new system.
7. Database design is the process of determining the tables needed as a place to store data and information from the system to be built.
8. Interface design aims to determine the communication flow between users and the system.
9. Testing is the stage carried out to evaluate the functionality of the information system being built.

RESEARCH DESIGN

After identifying the existing problems, then carrying out the system design process is the next step. In compiling a program, a data model is needed in the form of a diagram that can explain a process flow of the system to be built. This diagram can also be interpreted as a modeling language, depiction, planning, and sketch of the system to be developed. The design method used to visualize the structure of this information system is by using UML (Unified Modeling Language) as can be seen in Figure 2.

a. Use Case Diagram

The following is a Use Case Diagram for a web-based attendance information system using QR Code technology.

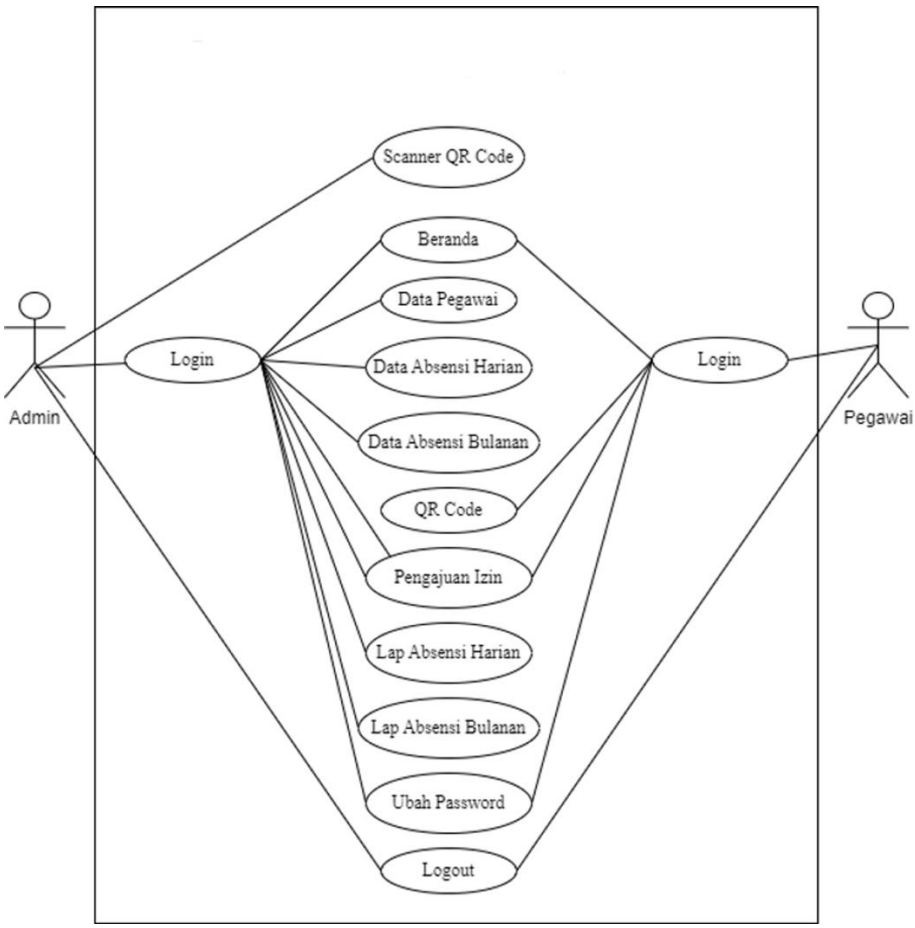

figure 2. Use Case Diagram

b. Activity Diagram

The following is the Activity Diagram for a web-based attendance information system using QR Code technology.

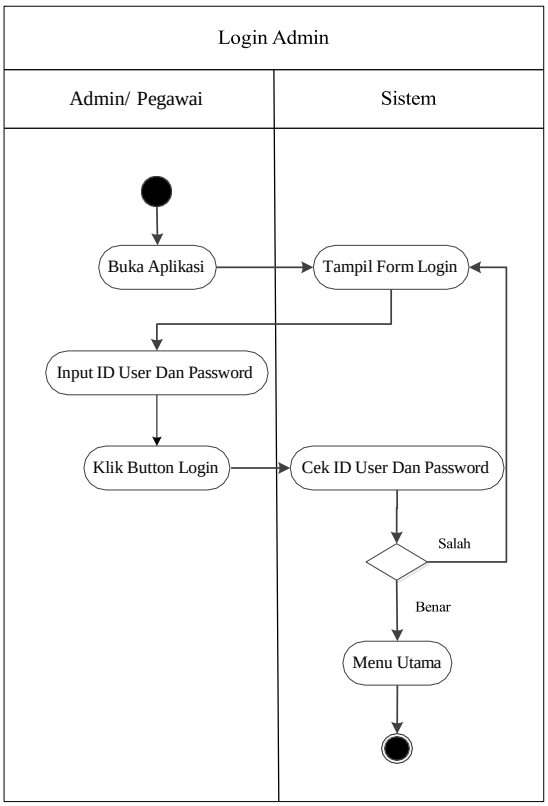

figure 3. Activity Diagram Login

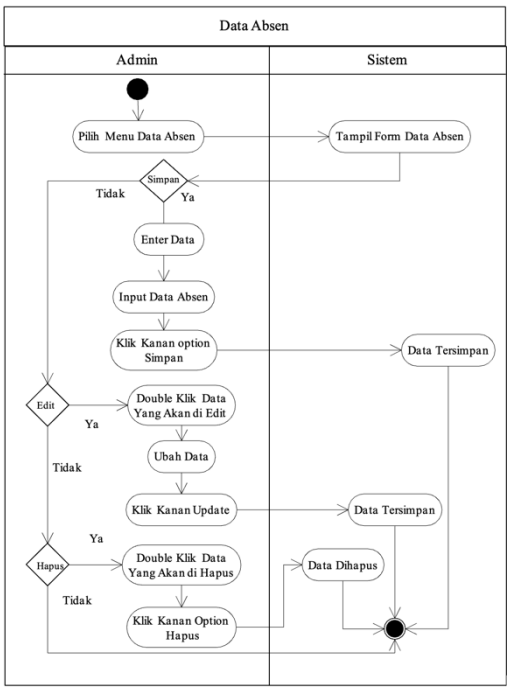

figure 4. Activity Diagram Attendance Form

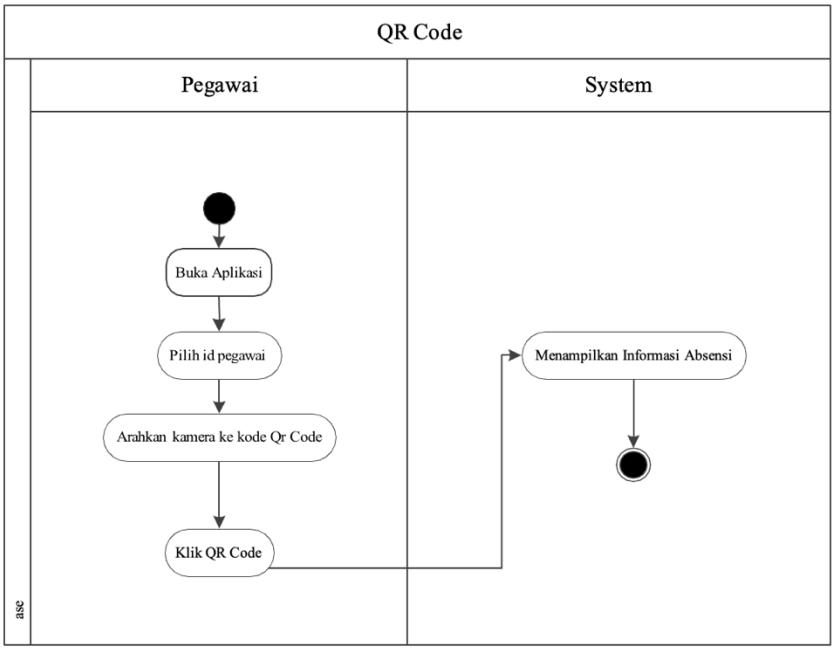

figure 5. Activity Diagram QR Code Form

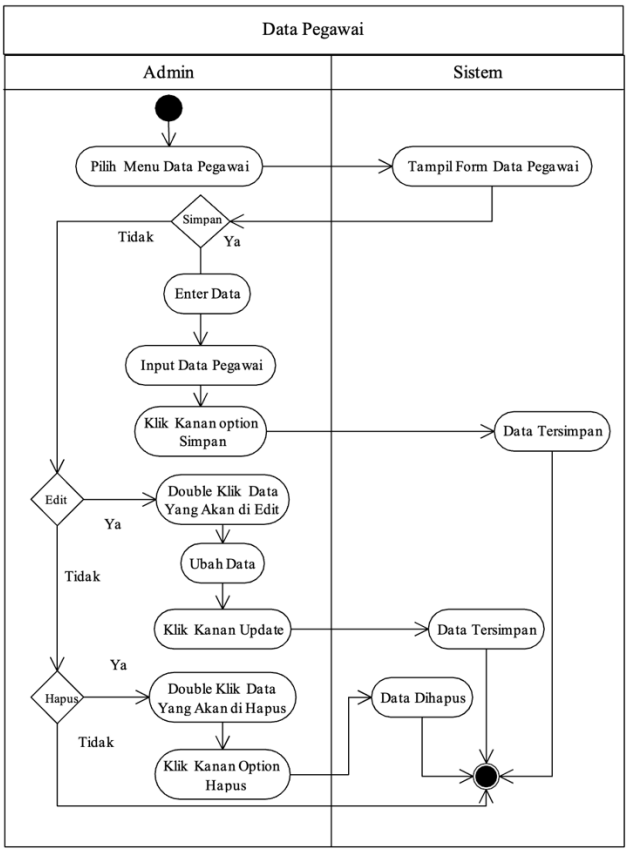

figure 6. Employee Form Activity Diagram

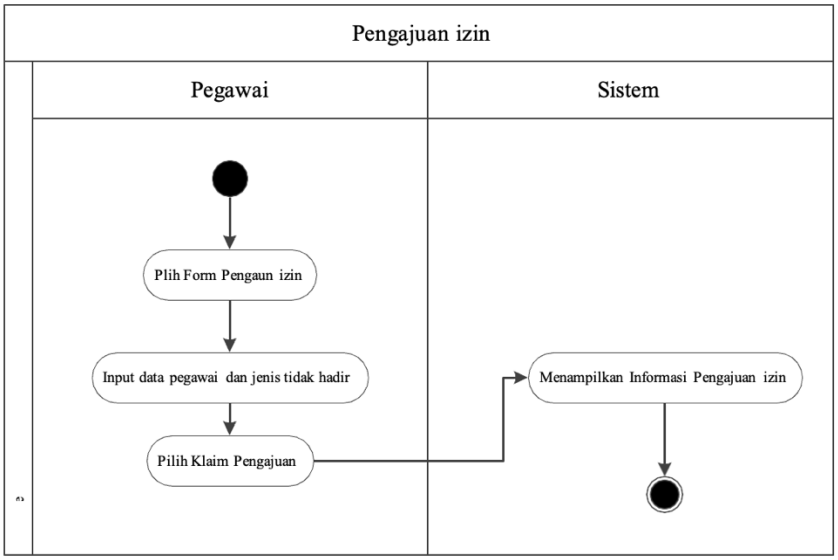

figure 7. Activity Diagram of Permit Submission

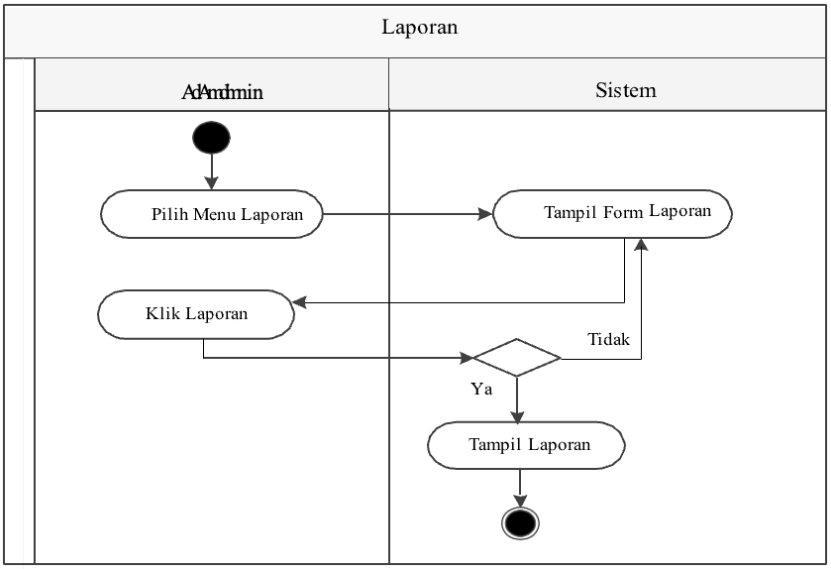

figure 8. Daily Attendance Report Activity Diagram

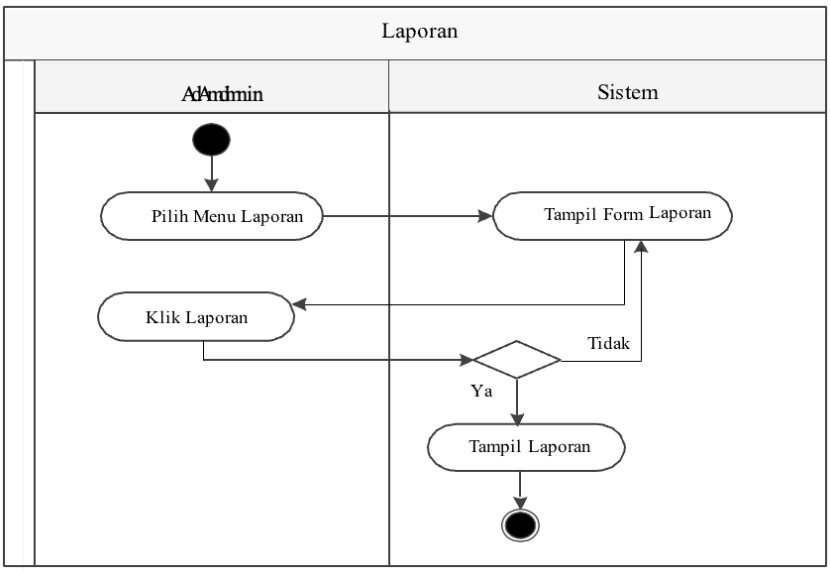

figure 9. Monthly Activity Diagram Attendance Report

RESULTS AND DISCUSSION

In this section, the research results related to the design and development of a web-based attendance information system using QR Code technology appear. Berikut ini adalah tampilan antarmuka sistem informasi kehadiran berbasis web dengan menggunakan teknologi QR Code to improve effectiveness and efficiency in recording attendance data.

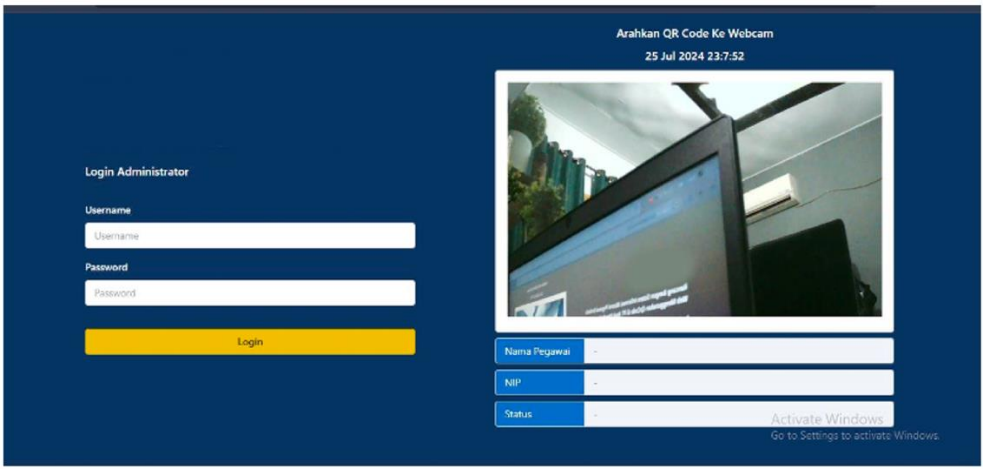

figure 10. Admin Login Form View

The Login display is the first display that appears when the program is run. It functions

as an input form for the program admin username and password.

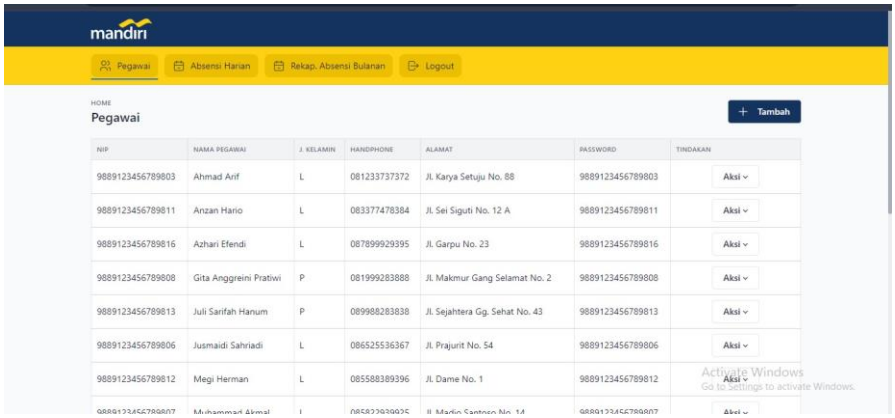

figure 11. Employee Form View from Admin

This form displays the Employee data options, when selecting Employee data the program will display the Employee data.

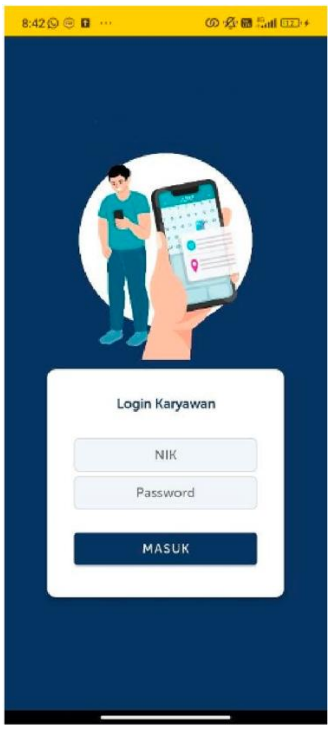

figure 12. Login Form View for user

figure 13. User Main Menu Form View

figure 14. User QR Code display

This display is a QR Code data display that functions to scan the attendance QR Code when checking in and checking out.

CONCLUSION

Based on the research results, the design and development of a web-based attendance information system using QR Code technology shows a change in the effectiveness and efficiency of using the attendance system, where it can be easier to carry out the attendance process every day both when entering and when leaving and the ease of submitting permits that can be done from the same system. Likewise with the presentation of attendance reports, both for daily reports and monthly reports.

REFERENCE

Adam, W. N., Suryani, W., & Tarigan, E. S. D. (2021). Pengaruh Pengembangan Sumber Daya Manusia dan Kompetensi Karyawan terhadap Kinerja Karyawan di Hotel Niagara Parapat Toba Sumatera Utara. *Jurnal Ilmiah Manajemen Dan Bisnis (JIMBI)*, *2*(1), 41–50. https://doi.org/10.31289/jimbi.v2i1.463

Akbar, M. D., & Antoni, A. (2022). Aplikasi Absensi Pegawai pada Dinas Komunikasi dan Informatika Kabupaten Deli Serdang dengan QR Code Menggunakan Algoritma Bcrypt. *Sudo Jurnal Teknik Informatika*, *1*(1), 8–16. https://doi.org/10.56211/sudo.v1i1.2

Alfina, O., & Harahap, F. (2019). Pemodelan Uml Sistem Pendukung Keputusan Dalam Penentuan Kelas Siswa Siswa Tunagrahita. *METHOMIKA: Jurnal Manajemen Informatika & Komputerisasi Akuntansi*, *3*(2), 143–150. https://doi.org/10.46880/jmika.Vol3No2.pp143-150

Mulia, A. G. (2020). Sistem Informasi Absensi berbasis WEB di Politeknik Negeri Padang. *Jurnal Teknologi Informasi Indonesia (JTII)*, *5*(1), 11–17

Perbawa, K. A. (2022). Application of Linear Congruential Generator (LCG) Algorithm in Android Based Mathematics Education Game Penerapan Algoritma Linear Congruential Generator (LCG) dalam Game Edukasi Matematika Berbasis Android. *Jurnal Komputer, Informasi Dan Teknologi*, *2*(1), 47–56.

Rabhani, A. P., Maharani, A., Putrie, A. A., Anggraeni, D., Azisabil, H. F., Cantika, I., Cahyani, I., Destianti, L. L., Mahmud, P. T., & Firmansyah, R. (2020). Audit Sistem Informasi Absensi Pada Kejaksaan Negeri Kota Bandung Menggunakan Framework Cobit 5. *Jurnal Sisfokom (Sistem Informasi Dan Komputer)*, *9*(2), 275–280. https://doi.org/10.32736/sisfokom.v9i2.890

Rizki, M. A. K., & Ferico, A. (2021). Rancang Bangun Aplikasi E-Cuti Pegawai Berbasis Website (Studi Kasus : Pengadilan Tata Usaha Negara). *Jurnal Teknologi Dan Sistem Informasi (JTSI)*, *2*(3), 1–13. http://jim.teknokrat.ac.id/index.php/JTSI

Rubiati, N., & Harahap, S. W. (2019). Aplikasi Absensi Siswa Menggunakan Qr Code Dengan Bahasa Pemrograman Php Di Smkit Zunurain Aqila Zahra Di Pelintung. *I N F O R M a T I K A*, *11*(1), 62. https://doi.org/10.36723/juri.v11i1.156

Susila, M. N., Kiki Salam Ruzki, Ardian Dwi Praba, Sriyadi, Mulyadi, & Eka Wulansari Fridayanthie. (2022). E-Absensi Berbasis QR-Code Dengan Extreme Programming. *Jurnal Sistem Informasi*, *11*(2), 58–64. https://doi.org/10.51998/jsi.v11i2.494