

Design of Employee Attendance Data Information System Using Web-Based QR Code at Medan City Election Commission Office

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ABSTRACT

One of the government organizations tasked with planning general elections honestly in order to carry out elections is the Medan City KPU Office. The issue is that fingerprints are still used in the attendance system used by staff members at the KPU office in Medan. However, the fingerprint machine frequently has issues, for instance, when there is a power outage, employees are unable to use the fingerprint scanner, which can affect attendance. In order to avoid having employees wait in line to check their attendance at work using fingerprints, this study suggests a web-based application to record and arrange all types of attendance data collecting or attendance hours into the information system using a QR Code. In order to avoid having employees wait in line to check their attendance at work using fingerprints, this study suggests a web-based application to record and arrange all types of attendance data collecting or attendance hours into the information system using a QR Code. The PHP programming language and MySQL database are used in stages of the Waterfall approach for system development. Using the QR Code, the author will create a web-based application that will serve as an attendance data information system. It is intended that the application that is created would make it easier and faster to recapture staff attendance, making the process more ideal, efficient, and successful.

Keyword : Information Systems; Employee Attendance Data; QR Code; Website

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1. INTRODUCTION

In the modern era, technology is advancing really quickly (Naik, G et al., 2019; Kraus, S et al 2018). The work of a few people or organizations can be made easier by the numerous digital platforms, applications, and information systems (Simamora, R. M., 2020; Serhan, D., 2020; Nuere, S., & De Miguel, L., 2021). An attendance application system, for instance, is one of the needs that can enhance employees' performance and discipline when it comes to enhancing the quality of firm employee attendance (Darwis, M et al., 2021; Maryani, Y et al., 2021; Arr, M et al., 2019). The performance of employees in the organization can operate smoothly if there is an information system for tracking employee attendance data (Song Q et al., 2019; Olagunju D et al., 2018; Sunarsi D., 2020; Khadonova et al., 2020).

One of the government organizations tasked with planning general elections honestly in order to carry out elections is the Medan City KPU Office. The issue is that fingerprints are still used in the attendance system used by staff members at the KPU office in Medan. However, fingerprint attendance is frequently interfered with by the machine; for instance, when a fingerprint machine is turned off, employees cannot use it and may be prevented from attending. This is not the best course of action, especially in a pandemic circumstance like the one presented by the existing fingerprint system, as the virus will spread more readily. Another issue is the collection of attendance data, which is still done manually using Microsoft Excel to calculate employee attendance recapitulation and in the form of

hardcopy attendance reports, which can lead to mistakes in data recording, make it more difficult to search for data, and raise concerns about employee attendance data loss.

In order to avoid having employees wait in line to take attendance at the workplace using a fingerprint, this study suggests a solution for a web-based application that would record and arrange all types of attendance or attendance data gathering into an information system. A QR Code will be integrated into the application being developed for the attendance information system to make it simpler for employees to take attendance. In order for staff to merely have to scan the daily-displayed QR Code. This is why a software engineering-based method is used to develop software, which must take into account its structure and design. The Waterfall approach is the software development model employed in this investigation.

Based on the backdrop described above, a website-based application will be created that can be utilized to process staff attendance at the KPU office in Medan City by integrating the QR Code. This research's title will be "Design of Employee Attendance Data Information System Using Web-Based QR Code at the Medan City Election Commission Office" as a result. It is intended that the application created will make the process of employee attendance recapitulation easier and faster, making it more ideal, efficient, and effective.

2. RESEARCH METHOD

This study used the waterfall method to design a system. The system requirements are the beginning point for this procedure, which then moves on to the steps of analysis, design, coding, testing/verification, and maintenance (Kramer, M., 2018; Heriyanti, F., & Ishak, A., 2020). The waterfall approach involves the following steps:

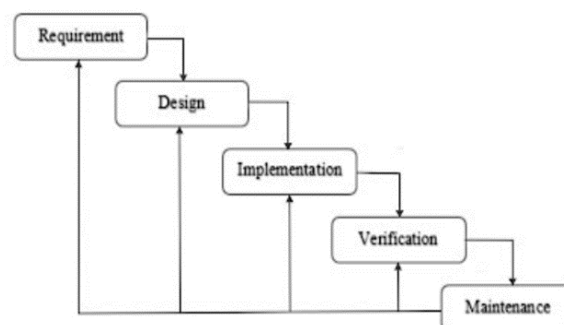


Fig 1. Waterfall Method
(Source: Amalia et al., 2022)

1. Requirement
Is the first phase, during which the author gathers information to ascertain the needs of the system. Data about employee attendance is required for data collecting, so that it meets the demands of the administrator and is simple to grasp.
2. Design
The next stage is design, where the creation of software programs, including database structures, software architectures, and user interface designs, is the main focus. so that program code can be written to implement the following stage.
3. Implementations
The software architecture and interface design will now be converted into computer code. The CodeIgniter Framework is used in the software architecture.
4. Verification
The feasibility of the created system will be tested to some extent during the testing phase. In order to properly use the system, it must be ensured that the input used will result in the desired output.

5. Maintenance

The system is deployed at this stage if the testing revealed that it was practical to utilize the system in the earlier stage. This stage also serves as a means of accountability for ensuring that the system can function properly and for enhancing system capabilities.

A. Requirements Analysis

In order to create the Attendance Data Information System Using Web-Based QR Code at the Medan City KPU Office, it was necessary to conduct a system requirements analysis to determine the information that was required. Problem analysis, system requirements analysis, and functional analysis are only a few of the sub-discussions under which requirements analysis will be given here.

The Medan City General Election Commission office currently lacks an attendance data information system that can assist employees and provide information about attendance data collection or attendance hours, into the information system. In order to build the system, one option is to use the web to build an employee attendance system and obtain a QR Code that has been registered by the admin, after which the employee can simply point the QR Code at the webcam that is already connected to the service. The admin department is in charge of the server computer, which may instantly produce reports based on data about employee absences that is stored on the server computer. The report is then delivered to the top management for approval.

B. Design System

1. Usecase Diagrams

The system design's usecase diagram describes the functionality offered by the system. Use case diagrams are used to demonstrate all of the system's required functions, which include tools that administrators and leaders can use (Lubis, D. N et al., 2021). A design for a use case diagram is as follows:

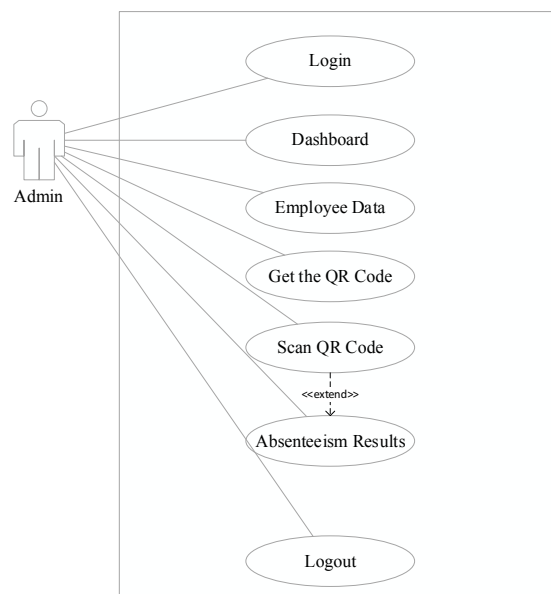


Fig 2. Usecase Diagrams System

2. Activity Diagrams

Activity flow diagrams show how each activity in the system under design begins, moves through potential decisions, and ends (Amalia, P. S et al., 2021). The steps in Figure 3. can be used to explain the admin's activity on the Get QR Code form.

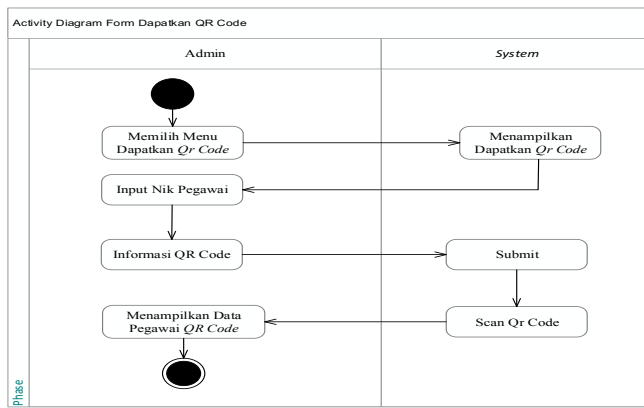


Fig 3. Activity Diagram Get Qr Code

3. Sequence Diagrams

Sequence diagrams depict how an event would play out. The various objects and messages that are positioned between these objects in a use case are depicted in this figure (Rachmad, A. J et al., 2022).

The interactions that take place when printing the attendance results report are shown in the attendance results sequence diagram. Figure 4 displays the flowchart of the attendance results.

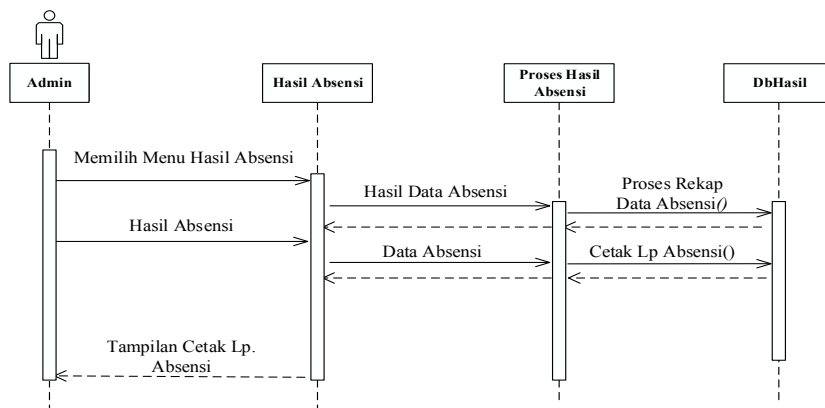


Fig 4. Sequence Diagram of Absence Results

4. Class Diagrams

The system uses class diagrams as a data structure design that may be utilized as a guide for building tables in the system database (Syahputra, E. R., & Anggraini, N., 2020). The outcomes of the system design for the class diagram's procedure are listed below.

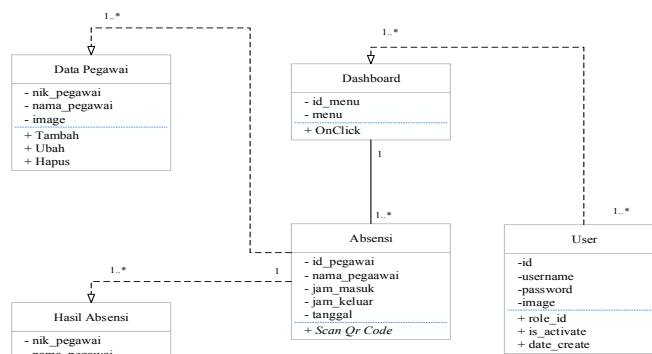


Fig 5. Class Diagram System

3. RESULTS AND DISCUSSION

A. Result

The implementation of the system, which results in a system that people can use, is the following step after the system has been previously analyzed and developed. This chapter will explain the outcomes of the system that has been analyzed and built. The results of the system's presentation are shown below, along with an explanation that makes it clear how the system can function. The outcomes of the implementation discussed are in the form of system implementation, which is done at the Medan KPU by the administrator displaying the QR Code before the employee scans it.

In the system page's initial appearance, as seen in the illustration below,

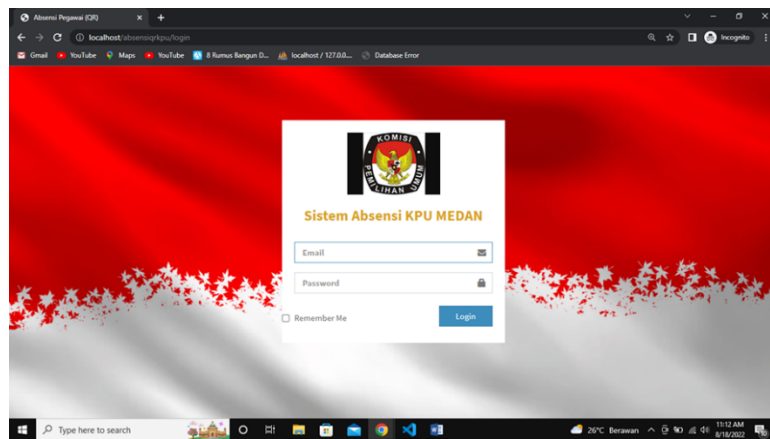


Fig 6. Display System Login Page

The General Election Commission uses the login page to allow users to access the application and view its menus. Admin may sign in. The system's dashboard display comes next.

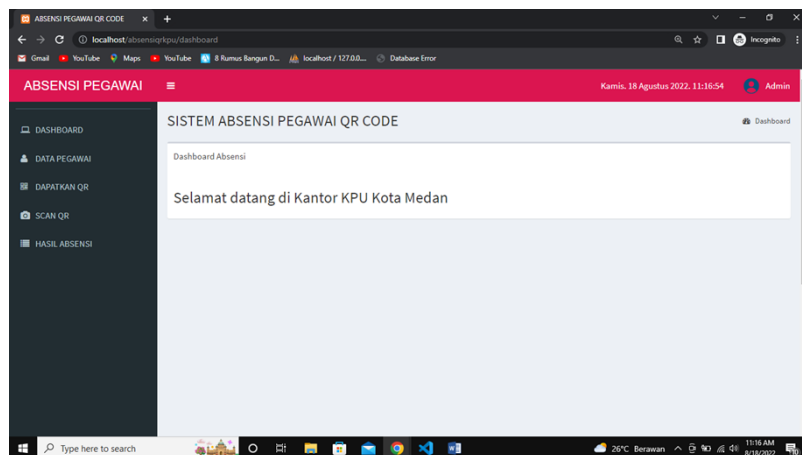


Fig 7. Dashboard Page Display

The dashboard page is seen in the image above. The Dashboard menu page will appear after the admin logs in. A description of the welcome page at the Medan City KPU Office can be found on the dashboard page. Next, the system shows each employee's QR Code page that has registered with the system.

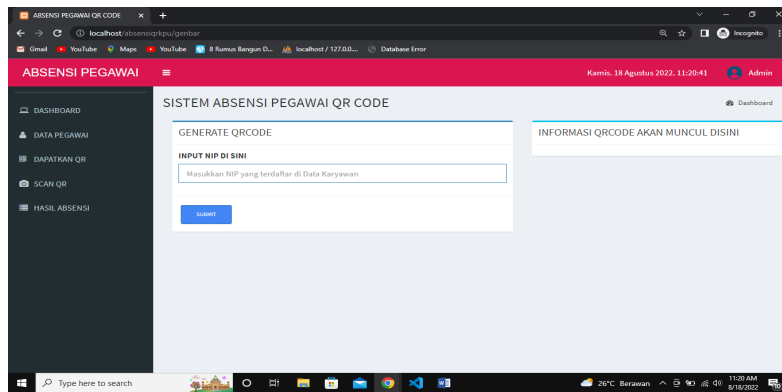


Fig 8. View Page Get Qr Code

The Get QR Code page is seen in the image up top. Following the admin's entry of the NIP registered in the employee data. The outcomes of employee absences are then displayed, as can be seen below.

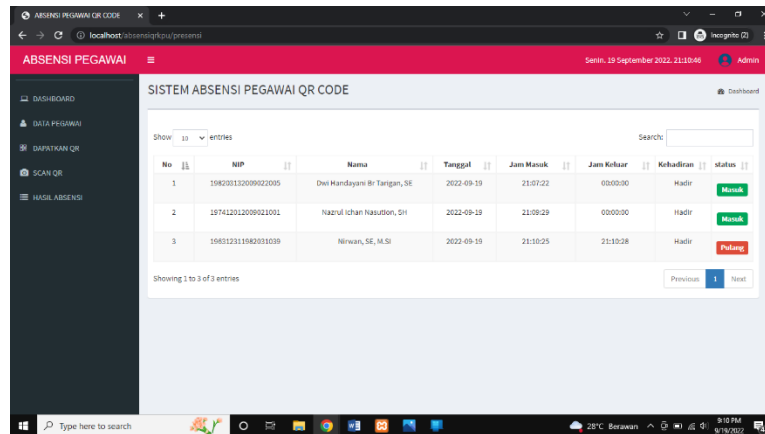


Fig 9. Absence Results Page Display

The absence results page is seen in the image above. Results of employee absences based on hours in and hours out are shown on this page.

B. Discussion

The Medan General Election Commission's Information System for Employee Attendance Data was created with the intention of creating a system that can benefit employees. Employees can directly point the QR Code at the webcam that is already linked to the server computer as the first stage in setting up the system is to construct an employee attendance system using web-based technology and obtain a QR Code that has been registered by the admin.

The admin department is in charge of the server computer, which may instantly produce reports based on data about employee absences that is stored on the server computer. The report is then delivered to the top management for approval. The waterfall approach is the technique utilized in system development, and it has been effectively applied. The author created this system utilizing the PHP (Hypertext Preprocessor) programming language, the CodeIgniter Framework, and the MySQL database.

4. CONCLUSION

It may be stated that based on the findings of the study carried out for the creation of this thesis and taking the research objectives into consideration:

1. This integrated web-based application solution has given processing attendance in any circumstance flexibility. Employees can continue fill out attendance forms without any further issues during a power outage.
2. With a web-based application system, creating attendance reports is no longer a problem for employees. By backing up in a specific database to prepare for data loss, entering and storing data is made safe and simple. With this web application, it is also much easier for employees to find specific attendance information.
3. To simplify the process of collecting employee attendance data, the application has included a QR Code. The system that has been developed uses the web-based PHP programming language to offer attendance statistics information and requires a webcam to function.

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