



Design and development of a web-based teacher payroll system at Al-Hikmah Middle School Medan

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ABSTRACT

The Online Payroll Application for Al Hikmah Middle School in Medan is an innovative solution for efficiently and transparently managing the payroll process within the school environment. This application is specifically designed to meet the financial administration needs of the school, including calculating employee salaries, tax deductions, and maintaining a salary history record. The system leverages cutting-edge technology to ensure data accuracy and security. With the implementation of this application, it is expected to increase efficiency in payroll management, reduce potential human errors, and provide greater transparency in school financial administration.

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Introduction

Education is an effort to implement teaching and learning and the learning process for students can reach their maximum potential (Jarir & Ernawati, 2022). Today's developments are very rapid, many advanced technologies have been discovered There are even those who are developing it (Mulyadi et al., 2022). In school it is appropriate to use it systems that can produce more effective information and efficient (Hakim et al., 2020). The design of a teacher and employee payroll information system is a system created for makes it easier for treasurers to manage teacher and employee salary data (Robi et al., 2021).

Along with the rapid development of technology, the use of computers has become very important in various fields, including data processing systems. Without an efficient data processing system, activities in a school will experience obstacles, both in terms of time and accuracy of the resulting performance. Therefore, implementing a sophisticated data processing system is an urgent need to ensure smooth and efficient operations.

Al-Hikmah Medan Junior High School, which was founded on October 13 2016, is still in the development stage. The location is on Jl. Marelان 1 Pasar IV Barat Gg. Madrasah Kel. Rengas Island, District. Medan Marelان, North Sumatra Province. Currently, this school still uses a manual payroll system, where calculations are done using paper. This includes recording teacher and employee data manually. Definition On the other hand, payroll is the process of providing compensation to employees, as compensation in the form of salary, as financial reward, in lieu of employee contributions to the organization or agency (Choirina et al., 2022).

The process of calculating teacher and employee salary funds, which is usually done manually and in writing, often experiences errors, such as nominal differences and incorrect calculations. This can create obstacles when the treasurer wants to make salary payments. Therefore, a more computerized and automated solution is needed.

Based on the situation above, the author is interested in researching and developing a web-based teacher salary system at Al-Hikmah Middle School, Medan. The aim of this research is to facilitate and speed up the process of calculating the salaries of teachers and employees at Al-Hikmah Medan Middle School. With this system, it is hoped that all payroll processes can be carried out more accurately, efficiently and transparently.

Planning This information system was created as a solution to the above problems to make things easier the information system. Because by designing this system it will improve treasurer's performance in payroll management (Robi et al., 2021). This includes systems processing data and information that cannot be separated from our lives daily (Jaya & Ariyani, 2021). From the research carried out it is hoped that the system This teacher salary information can be used and help manage salary calculations teachers and improve the quality of accurate information (Shadiq Jafar & Keivin, 2020).

This research will discuss various technical and functional aspects of a web-based payroll system, including user interface, data processing, and integration with school financial systems. Apart from that, the economic benefits and operational efficiency that can be obtained from implementing this system will also be analyzed.

System Computerized payroll information is needed to minimize these inefficiencies. The development of a computerized salary information system for MTs will make calculations easier teacher attendance, salary recapitulation and reporting (Andriana & Priyadi, 2023). The payroll system is one of the most important systems in the company the education world is no exception. Teachers are the main resource in the teaching and learning process at school (Prihati & Fauziah, 2020). Salary or wages is an acceptance as a reward from entrepreneurs to employees for a job or service have been done (Anggraeni et al., 2023)

Thus, it is hoped that the results of this research will make a positive contribution to increasing payroll efficiency at Al-Hikmah Medan Middle School and can be used as a reference for developing similar systems in other educational institutions.

The method used by the author in this study is to conduct observations, interviews, study of literature, analysis, design of information systems followed by the construction of information systems and subsequently is a trial (Noviyanto, n.d.). In this design, the author uses the PHP programming language with the format MySql database, using the Waterfall Method and using the Laravel framework (Gustina & Leidiyana, 2020). It is hoped that with the payroll administration system at SD Madani Cilegon it can be processed more effectively administratively, there are no payroll errors and the reporting process is fast (Kunci, 2022). The purpose of this research is to analyze payroll data processing, besides that the authors hope that users can understand the purpose of this payroll application system (Amzah et al., 2021). The method used in designing a payroll information system is Waterfall. With the use of this method, it can make it easier to design and build a payroll system, especially at PT. Kindo Makmur Jaya Bekasi, so that the problems it faces can be resolved (Effendi et al., 2020)

Method

The system being designed certainly requires data collection, in the data collection process there are several ways, including:

- a. Field Survey
A field survey is the first step aimed at obtaining the data needed in the analysis stage. At this stage, ask questions about what form the data usually enters or exits.
- b. Literature review
Literature study is an activity to collect data in the form of supporting theories from a system created with the aim of explaining the theories related to this research. Sources can be in the

form of literature, ebooks, and others that are relevant to the research.

In designing the system, the design procedure stage is carried out, the steps needed to achieve the design objectives can be seen in the waterfall diagram model in Figure 1.

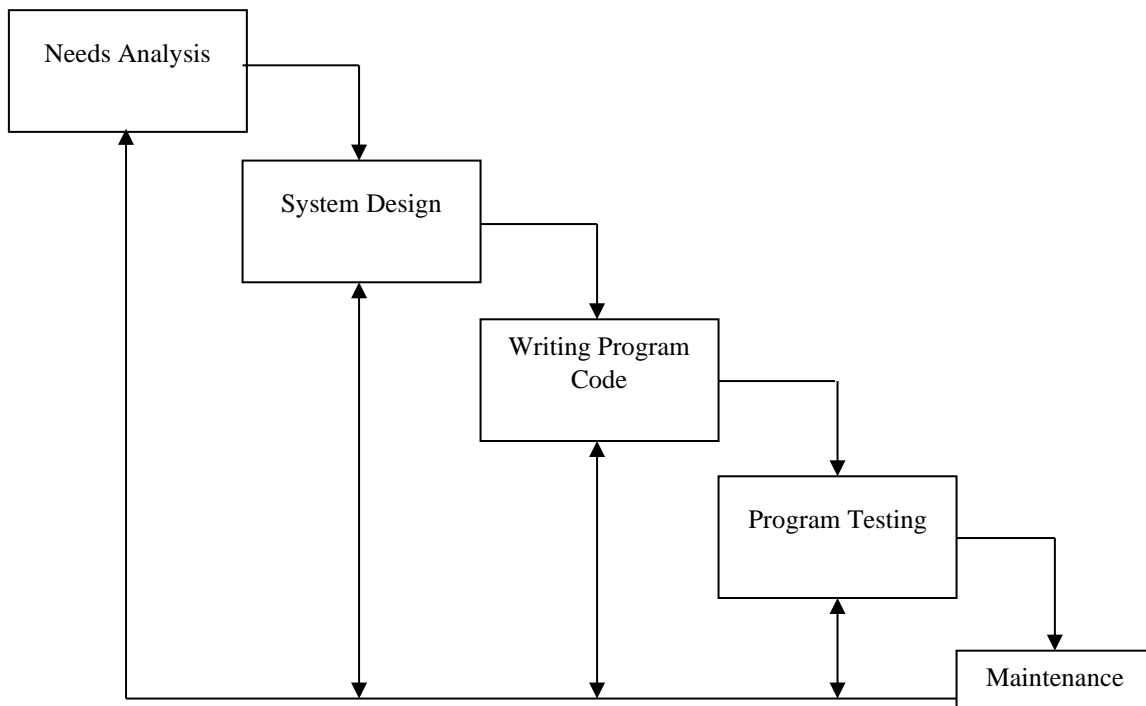


Figure 1. System Design Waterfall Diagram

Based on the flowchart image above, it can be explained as follows:

1. Needs Analysis

Data collected for research needs includes:

- a. Journal
- b. Teacher Information Data

Apart from the data collected, there are computer specifications that the author will use during the research, including hardware and software, namely:

1) Hardware

The hardware used includes:

- a. Core(TM) i3-5005U CPU @ 2.00GHz Hard disk 500 GB
- b. Laptops
- c. RAM 2GB

2) Software

- a. Windows 10 Operating System.
- b. Microsoft Visual Studio Code.
- c. MySQL

2. Design

System The system designed uses several UML models, including class diagrams, activity diagrams, and sequence diagrams.

3. Implementation of Program Code

This is the stage of program coding through which the design is translated into a programming language. The programming language used is PHP with the Microsoft Visual Studio Code Text Editor.

4. Program Testing

The final stage is where the new system is tested for its capabilities and effectiveness so that the deficiencies and weaknesses of the system are found and the application is then reviewed and improved to make it better and more perfect.

5. Program Implementation and Maintenance

After the design is created, the application is then built or created which will later be uploaded to hosting so that it becomes an online web display.

Results and Discussions

The payroll that has been running so far at Al Hikmah Medan Middle School is still conventional and in other words the process of calculating teacher salaries is still done manually. At this stage, of course there are weaknesses that usually occur in the payroll process, such as what commonly occurs is incorrect calculations due to manual calculations, so there are salary advantages and disadvantages for some teachers and employees. Another weakness is that the manual process takes a long time so the treasurer has to carry out payroll recapping stages with the Treasurer carrying out absenteeism recaps and other calculations according to position which will later be entered into the Microsoft Excel application. Then the Treasurer makes a payroll report which will later be printed and given to the Principal and Foundation Chair for approval and signature. Once approved, a pay slip is created by recording it again from the payroll report using Microsoft Excel and then printing it as a pay slip and proof of salary receipt. Salary payments are made every 1st by providing salary money and proof of salary receipt slip and signature. With this Web-Based Teacher Payroll Application, the Treasurer/school administrator can more quickly recapitulate salaries and payroll reports carried out by the system and minimize errors in the payroll process such as excess and shortage of salaries received by teachers and employees at Al Hikmah Medan Middle School.

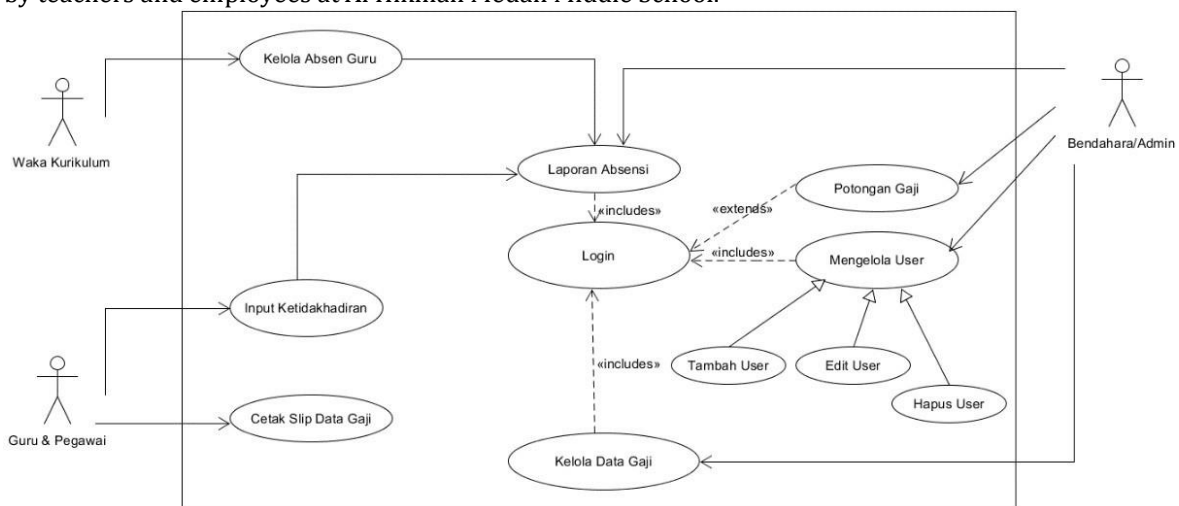


Figure 2. Use Case Diagram

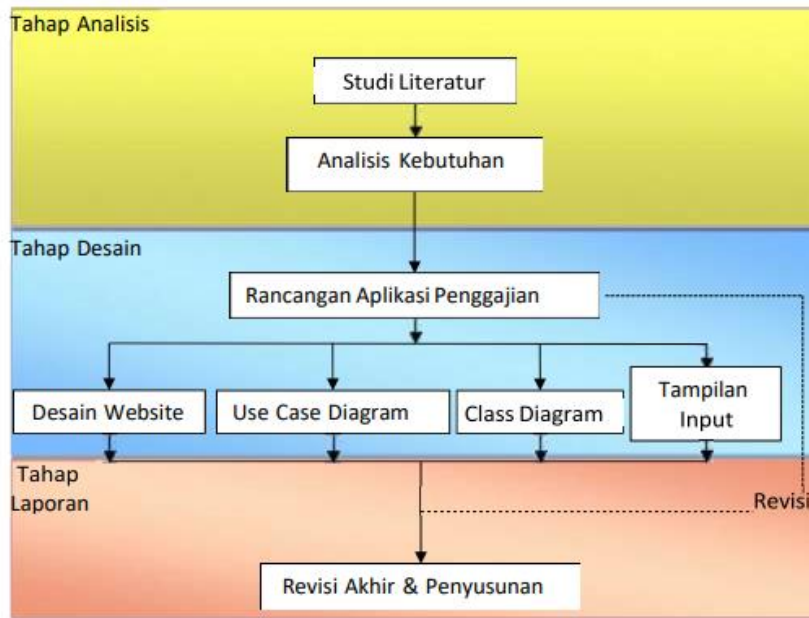


Figure 3. Research steps

Each stage will be explained as follows:

1. Analysis Stages

In the process of designing a product, there needs to be an initial study that is useful for determining the purpose of a product being built. Analysis is important in designing a product because this can guarantee the effectiveness of resources and the right target goals of a product being built. At this stage the researcher took two approaches to the object being studied. A literature study was carried out to understand the views of technology experts and practitioners who play an active role in technological development. Meanwhile, field studies are used by researchers to observe the real impacts that are occurring in the surrounding environment.

2. Design Stage

- a. Website Design Concept
- b. Use Case Diagram Designer
- c. Class Diagram Design
- d. Input Display Design

3. Report stage

The final stage of this research is preparing a report. The report is prepared in accordance with the provisions stated in the Main Potential University thesis writing guidelines.

4. Data Collection Methods

The author uses several data collection methods, namely:

- a. Field research, collecting data by direct research, makes it easier for the author because he can interview the Treasurer of Medan Al Hikmah Middle School who is directly related to ongoing payroll and finances, so that he knows the basic concepts for carrying out further problem analysis.
- b. Library Research (Library research), collecting data from books as relevant references to produce information. The purpose of this library research is to help find school learning questions and to support knowledge and scientific basis in subsequent discussions.

5. System Analysis in Progress

The process that takes place at Al Hikmah Medan Middle School is a manual or computerized process.

6. Data Entry Process

The data entry process for Al Hikmah Medan Middle School includes inputting information data about Al Hikmah Medan Middle School, namely the school profile, activities, teaching staff, teachers, gallery and contact persons at the school.

7. Research Design

The design carried out by the author in completing this thesis consists of several parts, including: The design concept used by the author in building this website is using a minimalist design concept which is defined as a simple web design, not too many colors, and easy to navigate or browse through the available features. This website has simple colors, textures, backgrounds and elements. The main concept in creating this website is to create an online website for salaries and salary recapitulation of teachers and employees at Al Hikmah Medan Middle School which can only be accessed by the Treasurer, Teachers and Employees who have previously registered on the website.

This page is a benefits page for teachers and employees which can be added to their monthly salary, for example THR. It can be seen as in Figure 4 below:

SMP SWASTA AL-HIKMAH
Daftar Gaji Pegawai

Bulan : 09
Tahun : 2023

No	NIP	Nama Pegawai	Jenis Kelamin	Jabatan	Total Les	Tj_gaji_les	Uang Makan	Potongan	Total Gaji
1	1791209830491807	Admin	Laki-Laki	Kepala Sekolah	24	Rp 45 000	Rp 500 000	Rp 21 801	Rp 1.558 199
2	1791209830492818	M. Rizky Azis Azhari	Laki-Laki	Matematika	30	Rp 60 000	Rp 10 000	Rp 2.801	Rp 1.807 199

Medan, 30 Sep 2023
Bendahara

Figure 4. Printed Display of Employee Salary List

Page that displays data on teachers who are absent and approves teachers who are absent. It can be seen as in Figure 5 below:

#	NIP	Nama Pegawai	Jabatan	Jenis Cuti	Tanggal Pengajuan	Tanggal Mulai Cuti	Tanggal Akhir Cuti	Jumlah Hari	Keterangan	Status Approval	Action
1	1791209830492818	M. Rizky Azis Azhari	Matematika	SAKIT	2023-08-14	2023-08-14	2023-08-15	2	sakit	SUCCESS	

Figure 5. Teacher Salary Data Display

A page that displays monthly teacher/employee salary data. It can be seen as in Figure 6 below:

Bulan/Tahun	Total Les	Gaji Per Les	Uang Makan	Potongan Gaji	Potongan Cuti	Total Gaji	Cetak Slip
09/2023	30	Rp60.000	Rp10.000	Rp2.801	Rp 0	Rp1.807.199	

Figure 6. Teacher Salary Data Display

Conclusions

Based on the limited time and limitations of the writer in compiling the final assignment, the following conclusions can be drawn. With this web-based payroll application, it is useful to build a system that can be used as an online payroll medium, especially at Al - Hikmah Middle School, which can facilitate the payroll system and print computerized slips. With a web-based payroll system, it is hoped that the salary data processing process can become more efficient, accurate and transparent. Apart from that, this system will also help in overcoming the problem of nominal differences and calculation errors that often occur in manual methods. This system will bring significant benefits, not only in terms of operational efficiency, but also in terms of overall financial management in schools. By implementing this technology, it is hoped that schools can experience increases in productivity, payroll accuracy and time savings. Using the application created has instructions for using the application. It is recommended to improve the absence/presence system that uses a fingerprint and webcam so that it is replaced by a fingerprint system. So it can support payroll activities better. It is recommended that users of this payroll system be given training in using the application so that they can master and run this new information system properly and correctly.

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