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RESEARCH ARTICLE

# Web-Based Information System for New Student Admissions at SMK 1 Perintis Depok Using Codeigniter 4

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**Abstract**
Admission of new students is one of the processes in educational institutions such as schools which is useful for finding prospective students who are selected according to the criteria determined by the school to become their students. In general, the process of accepting new students is carried out through the stages of registration, selection tests, and student acceptance announcements. This research aims to develop a web-based school information system at SMK 1 Perintis Depok using CodeIgniter 4 and MySQL. This software functions to simplify the registration process for new students who have so far still used paper documents and Microsoft Excel. This research method is research and development. The development model used is the waterfall research method which consists of analysis, design, implementation and testing. Based on the results of this research, a web-based information system for new student admissions has the ability to make it easy for parents of prospective new students to obtain all information about new student admissions and carry out the online registration process.

**Keywords**
Information Systems; New student Admission; Codeigniter; MySQL; Waterfall.

# 1 | INTRODUCTION

An information system is a collection of components of an organization that processes. There is no need to doubt the role of information systems, because with the support of a good information system, an organization will have various competitive advantages compared to others. The use of computers and software as tools to help process data also continues to grow rapidly, this is due to technological advances and the desire to be able to complete work quickly. The process of accepting new students is an important thing for the school. Through this process new students will be selected, who has the right to be accepted and who does not. The purpose of this selection is to select prospective students with the best academic scores and to find students who meet the school's criteria. Therefore, the selection process for new students must run quickly and can always be monitored by the registrants. The data collection process for new students at SMK 1 Perintis Depok still uses paper and is processed using Microsoft Excel, this means that data processing does not run quickly and is difficult to update. Because it is processed using Microsoft Excel, the selection results cannot be displayed online, so prospective students must wait until the registration process ends to find out the results. Another problem that arises is that when more than one officer enters data, the data from other computers must be combined to get the result. Teachers and administrators must enter each student's data into the computer for processing. This causes the error rate to increase. In addition, the number of students who register each year always increases. From existing data, the number of registrants in 2014 was 150 and in 2016 it increased to 307 registrants.

Based on the background that has been explained, the formulation of the research problem is: The formulation of the problem raised in this final assignment is how to create a design for the Information System for New Student Admissions at SMK 1 Perintis Depok?. So that the discussion of this problem does not expand beyond its objectives, the author limits the problem in scope, namely; The Information System for New Student Admissions at SMK 1 Perintis Depok is focused on adding, changing, deleting, searching, selecting students, and displaying statistics. Discussing the admissions process for prospective new students at SMK 1 Perintis Depok. Using computer devices as a website creation facility. and browser or internet devices for users, and Using the PHP programming language with the CodeIgniter 3 framework and MySQL as a website creation tool. The aims of this research are; To help and make it easier for school employees and prospective new students in the process of admitting new students by using the student admissions website, Creating a new student admissions application so that it can be used on Android-based smartphones or laptops or desktop-based computers, To implement a new student admissions system at SMK 1 Perintis Depok, and Developing a New Student Admission Information System Based on the CodeIgniter PHP Framework.

# 2 | BACKGROUND THEORY

The development of a new student admission information system is crucial for educational institutions to streamline the process of admitting new students. The use of web-based systems has been shown to enhance the efficiency and effectiveness of student admission processes (Rochman *et al*., 2023; Simamora, 2020). These systems can facilitate the collection and secure storage of student data, making it easier for educational institutions to manage and access the information (Irawan & Neneng, 2021; Ariska, 2021). Additionally, the implementation of computerized systems can reduce human errors and ensure the security of stored data (Giovani *et al*., 2020; Noo, 2021). The traditional, manual methods of student admission can be time-consuming and may lead to administrative delays due to the lack of integration and proper management of data (Ismi *et al*., 2020). Therefore, the transition to web-based systems is essential to address these challenges and improve the overall efficiency of the admission process (Mukhandi *et al*., 2022; Najamudin *et al*., 2019). Furthermore, the development of these systems aligns with the increasing need for online platforms, especially in the context of the COVID-19 pandemic, which has highlighted the importance of digital solutions in education ("Changes in College and Career Readiness Supports During the First Year of the COVID-19 Pandemic", 2022). The use of web-based systems can also provide convenience for prospective students and their parents, as they can access admission-related information without the need to physically visit the institution (Ariska, 2021). The development of a web-based student admission information system is essential for educational institutions to enhance the efficiency, security, and accessibility of the admission process. This transition is particularly relevant in the current digital age and has become even more crucial considering the challenges posed by the COVID-19 pandemic.

CodeIgniter 4 is a modern PHP framework that offers features such as CLI support (Atmaja *et al*., 2023). The use of PHP frameworks like CodeIgniter can simplify the development process by eliminating the need to write the entire code from scratch (Pramakrisna *et al*., 2022). Additionally, the development of a web-based student admission system using CodeIgniter 4 aligns with the trend of modernizing PHP frameworks (Atmaja *et al*., 2023).

Furthermore, the development of web-based systems using PHP for student admission processes has been shown to enhance the efficiency and effectiveness of the admission process. These systems can facilitate the collection and secure storage of student data, making it easier for educational institutions to manage and access the information. The use of web-based systems can also provide convenience for prospective students and their parents, as they can access admission-related information without the need to physically visit the institution. In conclusion, the use of CodeIgniter 4 for developing a web-based student admission system is supported by the literature, and it aligns with the modernization of PHP frameworks. The development of such a system can enhance the efficiency, security, and accessibility of the admission process, providing benefits for both educational institutions and prospective students.

## 3 | METHOD

This research was conducted by researchers in Depok City with the parties involved in this research. The reason the researcher conducted research at SMK 1 Perintis Depok was with the consideration that at SMK 1 Perintis Depok there was no website for accepting new students. This research is planned for the even semester of 2020/2021.

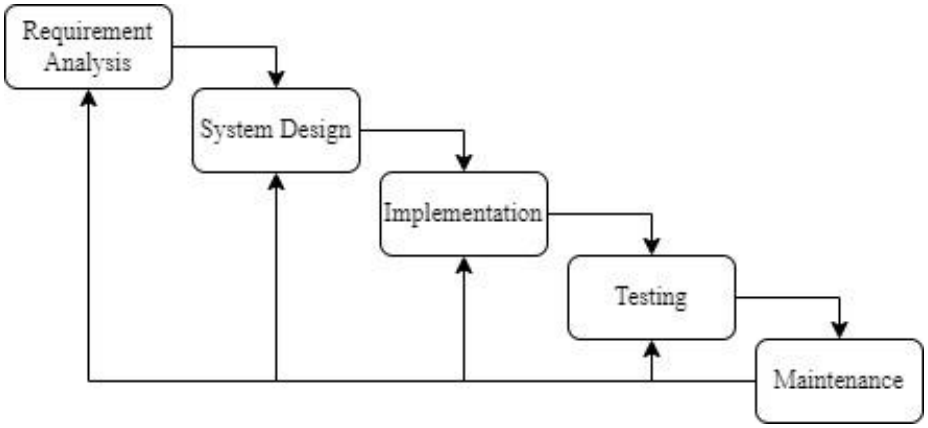



Figure 1. Waterfall Method

The Waterfall model is a sequential software development process, where progress is seen as flowing steadily downwards through the phases of conception, initiation, analysis, design, construction, testing, production/implementation, and maintenance Triansyah *et al*. (2022) Ratuumbuisang *et al*., 2022; Nugroho, 2019; Wahdiniwaty *et al*., 2020; Rachma & Muhlas, 2022; Novaliendry & Azkia, 2021; Kingdom, 2021; Sidiq & Kurniadi, 2021). This method approaches systematically and sequentially in building software, making it suitable for the initial stage of application development (Irsandi *et al*., 2020). It is known for its simplicity, ease of understanding, and implementation (Sunardi *et al*., 2020). The Waterfall model is particularly suitable for generic systems or software that can provide services to the user (Rachma & Muhlas, 2022). PHP is a widely used open-source scripting language for web development, commonly used to build large application frameworks and web applications (Hills *et al*., 2013; Hills *et al*., 2017; Aryanto *et al*., 2015). It is known for its ability to generate dynamic page content, connect to databases, and manage session tracking (Aryanto *et al*., 2015). The PHP language is used in various applications, such as e-learning platforms, intelligent tutoring systems, and institutional DICOM distribution systems (Weragama & Reye, 2014; Aryanto *et al*., 2015). MySQL is a popular relational database management system used in various applications, including e-learning platforms, web-based information systems, and clinical trial processors (Fälth *et al*., 2006; Zhao, 2022; Warman & Ramdaniansyah, 2018). It is known for its reliability, ease of use, and integration capabilities with web interfaces built using PHP (Aryanto *et al*., 2015). The Waterfall model provides a systematic approach to software development, PHP is a versatile scripting language for web development, and MySQL is a reliable and widely used database management system. When used together, these technologies can contribute to the development of robust and efficient web-based systems. The research planning schedule is listed in table 1 below:

Table 1. Research Planning Schedule

| No | Research plan | Year 2021 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Determining Research Topics | | | | | | | | | | | |
| 2 | Observation | | | | | | | | | | | |
| 3 | Data Generation | | | | | | | | | | | |
| 4 | Data analysis | | | | | | | | | | | |
| 5 | System planning | | | | | | | | | | | |
| 6 | Dissemination | | | | | | | | | | | |
| 7 | Application Creation | | | | | | | | | | | |
| 8 | Application Testing | | | | | | | | | | | |
| 9 | Report | | | | | | | | | | | |

## 4 | RESULT

The general election to select prospective new students currently still uses Waterfall, where all New Student Admission activities still use manual methods. The following is the flow of the system that is currently running. In the process of selecting prospective new students, students register themselves first so they can log in, fill in the registration in the application by filling in NISN, name, school of origin, place of birth, date of birth, address and home address which are provided on the website application. The following is a flowchart of user registration.

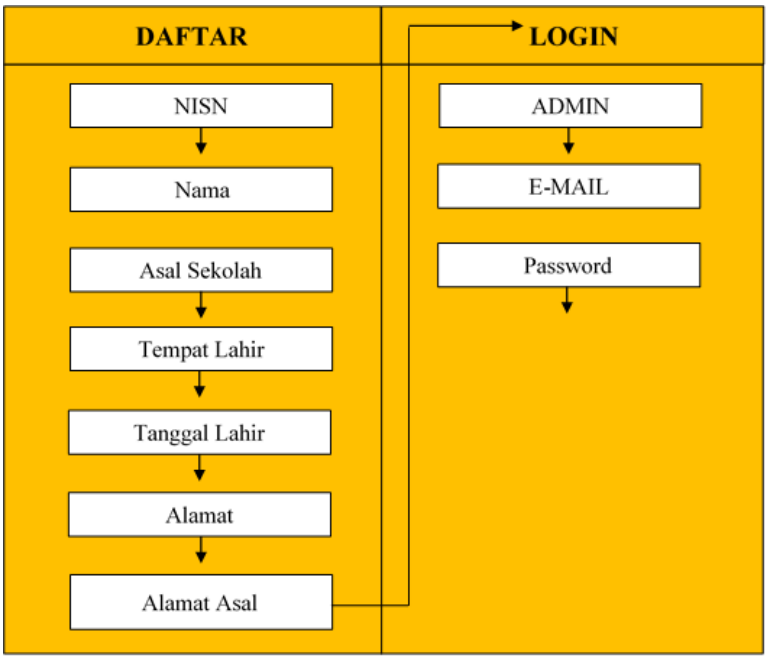
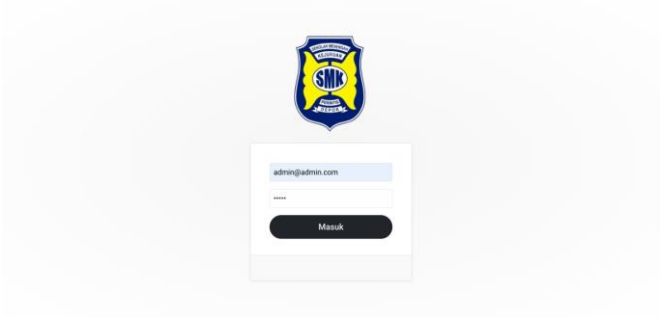


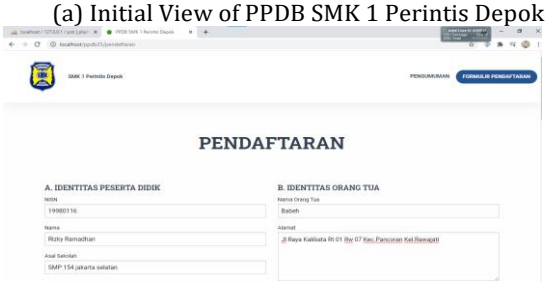

Figure 2. Flowchart for Registration of Prospective New Students

The initial display displays the requirements and criteria for registration at SMK 1 Perintis Depok (figure 3.a). Database display that will display the Admin Login on the Website for New Student Admission Candidates at SMK 1 Perintis Depok (figure 3.b). From Registration procedures displays information regarding the rules and procedures for registering new students. Time, place, conditions, selection conditions, re-registration conditions are explained on this page (figure 3.c). Admissions data displays prospective new students who will be selected and entered according to the requirements and criteria at SMK 1 Perintis Depok (figure 3.d).

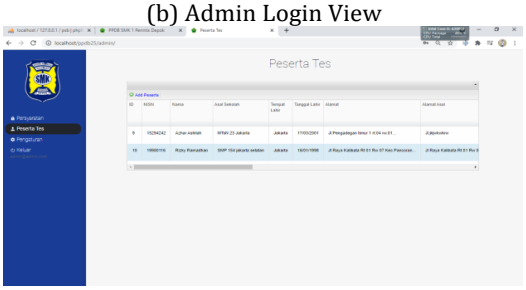

(a) Initial View of PPDB SMK 1 Perintis Depok




(b) Admin Login View



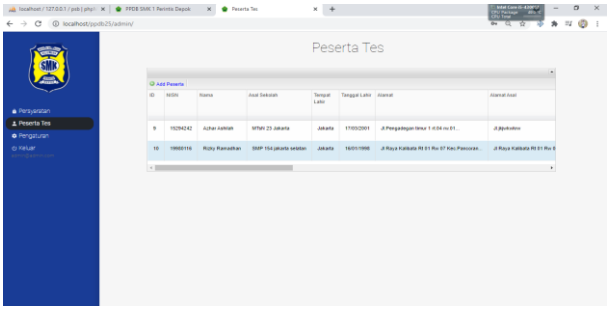

(c) Registration View



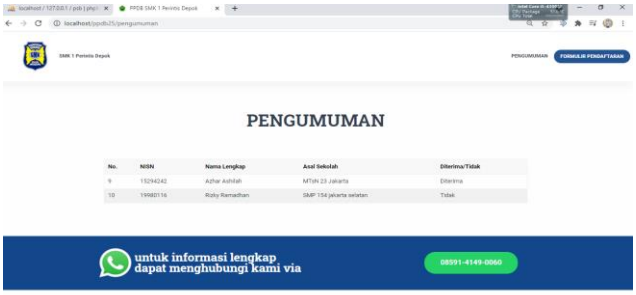

(d) Prospective New Student Data in Admin

Figure 3. Appearance Main Menu Application.

Announcement Results displays information about the announcement of prospective new students who were selected and entered into SMK 1 Perintis Depok (figure 4.a). Displays an attendance list for employees consisting of time, date and attendance (figure 4.b).




(a) Prospective New Student Data in Admin




(b) Announcement Results for New Student Candidates

Figure 5. Advanced Application View

## 5 | CONCLUSIONS AND FUTURE WORK

Based on the activities carried out by the author during the design and creation of the new student admission application, several conclusions can be drawn; This PPDB website helps prospective students and female students to register at SMK 1 Perintis Depok. By using this PPDB website, prospective students and prospective female students at SMK 1 Perintis Depok can be run on an Android smartphone, and this PPDB website uses the requirements and criteria for registration at SMK 1 Perintis Depok.

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