

## HIGH SCHOOL STUDENT COMPLAINT APPLICATION USING WEBSITE-BASED WATERFALL METHOD

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### Abstract

The web-based student complaint application aims to make complaint services more effective as a learning support and to make it easier for schools to respond to student complaints and aspirations regarding unsatisfactory school services. Previously, manual student complaints were considered ineffective due to the slow response received by students. The waterfall method in software development helps the process of running this application. Simplicity and ease of understanding are one of the main attractions, with an easy-to-understand linear structure. Each phase has clear stages with defined outcomes and a review process, ensuring clarity and understanding of requirements at the start of the project. This application effectively meets functional needs, especially in terms of ease of use for schools and students, and facilitates the automatic submission of complaints outside scheduled school hours.

**Keywords:** *Waterfall method*

### INTRODUCTION

Technology today has developed greatly, especially in the field of informatics. Along with the rapid development of science, technology and information, it has caused changes in performance in solving problems, both in society, schools and government agencies. The development of technology that can be felt today is internet technology. (Irawan & Siregar, 2020; Sansena, 2021).

Current information systems are a support for the world of education. (Aji Kuncoro & Widiyatmaka, 2022). School stakeholders in the current environment are required to always adjust to what is needed in the school environment, as a form of effort to interact and adjust to environmental developments that occur inside and outside the environment, so that they can encompass all interests in expressing opinions. (Gunawan & Ma'ruf Farid, 2020; Sansena & Samsudin, 2023). With the existence of a complaint and interaction forum, schools will be greatly helped in evaluating the various opinions that develop.

One of the schools that has such a container is Al-Azhar Medan Private High School. The school has various excellent educational programs such as the Tahfiz Al-Quran program, health classes, engineering, SOSHUM, to civil service classes. Of course, the existence of many programs has various challenges related to facilities and infrastructure, character building of students to other developing issues. This is very vital if not responded to properly. The school with the vice principal for student affairs, curriculum and also finance and school administration is very responsive as a container for the aspirations of the school community and is at the forefront of resolving various problems received.

In conveying aspirations, school residents sometimes have difficulty meeting and conveying their aspirations directly because the person concerned is not always there when they want to convey an opinion. So it cannot be reviewed as soon as possible to resolve a matter, opinion or other obstacles related to the school. Mistakes in evaluating something are still recorded conventionally with stationery so that it can cause errors or loss of data obtained. Later, this is very ineffective if the data needed is still looking for from one notebook to another, where this will be very risky to be lost or damaged (Febrita & Nurdiana, 2019). It is very necessary to have a forum for aspirations that can be conveyed wherever and whenever the school community submits their complaints. One of them is using a website (Cahyawati, 2017; Ikhwan & Fahrian, 2022). The website is very easy to access via any

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media connected to the internet.(Samsudin et al., 2022; Yohanitas & Prayitno, 2014). With the website, accessing information, complaints and other supporting data can be very easy to obtain. So that the existing problems are very large resolved in order to support services and services to improve the quality of schools, academics, to school accreditation(Aji Kuncoro & Widiyatmaka, 2022; Damayanti et al., 2023).

Related research according to Cahya Firmansyah and Cucu Tohir found that the public complaint service system can provide a faster and more effective response from users and connect the community with stakeholders who can relate to complaints or problems and village complaint management employees get convenience in processing complaint data and in compiling complaint data reports up to a certain period of time (Firmansyah & S, 2018). Similar research conducted by Siti Widhareto Mursalim resulted in the overall result that the existence of a complaint service system aims to help the community as a forum for expressing aspirations or complaints about the performance of the agency in order to facilitate the submission of public complaints or aspirations related to performance. This report is accessible, simple, fast, fair, confidential, records and recovery (Mursalim, 2018). Similar to previous research, according to Hardiansyah, et al., found that with this aspiration service system, it can bridge the gap between the community and stakeholders to submit complaints so that they can follow up on complaints and aspirations directly. (Hardiansah et al., 2017).

With the development especially in the field of technology, this research was made with the hope of making it easier for the community to make complaints. So that criticism and suggestions from the school community can be conveyed and given consideration to the parties involved. In addition, in the field of schools, it can also make it easier for parents to access the development and condition of their children, thereby improving the quality of education for students because of the contribution from the family.

## LITERATURE REVIEW

### A. Website

Website is A website (often shortened to just site, website or site) is a term for a group of web pages, which are generally part of a domain name or subdomain on the World Wide Web (WWW) on the Internet. A web page is a document written in HTML (Hyper Text Markup Language) format, which is almost always accessible via HTTP, a protocol that conveys information from a website server to be displayed to users via a web browser, either static or dynamic, forming a series of interrelated buildings where each is connected by a network of pages (hyperlinks).(Annah et al., 2020; Samsudin et al., 2022; Sari & S, 2020).

### B. Waterfall

The waterfall method is something that describes a systematic and sequential approach (step by step) in software development. Stages with user requirements specifications then continue through the planning stages, namely planning, modeling, construction, a system and submission of the system to users, support for the complete software produced.(Haq & Suendri, 2023; Samsudin et al., 2022; Sansena, 2021; Sansena & Samsudin, 2023; Ulhaq & Irawan, 2023; Usnaini et al., 2021)

## METHOD

The research method used for the design of this website-based application is the Waterfall Model method. The Waterfall Model is an example of a system design process whose main phases directly represent the basis of system planning, such as analysis and definition of needs, system design, software, implementation, and system testing.(Mahdias et al., 2019)which can be seen in Figure 1.

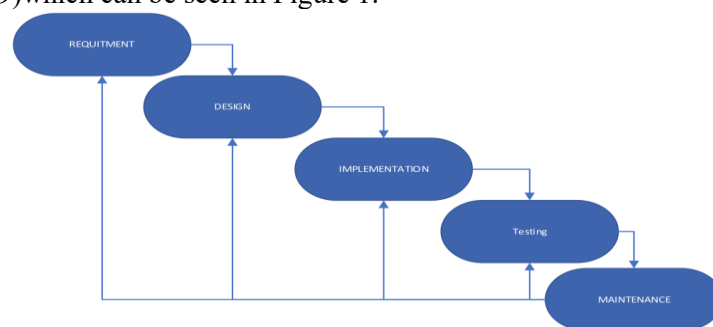


Figure 1. Waterfall method

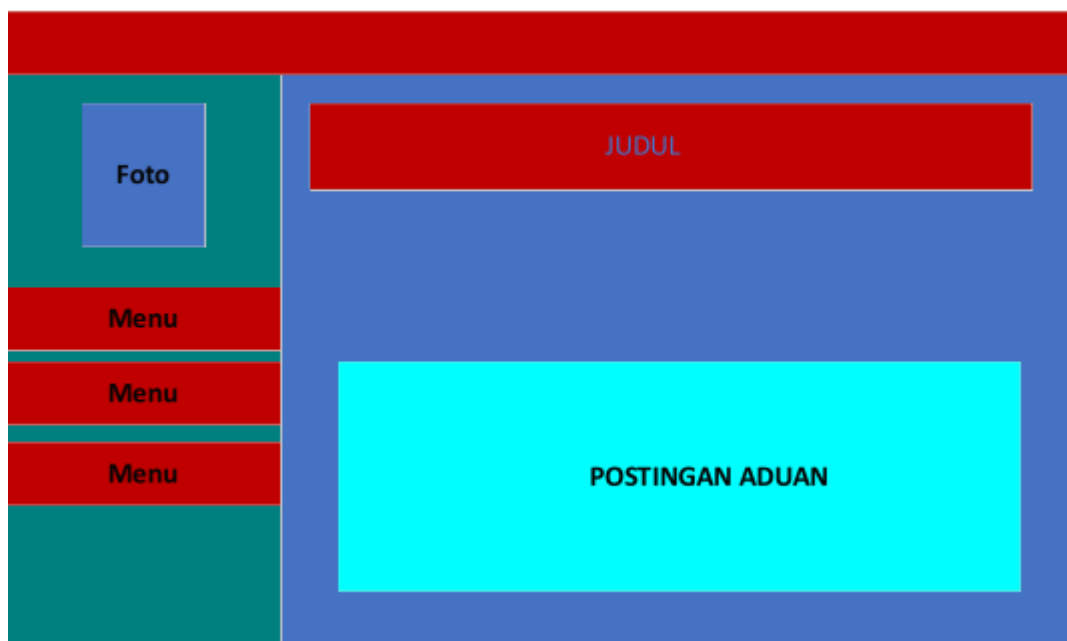
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The Waterfall Model method describes a systematic approach so that a series of studies are carried out, including:

- a. *Requirements.* This stage requires system developers to communicate with the aim of understanding the software expected by users and the limitations of the software. Information can be obtained through interviews, discussions or direct surveys. Information is analyzed to obtain data needed by users.
- b. *Design.* At this stage, the developer creates a system design that can help determine hardware and system requirements and also helps in defining the overall system architecture. At the design stage, a program flow or flowchart is needed. The flowchart aims to explain the system flow later. The flowchart looks like Figure 2. And the interface design to compile the ideal content and navigation in use can be seen in Figure 3.



**Figure 2.**Proposed System Flowchart



**Figure 3.**Main interface design

- c. *Implementation.* At this stage, the system is first developed in a small program called a unit, which is integrated in the next stage. At this stage, the implementation of the website application has been carried out which is used to bridge between users and the system in making complaints at school. At the implementation stage, coding is done using PHP with the support of the Visual Studio Code platform and the database used is XAMPP version 7.4.6 and other programs that support the creation of web applications.

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- d. Data Collection Techniques. Data collection techniques to gather information needed to develop a school complaint service system. The methods used are observation and interviews. Observation is used to obtain direct information on user responses regarding the use of the school complaint service system. Interviews are used to obtain responses regarding input, suggestions and criticisms for the purpose of developing a school complaint service system.

## RESULTS AND DISCUSSION

The results of this implementation investigation are available in the form of a website in order to facilitate the provision of school complaint services. The visualization results in this study are presented below:

### 1. Login Page

On the first display opening the site is a login display to be able to access the main page. The login page contains the website logo, login form to the main page, looks like in Figure 4.



Figure 4. Web View Login section

### 2. Complaints Page

When you first access the website, a form for filling in school complaint data will appear, as shown in Figure 5.

| NO | ID Pengaduan    | Kelas   | Tanggal             | Kategori             | Detail Pengaduan   |
|----|-----------------|---------|---------------------|----------------------|--|
| 1  | BK-080225172140 | X UG D  | 2025-02-08 17:22:20 | Pengaduan            | Drompt saya hilang di kelas saya                         |
| 2  | BK-080225172050 | XI UG A | 2025-02-08 17:21:38 | Program Kurikulum    | Programnya butuh pengembangan agar bisa go internasional |
| 3  | BK-080225171851 | X UG A  | 2025-02-08 17:19:40 | Sarana dan Prasarana | AC nya tidak berfungsi seperti semestinya                |

Figure 5. Web View of Complaint Form section

3. Home Page

This main display displays several menus such as the account menu, Home, Complaint Data, Employee Data and Reports, as seen in Figure 6.

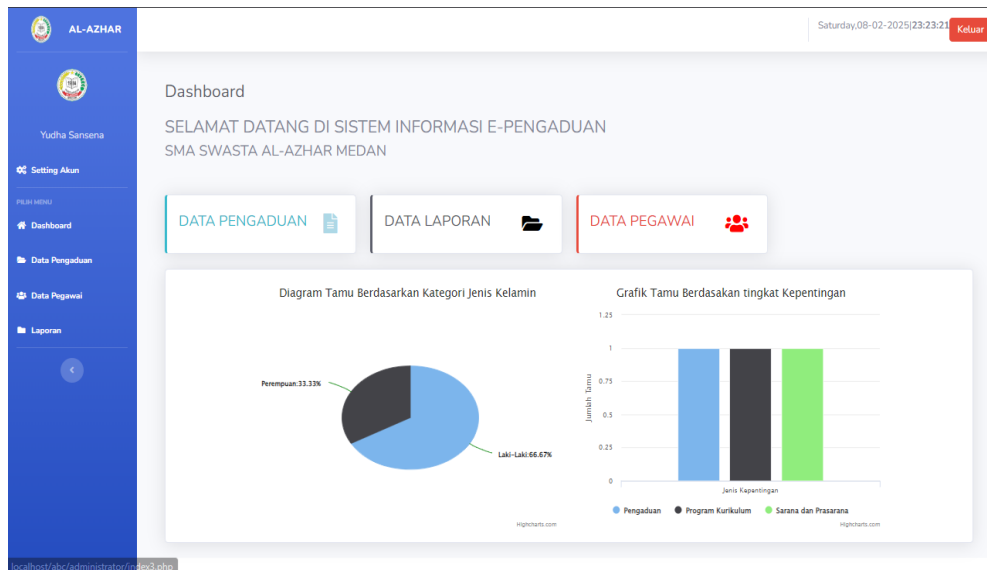


Figure 6. Administrator Home Page Web View

4. Complaint List Page on Admin

This view of the list of incoming complaints displays several complaint data that have been entered into the system, as seen in Figure 7.

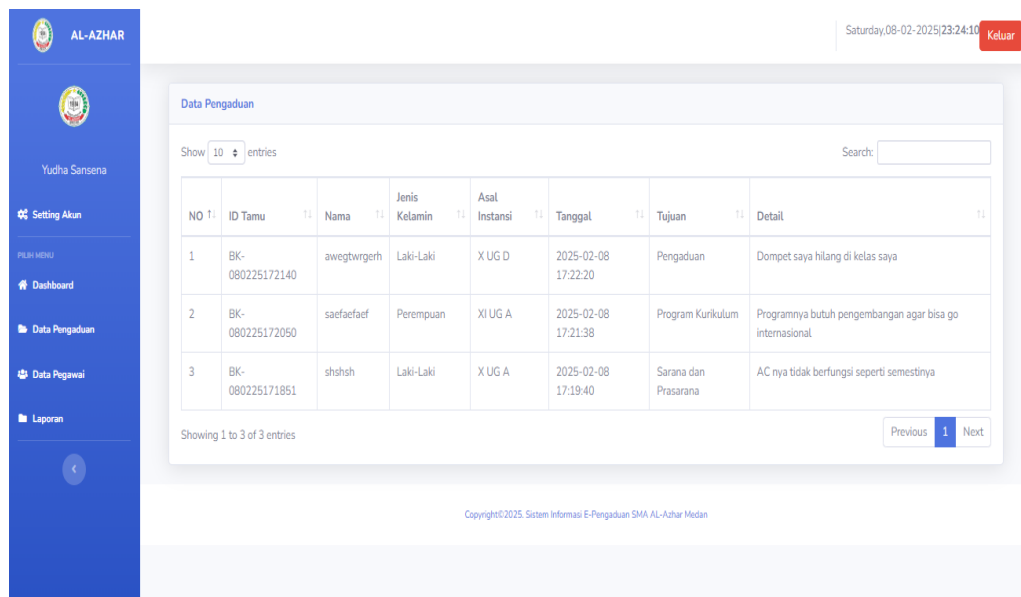


Figure 7. Web view of complaint data section in administrator

5. System Testing

Black box testing is the most important part in developing applications, testing that uses black box testing focuses on the specifications of the system functions built, defining input conditions by users, and running functional specification testers of application programs. The results of the black box test are shown in Table 1.

**Table 1.**Black box test results

| No | Case/tested         | Test Scenario                                      | Expected results  | Test Results |
|----|---------------------|--|---|--------------|
| 1. | Initial View        | Selecting the Complaint Service Text Icon Launcher | When the icon is clicked/touched, the application runs and enters the main display.   | Succeed      |
| 2. | Complaint Data Menu | Selecting the Complaint Data Menu                  | When the Menu is clicked/touched, the application will run and enter the complaint data display.  | Succeed      |
| 3. | Report Menu         | Selecting the Report Menu in Admin                 | When the Menu is clicked/touched, the application will run and enter the complaint list display and complaint verification data (Admin) | Succeed      |
| 4  | Employee Data Menu  | Selecting the Employee Menu                        | When the Menu is clicked/touched, the application will run into the employee data display containing detailed user account data.        | Succeed      |
| 5  | Home Menu           | Selecting the Home Menu on the Dashboard           | When the Home Menu is clicked/touched, the application will run and display the initial display.  | Succeed      |
| 6  | Save Data           | Select the Save Button on Complaint                | When the Save button is clicked/touched, the application will run and display the complaint data below the complaint form.              | Succeed      |
|    |                     | Selecting the Save Button on the Report            | When the save button is clicked/touched, the application will run and display the changes to the verification data.                     | Succeed      |

**CONCLUSION**

Based on the description of the results and discussion, it can be concluded that a web-based school complaint service product has been implemented that can break through the school complaint bureaucracy system to be more efficient. easy and efficient. The results of the implementation of a website-based complaint service system can provide convenience for students and parents to submit complaints and manage complaint data to be more flexible, simple, and efficient. The research conducted still found weaknesses, therefore the suggestion that can be shared is to improve the complaint service system of Al-Azhar Medan High School in the future by further improving it with the appearance or other complaint features so that users can more easily make other reports.

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