

Designing of Project Management Information System for Web-Based OSIS Saturday Clean-Up Attendance Data

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ABSTRACT

The rapid progression of technology in today's globalized era has created a heightened demand for efficiency and effectiveness in various aspects of life. This demand is particularly evident in the management of student activities, such as the OSIS clean-up events held on Saturdays. These events, while important for fostering a sense of community and responsibility among students, often face challenges due to manual and non-systematic data management processes. We developed a project management information system to manage attendance and data related to Clean Saturday activities, addressing these challenges. This system utilizes the waterfall method, a structured approach that allows for quickly identifying and resolving issues that may arise during the management process. By implementing this system, Clean Saturday activity management becomes more streamlined and efficient, resulting in improved overall effectiveness. The outcomes of this research are twofold. Firstly, it simplifies the data processing involved in managing attendance at Clean Saturday events, making it easier for OSIS personnel to track and analyze participation. Secondly, it enhances the overall efficiency of the OSIS clean-up program, allowing for better resource allocation and improved outcomes for both students and the community at large.

Keywords: Project Management Information System, Waterfall, Attendance Data, Saturday Clean-Up, OSIS.

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INTRODUCTION

As the world becomes more connected, technology and information develop at an ever-increasing pace. Humans recognize the need for high efficiency across all domains due to the growing significance of information in the globalized world. This applies to all economic sectors such as business, organizations, and even education. Therefore, we hope this research can aid in optimizing the management of student attendance data. Based on these issues, the author decided to design an information system for students' Saturday net attendance data. By creating an information system for Saturday activities, this research seeks to offer a solution. Call on the OSIS to address the problems students face in handling attendance data more effectively and economically[1].

A project management information system consists of tools and techniques for collecting, integrating, and disseminating output from the project management process. Information systems project management is becoming increasingly important in the ever-growing digital era to ensure the successful execution of information technology projects[2]. This article will discuss definitions, stages, keys to success, examples of implementation, challenges, and conclusions related to information systems project management. This comprehensive exploration aims to shed light on the importance of effective project management in the realm of information systems, highlighting its

relevance and impact on various sectors and industries. Through this research, we aim to contribute valuable insights and strategies for enhancing project management practices, particularly in the context of information systems. By addressing key challenges and offering practical solutions, we hope to support organizations and individuals in achieving greater efficiency and success in their project endeavors.

LITERATURE REVIEW

System design is a complex process that includes creating new systems or improving existing systems to increase functionality and operational efficiency. This process usually involves several important stages, including requirements analysis, system architecture design, input and output design, and data management through creating and managing relevant files[3]. While input design concentrates on data entry into the system, output design handles the presentation of information to users. Efficient and structured file management is essential to ensuring data integrity and accessibility[4].

In this context, the main goals of project management are to achieve efficiency, project control, quality improvement, increased productivity, risk mitigation, internal coordination, and increased team spirit[5]. Project management achieves efficiency by optimally utilizing all project components, including financial resources, schedule, and labor, thereby minimizing waste and optimizing results for project completion. Project control is a crucial aspect that includes the implementation of rules and control mechanisms to ensure that every aspect of the project runs according to the plans and standards set. This includes performance monitoring, risk assessment, and implementing corrective actions to keep the project on track[6].

Quality improvement is a critical goal because well-managed projects have the potential to produce results that meet or even exceed the highest industry standards. Effective project management closely monitors each stage of the project and thoroughly tests the processes and outputs to ensure the desired quality[7]. Efficient evaluation and management of time and resources lead to increased project productivity. Project management provides a clear structure and boundaries for each task so that each team member can work optimally to achieve project goals[8].

Risk mitigation is one of the critical components of project management. This entails identifying potential risks that could impact the project, as well as developing strategies to reduce or manage those risks[9]. This protects the project from unanticipated surprises that could impede progress or lead to failure. Internal coordination is another important element that ensures that all teams and individuals involved in a project communicate and work together effectively[10]. Project management provides a framework for efficient collaboration, which in turn improves teamwork and produces more reliable results[11].

Finally, increasing team spirit is an equally important goal. Good project management provides clear leadership and firm direction, which is critical to keeping teams organized and motivated. Without clear leadership and rules, a team tends to become disorganized and ineffective, hindering the achievement of project goals. Effective project management enables the team to work with high enthusiasm and productivity, ensuring the successful completion of the project[12].

METHODOLOGY

The waterfall model, often known as the “classical life cycle” approach, was chosen as a research methodology in software development. This Waterfall method is applied sequentially or linearly, where each stage must be completed before proceeding to the next stage. Software development using the Waterfall method involves several main stages, namely requirements analysis, design, implementation, testing, and maintenance[13]. The software development process is broken down into separate but interconnected phases, allowing better control over each stage. At the requirements analysis stage, system developers must focus on understanding user expectations for the software as well as various obstacles that may exist. To collect this data, methods such as direct surveys, in-depth

conversations, or interviews with users are usually used. The data obtained is then analyzed to produce clear and detailed requirements specifications.

The next step is system design, where the requirements specifications that have been collected are used to design the overall system architecture. This system design includes designing the main components, hardware requirements, and other system needs. Good design will help ensure that the system being developed meets all user needs and functions well in its operational environment. During the implementation phase, the system that has been designed is developed into a compact program known as code. This code is then combined in subsequent phases to form a complete system. Code testing is an integral part of this phase, where each program unit is functionally tested to ensure that it works according to predetermined specifications. Once unit testing is complete, all the units that have been created during the implementation phase are combined in a process known as system integration. The entire system is then tested to detect and correct any deficiencies or problems that may exist. This test ensures that the system is functioning properly as a whole and is ready for operation. The final phase is maintenance, where the implemented and tested system is monitored and updated as needed. Maintenance involves fixing bugs, adding new features, and adapting the system to changes in the operational environment. With proper maintenance, the system can continue to function well and meet user needs in the long term.

RESULTS

Based on the results of research carried out in Data Processing Present Saturday Clean by Osis Students, researchers created a web-based system design which in this design can describe the workflow of the system that will be created. A use case diagram is a type of diagram that shows how actors and systems interact. The nature of the interaction between system users and the system can also be explained through use case diagrams. The use of use case diagrams includes: illustrating user interactions with the system, mapping system requirements, and identifying needs outside the system.

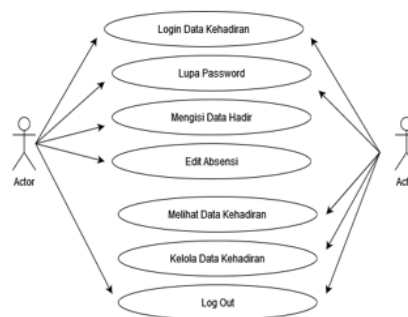


Figure 1. Use Case Diagram

To understand the problem and the current flow, you can see Figure 2 Current System Analysis below.

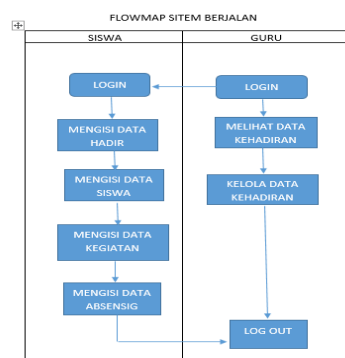


Figure 2. Current System Analysis

Figure 2 depicts the system process flow that is currently running. This flow includes various stages starting from logging in, filling in attendance data, student data, activity data, and attendance data by students, and data processing by the system, to the resulting output. Each stage is analyzed to identify potential problems or existing obstacles. At the stage of filling in attendance data, student data, activity data, and attendance data, the data is entered into the system through filling out forms, manual input, or integration with other systems. Problems that are often found at this stage include data input errors, incomplete data, and limited user access. After the data is input, teachers can view and manage attendance data. This stage includes data validation, calculations, and data transformation. Possible problems include logic errors, processing delays, and data mismatches. The results of data processing are then presented in the form of output, such as reports, displays on the screen, or sending data to other systems. Problems that can occur at this stage include output inaccuracies, inappropriate output formats, and failures in the distribution of results. By analyzing the current system flow through Figure 2, we can identify and understand existing problems, and develop effective solutions to increase system efficiency and effectiveness.

Actions taken to formally implement a system design, whether for a new system or an upgraded system, are referred to as system implementation. System implementation is the critical step where the theoretical design is converted into an operational and usable system. At this stage, the system is ready to be used in full operational capacity. One important step in implementation is system testing, which aims to find bugs or problems that can interfere with system performance. System testing is an important process that ensures that all system components work according to predetermined specifications. This process includes various types of testing, from unit testing to integration testing and overall system testing. Once initial testing is complete, the system then moves into the real operational phase, where it is used in a real user environment to ensure that all functions work well and meet user needs.

One form of testing that is very important in the context of software development is web testing. Web testing is the process of running and analyzing a website, either automatically or manually, to evaluate whether it meets specified requirements. This testing aims to identify differences between the expected results and the actual results displayed by the website. This process includes various aspects, such as functionality testing, usability testing, security testing, and website performance testing. Web testing is usually carried out according to recognized web development methodologies. This methodology provides a systematic framework to ensure that all aspects of a website are thoroughly tested and that any issues discovered can be fixed before the website is officially launched. This web development methodology involves various stages, from planning and design, implementation and testing, to launching and maintaining the website. By following proper web development methodology, developers can ensure that the resulting website not only functions well but is also secure, easy to use, and able to handle the expected user load. Therefore, web testing is an integral part of an effective web development process, contributing significantly to the overall success of a system development project.

DATA KEHADIRAN KEGIATAN SABTU BERSIH SISWA OSIS Login Register

Login

Email Address

Password

Remember Me

[Login](#) [Forgot Your Password?](#)

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Figure 3. Login Page

The login page is an important element of a website or application that serves to identify users before they gain access to a particular account or service. On this page, users are asked to enter identifying

information, such as a username and password, as part of the authentication process. This authentication aims to ensure that only authorized users can access restricted information or features, thereby increasing system security and privacy. The authentication process on the login page includes several important steps. First, users enter their username and password into the form provided. After that, this information is sent to the server for verification. The server will check the provided credentials against the database of registered users. If the username and password match the existing data, the user will be granted access to the requested account or service. Otherwise, users will receive an error message and be asked to try again or perform recovery steps such as password reset. Login pages also often come with additional features to increase security, such as CAPTCHA, which helps prevent access by bots or automated devices. Additionally, some systems use two-factor authentication (2FA), where users must enter an additional code sent to their device to gain access. These steps add an extra layer of security, protecting sensitive information from unauthorized access. Apart from security functions, the login page is also designed to provide a good user experience. The intuitive and responsive design helps users easily enter their information and resolve any issues they may encounter during the login process. Providing options such as “Forgot Password” or “Remember Me” also increases the convenience and usability of the login page. Overall, the login page is not only a gateway to user access, but also a vital component of a system's security strategy, ensuring that only authorized users can access restricted data and features.



Figure 4. Dashboard Page

A dashboard page is a page designed to provide a concise display of various important information or metrics on one screen. These dashboards are typically used in applications or websites to give users a quick overview of performance, statistics, or other important data relevant to their context. The main purpose of a dashboard is to present complex information in a form that is easy to understand and interpret, allowing users to quickly understand an ongoing situation or trend and take appropriate action. In a business context, dashboards are often used by managers or executives to monitor company performance through key performance indicators (KPIs). These dashboards can display data in a variety of visual forms such as graphs, charts, tables, or maps, all of which are designed to provide a glance at a particular status or trend. For example, a financial dashboard might show metrics like revenue, expenses, and net profit, while a marketing dashboard might show metrics like conversions, website visitors, and social media engagement. Apart from business, dashboards are also widely used in various other fields. In the education sector, for example, dashboards can be used to display student attendance data, test scores, and other statistics that help teachers and school administrators monitor student performance and take necessary action. In the health sector, dashboards can be used by hospitals to track the number of patients, occupancy levels, and other vital data that is important for the management of health facilities and services. One of the main advantages of using dashboards is the ability to integrate data from various sources and present it in a consistent and easily accessible format. This not only saves time but also increases decision-making accuracy, as users can see the whole picture without having to dig into data from multiple reports or different systems. Effective dashboards are also usually interactive, allowing users to click on specific elements to get more detailed information or customize the data display to suit their needs. Features such as filters, drill-downs, and tooltips assist users in deeper data exploration, providing flexibility in analysis and reporting.

Overall, dashboard pages are a very useful tool in information management, providing an efficient and effective way to monitor, analyze, and manage important data. By presenting data concisely and clearly, dashboards help users make better and faster decisions, supporting overall organizational or individual goals.



No	NIS	Nama	Kelas	Alamat	Aksi
1	31423524	Tasya	VII-C	Jln. Wr Supratman	Edit Delete

Figure 5. Student Data Page

The student data page is an important component of designing the Clean Saturday attendance data system which is managed by OSIS students. This page functions as a place to store and manage information about each student involved in the activity. The data available on this page includes the Student Identification Number, the student's full name, class or level of education, the student's address, and is accompanied by edit and delete features that allow users to update or delete the student's data. Student Identification Number information is a unique identity for each student and is important for distinguishing one student from another. This makes it easier to search and group student data in the system. In addition, the student's full name and class data provide a complete picture of the student's identity and the level of education they are pursuing. Address information is also included in the student data page to provide context for the student's location, which can be useful in planning and organizing activities or distribution of Clean Saturday-related materials. The edit feature allows users to make changes or updates to student data that may be necessary, such as changes to addresses or other contact information. Meanwhile, the delete feature allows users to delete student data entries if necessary, for example, if the student is no longer active or not involved in Clean Saturday activities. With a student data page that is structured and equipped with important features such as edit and delete, managing student data in the system becomes more efficient and organized. This page can also assist in tracking and reporting student data, as well as ensuring that the information available is always up to date and accurate according to student progress in Clean Saturday activities.



No	Nama Kegiatan	Tanggal Pelaksanaan	Tempat	Keterangan	Aksi
1	Hias Taman	2024-05-01	SMP ABC	Menanam Bunga dan Menghias Pot Bunga	Edit Delete

Figure 6. Student Activity Data Page

The activity data page is a crucial part of designing the Clean Saturday Present data system which is managed by OSIS students. This page functions as a means to manage information regarding various activities carried out by the organization, which will be input and managed in the system. The data

contained on this page includes information regarding the name of the activity, the date of the activity, the location of the activity, and information or description of the activity, and is equipped with edit and delete features that allow users to update or delete the activity data. Information regarding the name of the activity is the identity of the activity, which gives users an idea of the type of activity carried out by the organization. The date of activity implementation helps in scheduling and managing the activity schedule, while the location information provides the physical context in which the activity takes place. Descriptions or descriptions of activities provide more detailed information regarding goals, objectives, and other important details related to the activity. This helps users to better understand the aims and objectives of the activities carried out by the organization. The edit feature allows users to make changes or updates to activity data that may be necessary, such as changing the date or location of the activity. Meanwhile, the delete feature allows users to delete activity data entries if necessary, for example, if the activity is canceled or no longer relevant. With a structured activity data page equipped with important features such as edit and delete, managing information regarding organizational activities in the system becomes more efficient and organized. This page can also assist in reporting activities and monitoring the development of organizational activities from time to time.

No	Nama Siswa	Kegiatan	Tanggal Pelaksanaan	Tempat	Status Kehadiran	Keterangan	Aksi
1	Tasya	Hias Taman	01/05/2024	SMP ABC	Hadir	hadir dalam mengikuti sabtu bersih	Edit Delete

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Figure 7. Student Attendance Data Page

The attendance data page is a vital part of designing the Clean Saturday Attendance Data system which is managed by OSIS students. This page provides attendance records for students who take part in Clean Saturday activities, where these data will be input and managed in the system. The information contained on this page includes the student's name, activities participated in, date of the activity, location of the activity, attendance status, additional information, and is equipped with edit and delete features which allow users to update or delete the student's attendance record. Student name data provides a unique identity for each student who attends Clean Saturday activities, making it easier to search and track their attendance. Activities participated in indicate the type of activity or pursuits attended by the student, which is important for understanding the student's contribution to a particular organization or activity. Information regarding the date of the activity and the location of the activity helps in recording the time and location of students' attendance at Clean Saturday activities. This is important for documentation purposes and monitoring the development of activities from time to time. Attendance status includes information on whether the student was present, permitted, or absent from the activity. Additional information can be used to record reasons or specific information regarding a student's attendance, such as the reason for permission or additional information required. The edit feature allows users to make changes or updates to student attendance data that may be necessary, such as correcting recording errors or updating attendance status. Meanwhile, the delete feature allows users to delete student attendance records if necessary, such as if there are duplications or errors in recording. With a structured attendance data page equipped with important features such as edit and delete, managing student attendance records in the system becomes more efficient and organized. This page can also assist in reporting student attendance, monitoring attendance trends over time, as well as evaluating and analyzing student attendance in Clean Saturday activities.

CONCLUSION

Based on the analysis and research results, it can be concluded that the attendance system for Clean Saturday activities for students carried out by the OSIS is still manual. This condition causes a lack of time efficiency and potential errors in managing attendance data. Therefore, the author designed a web-based information system for attendance data. This design is expected to increase time efficiency and make attendance data management better and more structured. In the system development method, the waterfall method is used. This method was chosen because it has benefits in clear control and departmentalization. Errors in system development can be minimized with a progressive, step-by-step modeling approach. The development process starts from the concept stage and then continues with design, implementation, testing, installation, troubleshooting, operation, and maintenance. This approach allows each stage of system development to be carried out in a structured and controlled manner. A clear system concept and thoughtful design form the basis for effective implementation. Careful testing is performed to ensure that the system functions as required and produces accurate output. After installation, a troubleshooting process will be carried out systematically to deal with any problems that may arise. System operations will be carried out with appropriate guidance to ensure that users can use the system properly. In addition, regular system maintenance will be carried out to ensure system performance remains optimal and can be adapted to changing needs. By using the waterfall method in developing an information system for attendance data for Clean Saturday activities, it is hoped that the system development process can be carried out efficiently, structured, and produce quality results.

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