Design and Construction of a WEB-Based Information System for the Anak Air Youth Organization

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Abstract -**The design and construction of a web-based Information System for the Youth Organization Anak Air was developed to improve efficiency in managing organizational data, including recording cash, activity information, and membership. Currently, the running system still uses a manual method, which has the potential to cause delays in information and errors in recording. This study aims to design and build a web-based information system to facilitate access and transparency in managing the Youth Organization Anak Air. The development of this system uses a prototype method with the Laravel framework as the development base and MySQL as the database. The results of the study show that the information system developed is able to improve the efficiency of data recording, accelerate the delivery of information, and reduce the possibility of errors in managing organizational finances. The prototype method is used to develop the system iteratively by involving youth organization administrators and the community in the design and evaluation process. With the implementation of this system, it is hoped that transparency and member participation in the organization can increase significantly.**

Keywords – Information System, Youth Organization, Transparency, Prototype Method..

I. INTRODUCTION

The development of information technology has brought significant changes in the way organizations manage and disseminate information. Information systems are part of information technology that is used to support operations and decision-making in organizations. The Anak Air Youth Organization, as a youth community that is active in various social and community activities, requires a system that can integrate various aspects of organizational management in one web-based platform.

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Information technology includes various hardware, software, and network infrastructure that supports data processing and distribution in an organization[1]. In the context of the Anak Air Youth Organization, the use of information technology is very important to improve efficiency in communication and member data management. Information systems, as part of information technology, function to manage, store, and present relevant information for members of the organization, so that it can improve coordination and effectiveness of activities.

Information systems can be defined as a set of interrelated components to collect or retrieve, process, store, and distribute information to support decision making and control in an organization [2]. The role of information systems in general is to support operational business activities, support management in decision making, and support competitive strategic advantages.

Anak Air Youth Organization faces various challenges in managing administration, documenting activities, and communicating between members. The manual and poorly organized system often causes difficulties in recording member data, activity schedules, and distributing information quickly and accurately. Therefore, a web-based information system is needed that can provide effective solutions to overcome these obstacles.

Data collection and payment of membership fees or from company fees in the area around the water child, are still recorded in a book and then written on a whiteboard. This recording is as information for the community and is

summarized in the agenda, so that sometimes there are errors in recording data that cause misunderstandings between members and administrators for payment fees. Making reports is still recorded in the activity agenda so that it takes quite a long time. Many young people from Water Children do not yet know about the series of activities of this organization due to limited promotion.

The web-based information system is designed to facilitate the management of the organization through features such as member data management, activity agendas, internal communication, and digital documentation storage. With this system, it is expected that coordination between members will be more efficient, transparency in organizational management will increase, and activity documentation can be stored better.

Based on observations and interviews conducted with the local community and the youth administrators of the water children, it was found that the community did not know or did not know much about the agenda of activities or work programs of the youth management of the water children. Members of the water children did not know and were not involved in preparing the budget for each activity. The recording of cash money was not transparent or open so that it could potentially cause misunderstandings between fellow youth members and the youth administrators of the water children. The administrators wanted every activity agenda of the water children to be supported by the local community with high enthusiasm. The administrators were constrained by limited facilities for promoting activities so that they reached every local community. Regarding the youth cash and funds that came out of each youth activity such as the August 17th event, the administrators wanted to achieve openness or transparency in recording reports. The lack of suggestions for recording and still being done manually, so that errors or human errors could occur in recording reports that could cause misunderstandings from members and the community.

The implementation of a web-based information system in the Anak Air Youth Organization can improve the efficiency and effectiveness of organizational management. Information technology and information systems play an important role in supporting organizational operations, especially in terms of communication, data management, and documentation. With this system, it is hoped that the organization can develop better and provide a positive impact on its members and the surrounding community.

Based on the background of the problem, it is necessary to build an information facility between youth organization administrators and youth members and the local community. A youth information system that can be accessed by youth members and the community so that it can be used as a means of information about youth children..

II. LITERATURE REVIEW

A. Information Systems

1) System: In general, a system is a form of integration between one component and another. Therefore, the system can be classified from several perspectives. According to [3], a system explains that "a procedure or element that is interconnected with each other where in a system there is an input, process and output, to achieve the expected goals".

2) Information: Information is a collection of facts that have been processed into data form, so that it can be more useful and can be used by anyone who needs the data as knowledge or can be used in decision making [4]. Data that is processed through a model becomes information, the recipient then receives the information, makes a decision and takes action, which means producing another action that will create a number of data back.

3) Information Systems: Information systems are a collection of sub-systems that are integrated with each other and collaborate to solve certain problems by processing data with a tool called a computer so that it has added value and is useful for users.[5].

B. Youth Organization

Youth-level community organizations are a forum for young people in the village to develop their potential and help the local community in all matters [6]. Youth-level community organizations are important assets that exist in helping to advance the village [7]. Seeing this, each member of the youth-level community organization needs to be equipped with various skills to support their role in the organization, the overall performance or performance of an organization is the achievement of the organization's management.

Youth of the water children is an organization or forum to develop the potential of youth who live around the water children's area and its surroundings. This organization can be interpreted as a social organization that grows and develops on the basis of social awareness and responsibility from, by, and for the community, especially the younger generation. Youth of the water children was formed based on the awareness and will of the water children's residents in 2006, and there have been several changes in management until now.

C. PHP (Hypertext Preprocessor)

PHP (Hypertext Preprocessor) is a server-side programming language designed specifically for web development. PHP is used to build dynamic and interactive web-based applications by processing data on the server before displaying it in the user's browser. In the context of the Anak Air Youth Organization Information System, PHP plays an important role in managing member databases, creating responsive web pages, and providing more efficient internal communication features. With its flexibility and compatibility with various database systems, PHP is the right choice for building reliable and easy-to-develop web-based information systems.[8].

D. Laravel Framework

Framework is a collection of program codes stored in different files that can simplify repetitive operations. The advantage of having a framework is that it can make application development uniform, where developers are required to follow the workflow set by the framework[9].

Laravel is one of the popular PHP frameworks used for developing modern web applications. Laravel offers various features such as MVC (Model-View-Controller) architecture, flexible routing, efficient database management, and strong authentication and security systems. In the context of the

Anak Air Youth Organization Information System, Laravel is used to accelerate the process of developing a web-based information system by providing various tools and libraries that facilitate the implementation of member management features, activities, and internal communication. With Laravel, information system development becomes more structured, secure, and easy to maintain.

E. HTML

HTML (HyperText Markup Language) is a standard markup language used to create and structure web pages. HTML works by defining elements in a web page, such as text, images, tables, and forms. In the context of the Youth Organization Information System Anak Air, HTML is used as the main foundation in building an easily accessible and interactive user interface. With the help of CSS and JavaScript, HTML can be combined to create a responsive and dynamic web display, making it easier for members of the organization to access information and communicate effectively through this web-based information system.According to Adani [10]. Hypertext is a method used to move from one web page to another by clicking on a text or symbol on the website page..

F. MySQL

MySQL is an open-source relational database management system (RDBMS) used to store and manage data efficiently. MySQL works using the SQL (Structured Query Language) language to perform operations such as storing, retrieving, updating, and deleting data.[11]. In the context of the Anak Air Youth Organization Information System, MySQL is used as the main database to store member information, activity data, and various other information needed by the organization. With its scalability and reliability, MySQL ensures that the information system can be accessed quickly, safely, and well-organized.

G. Bootstrap

Bootstrap is an open-source front-end framework used to build responsive and modern web interfaces[12]. Bootstrap provides various ready-to-use components such as grid systems, buttons, forms, and navigation that make it easier to develop website displays. In the context of the Youth Organization Information System Anak Air, Bootstrap is used to ensure that the appearance of the web-based information system is more responsive, compatible with various devices, and more visually appealing. By utilizing Bootstrap, user interface development becomes faster, more efficient, and easier to customize according to organizational needs.

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H. Database

A database is a collection of data that is systematically organized and can be accessed, managed, and updated easily. The database functions as a place to store information that can be used for various purposes, such as member recording, activity documentation, and resource management in a system. In the context of the Youth Organization Information System Anak Air, the database is used to store and manage member data, activity schedules, and other information related to the organization's operations. By using a database, the organization can ensure that the stored data remains structured, secure, and easy to access and update whenever needed.

I. Prototype

A prototype is an early representation or model of a system used to test a concept, design, or functionality before the system is fully developed. In software development, a prototype serves as a communication tool between developers and users to ensure that user needs and expectations are well understood before final implementation. In the context of the Youth Organization Information System Anak Air, a prototype is used to illustrate the appearance of the system interface and workflow before full development begins. With a prototype, the development team can make improvements or adjustments early based on user input, so that the final result is more in line with the needs of the organization..

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III. METHOD

This study uses the prototype development method. Prototype is a software development method, which is a physical model of the system's work and functions as an early version of the system. With this prototyping method, a system prototype will be produced as an intermediary for developers and users to interact in the process of information system development activities.

At the communication stage in the prototype method, data collection is carried out using several techniques, including:

1. **Interview**– Conducted with members and administrators of the organization to understand system needs, existing constraints, and expectations for the information system being developed.
2. **Survey**– conduct surveys to gather input from members of the organization regarding desired features and level of satisfaction with the current system.
3. **Observation**– Directly observe the administration and communication processes within the organization to understand how the system can assist in work efficiency.

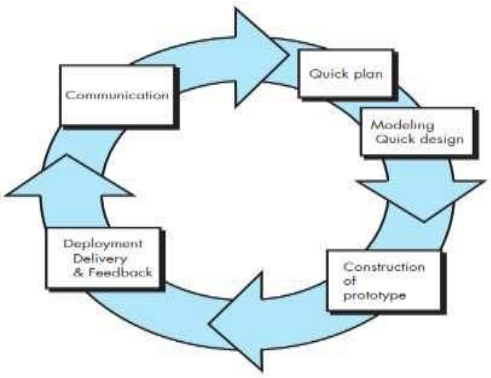


Figure 1. Prototype method

1. Communication

The Communication stage is how to obtain information for developers to users about what is needed in order to achieve research objectives. Before conducting research, there has been an assumption based on the theory used, the assumption is a hypothesis. To prove the hypothesis empirically, data collection is needed to be studied in more depth.

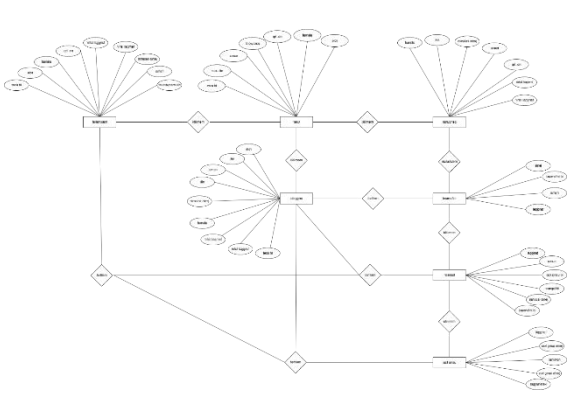
2. Quick plan

A. Problem analysis and solutions

The analysis of the current system aims to provide an overview of the current system with the aim of knowing more clearly how the system works, so that the advantages and disadvantages of the system can be identified.

No	Masalah	Solusi
1	Proses penyampaian informasi masih manual yang terkesan lambat dan kurang jelas	Sistem ini akan menampilkan segala bentuk informasi di dalam website
2	Proses pencatatan uang kas masih dilakukan secara manual dan berpotensi terjadinya kesalahan	Dengan adanya sistem ini pencatatan uang kas pemuda dapat berjalan lebih transparans dan lebih mempersingkat waktu pengerjaanya.
3	Sebahagian besar pemuda dan masyarakat setempat belum mengetahui mengenai program kerja dan agenda kegiatn karena kurangnya media promosi	Dengan adanya Sistem informasi ini dapat dijadikan sebagai median untuk mempromosikan segala agenda kegiatan kepemudaan
4	Pembuatan laporan masih dilakuan didalam agenda kegiatan kepemudaan sehingga membutuhkan waktu yang cukup lama	pada sistem ini segala bentuk pelaporan kegiatan akan tercatat secara sistematis sehingga dapat mempersingkat waktu.

B. Analysis of the proposed system



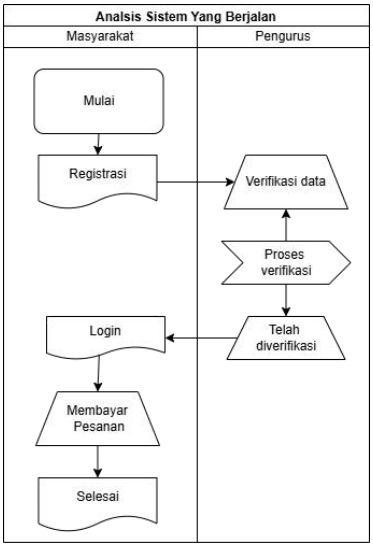


Figure 2. Flowmap of the running system

3. Quick Design Modeling

System Design

A. Use Case

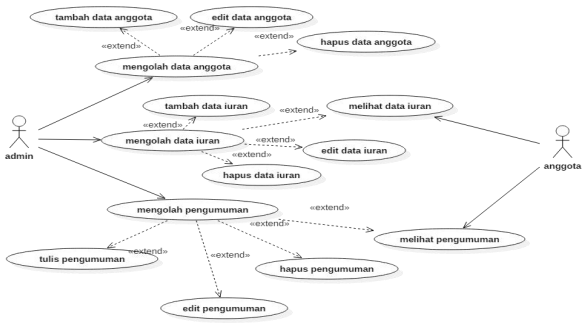


Figure 3. Use Case

B. Activity Diagram

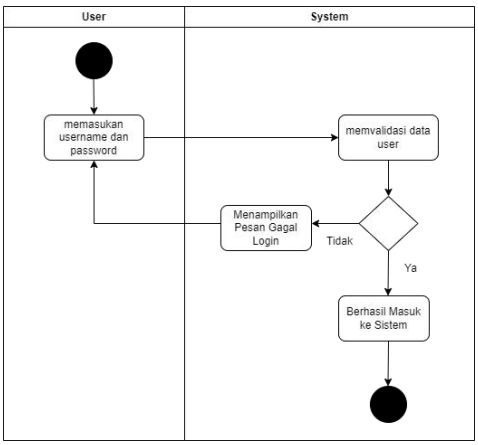


Figure 4. Activity Diagram

C. ERD (Entity Relationship Diagram) Design

Figure 5. ERD

4. Construction

A. System view

This stage is the peak stage in building a software, namely the use of computers is very large in this step. After coding, the programmer will do testing. Testing aims to find errors or bugs in the system/software that has been built to be fixed before being submitted to the client.

1. Login Page

The login page is the page that appears when the application is first run. The login page is used as an intermediary to enter the application for users who have been given access rights. On this login page there is the name of the application and a form to enter email and password as well as a button to login for users who will use this application. The appearance of the login page is as follows:

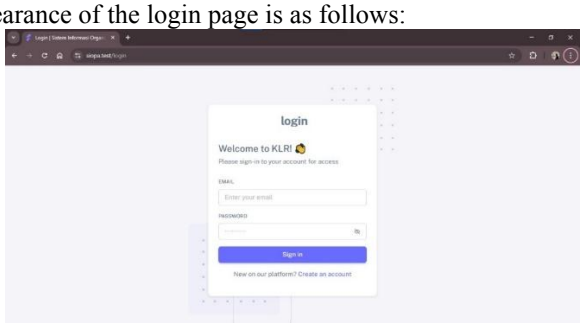


Figure 6. Login Page

2. Admin Page

a. Dashboard

The admin dashboard page is the first page that will be accessed by the admin user if they successfully log in to the system. The appearance of the admin dashboard page is as follows:

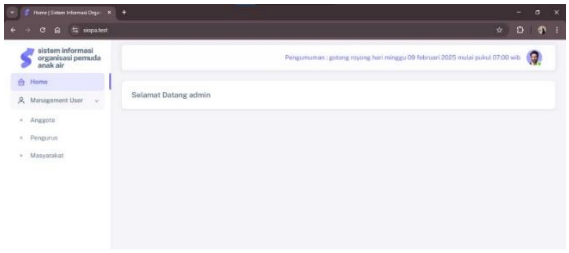


Figure 7. Admin dashboard page

From the image above, it can be seen that the admin user has several menus, namely the member, administrator, and community user menus.

b. User

The user page is a page used by the admin to change and add user data for admins, administrators, members, and the public who will enter the system.

1. Administrator data

a) Admin can manage or administer administrator data. Here is the user management page display:

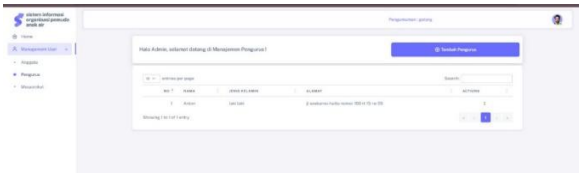


Figure 8. Administrator data page

b) Admin can add administrator user by pressing the add button. Then the image will appear as below:

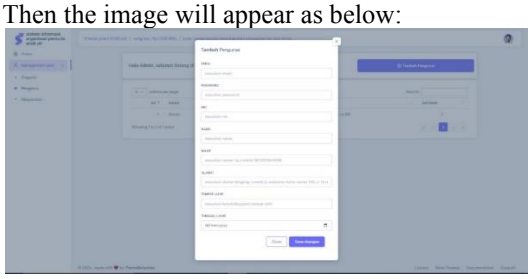


Figure 9. Add admin page

c) Admin can edit the administrator user by pressing the edit button. Then the image will appear as below:

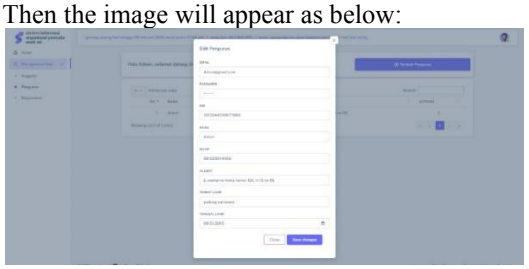


Figure 10 Admin edit page

d) Admin can delete the administrator user by pressing the delete button. Then the image will appear as below:

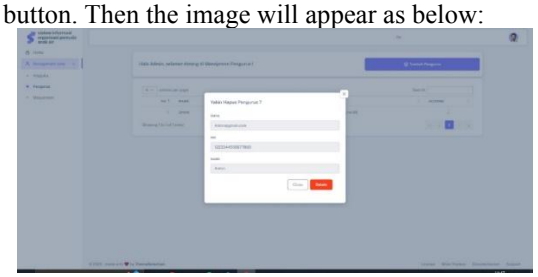


Figure 11. Delete admin page

2. Member data

a) Admin can manage or administer member data. Here is the user management page display:

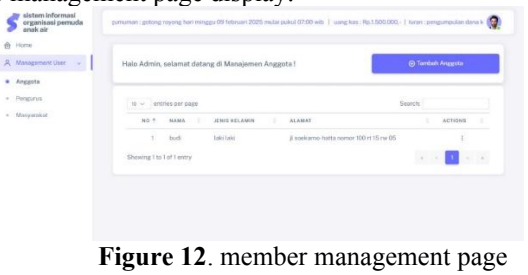


Figure 12. member management page

b) Admin can add member users by pressing the add button. Then the image will appear as below:

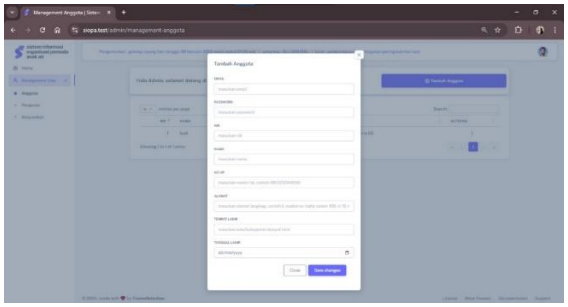


Figure 13.Add member user page

c) Admin can delete and edit member users by pressing the edit or delete button. Then the image will appear as below:

Figure 14.Member management page

d) Admin can edit member users by pressing the edit button. Then the image will appear as below:

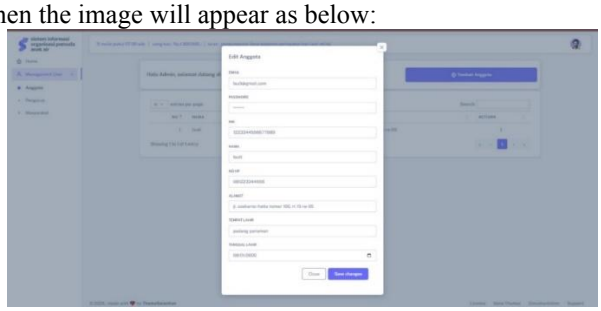


Figure 15.Member edit page

e) Admin can delete member users by pressing the delete button. Then the image will appear as below:

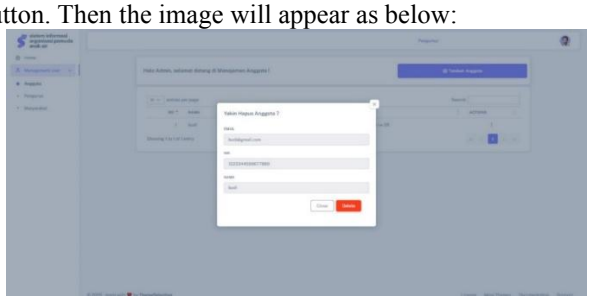


Figure 16.Delete member page

3. Community data

a) Admin can manage or administer community data. Here is the user management page display:

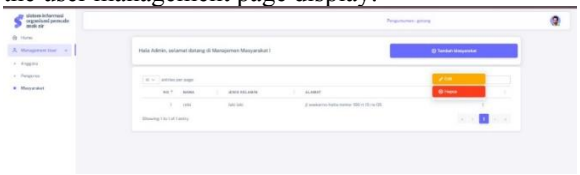


Figure 17.Community management page

b) Admin can add community users by pressing the add button. Then the image will appear as below

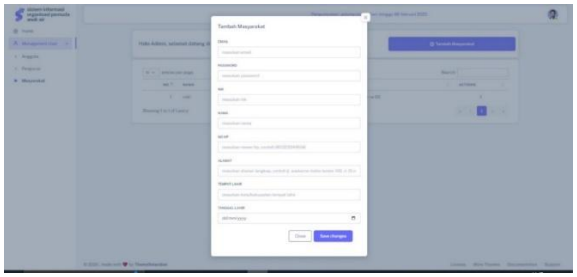


Figure 18.Community add page

c) Admin can edit community users by pressing the edit button. Then the image will appear as below

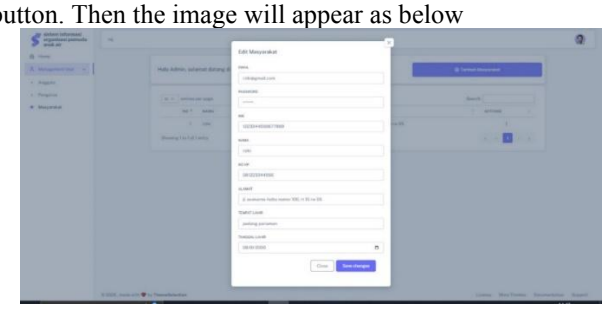


Figure 19.Community edit page

d) Admin can delete community users by pressing the delete button. Then the image will appear as below

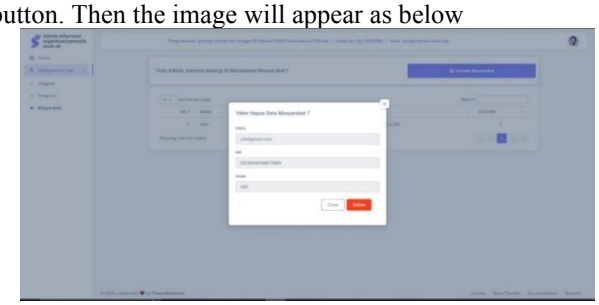


Figure 20.Delete member page

B. Discussion

Points The results of the user interface design have displayed the pages and features of the Anak Air Youth Organization Information System. The following is a discussion of the design results of the display.

1. Login Page

The login page on this system is the first page that appears when the url is accessed. On this page, admins, administrators, members, and the public must enter a username and password if they want to access the system. During the login process, if the username and password are correct, they will be directed to the main page, and if the username or password is wrong, they will remain on the login page and a notification will appear that the username or password is wrong.

2. Home Page

The main page is the page accessed by users when they successfully log in. User activities will vary according to the access rights of each user, so that each user gets a different menu based on the access level of each account.

a. Admin Page

The admin homepage is the page that will be displayed when a user logs in using the 'Admin' account level. The menu that will be displayed on an account with the admin level is as follows:

1. User Menu

The user menu is a menu that contains user data registered in the system, namely administrators, members, and the public. Admin can add, edit, and delete user data.

b. Administrator Page

The main administrator page is the page that will be displayed when a user logs in using the 'Administrator' account level. The menu that will be displayed on an account with the administrator level is as follows:

1. Work Program Menu

The work program menu is a menu that contains work program data registered in the system, namely work program type, work program data, activity schedule and activity reports.

2. Cash Menu

The cash menu is a menu that contains cash data registered in the system, namely cash in, cash out and remaining cash.

3. Information Menu

The information menu is a menu that contains information data registered in the system.

c. Member Page.

The member homepage is the page that will be displayed when a user logs in using the 'Member' account level. The menu that will be displayed on an account with a member level is as follows:

1. Work Program Menu

The work program menu is a menu that contains work program data registered in the system, namely work program type, work program data, activity schedule and activity reports.

2. Cash Menu

The cash menu is a menu that contains cash data registered in the system, namely cash in, cash out and remaining cash.

3. Information Menu

The information menu is a menu that contains information data registered in the system.

d. Members home page

The community homepage is the page that will be displayed when a user logs in using the 'Community' account level. The menu that will be displayed on an account with the community level is as follows:

1. Work Program Menu

The work program menu is a menu that contains work program data registered in the system, namely work program type, work program data, activity schedule and activity reports.

2. Cash Menu

The cash menu is a menu that contains cash data registered in the system, namely cash in, cash out and remaining cash.

3. Information Menu

The information menu is a menu that contains information data registered in the system.

C. Experiment in Black Box

No	Halaman	Skenario	Input	Output	Status
1	Login	Pengguna memasukkan email dan password yang benar	Input Email dan password benar	Email dan password valid	sukses
2	Login	Pengguna memasukkan email dan password yang salah	Input Email dan password salah	Kembali kehalaman login	sukses
3	Admin	Admin memasukkan email dan password yang benar	Input Email dan password benar	Email dan password valid	sukses
4	Admin	Admin messukkan dapa pengurus	Input data pangurus	Menampilkan data pengurus	sukses
5	Admin	Admin menambahkan data pengurus	Tambah data pangurus	Menampilkan data pengurus	Sukses
6	Admin	Admin mengedit data pengurus	Edit data pangurus	Menampilkan data pengurus	Sukses
7	Admin	Admin menghapust data pengurus	Hapus data pangurus	Menampilkan data pengurus	Sukses
8	Admin	Admin memasukkan data anggota	Input data anggota	Menampilkan data anggota	Sukses
9	Admin	Admin menambahkan data anggota	Tambah data anggota	Menampilkan data anggota	Sukses
10	Admin	Admin mengedit data anggota	edit data anggota	Menampilkan data anggota	Sukses

11	Admin	Admin menghapus data anggota	Hapus data anggota	Menampilkan data anggota	Sukses
12	Admin	Admin memasukkan data masyarakat	Input data masyarakat	Menampilkan data masyarakat	Sukses
13	Admin	Admin menambahkan data masyarakat	Tambah data masyarakat	Menampilkan data masyarakat	Sukses
14	Admin	Admin mengedit data masyarakat	Edit data masyarakat	Menampilkan data masyarakat	Sukses
15	Admin	Admin menghapus data masyarakat	Hapus data masyarakat	Menampilkan data masyarakat	Sukses

5. Deployment Delivery & Feedback

1. . Deployment (System Deployment)

The deployment of the web-based Youth Anak Air organization information system will be carried out in stages to ensure smooth implementation and reduce the risk of errors. The deployment stages include:

a. Server and Infrastructure Preparation
- Providing hosting servers and domains that suit system needs.
- Database installation and web server configuration.
- Compatibility testing with various devices and browsers.

b. System Installation and Configuration
- Perform an initial deployment on a staging server.
- Testing the functionality and performance of the system before it is released to the public.
- If the system has passed the test, it is deployed to the production server.

c. User Socialization and Training
- Provide training to administrators and members of the organization regarding the use of the system.
- Provides documentation and user guides.

d. Monitoring and Maintenance
- Perform periodic system performance monitoring.
- Provides data backup mechanisms to prevent information loss.
- Handle bugs and perform system updates regularly.

2. Delivery (System Delivery)

The system delivery is done by ensuring that all features have functioned according to the needs of the Youth Anak Air organization. The system delivery steps are as follows:

a. Final Testing and Validation
- Conducting trials with a limited group of users before the official launch.
- Get early feedback for improvements if needed.
- Final validation by the organization's management before the system is launched.

b. Official Launch
- The system will be introduced to all members of the organization through an official event.
- Information regarding access and usage guidelines will be disseminated through the organization's internal media.
- The development team will be on standby to handle any technical issues that may arise.

c. Account Distribution and Access
- Grant accounts to members of the organization according to the specified access rights.
- Activate login and registration features according to user needs.

3. Feedback (Feedback and Evaluation)

To ensure the system runs optimally and meets user needs, evaluation and feedback will be collected in several ways:

a. User Questionnaires and Surveys
- Provide an online form for organization members to provide feedback regarding the system.
- Collect data regarding user satisfaction and the obstacles faced.

b. Discussion Forum and Problem Reporting
- Open a communication forum or discussion group for users to share experiences and suggestions for improvement.
- Provides a feature for reporting bugs or technical issues so that they can be handled immediately by the development team.

c. Usage Data Analysis
- Monitor system usage data to identify areas for improvement.
- Use web analytics to see usage patterns and the effectiveness of available features.

d. Iteration and Further Development
- Using feedback results to design system updates and improvements.
- Plan the release of new features or fixes according to user needs.

By implementing this deployment, delivery, and feedback method, it is hoped that the web-based information system of the Pemuda Anak Air organization can run well, provide maximum benefits for members of the organization, and continue to develop according to the needs of the community.

IV. CONCLUSION

Based on the results of the preparation of the proposal for the Web-Based Youth Organization Information System, it can be concluded that the development of this system aims to improve efficiency in managing organizational data, communication between members, and disseminating information more quickly and in a structured manner. With a web-based system, the administration process becomes more transparent, effective, and easily accessible to all members of the organization. The implementation of this system is expected to support the organization's performance in achieving its goals more optimally.

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