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Design of a Server Application for Web-Based Automation of Darul Qur'an Student Registration

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Abstract

Study This discuss design server aplication for help automation of the registration process students at Darul Qur'an through a web-based platform. The systemThis developed for increase speed procesissing, accuracy record keeping and neatness previous data management handled manually. Stages study covering requirements analysis, system architecture design, and implementation using web technology. The design result show that the aplication is capable of handling registration in a structured manner, storing data centrally, and offering an easy-to-use interface. This system is expected to improve administrative efficiency and serve as a basis for developing additional features in the next phase.

Keywords: *Server Aplication, Registration Automation, Web-Based System, System Design, Darul Qur'an*

1. Introduction

The student registration process at various Islamic educational institutions, including Darul Qur'an, is still largely manual. This manual process often creates a number of obstacles, such as delayed file verification, irregular recording, and an increased risk of data errors due to a lack of standardized procedures. As the number of prospective students increases each year, this conventional system increasingly struggles to meet administrative needs that demand speed, accuracy, and a clear workflow. This situation highlights the need for information technology-based solutions that can simplify the regiistration process while improving the quality of administrative services [1].
Advances in web-based technology have opened up opportunities to buid systems that can manage the registration process in an integrated manner. By utilizing server applications, all registration activities, from data input and document uploads to verification and archiving, can be completed within a single, easily accessible platform. Server-based systems also enable centralized data management, ensuring information is more organized, secure, and usable for analysis and reporting. Furthermore, a well-designed web interface makes it easier for committees and prospective students to understand the registration process without the need for lengthy additional explanations [2] .
This research was conducted to design a server application that supports the automation of student registration at Darul Qur'an. The design was conducted through a needs analysis to ensure that the resulting system truly addresses the problems encountered in the field. This research not only discusses the system structure and technology used, but also emphasizes how each module functions to support a smooth registration process. With this system, the institution is expected to improve administrative efficiency, minimize recording errors, and provide more professional and responsive services to community needs [3] .

2. Research Methodology

2.1. Waterfall Method

The Waterfall method was used as the system development approach in this study because it provides structured work stages that are easy to apply to the application design process. This model emphasizes a sequential sequence of steps from analysis to maintenance, allowing each stage to be clearly completed before proceeding to the next. This approach is considered appropriate for the needs of designing a server application for student registration, considering the system's characteristics, which require a stable and well-documented workflow.

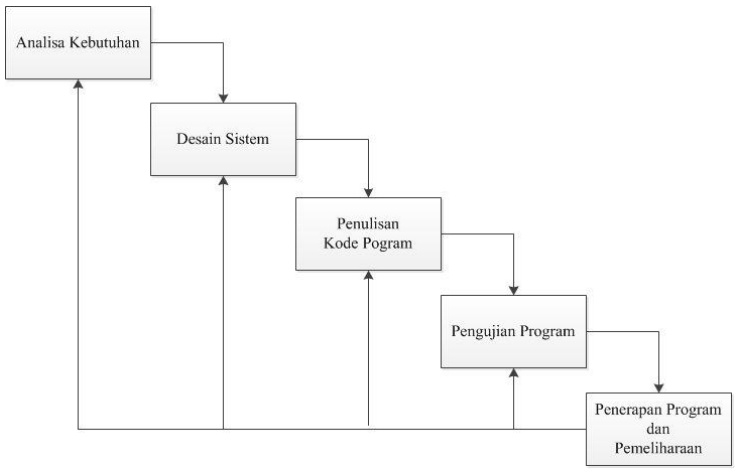

Fig. 1: Waterfall Method

2.2. DFD

System modeling is done using DFD *Data Flow Diagrams* are used to describe the flow of data in a system. DFDs show how data enters, is processed, stored, and exits through interconnected processes, making it easier to understand the system's functions clearly and in a structured manner [4] .

2.3. ERD

An Entity Relationship Diagram (ERD) is a modeler that illustrates the relationships between entities within a database. This diagram shows the data structure, important attributes of each entity, and the types of relationships that connect them. With an ERD, developers can understand data requirements more systematically, making the database design and management process more focused and efficient [5] .

2.4. CD

A CD *Context Diagram* is the earliest level of modeling that depicts a system as a whole within a single, primary process. This diagram shows who is involved (external entities) and the data flow into and out of the system. The CD helps provide a broad overview of the system's scope without detailing internal processes, making it easily understood by both users and developers [6].

2.5. PDM

PDM is a model that describes the physical structure of a database in detail according to the database management system used. At this stage, each table, data type, character length, primary key, foreign key, and data integrity rules are explained in more technical terms [7] .

2.6. DFD

The development of this system utilizes several platforms as the main support, namely:

a. Power Designer is used to create various data models such as ERD, Context Diagram, and PDM. This tool helps design database structures in an orderly and organized manner [8] .
b. Figma is used to design user interface (UI) displays and user interaction flows. With Figma, visual system designs can be prepared before the implementation process begins [9] .
c. Google Chrome is used as a testing tool to review the appearance and ensure that each feature works properly through the browser [10] .

These three platforms were chosen because they are easy to use, mutually supportive, and able to increase efficiency in the system design and testing process.

3. Results and Discussion

3.1. System Analysis

The results of the system analysis indicate that the manual registration process at Darul Qur'an has several obstacles, such as unstructured recording, lengthy verification processes, and the risk of input errors . findings In this case , a web-based system with a centralized server is designed to simplify the registration flow and increase the accuracy and speed of data management.

The system allows prospective students to register independently using an online form and upload documents, while the committee can verify the data through a dedicated dashboard. This process has proven to be more efficient because the data is stored directly in a centralized database, simplifying searching, updating, and reporting.

Overall, the designed system overcomes the shortcomings of manual processes and provides a more streamlined, faster, and easier-to-use workflow. This supports improving the quality of student registration administration services at Darul Qur'an.

3.2. CD

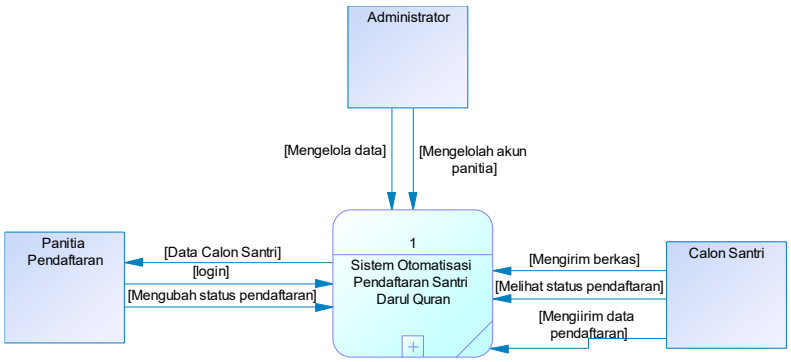

Fig. 2: Context Diagram

Context diagram illustrates the interaction between the Darul Qur'an Student Registration Automation System and three main entities, namely the Administrator, the Registration Committee, and Prospective Students, each of which has a different role in the registration flow. The Administrator manages data and committee accounts through a two-way information flow, while the Registration Committee uses the system to log in, check prospective students' data, and update registration status to ensure the verification process runs smoothly. Prospective Students interact with the system to submit data and registration files and monitor their registration status. Overall, this diagram shows that the system functions as a data management center that connects all entities through a clear and structured information flow.

3.3. DFD

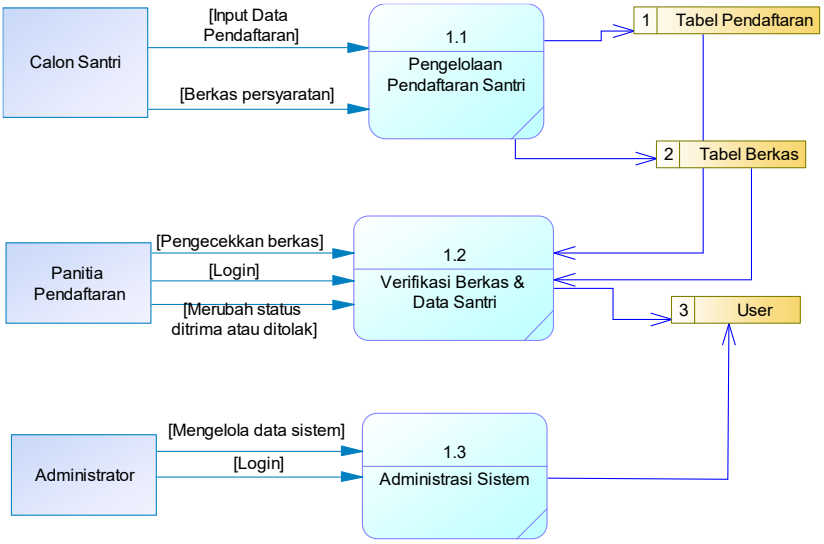

Fig. 3: Data Flow Diagram

The student registration system workflow consists of three main processes: student registration management, student file and data verification, and system administration. Prospective students input registration data and upload required files, which are then stored in the registration and file tables. The registration committee logs in to check the completeness of the files and change the admission status recorded in the user table. Administrators also log in to manage system data through the administration module. This flow shows a structured relationship between actors, processes, and data storage to ensure the registration process runs orderly and is documented.

3.4. ERD

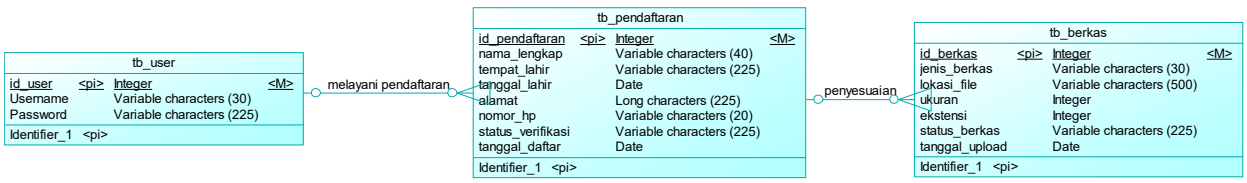

Figure 4: Entity Relationship Diagram

This design represents a registration system based on three entities: tb_user, tb_registration, and tb_file. The tb_user entity serves the registration process stored in tb_registration, which records the applicant's personal data. Each registration is then connected to many tb_files through a matching relationship, where tb_file serves to store the technical details (file_location, size) of the documents uploaded by the applicant.

3.5. PDM

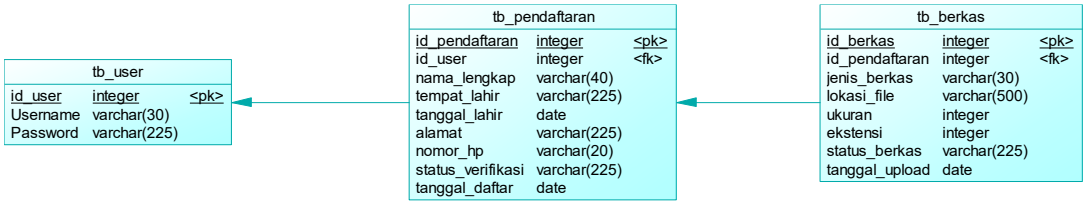

Figure 5: PDM

The database model is implemented through three physical table schemas, namely tb_user, tb_pendaftaran, and tb_berkas, each of which is centered on an Integer primary key (PK) (id_user, id_pendaftaran, id_berkas) to ensure entity integrity and record uniqueness. One-to-many relationships are realized through a foreign key (FK) mechanism (id_user in tb_pendaftaran and id_pendaftaran in tb_berkas), which explicitly links user authentication data to the registration process, and further links each registration to the associated set of digital files. Specific data type definitions, such as the use of VARCHAR for variable strings and DATE for chronological information, ensure efficient storage allocation and facilitate data validation operations at the application level.

3.6. Web Design

3.6.1. Committee

Fig. 6: Committee

Open the official registration page and fill in all your personal details, including your full name, gender, date of birth, place of birth, and ID card or passport number. Then, complete your address information, including city and province. Once all fields are filled in, double-check that the data is correct and complete. Continue to the next section if additional information is required. Then, submit the form by clicking the submit button at the bottom. Finally, save the proof of registration or the registration number that appears after the form is successfully submitted.

3.6.2. Prospective Student

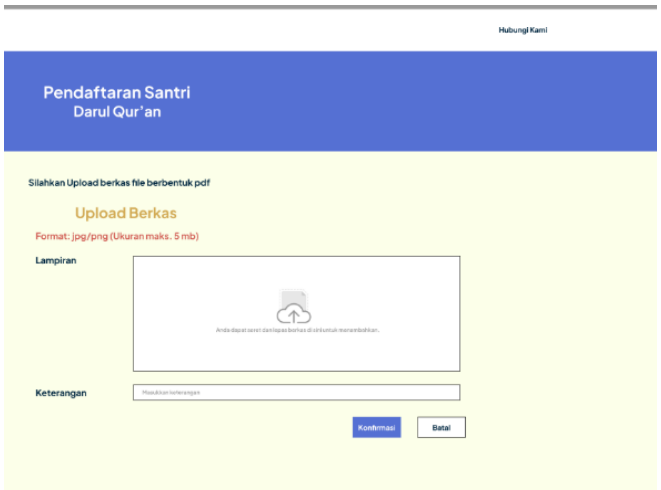

Fig. 7: Rospective Student

The file upload section for student registration involves preparing the requested files, then tapping the upload area or the icon in the center of the box to select the files from your device. Once the files are successfully selected and displayed as attachments, users can add a description in the provided field, then press the Confirm button to send the files or the Cancel button to cancel the upload process.

3.6.3. Admin

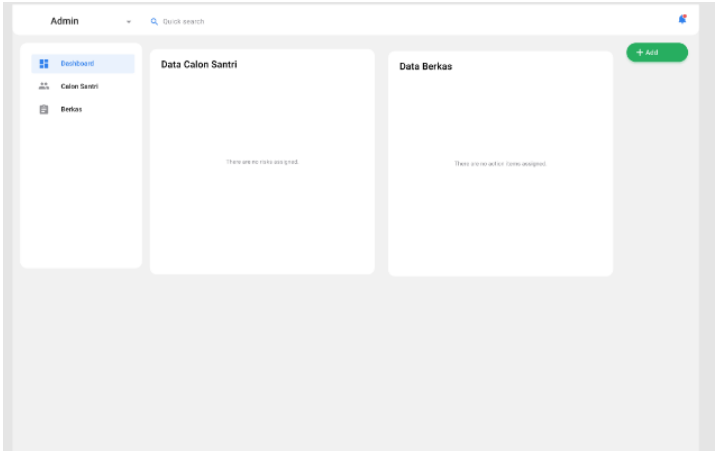

Fig. 8: Admin

This page displays the admin dashboard for managing student registration. It allows administrators to view a summary of data in two main sections: Prospective Student Data and File Data, which are currently empty or have no data entered. The left panel features navigation menus such as Dashboard, Prospective Student Data, and Files, while the top right corner features an Add button for adding new data. This simple and structured interface makes it easy for administrators to monitor and manage the entire registration process through a single interface.

3.6.4. Conclusion

Based on the research results and discussions that have been presented, it can be concluded that:

1. The design of a web-based server application has successfully provided a solution to the manual registration problem at Darul Qur'an by offering a faster, more structured, and error-free process.
2. Implementation method Waterfall as well as use model modeling such as DFD, ERD, CD, and PDM help produce documented system with good , have clear architecture , as well as support data management centralized and efficient .
3. The resulting system able to facilitate online student registration through an easy-to-understand interface, while also making it easier for the committee in the verification and archiving process, thereby improving the quality of administrative services and ready to be developed further in the next stage.

3.6.5. Sugestion

Some suggestions that can be given based on the results of this study include:

1. Future system development should include the integration of additional security features, such as two-step verification and data encryption, to ensure the security of student information is more secure.
2. Regular training is required for the committee and system operators so that they can utilize all application features optimally and minimize the potential for errors in use.
3. The system can be further developed by adding automatic reporting features, registration notifications, and integration with payment applications to support a more comprehensive and efficient administration process.

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Acknowledgement

This is a text of acknowledgements. Do not forget people who have assisted you on your work. Do not exaggerate with thanks. If your work has been paid by a Grant, mention the Grant name and number here.

References

[1] N. Ichsan, S. Alfarizi, D. Gunawan, AR Mulyawan, and H. Basri, "WEB-Based New Student Registration Information System Using UML at Daarun Nizham Islamic Boarding School," *Profitabilitas* , vol. 1, no. 1, pp. 1–11, 2021.

[2] R. Ordila and S. Nasution, "Design of a Web-Based New Student Admission System for Bahrul Ulum Islamic Boarding School," *J. Comput Science.* , vol. 11, no. 1, pp. 51–56, 2022.

[3] IF Sari and J. Devitra, "Analysis and Design of the Regional Budget (APBD) Monitoring and Evaluation Information System at the Jambi City Environmental Service," *J. Manaj. Sist. Inf.* , vol. 6, no. 3, pp. 416–428, 2021.

[4] A. Wicaksono and F. Yuamita, "Sardine Production Quality Control Using Failure Mode and Effect Analysis (FMEA) Method to Minimize Canned Defects at PT. Maya Food Industries," *J. Technol. and Manaj. Ind. Terap.* , vol. 1, pp. 1–6, 2022, doi: https://doi.org/10.55826/tmit.v1iI.6.

[5] J. Enterprise, *HTML, PHP, and MySQL for Beginners (Update Version)* . Elex Media Komputindo, 2023.

[6] YW Setiya Putra and MF Adhim, "Online Attendance Information System Using Face Recognition and GPS Technology," *J. Tekno Kompak* , vol. 16, no. 1, p. 149, 2022, doi: 10.33365/jtk.v16i1.1470.

[7] Nur Alif Irawan and Abdul Rahman Kadafi, "Designing a Website-Based Online Employee Attendance Information System with Face Record and Geo Location," *Bull. Comput. Sci. Res.* , vol. 3, no. 6, pp. 413–419, 2023, doi: 10.47065/bulletincsr.v3i6.294.

[8] SK Vinicius M. Grippa, *Learning MySQL: Get a Handle on Your Data* , 2nd ed. English: O'Reilly Media. [On line]. Available: https://www.amazon.com/Learning-MySQL-Handle-Your-Data/dp/1492085928?utm_source=chatgpt.com#detailBullets_feature_div

[9] MNM Al-Faruq, S. Nur'aini, and MH Aufan, "Ui/Ux Design for Semarang Virtual Tourism Using Figma," *Walisongo J. Inf. Technol.* , vol. 4, no. 1, pp. 43–52, 2022.

[10] S. Fuada and N. Azizah, "Use of Augmented Reality on Google Chrome Android as a Media for Animal Introduction to Early Childhood," *J. Pengabdi. Masy. IPTEKS* , vol. 9, no. 1, pp. 56–64, 2023.