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Research Article

DEVELOPMENT OF STUDY HOUSE JEMBER LEARNING GUIDANCE MANAGEMENT APPLICATION USING THE DJANGO FRAMEWORK

Moh. Jasri[1], Putri Marátu Sholehah[2], and Maulidiansyah[3], and Muhammad Ichsan[4]
[1] Nurul Jadid University, Probolinggo, Indonesia
[2] Nurul Jadid University, Probolinggo, Indonesia
[3] Nurul Jadid University, Probolinggo, Indonesia
[4] Hafshawati Zainul Hasan University, Probolinggo, Indonesia

Corresponding Author:

Muhammad Ichsan,
Department of Informatics, Faculty of Education and Economics, Hafshawati Zainul Hasan University, Probolinggo
Email: ichsan29061997@gmail.com

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Abstract
Learning guidance is an additional learning activity carried out by pupils outside of school learning hours. The management process conducted by Study House Jember is the registration of new students, the change of tutor schedules and the reporting of student values is still using manual methods, namely the student guardian comes to the place to do registration, the tutor chats via whatsapp to exchange schedules with other tutors and the writing of values on the book that has been provided. The study aims to create a learning guidance management application to make it easier for students and tutors to register, change schedules and obtain online learning assessment results. The data collection method used is observation and interview with the head of study house Jember. The research creates a Learning Counselling Management application using the Django framework to help with enrolment, scheduling changes and student score reporting.

Keywords: Framework Django, Guidelines for Writing, Learning Guidance, Management, Website

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INTRODUCTION

Education is paramount in human life because it plays a central role in shaping individuals' intellectual, emotional, social, and moral development, ultimately determining the quality of human resources produced by educational institutions (Suhermanto & Jasri, 2024). Through education, children acquire not only academic knowledge but also essential life skills, values, and attitudes that enable them to participate actively and responsibly in society (Alam & Mohanty, 2023). In this sense, education functions as a transformative process that prepares learners to adapt to social change, technological advancement, and global challenges.

Therefore, educational media are not limited to formal school environments; they also extend to non-formal and informal settings such as community learning centers, religious institutions, training courses, and family environments (Alghamdi & Rahman, 2022). These various educational contexts contribute significantly to children's holistic development by providing diverse learning experiences that complement formal schooling. The integration of educational media across formal and non-formal institutions strengthens the overall educational ecosystem, ensuring that learning becomes a continuous and lifelong process rather than being confined solely to the classroom (Jasri & Zibyan, 2025).

The method used in tutoring is primarily direct instruction, allowing teachers to explain concepts clearly, provide step-by-step guidance, and immediately address students' questions or misunderstandings (Anshori & Setiawan, 2023). This approach is particularly effective in helping students strengthen their foundational knowledge and improve their academic performance, as it enables close interaction between teacher and learner. Through direct engagement, teachers can monitor students' progress in real time and adjust explanations or practice activities according to individual needs.

The tutoring program at Rumah Belajar offers two types of learning services: regular tutoring and private tutoring. In regular tutoring sessions, classes typically consist of one teacher and between one to ten students (Aziz & Huda, 2024). These sessions cover four main subjects, namely Mathematics, Indonesian, English, Science, and Islamic Religious Education. The small class size allows for a supportive learning environment in which students can actively participate while still receiving sufficient individual attention. This structure also encourages peer interaction, discussion, and collaborative problem-solving.

In addition, Rumah Belajar provides private tutoring, which involves one teacher and one student in a more personalized learning setting (Basri & Karim, 2022). Private classes are designed to focus intensively on the specific academic needs and abilities of the student. The subjects most commonly tailored to individual students' skills are Mathematics and English, as these areas often require focused practice and conceptual mastery (Budianto & Pratama, 2023). Through individualized instruction, teachers can design customized learning strategies, provide targeted exercises, and help students overcome specific learning difficulties more effectively.

In data management, including registration, teacher changes, and student evaluation, the Study House tutoring institution consistently uses traditional methods: regularly recording student data, and then printing the information provided. This is productive (Agbaria, 2024; Gadais et al., 2022). This also saves time and money. Information from the student's tutor is superficial. Before enrolling in a course, students must complete a registration form containing personal data, academic background, and class selection.

Based on these issues, the author is interested in conducting research entitled "Tutoring Management Application at Study House Jember Using the Django Framework." The problem can be identified as how to build a tutoring management application system to simplify the registration process, schedule changes, and student assessments at Study House Tutoring (Futaqi & Mashuri, 2023). The problem limitation in this research discusses the Development of a Web-Based Tutoring Management Application System at Study House Tutoring and the Programming Languages used (Afif et al., 2024).

This research topic is not the first to be explored; several studies have been conducted on similar topics in recent years. These studies serve as references for this study. The first study, entitled "Web-Based Information System" by Abdul Hafid Alaudin, Andy Prasetya Utomo, and Supryono (2021), focused on the development of a web-based teaching service information system at Nabila Tutoring Center. The purpose of this study was to support the role of teachers and students in teaching and learning activities. The methods used in this study were observation, interviews, and literature review. The system analysis and design used UML (Unified Modeling Language) (Cholil & Wahyudi, 2021). The system testing used the Black Box method. The result of this research was the development of a web-based teaching information system within the Nabila Tutoring Center that can assist teachers and students in the teaching and training process.

The subsequent study, entitled "Development of a Web-Based Information Management System and Management Solutions," was conducted by Dedik Purwanto (2021). This study focused on the design of a web-based management information system using Bimbel Creative Solution (Dewi & Lestari, 2024). The management information system aims to provide information to students and teachers during the teaching and learning process and effectively improve the teaching and learning process at Creative Solutions. The process used is the Waterfall method. The result of this research is the creation of a web-based Creative Solutions teaching knowledge management system, helping teachers and students obtain useful information about teaching and learning without having to go to the Creative Solutions teaching office (Nailasariy et al., 2023).

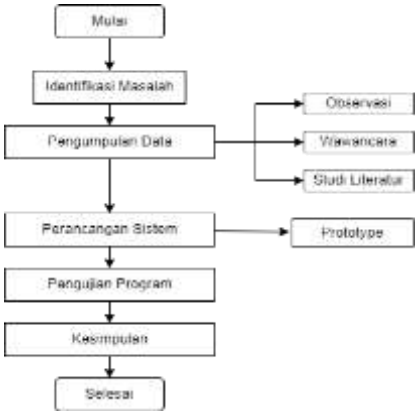
In addition, a study entitled "Web-Based Learning Success Assessment System Using the CodeIgniter Framework at KUMON Ngringo Jaten Karanganyar" (Dewi Santika Wulandari, Chairullah Naury, Ari Pantjarani, 2022) was also conducted. This study evaluates the design of a web-based information system for assessing student learning progress. The purpose of this research is to support information data management. The system development process used is the SDLC (System Development Life Cycle) process. The system design results include flowcharts, DFDs, ERDs, schematic diagrams, and diagrams. Users of the information system include administrators, teachers, and students.

RESEARCH METHOD

A research method is a systematic approach used to explain, analyze, and interpret the relationship or connection between the variables being studied (Fadli & Arifin, 2022). It serves as a structured framework that guides researchers in collecting, organizing, and analyzing data in order to answer research questions and achieve the objectives of the study. By applying an appropriate research method, researchers can ensure that the findings are valid, reliable, and scientifically accountable (Farooq & Soomro, 2023). In educational research, particularly in classroom contexts, the method selected determines how teaching strategies, student performance, learning outcomes, and other relevant variables are examined and understood.

The research process for classroom teaching generally begins with the identification of a specific problem or phenomenon observed during the learning process (Hanafiah & Suryana, 2021). After defining the problem, the researcher formulates research questions or hypotheses that focus on the relationship between instructional strategies and student outcomes. The next step involves selecting the research design, such as qualitative, quantitative, or mixed methods, followed by determining the participants, instruments, and procedures for data collection (Hidayat & Kurniawan, 2024). Data may be gathered through classroom observations, interviews, questionnaires, tests, or documentation.

Once the data are collected, the researcher analyzes them using appropriate analytical techniques to identify patterns, relationships, or significant differences among variables (Ismail & Hasan, 2022). The results are then interpreted in relation to existing theories and previous studies to provide meaningful conclusions. Finally, the research process concludes with reporting the findings and offering recommendations for improving classroom teaching practices, thereby contributing to the development of more effective and evidence-based educational strategies.



The following are the stages of the research method (Abdussamad, 2021):

1) Observation

Observations conducted by the researcher involved systematically and directly examining activities at the Study House Tutoring Center in order to identify aspects relevant to the research objectives. This process was carried out in a structured and purposeful manner, enabling the researcher to gather authentic data about the teaching and learning environment (Junaidi & Rahmawati, 2023). Through direct observation, the researcher was able to capture real-time interactions between tutors and students, classroom dynamics, instructional strategies, and student engagement during learning sessions.

The observation focused on several key components, including the methods used by tutors, the organization of learning activities, the use of instructional media, and the overall atmosphere of the tutoring sessions. Attention was also given to students' responses, participation levels, and learning behaviors (Kamal & Prasetyo, 2025). By observing these elements firsthand, the researcher could obtain a comprehensive understanding of how the tutoring process was implemented in practice.

Furthermore, the systematic nature of the observation ensured that the data collected were relevant, accurate, and aligned with the research questions. Field notes were recorded carefully to document significant events, patterns, and situations that emerged during the sessions (Khan & Abdallah, 2024). This approach allowed the researcher to analyze the findings more objectively and provided a strong empirical foundation for interpreting the effectiveness of the tutoring program at the Study House Tutoring Center..

2) Interviews

Interviews involved conducting structured and semi-structured question-and-answer sessions with an assistant in order to obtain detailed information about the school's current teaching management system and to uncover any existing issues within its implementation (Ma'arif & Yuliana, 2021). This method enabled the researcher to gather in-depth insights that could not be fully captured through observation alone. By engaging directly with the assistant, the researcher was able to explore how teaching activities are planned, organized, implemented, and evaluated within the institution.

The interview process focused on several key aspects, including curriculum implementation, scheduling, teacher coordination, student assessment procedures, and administrative support (Mahmud & Syamsuddin,, 2022). In addition, questions were designed to identify challenges faced in managing classroom instruction, such as limitations in facilities, time constraints, teacher workload, or student-related factors. The interactive nature of the interviews allowed for clarification of responses and follow-up questions, ensuring that the information obtained was comprehensive and contextually accurate.

Through this approach, the researcher gained a clearer understanding of both the strengths and weaknesses of the school's teaching management system (Nasution & Firmansyah, 2024). The data collected from interviews complemented the findings from observations and documentation, thereby strengthening the validity of the research and providing a more holistic analysis of the institution's instructional management practices..

3) Literature Review

Data collection involved conducting a comprehensive literature review by searching for books, scholarly journals, and relevant internet articles related to the focus of this research. These sources were carefully selected to ensure their credibility, relevance, and contribution to the theoretical and conceptual framework of the study (Nugroho & Santosa, 2023). The collected literature served as essential references to support the research design, strengthen the analysis, and provide a solid academic foundation for program development.

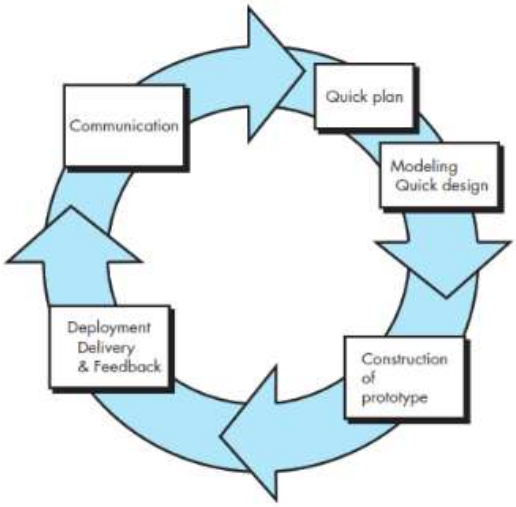
In this process, the researcher utilized various academic databases and digital libraries to obtain up-to-date and peer-reviewed materials. The literature review helped identify key theories, previous findings, and best practices related to teaching management systems, tutoring programs, and educational strategies (Rahman & Yusuf, 2022). By examining existing studies, the researcher was able to compare findings, identify research gaps, and position the current study within a broader academic context.

The journals frequently used in this research were informatics journals, particularly those discussing educational technology, information systems in education, and digital learning management (Ritonga & Siregar, 2023). These journals provided insights into how technology can support teaching management, improve learning efficiency, and enhance data organization within educational institutions. The integration of informatics-based perspectives enriched the study by offering a modern and systematic approach to analyzing and developing educational programs.

This research development uses the Prototype model because it emphasizes an iterative and interactive software development process. The Prototype model allows developers to create an initial version of the system quickly, which can then be evaluated and refined based on user feedback (Salim & Wahid, 2024). This approach is particularly useful when system requirements are not fully defined at the beginning of the project, as it enables continuous clarification and adjustment throughout the development cycle. By focusing on early visualization of the system, stakeholders can better understand how the software will function before the final version is completed.

The Prototype model is especially suitable for developing software on a limited scale and with limited human resources. Since the model prioritizes the creation of a working prototype rather than a fully completed system in the initial stages, it reduces development time and cost (Sari & Utami, 2021). Small development teams can efficiently collaborate with users to gather feedback, identify weaknesses, and improve system functionality step by step. This incremental refinement process helps minimize the risk of errors and ensures that the final product aligns closely with user needs and institutional requirements.

In general, the stages of the Prototype model include requirement identification, quick design, prototype development, user evaluation, revision, and final implementation. First, the developer collects initial requirements from users (Setiawan & Hidayati, 2025). Next, a simple design is created and transformed into a functional prototype. The prototype is then tested and evaluated by users, who provide feedback for improvement. Based on this input, revisions are made repeatedly until the system meets expectations. Once approved, the system proceeds to final development and deployment. This cyclical process ensures flexibility, user involvement, and continuous improvement throughout the research and development stages. (Sugiyono, 2018).



1) Communication

This stage involved structured communication and consultation with two key resource persons at the Study House Tutoring Center: Mr. Alfianul Usman, as the head of the tutoring center, and Ms. Dea Wilya, as the administrative staff member (Suharto & Aminah, 2023). Their roles were essential in providing both managerial and operational perspectives regarding the current system implemented at the institution. Through meetings, discussions, and question-and-answer sessions, the researcher gathered comprehensive information about the existing workflow, administrative procedures, academic services, and challenges faced in daily operations.

The primary objective of this communication stage was to identify the overall needs and interests related to the development of software that could effectively address and resolve existing problems within the tutoring center (Wibowo & Pramudito, 2022). Discussions focused on issues such as student data management, scheduling, attendance tracking, payment records, and reporting systems. By understanding these challenges directly from decision-makers and administrative staff, the researcher was able to map system requirements more accurately and determine the features needed in the proposed software solution.

Furthermore, this stage ensured that the planned software development aligned with the institution's vision, operational capacity, and available resources (Yusuf & Hidayah, 2024). The involvement of both the head of the tutoring center and the administrative staff facilitated a more holistic needs analysis, as it combined strategic considerations with practical, day-to-day administrative concerns. As a result, the communication process became a crucial foundation for designing a relevant, efficient, and user-oriented system tailored to the Study House Tutoring Center's specific context.

2) Planning (Quick Plan)

Data management planning at the tutoring center, including student registration, teacher assignment adjustments, and student evaluation processes, consistently employed traditional and manual methods (Zainuddin & Hamzah, 2023). Student data were regularly recorded in written form, stored in physical files, and later printed when needed for reporting or documentation purposes. This approach was considered practical within the institution's

limited operational scope, as it required minimal technological resources and helped control operational costs. In certain situations, the manual system was perceived as productive because it allowed staff to manage data directly without relying on complex digital tools.

However, the information obtained from students' teachers was often superficial and limited to general academic performance, without comprehensive documentation or detailed progress tracking. The absence of an integrated data system made it difficult to monitor long-term student development, compare performance over time, or generate systematic reports. As a result, decision-making related to class placement, instructional strategies, and student support was sometimes based on incomplete or fragmented information.

Before students could enroll in a course, they were required to complete a registration form containing personal data, academic background, and class preferences. This form served as the primary source of initial information for administrative and instructional planning (Zulkifli & Rahma, 2022). The collected data were then manually processed and archived by administrative staff. While this procedure ensured that essential information was documented, it also increased the risk of data redundancy, misplacement, and inefficiency in retrieval. Therefore, although the traditional system functioned adequately on a basic level, it highlighted the need for a more organized and integrated data management solution.

3) Quick Design Modeling

The system design stage utilizes several modeling tools to ensure clarity, structure, and accuracy in representing the proposed software. A flowchart is used as the system flowchart to describe the overall workflow and sequence of processes within the system. Through the flowchart, each step—such as data input, processing, storage, and output—can be visualized logically and sequentially. This helps developers and stakeholders understand how the system operates from start to finish, including decision points and process interactions.

In addition, a Data Flow Diagram (DFD) is employed to illustrate the flow of data within the system. The DFD focuses on how data move between users, processes, and data storage components. It provides a clear representation of input data, processing activities, and output information, ensuring that all data interactions are systematically mapped. By using DFDs, the researcher can identify potential inefficiencies or redundancies in data handling before the system is fully developed.

An Entity Relationship Diagram (ERD) is also used to define the relationships between entities in the database structure. The ERD identifies key entities such as students, teachers, classes, registration records, and evaluations, along with their attributes and relationships. This diagram serves as a foundation for designing a well-structured database that supports efficient data storage, retrieval, and management.

Furthermore, a prototype is developed as a system illustration using a quick design approach. The prototype provides a visual and functional representation of the proposed system interface and features, allowing users to interact with a preliminary version of the software. This iterative process continues through revisions and refinements based on user feedback. The design and modification cycle is carried out repeatedly until the user confirms that the system accurately meets their needs and expectations, ensuring that the final product aligns with operational requirements and institutional goals.

4) Prototype Construction

Prototype creation involves creating a framework for application development. After conducting a quick plan with the user, the next step is to build the system according to the tutoring management optimization application design developed with the tutoring principal and administrative staff. The tutoring management application design is translated into an application using the Python programming language.

5) Improvement and Feedback (Deployment Delivery and Feedback)

The prototype is used for evaluation by stakeholders and is then tested by experts in the field of informatics engineering. After the trial, the prototype is evaluated, and if errors are found, improvements or feedback can be provided. This feedback can then be used to expand the requirements specifications for the system's features.

RESULTS AND DISCUSSION

Data collection was the initial and fundamental step in this research, as it provided the empirical basis for identifying problems and determining system requirements. The data were obtained through direct observation and interviews with relevant parties involved in the operations of the Study House Tutoring Center, including managerial and administrative staff. These methods were chosen to ensure that the information gathered reflected actual practices and conditions in the field rather than assumptions or secondary interpretations.

Through observation, the researcher examined how daily administrative and academic activities were carried out, including student registration procedures, class scheduling, teacher assignments, and assessment documentation. Meanwhile, interviews allowed the researcher to explore more deeply the challenges faced by staff members in managing these processes. The interactive nature of the interviews enabled clarification of specific procedures and identification of recurring operational difficulties.

The results of both interviews and observations indicated that the Study House tutoring system was still implemented manually. Student registration was conducted using paper forms, schedule changes were recorded and adjusted by hand, and student assessments were documented in written records without integration into a centralized system. Although this manual approach was functional on a basic level, it often led to inefficiencies such as time-consuming data retrieval, risk of data loss, duplication of records, and limited accessibility of information. These findings highlighted the need for a more systematic and technology-based solution to improve the effectiveness and accuracy of data management within the tutoring center.

At this stage, the collected data were analyzed and a new system was designed.

1) Analysis

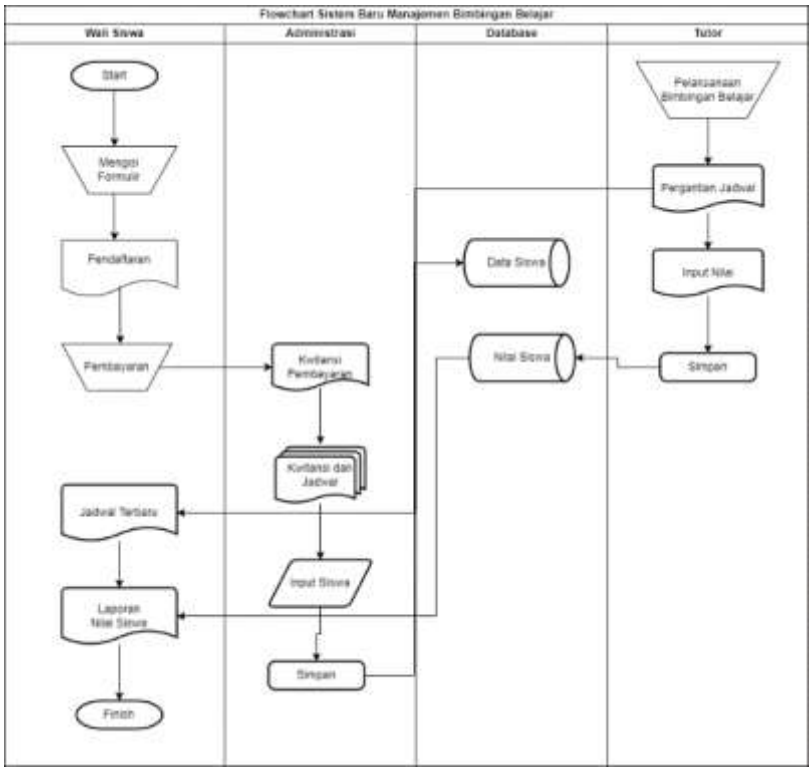
The old system was analyzed. Registration was still manual, with parents coming to the office to fill out registration forms. Tutor scheduling was still done using Word or Excel. Schedule changes were only confirmed between tutors, and student grade reporting was still done via WhatsApp. This system made it difficult for administrative staff to summarize data. After identifying the problems, the next step in analyzing the new system was the need for a tutoring management system (Ghozali et al., 2024). Because an existing system was not yet in use, a tutoring management system was proposed that could simplify the management process. This system could be developed into an application to maximize the performance of administrative staff and tutors at the Study House tutoring system. This can assist in data processing and reporting to parents.

2) Design

System design is carried out after data analysis. The design phase involves the use of tools such as flowcharts, data flow diagrams, and entity relationship diagrams. This design will serve as the basis for the subsequent implementation phase. Thus, this research yields information on student registration, schedule changes, and assessments at the Study House tutoring center, which were previously manual. The proposed new system is a website-based management application development system, which is expected to simplify transactions, sending, and processing customer data.

a. Flowchart

The flowchart of the new system designed for the registration, schedule changes, and student assessment processes is shown in the following figure:



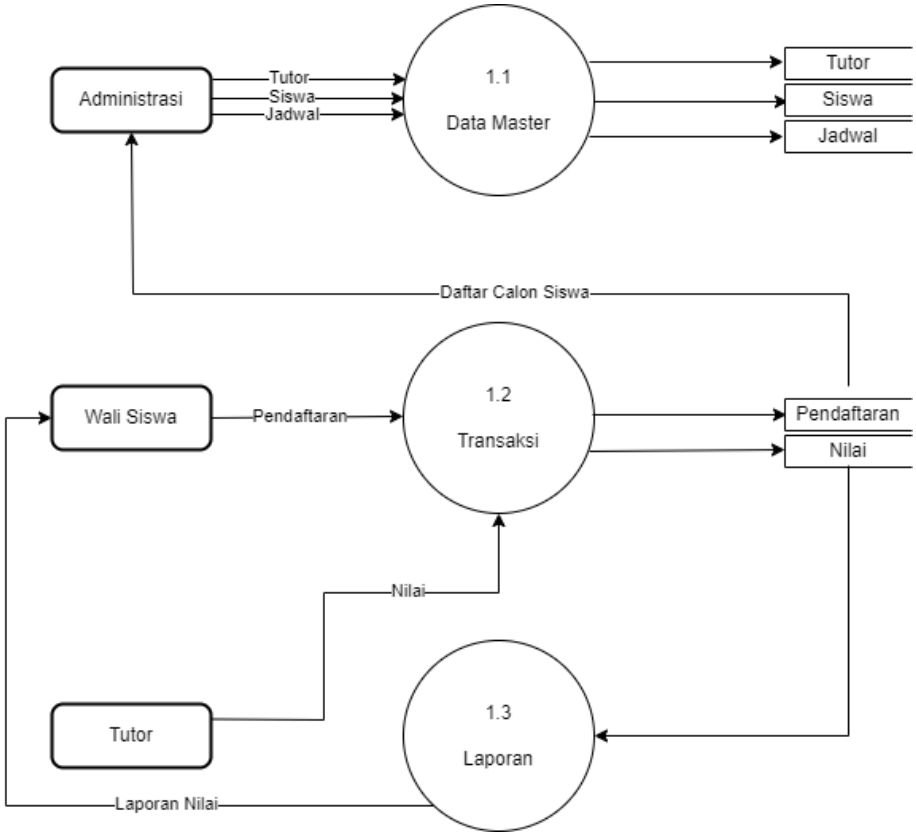
b. Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is a design tool used to model and describe a system by focusing on how data move within it. Rather than emphasizing hardware or technical architecture, a DFD illustrates the logical flow of information between external entities, processes, and data stores. In other words, it explains where data originate, how they are processed, where they are stored, and how they are ultimately delivered as output. By visualizing these data movements, developers and stakeholders can better understand how the system operates and identify potential inefficiencies or gaps in information flow.

A DFD also clearly shows who is involved in the system being developed. External entities—such as administrators, teachers, students, or system managers—are represented as sources or destinations of data. Processes illustrate how data are transformed, while data stores represent repositories where information is saved for future use. Through this structure, the DFD provides a comprehensive overview of interactions between users and the system, ensuring that all functional requirements are properly mapped.

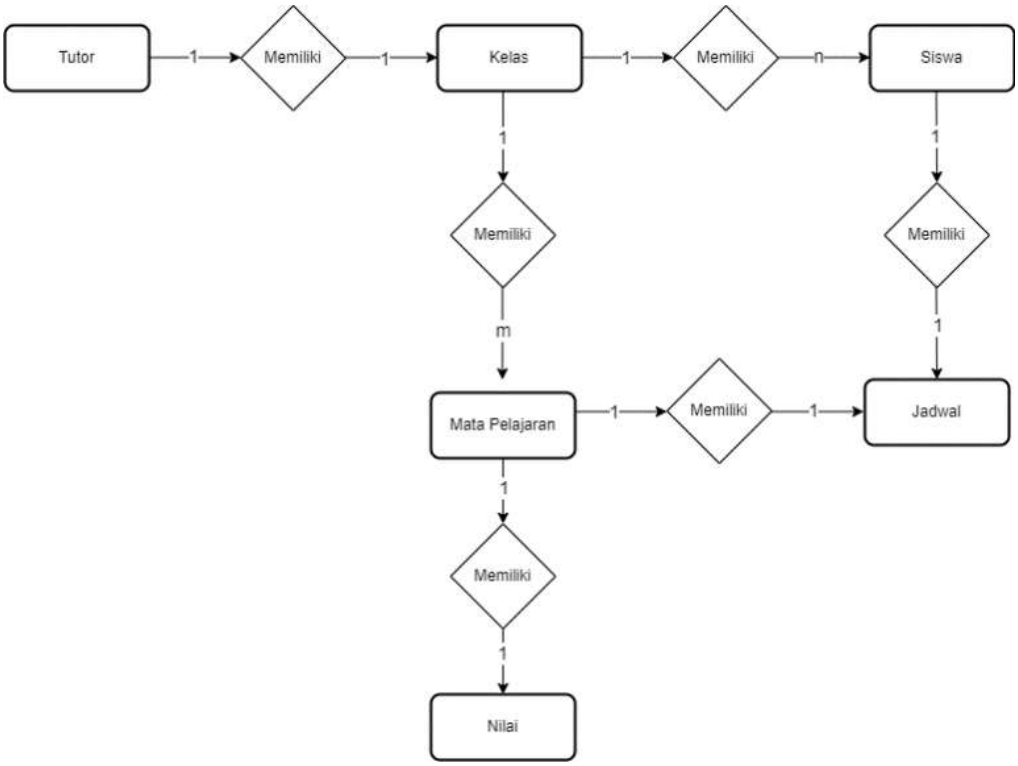
DFDs are typically divided into several levels to present the system in increasing detail. The highest level, often called the Context Diagram (Level 0), provides a broad overview of the entire system as a single process and shows its interaction with external entities. The next level, known as Level 1, breaks the main process into several major subprocesses, illustrating more detailed data flows. Further decomposition into Level 2 or lower levels may be performed to explain complex processes in greater depth.

At more detailed levels, the system flow becomes clearer and more specific. These diagrams add and describe the relationships between processes within the entity system, as well as the interconnected steps that collectively form the complete system. By progressively refining the diagram, developers ensure that each process is logically structured and aligned with user requirements. As shown in the image below, the detailed DFD illustrates how data circulate through various processes, forming an integrated and coherent system.



c. Entity Relationship Diagram (ERD)

An Entity Relationship Diagram (ERD) is one way to design and build a Tutoring Management application system. Entity Relationship Design (ERD) facilitates the construction of a system consisting of interconnected entities that support each other and are related to each other. The ERD depicts many-to-many, one-to-many, and one-to-one models for designing a system. An overview of this system is as follows.

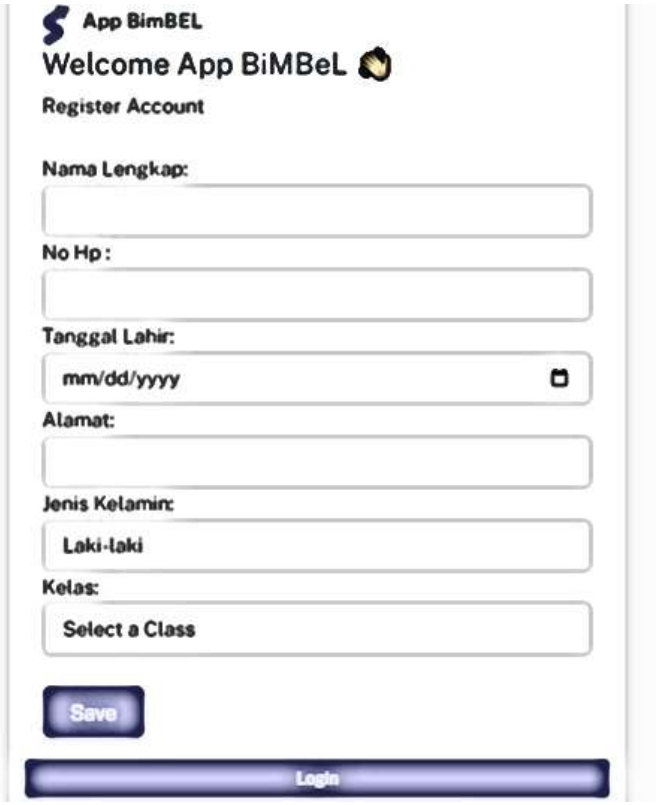


d. Interface Design

Interface design is the design of the application program's user interface. Because it is still a design, there may be additions or subtractions within the actual program, but these additions and subtractions are not necessarily related to the main functions of each procedure. These designs are as follows:

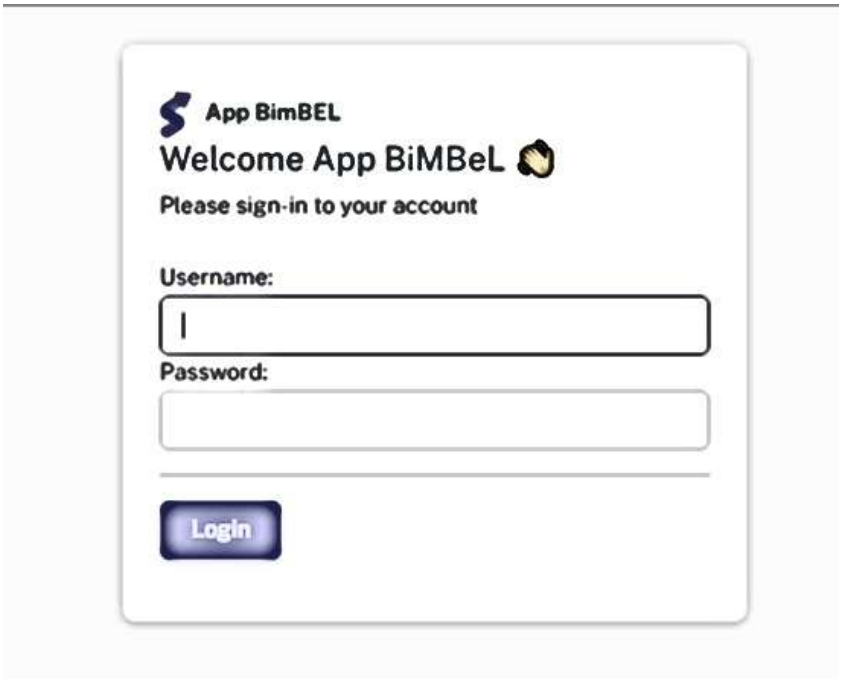
1. Registration Page Interface Design

This registration page functions to register and store data for each user.



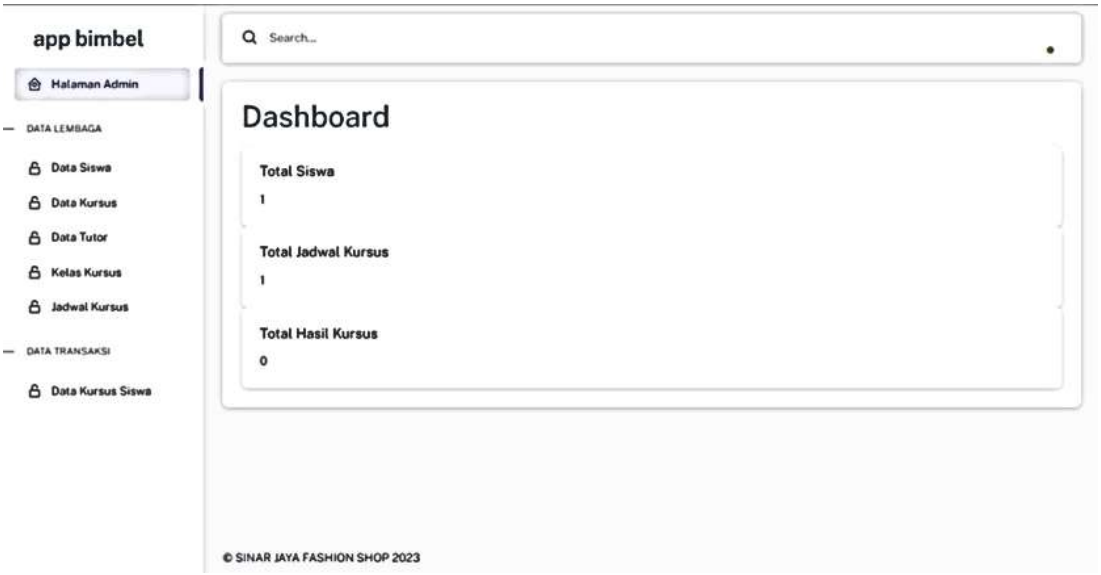
2. Login Page Interface Design

The login page is the first screen that appears when running the program. It aims to limit its use. The login process involves entering the correct username and password.



3. Admin Dashboard Interface Design

The Admin Dashboard page is a display containing submenus within the program, as shown in the image below.

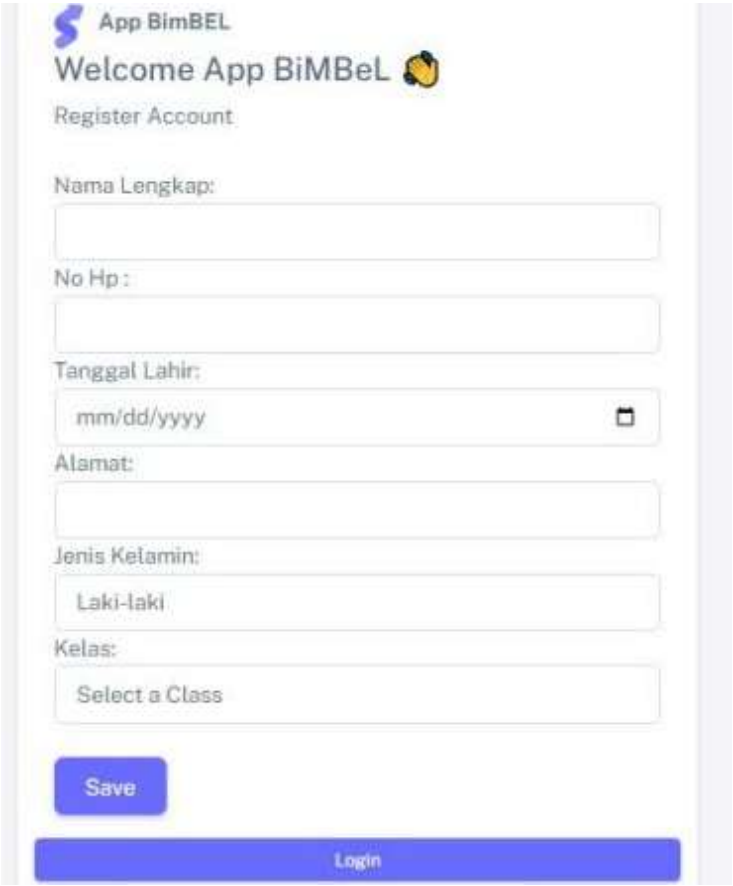


e. Implementation

Implementation is the process of implementing or carrying out a plan, system, or concept in practice. It involves concrete steps to turn ideas into tangible actions. The following is a screenshot of the application's interface.

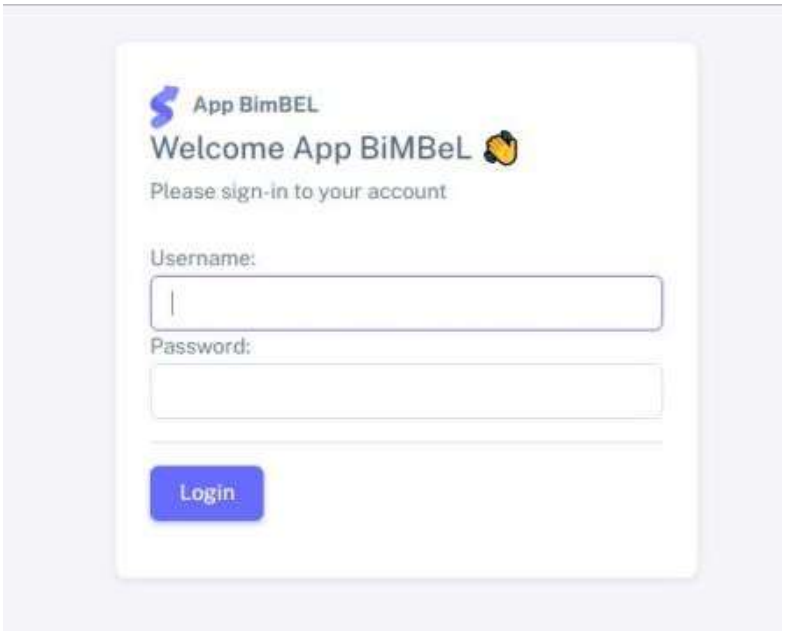
1. Registration Page

The Registration page is used to input personal information such as full name, phone number, date of birth, address, gender, class selection, and a photo file.



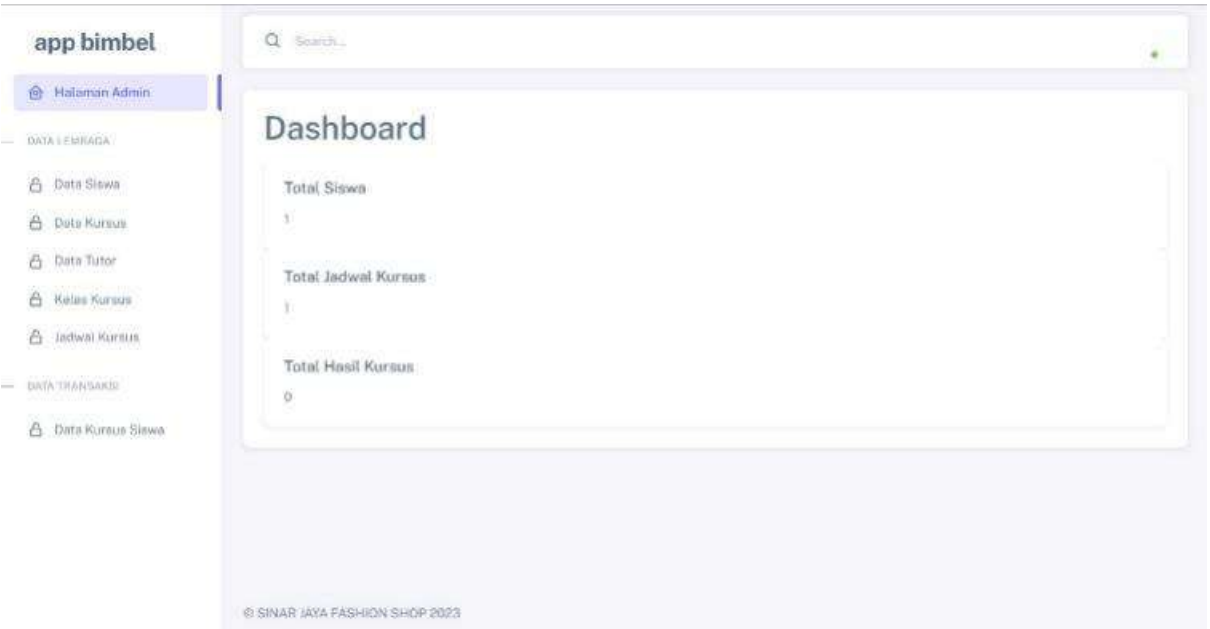
2. Login Page

The login page serves to restrict users from using the application.



3. Admin Dashboard

The Admin Dashboard page menu displays features found on the tutoring management website, such as (Total Students, Total Course Schedule, Total Course Results)..



CONCLUSION

Conclusions represent generalized findings that are formulated based on the research problems and objectives established at the beginning of the study. They summarize the essential results obtained from data collection, analysis, and interpretation, providing clear answers to the research questions. In this sense, conclusions do not merely restate the findings but synthesize them into broader insights that reflect the overall significance of the study. Through well-formulated conclusions, researchers demonstrate how the data support the theoretical framework and how the identified patterns or relationships contribute to a deeper understanding of the issue being examined.

In addition to presenting generalized findings, conclusions may also take the form of practical or strategic recommendations for future actions. These recommendations are derived from the limitations, challenges, and opportunities identified during the research process. They may suggest improvements in policy, practice, system development, or further areas of investigation. By offering such recommendations, the research extends its value beyond theoretical contribution and provides actionable guidance for stakeholders, practitioners, or future researchers.

Therefore, conclusions serve a dual function: they consolidate the main outcomes of the study and provide direction for subsequent steps. A well-constructed conclusion ensures that the research not only answers the initial problems but also contributes meaningfully to ongoing development and continuous improvement within the relevant field..

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