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Analyzing the Requirement of Students' Advisory System on Campus

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Abstract

This study addresses the issue of advisory systems among students enrolled in information systems study programs at Bina Darma University Palembang, Indonesia. These students have complied with an advisory system, but it is an offline advisory system, which causes some difficulties for the students and supervisors during the final report-making process. Previous research has highlighted the importance of an online advisory system that is more flexible, accessible, and convenient and can be developed using the latest technology. After several investigations, we propose a system with object-oriented analysis (OOA) and object-oriented design (OOD) techniques. We suggested a layout that makes use of Rich Internet Application (RIA) technology, offering responsive and interactive features that enable advisers and students to communicate in both directions at any time and from any location. Moreover, the RIA includes an online chat feature that makes it easier for supervisors and students to communicate even when they are not in the same room. The suggested design for the advising system that we presented in this paper is the outcome of our requirement analysis.

Keywords

Requirement Analysis, Advisory System, Object Oriented Analysis, Object Oriented Design, Rich Internet Application

Introduction

Information technology is currently developing quickly and becoming more sophisticated, with the express goal of making human labor tasks simpler, quicker, and more effective (Poola & Božić, 2017). In private universities or tertiary institutions, information technology plays a crucial role in commercial operations. The institution needs a system that can speed up business procedures for staff, foundation members, instructors, and students. Applying a final report advisory to students enrolled in the information systems study program is one such system.

The previous researcher states that object-oriented design (OOD) and object-oriented analysis (OOA) techniques are the appropriate analysis and design for carrying out this research.

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Using object-oriented principles to build specifications or system needs and then modeling them to make them easier to implement with object-oriented programming is known as object-oriented design (OOD) (Romindo et al., 2023).

An advisory system has been implemented as part of Bina Darma University Palembang's current business procedure for final report supervisors. However, because there is currently no online advisory system in place, there are significant challenges associated with completing final reports for both supervisors and students. For instance, the advisory process may not have begun on time if students who wish to complete it at the time specified by the study plan, the lecturer, or the student, suddenly has an exigency that necessitates the lecturer to take several days off, or if the student has permission to take several days off. It has been found that some instructors merely deliver notes to students and do not maintain track of the students' histories under each supervisor's guidance. A few of the students failed to retain a copy of the consultation and neglected to place the list of consultations or advisories. The advisor sought the information systems study program to obtain device data to determine which students were mentored because some supervisors neglected to mention the students receiving mentorship.

The issues at Bina Darma University, particularly in the information systems study program, lead us to conclude that an online final report advisory system is essential. Here, the list of students who will receive mentoring can be managed by the application. Rich Internet program (RIA) technology allows this program to be simulated even if it is still in the design stage. The history and list of mentored students are also meticulously documented. In creating a final report advisory application, it is particularly advantageous to use Rich Internet Application (RIA) technology. A web application with the same features and capabilities as a desktop application is known as rich internet application (RIA) technology. Without specific software, RIA can be used with a web browser (Busch & Koch, 2009). With this information, we propose a solution by creating a design of the final report of an advisory system based on the description provided during the requirement analysis.

Methodology

Alhamdany (2020) revealed a philosophy in system analysis and design to understand the essential characteristics of system analysis and design activities. This philosophy also indicates the scope of concern in systems analysis. System analysis and design are not mechanical activities. Program writers may need skills, but analysts and system designers also need artistry. System analysis and design is a practical field.

There are several meanings of system design analysis, according to some experts, including the following:

Analysis

According to Riki (2018)., analysis can be defined as the decomposition of a complete information system into its parts to identify and evaluate problems, opportunities, obstacles that occur, and the expected needs so that improvements can be proposed.

Design

According to Rokhman et al. (2021), system design determines how a system will complete what must be achieved. This stage involves configuring a system's software and hardware components so that after installation, the system will genuinely satisfy the predetermined design at the end of the system analysis stage.

Rich Internet Application (RIA)

Rich Internet Application (RIA) is a technology that combines the advantages of web-based and desktop applications, of which Adobe Flash, JavaFX, and Microsoft Silverlight are currently the most common platforms (Ghoda, 2010).

Object Oriented Analysis and Design

Object Oriented analysis (OOA) is a stage for analyzing the specifications or requirements for a system to be built with an object-oriented concept. Is it true that existing conditions can be implemented into an object-oriented approach (Mukherjee, 2016)?

Database Design

The database design process is part of the micro lifecycle. The method includes data collection and analysis, conceptual database design, DBMS selection, logical database design (data model mapping), physical database design, and database system implementation (Teorey et al., 2006).

Unified Modeling Language (UML)

According to Alhir (2002), the Unified Modeling Language (UML) is a tool for visualizing and documenting analysis and design results, containing syntax for visual modelling systems.

Analysis and Design

Problem Analysis

Problem identification is the first step in the system analysis stage. According to Gorman, a problem or problem is a situation that contains difficulties for a person and encourages him to find a solution (Suparni, 2020). Therefore, the first step that must be taken at this stage is identifying the problems that occur (identify). Based on my observations at Bina Darma University Palembang in the information systems study program, it was concluded that there were problems in the system, which would be used as the basis for proposed new system designs as final project research. The problems are:

1. Mileage is a factor that is often experienced by some students due to bad weather and road conditions, causing students to feel too lazy to carry out the advisory process.
2. Obstacles when the student or lecturer has a sudden need, so the lecturer or student takes leave for a few days, so the advisory process is not running.
3. Some students experienced obstacles, namely, forgetting to put the consultation schedule and copy the program.
4. Time problems are often experienced by some students in carrying out the advisory process to adjust the lecture hours of students and lecturers.
5. There are no online advisory facilities that make it easier for students and lecturers at Bina Darma University to carry out online advisory without worrying about distance and time.

Ongoing System Analysis
With the problems described above, it is necessary to have an online-based advisory system. As a researcher, I try to provide an overview of an application design for final report advisory that utilizes Rich Internet Application (RIA) technology. So that the structure can be visualized, it is hoped that with this research, the design can be implemented in further study, and it is also expected to present a valuable system for Bina Darma University Palembang.

System Design
Design or design in software development is an attempt to construct a system that provides satisfaction (perhaps informally) with functional requirements specifications, meets targets, meets implicit or explicit requirements in terms of performance and resource usage, and fulfils limitations on the design process in terms of cost, time, and device. The UML design of the final report advisory application is as follows:

Results and Discussion

The system analysis process that has been done previously provides information about the running system. Including some weaknesses in the system. Based on the evaluation results of the current system, the existing system needs to be developed. System development can be done by changing or repairing systems that are still done manually into a computerized system, and it can be done online.

After the researcher understands the running system and some of the criteria for the system to be built, and after designing the system in the previous chapter, the next stage will be developing software for the advisory system for the final report for the Bina Darma University information systems study program. The design of this software will be developed based on the results of the system analysis that has been carried out.

Overview of the Proposed System
The process design proposal is a change in the manual advisory system to run to a advisory system that can be done online. Use the previous chapter's case design, activity diagrams, and database design to provide clear and complete design information.

System design is carried out to provide an overview of the system to be developed or changed to become a new system for the user or users. The system design stage has two main aims and objectives, namely:
1. To meet the needs of system users.
2. To provide a clear picture and a complete design to the programmer.

Proposed Design Procedure
Procedure design results from changes and evaluation of the current system, where the proposed approach is expected to improve the current system's deficiencies. After seeing the system that is running and evaluating the system, the following is the design of the proposed final report advisory system procedures for the Bina Darma University information systems study program:

1. Student registration is the same as the previous system for participating in the final report by paying with a payment code printed on the Bina Darma University information system.
2. After making a payment, students can log in using their username and password, like the Bina Darma University information system login.
3. After logging in, students can submit titles on the title submission form.
4. Students can choose the type of title to be submitted.
5. Students can submit the final report.
6. Students can choose supervisors according to predetermined quotas.
7. After submitting a title and receiving an acc response from the supervisor, students can carry out the advisory process with the supervisor.
8. If all the chapters carried out by the advisory process have been in the supervisor's account, then the process has been completed.

Interface Design

The researcher will discuss the design of the proposed software for making online final report advisory systems.

Menu Structure in figure 1 and figure 2

The design of this menu structure is used to make it easier for users and as a guide in operating the final report advisory application so that users do not experience difficulties in selecting menus in the application. The following is a menu structure design for the final report Advisory Application menu:

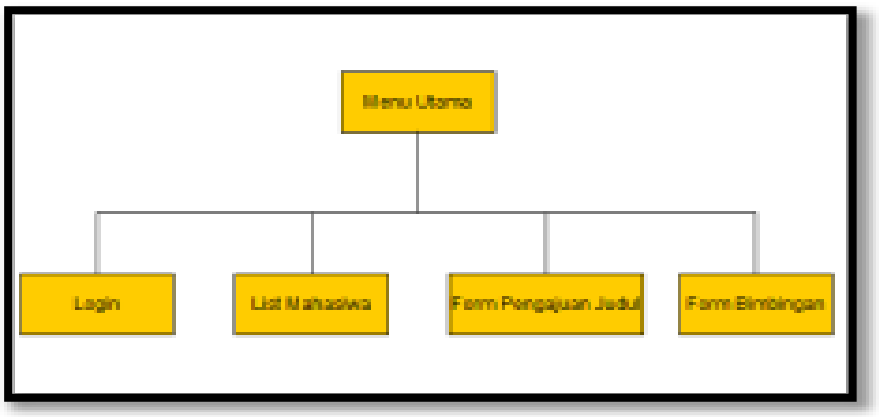

Figure 1. Menu Structure for the main page (Advisor)

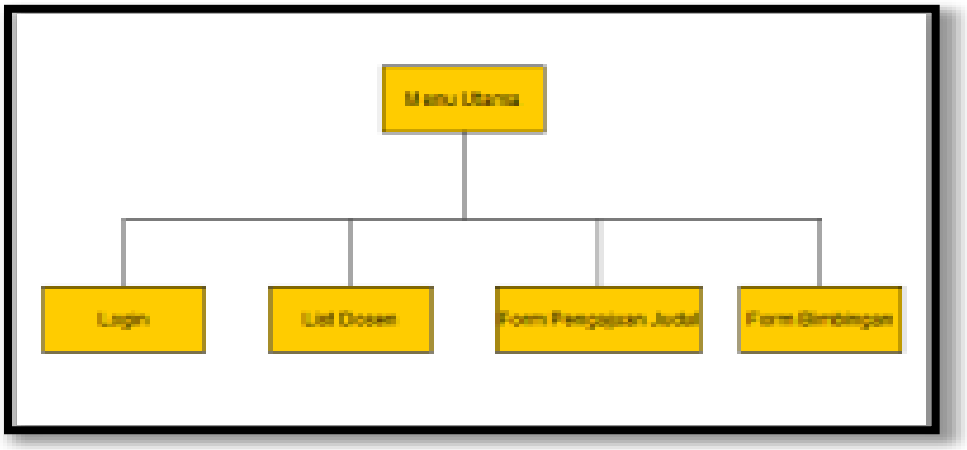

Figure 2. Menu Structure for the main page (Student)

Final Report Advisory Application Design in Figures 3, 4,5 and 6
The following is a design of the final report Advisory application, a web-based that researchers have proposed:

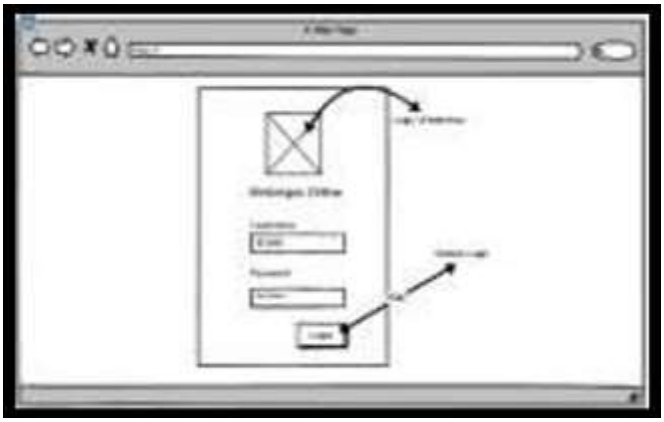

Figure 3. Login Menu Design

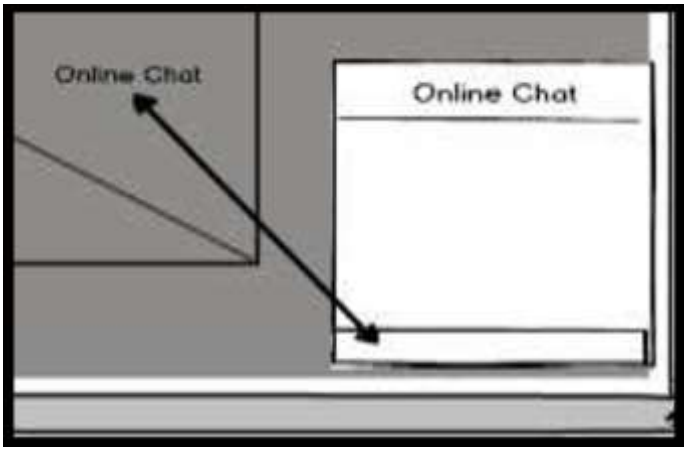

Figure 4. Online Chart Design

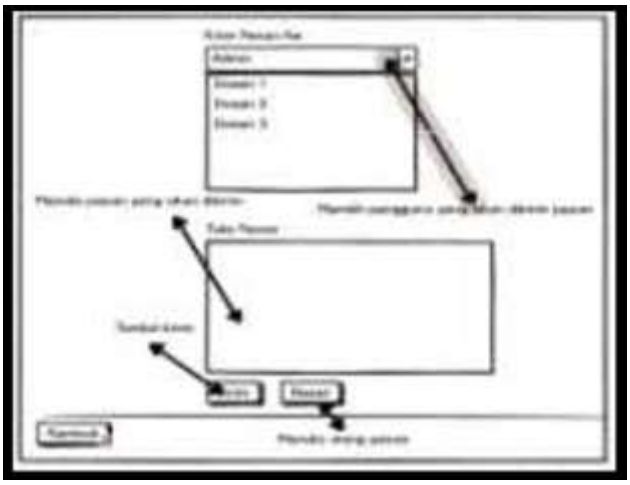

Figure 5. Message Form Design

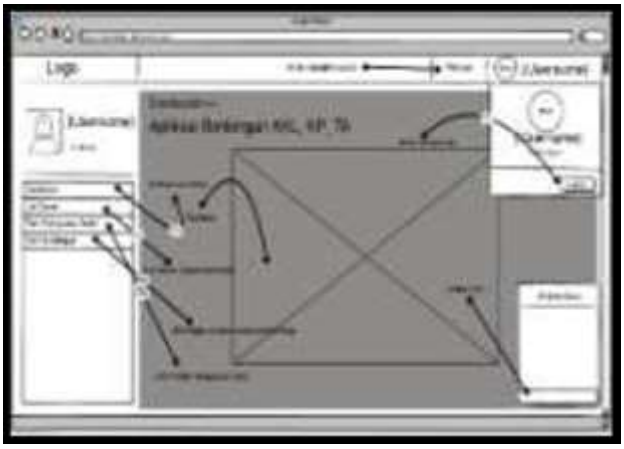

Figure 6. Student Main Page Design

Conclusion

Our requirement analysis has yielded the solution to create an Advisory System using Object-Oriented Design whereby the design adhered to the RIA. As previously said in the analysis step, the design outcome demonstrates that the procedure satisfies the need for an application for final reporting. There were several types of diagrams available that we presented including object, use case, class, collaboration, activity, state, sequence, database, and entity relational diagrams. Consequently, the final report interface design and menu structure were obtained together with the design interface.

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