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The Design Of Web-Based Thesis Management Data Information System

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ABSTRACT

Abstract

Web-based information systems have developed significantly over the last few years with their improvements. An information system that can facilitate service, and access to get information and data management. So that better service to students will be obtained. This research can help students and informatics study programs in archiving thesis data. The research method in this study is a. Observation Method, observation by directly observing the campus environment of the Baturaja University Informatics Study Program to obtain information about the fluidity of the current system used to produce information systems; b. Library Study Method Literature study technique is by collecting data and information on written materials related to the discussion of problems in this study, c. Interview method and d. the information system development method in this study uses the Rapid Application Development or RAD model. Based on the results and discussion in this study, the authors conclude that the creation of a Web-Based Thesis Data Information System at Baturaja University The process of collecting thesis files in the form of softcopy is no longer done conventionally, namely thesis files just need to be uploaded through the system and thesis searches can be done easily online.

1. INTRODUCTION

In the current era of information technology, the development of the world of technology and information is so fast. This situation forces agencies or companies to need accurate information to be able to reach decisions that are very effective and efficient in various fields. It can be used as a means to collect data about students who have completed education. Thesis is a scientific paper written by students as a graduation requirement to get a bachelor's degree. Students who have held a thesis session must submit their thesis in hardcopy and also a CD/DVD containing the thesis and program files that have been made (softcopy) to the study program for archiving. The number of theses that will be submitted later will increase every year along with the increase in informatics study program students who have carried out thesis trials. This causes piles of theses and CDs/DVDs. Unused CDs/DVDs that will become electronic waste. This electronic waste is not managed optimally. In addition, the thesis that has been collected is scattered in several computer databases. The study program must prepare a larger storage space which can take up time and money and students will find it difficult to find the thesis references that have been made by previous students because they have to search manually one by one. Based on the observations of researchers, an information system is needed that can facilitate services, and access information and data management. So that better service to students will be obtained, easier presentation of information and efficiency of study programs in managing thesis. The purpose of this research is to design and build a website-based thesis information system that can be managed properly. While the benefit of this research is to obtain an overview of how to design and implement a problem into a good and easy-to-understand system.

Information Systems, in simple terms, a system is a collection or collection of elements, components or variables that are organized, interact with each other, are interdependent and integrated (Sutabri, 2012). A system is defined as a set of related and interconnected procedures to collectively complete a task. In general, information systems consist of software, hardware, and brain programs. These three components relate to each other through goal-oriented actions, the desired goals and objectives can only be achieved through controlled actions. (Dalimunthe, 2022). Information is information that has been classified or processed or interpreted for use in the decision-making process (Sutabri, 2013). Information is the result of data processing that is used for a specific purpose so that the recipient has an incentive to act. (Yendrianof et al., 2022). It can be concluded that an information system is a system that provides information for decision-making or management policies and guides them with specific goals and objectives.

2. LITERATURE REVIEW

According to (Elgamar, 2020) websites are pages that are connected to each other, and are equipped with a domain as an address (url) or World Wide Web (www) andalso hosting as a medium that stores a lot of data. The Website according to (Utama, 2011). used to display information, both static and dynamic in nature which form a series of interrelated buildings where each is connected to a network of pages. It can be concluded that a website is a medium for displaying information, text, images, both static and dynamic, which have hyperlinked pages with a domain as an address (url) or the World Wide Web (www). The website can be accessed using an internet network with a platform called a browser, such as Chrome, Mozilla Firefox, Internet Explorer, Opera and so on. Websites are built in localhost mode, which means websites can be designed, built and modified without using an internet network.

Flow chart is An algorithm presentation technique that uses pictures or symbols is a flowchart. Flowchart or flow chart is a collection of symbols that describe the sequence of processes in solving a problem. The flowchart shows the sequence or steps of the problem solving process. Each symbol is connected by lines from start to finish. Flowcharts also always begin with a start terminator symbol which denotes the beginning of the flowchart and ends with a complete terminator symbol to denote the end of the flowchart. (Yuniansyah, 2020). PHP (Hypertext Preprocessor) PHP was originally developed at the end of 1994 by Rasmus Lerdorf, but is now taken up by The PHP Grou. Originally PHP stood for Personal Home Page, but in its development it was changed to PHP (Hypertext Preprocessor). (Elgamar, 2020). PHP (Hypertext Preprocessor) is a programming language used to translate lines of program code into server-side understandable machine code that can be added to HTML. (Supono & Putratama, 2016). PHP is focused on server-side scripting, so you can do what CGI can do with PHP like fetch and receive cookies and much more. Its capabilities and support for databases are also very reliable. (Supono & Putratama, 2016).

Based on the background above, the following problems can be formulated: How to design and build a website-based information system that can be used for thesis data management. In order for this research to be more focused, it is necessary to limit the problem. The limitations of the problems studied in this study are: a) This website-based thesis data information system was created for the informatics study program at Baturaja University. b) This website-based thesis data information system was created for students of the Baturaja university informatics study program.

3. RESEARCH METHOD

3.1 Informatics Study Program Profile

The informatics study program is the first computer science study program to be present at Baturaja University with a bachelor's degree according to the date of its establishment, namely: 2 July 2019 with the Implementation Decree number: 510/KPT/I/2019. The profiles of graduates from the informatics study program are: software developers, system administrators such as network administrators and database administrators, as well as technology-based entrepreneurs (techonopreneurs), whose graduate degree is Bachelor of Computer (S.Kom). Informatics lecturers come from S2. The number of courses offered is 145 credits consisting of basic science, applied science principles, computer science specialists, computer science design and projects, as well as computer science practice and careers.

The steps analyis used in this research;

a. Needs Analysis**.**

The post-analysis stage is the activity of defining the desired software specifications for ongoing communication between software developers and users, including the desired system requirements specifications in the form of data entry, data processing, and desired information.

Input requirements for each user of this subsystem include: Administrators, and students . The tools used to build the thesis information subsystem are divided into two parts, namely hardware and software. Regarding the hardware used in designing this web-based application, namely intel core i3 processor, 4GB of RAM, Monitor, keyboard, and mouse. The software used to design this web-based application, namely: Windows 7 operating system, Web server : XAMPP, Web browser: Chrome, Text editor: Visual Studio Code, Programming Language: PHP, Database server : MySQL

b. Feasibility Analysis

This thesis information system is technically feasible. The availability of technology to support this system is already available and known by the general public, making this new system feasible. In terms of operational feasibility, current staff competence is sufficient to use the proposed new system, as well as the ability to use a computer or laptop. Most of the data processing from data input and processing to output is done on a PC or laptop. In terms of infrastructure, the undergraduate program already has the necessary facilities and infrastructure for the system.

3.2 Application Design

In this section a DFD (Data Flow Diagram) thesis information system is designed for each process in the subsystem. Data Flow Diagram (DFD) modeling is a description of subsystems as a network of activities related to data flow and storage. The following is a final project information system context diagram that can be used to identify external entities, facilitate modeling and function in subsystem development, as shown in the figure.

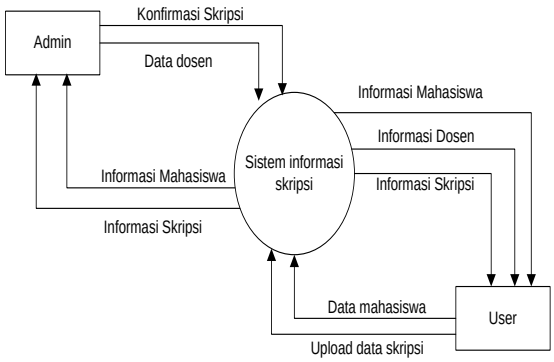

Figure 1 Application Design

Layer diagrams are developed into data flow diagrams (DFD) which show or explain more detailed information subsystems. The DFD level of the thesis information system is developed below, and levels 1 and 2. Data flow diagram (DFD) Level 1 DFD level 1 is a derivative of the context diagram. This diagram describes several processes in the thesis information subsystem.

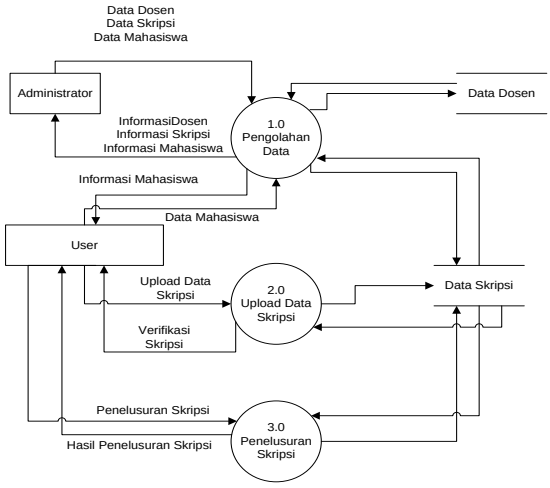

Figure 2. Data Flow Diagrams (DFD)

In DFD, Level 1 consists of the main processes of the system. The first process is data processing by the system administrator. Another process is uploading the thesis data. In the third process, user groups can search for theses. Data Flow Diagram (DFD) Level 2 Process 1. Data Processing DFD Level 2 Process 1 is a derivative of DFD Level 1 which occurs in data processing.

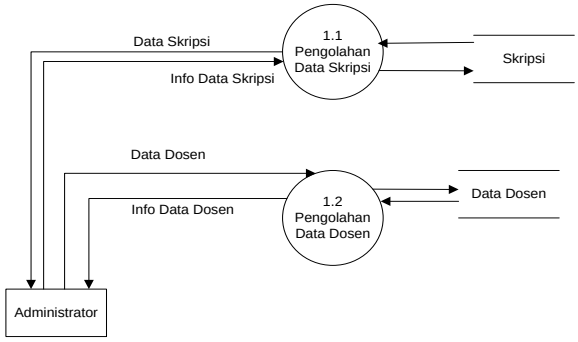

Figure 3 Data Flow Diagram (DFD) Level 2 from Process 1

Figure 3 describes the processing of each data required at DFD level 1. Processing of thesis data to manage thesis data in the thesis table, processing of lecturer data to manage lecturer data in the lecturer table.

Data collection methods in this study include the following:
a. Observation Method

Observation by making direct observations of the Informatics Study Program Baturaja University campus environment to obtain data on the flow of the ongoing system that will be used for making information systems;
b. Literature Study Method
The literature study technique is to collect data and information on written materials by studying and reading books and other media related to the discussion of the problems that will be described in this study.
c. Interview method
Data collection techniques in this study then used interview techniques or direct consultations.

The information system development method in this study uses the Rapid Application Development or RAD model. Rapid Application Development is a linear sequential software development process that emphasizes the development cycle in a short time. In developing an information system normally, it takes a minimum of 180 days at most, but by using the RAD method, system creation can be completed in 30-90 days. (Aristi & Ruuhwan, 2020)

Application Development Steps
The development steps have 3 stages as follows:
1. Requirement Planning: Users and analysts hold a meeting to identify the goals of the system and information needs to achieve the goals. At this stage, the most important thing is the involvement of both parties;
2. System Design: At this stage the activeness of the users involved determines to achieve the goal because in this process the design process is carried out and makes improvements if there are still design discrepancies between the user and the analyst. A user can immediately comment if there is a discrepancy in the design, design the system by referring to the documentation of user requirements made in the previous stage. The output of this stage is a software specification which includes general system organization, data structures and others;
3. Implementation (Implementation): This stage is the stage of the programmer who develops the design of a program that has been approved by users and analysts. Before being applied to an organization, a testing process is first carried out on the program whether there are errors or not.
At this stage the user usually gives feedback on the system that has been made and gets approval for the system, (Nughroho,2004)

4. RESULT AND DISCUSSION

The database used by the author in designing the thesis information system is to use a MySQL database which will later be linked to the software used to make the application.

Interfaces
Login Page
Figure 4.1 below is the display of the login page for administrators on the website. Administrators and users must enter a User Name and Password when logging in. After the administrator fills in the correct User Name and Password, the administrator can enter the next page, namely the Profile page.

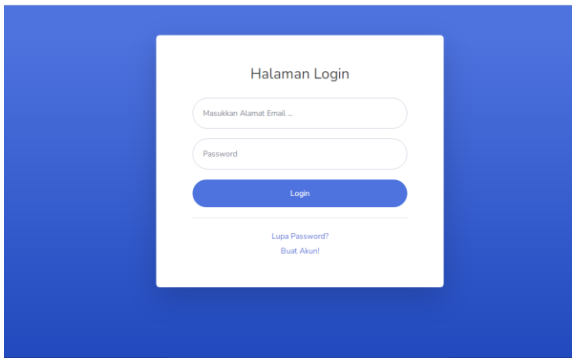

Figure 4. Login Page

But if it is wrong, a page will appear like in Figure 5

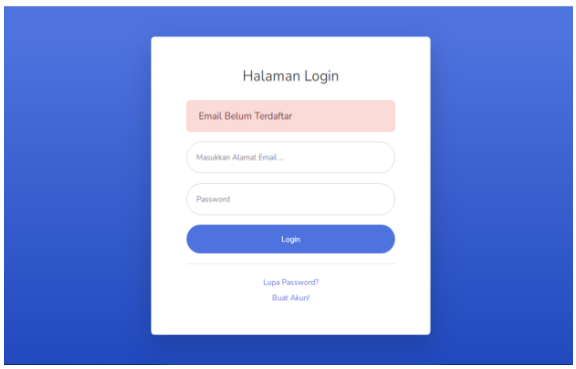

Figure 5 Invalid Login Page

Profile Page

Figure 6 below is the appearance of the Administrator and user profile pages according to the User Name and Password when logging in.

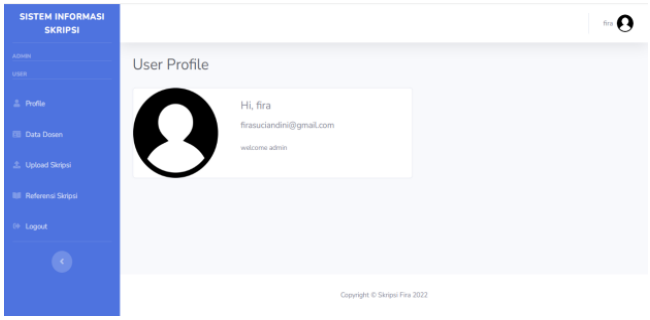

Figure 6 Admin Profile Page

Thesis Data Upload Page

Display of Thesis Upload Page which contains thesis data filling form

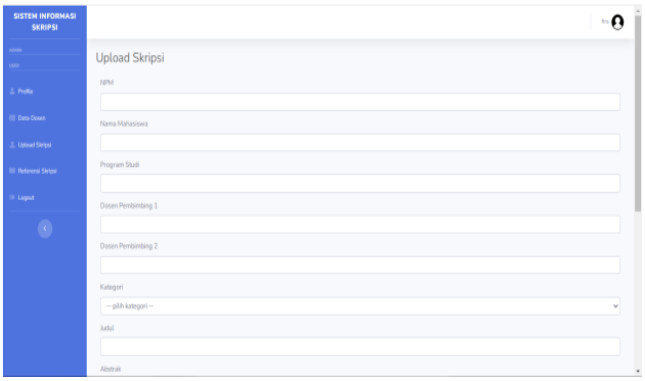

Figure 7 Thesis Data Upload Page

On this page, priority is given to students who have already carried out a thesis session. Students can upload thesis files in pdf format on this website as proof in the department that they have completed the results of the thesis in the informatics engineering study program

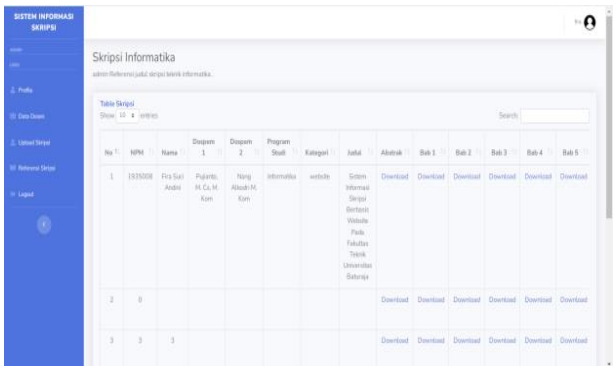

Figure 8 Thesis Reference Page

In figure 8 is a collection page of student thesis majors that students have uploaded on the website. Here students can view the document with the document listed as having been validated or not validated.

White Box Testing

White box testing is the last test performed before the system is implemented. This strategy is used to see the internal mechanism of a software product, especially to observe the structure and logic of the written program code. This strategy can be carried out by directly reviewing the program code (source code) written in building software. This includes components in the form of functions, procedures or external modules used.

Black Box Testing

Black Box Testing testing focuses on system functions, on interface errors, functions, databases or system performance errors. This test is carried out on all existing menus, to look for errors, so that if errors are found they can be corrected. The results of the test can be seen in the following table:

No	Testing	Process	Status
1	Manage lecturer data input	New, save, change, cancel, reset	Success
2	Manage thesis data input	Save, delete, success	Success
3	Thesis data search	Search	Success

5. CONCLUSION *AND SUGGESTION*

Based on the results and discussion in this study, the authors conclude that the creation of a Web-Based Thesis Data Information System at Baturaja University is the process of collecting thesis files in the form of softcopy is no longer done conventionally, namely thesis files can only be uploaded via the system. and searching for theses can be done easily and can be downloaded, so students who want to find old theses to be used as references for a study do not need to come to the library and look in filing cabinets. The research that has been carried out still has many shortcomings that need further development and this application still requires the role of the department and students majoring in informatics engineering so that it can run well.

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