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# DESIGN AND IMPLEMENTATION OF WEB BASED INFORMATION SYSTEM FOR THE THESIS DEFENSE SCHEDULE AND ASSESSMENT

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## Abstract

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Implementation of information system of academic especially in scheduling and assessment for online thesis defense is needed. This is because the implementation of thesis defense must be carried out online to avoid the possibility of spreading Covid-19. Therefore, The aims of this study to develop web-based information system for the thesis defense schedule and assessment. The development of information systems uses the waterfall model which consists of 5 steps are user requirement, system design, development, testing, and maintenance. The result of implementation show that web-based information system for the thesis defense schedule and assessment running well according to purpose and need assessment. The information system also can used for interaction between lecturers and students as long as the thesis process and defense don't need to be done offline.

Keywords: information system, web-based, thesis defense schedule and assessment

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## 1. Introduction

The information system is a place to present the information that computerized properly and correctly [1]. The information displayed on the website is a form of service provided by administrator to users. If the information more complete and update which are given, then users will access and visit the website more too [2]. The application of information systems in academics can be used as a place for interaction between lecturers and students. Information systems are currently very much needed, especially in the face of the Covid-19 Pandemic.

Now, there are still many university in the city that don't have an information system to manage the thesis schedule and assessment. The problem is the limited capacity and funds to develop the information system. Even though this information system is very much needed, especially during the Covid-19 Pandemic. The thesis defense has been done virtually (online), but the administrative process is still done manually. These problems must be resolved to avoid the possibility of spreading Covid-19 in the university environment.

Some reserch about registration and scheduling of thesis defense have been carried out, such as designing registration software and scheduling thesis defense at the Faculty of Medicine, University of Palangka Raya based on a website by applying the waterfall method and designing using a traditional approach [3], an integrated web-based information system final project/thesis. (case study: Department of Information Systems Darmajaya Institute of Information and Business) by applying the waterfall method (structured) and designing using a traditional approach [4], and designing a web-based thesis and final project scheduling application using a laravel framework with applying the waterfall method and designing

using a traditional approach [5]. Several studies indicate that the design stage uses a traditional approach, while for this study an object-oriented approach is used.

The steps that can be taken to solve these problems are to first study the administration needed by students to apply for a thesis defense, the process of conducting a thesis defense, and the process of evaluating the results of the thesis defense. After that, the information system can be built according to user needs.

## **2. Method**

Development of a web-based information system for schedule and assessment thesis defense using the waterfall model. There are 5 steps of the waterfall model are user requirement, system design, development, testing, and maintenance [6].

### **2.1 User Requirement**

Analysis of user needs is the step of collect data and documents related to administration maintaining the thesis. Furthermore, existing data and documents are studied further to determine user needs, both functionally and non-functionally [7].

### **2.2 System Design**

System design is the step of designing an information system for thesis defense schedule and assessment using Unified Modeling Language (UML) [8]. In addition, this stage also make the design of the display (interface) of the schedule information system and the daytime assessment to the thesis defense.

### **2.3 Development**

This step is implement the design results in the previous stage. The design results will be implemented in the form of program code so that it will display an easy-to-use interface for the user. Make code using the PHP and MySQL programming languages [9].

### **2.4 Testing**

Implementation is needed to ensure whether the program code is being made to function properly and correctly. In addition, this test is needed to minimize errors (errors) from the program that has been made. Testing uses the blackbox testing method [10].

### **2.5 Maintenance**

This step is the maintenance of the information system for thesis defense schedule and assessment that has been made [11]. This maintenance is carried out to adjust the development of user needs and ensure that the information system for thesis defense schedule and assessment is running well and correctly.

## **3. Results and Discussion**

Users of the information system of thesis defense schedule and assessment consist of students, lecturers, and admins with different access rights. Based on the results of the analysis of user needs, conclusions are obtained about the information system of thesis schedule and assessment as follows:

### **1. Students:**

- The system give feature to students registration.
- The system give feature to upload requirements of thesis, like invention file and thesis for lecturers.
- The system give feature to see the value from lecturer in realtime.

### **2. Lecturers:**

- The system give feature to see a list of students will do final test of the thesis.
- The system give feature to upload invention file and thesis.
- The system give feature to give value and suggestion.
- The system give feature to see a list of students who have been tested.

Design *Usecase Diagram* for a web-based information system of thesis defense schedule and assessment show in Figure 1. Generally show that students and lecturer interact with each other, where students can see their profile and value which has been given by the lecturer. Then, lecturer can give a value for students who have been tested for their thesis.

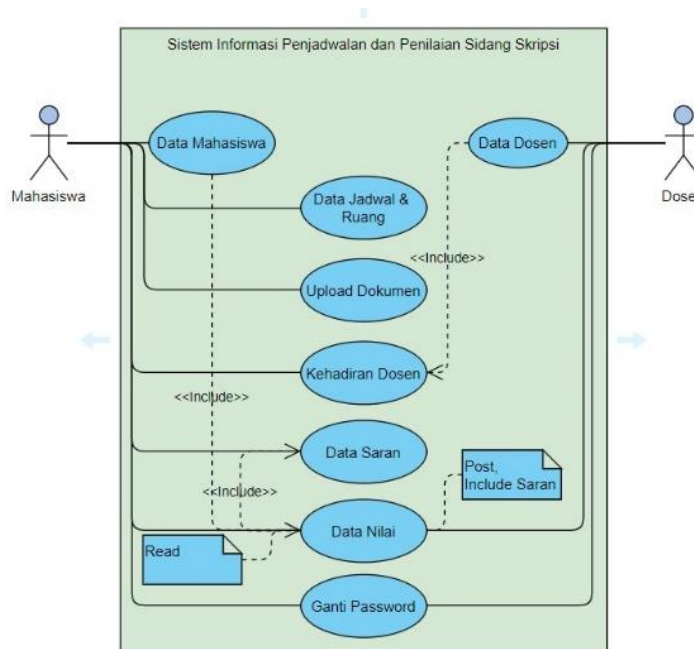
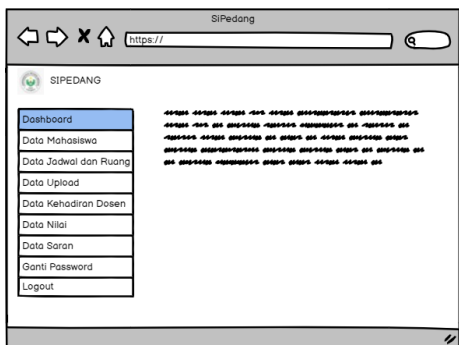

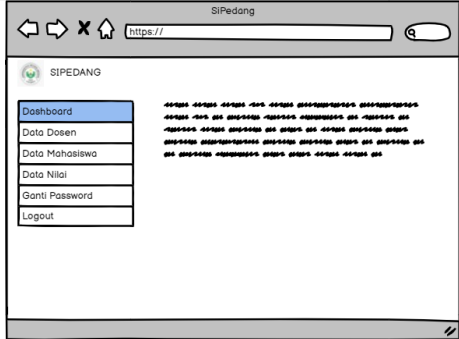
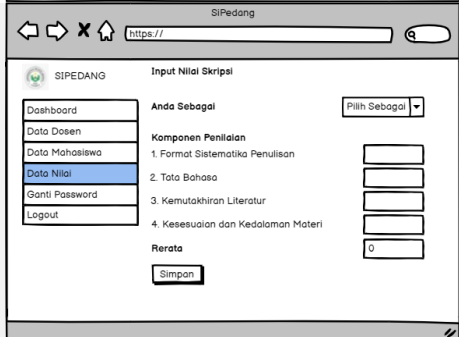


Figure 1. Usecase Diagram of Web-Based Information System of Thesis Defense Schedule and Assessment

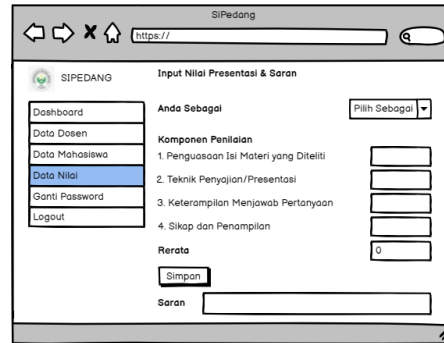
The result of design for some pages of web-based information system of thesis schedule and assessment show that in Table 1.

Table 1. Result of Design a Web-Based Information System of Thesis Defense Schedule and Assessment

USER	PAGE TYPE	PAGE VIEW
STUDENTS	Login	

	Home	
<b>LECTURER</b>	Login	
	Home	
	Input of thesis value	

Input of presentation value and suggestion



The view result for some pages of web-based information system of thesis defense schedule and assessment show that in Table 2.

Table 2. Result of Implementation a Web-Based Information System of Thesis Defense Schedule and Assessment

USER	PAGE TYPE	PAGE VIEW
STUDENTS	Home	
	Registration	
	Login	

Home

The screenshot shows the SI Pedang dashboard for user Polo Ha Saputra S. The page title is "SI Pedang". On the left, there is a sidebar menu with options: Dashboard (selected), Data Mahasiswa, Data Jadwal dan Ruang, Data Upload, Data Kehadiran Dosen, Data Nilai, Data Saran, Ganti Password, and Logout. The main content area displays a welcome message: "Selamat Datang Polo Ha Saputra S" and "Sistem Informasi Penjadwalan dan Penilaian Sidang Jurusan Matematika, FMIPA, Unimed".

LECTURER

Login

The screenshot shows the login page for lecturers. The page title is "Sistem Informasi Penjadwalan dan Penilaian Sidang Jurusan Matematika Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Medan". It features the logo of Universitas Negeri Medan. Below the logo, it says "Silahkan Login 'Dosen'". There are two input fields: "Nomor Induk Pegawai" and "Password". A "Login" button is located below the fields. A "Pandaian" link is visible at the bottom right.

Home

The screenshot shows the SI Pedang dashboard for user Dr. Armita, M.Si. The page title is "SI Pedang". On the left, there is a sidebar menu with options: Dashboard (selected), Data Dosen, Data Mahasiswa, Data Nilai, Ganti Password, and Logout. The main content area displays a welcome message: "Selamat Datang Dr. Armita, M.Si." and "Sistem Informasi Penjadwalan dan Penilaian Sidang Jurusan Matematika, FMIPA, Unimed".

Input of thesis value

The screenshot shows the "Input Nilai Skripsi" form in the SI Pedang system. The page title is "SI Pedang". On the left, there is a sidebar menu with options: Dashboard (selected), Data Dosen, Data Mahasiswa, Data Nilai, Ganti Password, and Logout. The main content area displays the "Input Nilai Skripsi" form. It includes a "Kembali" link, a dropdown menu for "Anda Sebagai" (set to "Pilih Sebagai"), and a section for "Komponen Penilaian" with four rows: "1. Format dan Sistematika Penulisan", "2. Tata Bahasa", "3. Kemutakhiran Literatur", and "4. Konsistensi dan Kedalaman Materi". Each row has an input field. Below the input fields is a "Rerata" field with the value "0" and a "Simpan" button.

Input of presentation value and suggestion

The testing result using Blackbox Testing Methods of web-based information system of thesis defense schedule and assessment can show in Table 3.

Table 3. The Testing Result using Blackbox Testing Methods

<i>Activity</i>	<i>Input</i>	<i>Output</i>	<i>Testing Status</i>
<i>Students login</i>	<i>Username &amp; Password</i>	<ul style="list-style-type: none"> <li>• If success will go to students home page</li> <li>• If fail will show alert that the username or password doesn't match</li> </ul>	<i>Valid</i>
<i>Students Registration</i>	Students ID, Name, Majors, Supervisor, Examiner 1, Examiner 2, Examiner 3, Phone Number, Title of Thesis	<ul style="list-style-type: none"> <li>• If success, registration page will show alert that registration is success</li> <li>• If fail will show alert that registration is fail</li> </ul>	<i>Valid</i>
<i>Schedule and Room</i>	Choose The Schedule & Room Feature	<ul style="list-style-type: none"> <li>• If success will show thesis schedule and room</li> <li>• If fail will show wrong page</li> </ul>	<i>Valid</i>
<i>Students See The Value</i>	Choose The Feature of Value Data	<ul style="list-style-type: none"> <li>• If success will show the value result of thesis</li> <li>• If fail will show wrong page</li> </ul>	<i>Valid</i>
<i>Students Upload Invention and Thesis</i>	Choose Data Upload Feature	<ul style="list-style-type: none"> <li>• If success will show form for upload invention and thesis file</li> <li>• If fail will show wrong page</li> </ul>	<i>Valid</i>
<i>Lecture login</i>	<i>Username and Password</i>	<ul style="list-style-type: none"> <li>• If success will go to lecturer home page</li> <li>• If fail will show alert that <i>username</i> or <i>password</i> doesn't match</li> </ul>	<i>Valid</i>
<i>Lecturer look at the students who will do</i>	Choose students data Feature	<ul style="list-style-type: none"> <li>• If success will show a form of students data informations who will do the test for thesis</li> </ul>	<i>Valid</i>

<p><i>the test for thesis</i></p> <p><i>Lecture input the thesis, presentation and suggestion value</i></p>		<ul style="list-style-type: none"> <li>• If fail will show wrong page</li> </ul>	
	<p>Choose Value Data Feature</p>	<ul style="list-style-type: none"> <li>• If success will show a page for input the thesis, presentation and suggestion value</li> <li>• If fail will show wrong page</li> </ul>	<p><i>Valid</i></p>

#### 4. Conclusions

The testing result using *Blackbox Testing* method show that the web-based information system of thesis schedule and assessment has been going well according to purpose of this research and student needs. The web-based information system of thesis schedule and assessment can be used as a place for students dan lecturers interaction to implementation the thesis defense, especially for thesis defense online scoring. The existence of a web-based information system of thesis defense schedule and assessment, it is hope that the administration process doesn't need to do with online for minimizing the potential spread of covid-19. The addition of some features will continue to be developed according to technological developments and user needs.

#### Reference

- [1] V. Sihombing and G. J. Yanris, "Penerapan Aplikasi Dalam Mengolah Aset Desa (Studi Kasus : Kepenghuluan Sri Kayangan)," *J. Mantik Penusa*, vol. 4, no. 1, pp. 12–15, 2020.
- [2] Y. A. Rahman, E. D. Wahyuni, and D. S. Pradana, "Rancang Bangun Prototype Sistem Informasi Manajemen Program Studi Informatika Menggunakan Pendekatan User Centered Design," *J. Repos.*, vol. 2, no. 4, pp. 503–510, 2020.
- [3] W. Widiatry, "Perancangan Perangkat Lunak Pendaftaran Dan Penjadwalan Ujian Skripsi Pada Fakultas Kedokteran Universitas Palangka Raya Berbasis Website," *J. Teknol. Inf. J. Keilmuan dan Apl. Bid. Tek. Inform.*, vol. 14, no. 2, pp. 150–160, 2020.
- [4] H. Kurniawan and W. B. Bondowoso, "Sistem Informasi Terintegrasi Tugas Akhir/Skripsi Berbasis Web (Studi Kasus: Jurusan Sistem Informasi Institut Informatika dan Bisnis Darmajaya)," *J. Sist. Inf. dan Manaj. Basis Data*, vol. 2, no. 2, pp. 124–134, 2019.
- [5] J. S. Utama and I. K. D. Nuryana, "Rancang Bangun Aplikasi Penjadwalan Skripsi Dan Tugas Akhir Berbasis Web Menggunakan Framework Laravel," *J. Manaj. Inf.*, vol. 11, no. 1, pp. 1–10, 2020.
- [6] M. Muhandi, S. I. Gunawan, Y. Irawan, and Y. Devis, "Design of Web Based LMS (Learning Management System) in SMAN 1 Kampar Kiri Hilir," *J. Appl. Eng. Technol. Sci.*, vol. 1, no. 2, pp. 70–76, 2020.
- [7] M. Stefanus and J. F. Andry, "Pengembangan Aplikasi E-learning Berbasis Web Menggunakan Model Waterfall Pada SMK Strada 2 Jakarta," *J. Fasilkom*, vol. 10, no. 1, pp. 1–10, 2020.
- [8] N. Setiyawati and M. Hariyanto, "Rancang Bangun Aplikasi Perizinan Surat Tugas dan Reimbursement Berbasis Web," *IJCIT (Indonesian J. Comput. Inf. Technol.)*, vol. 5, no. 2, pp. 213–220, 2020.
- [9] N. Huda and R. Amalia, "Implementasi Sistem Informasi Inventaris Barang pada PT.PLN (Persero) Palembang," *J. Sisfokom (Sistem Inf. dan Komputer)*, vol. 9, no. 1, pp. 13–19, 2020.
- [10] U. Rofiqoh, Y. Irawan, and R. Melyanti, "Aplikasi Pendaftaran Dan Penerimaan Data Persyaratan Calon Anggota Legislatif Sementara Secara Online Pada Partai Keadilan Sejahtera Di Kabupaten Bengkalis," *Riau J. Comput. Sci.*, vol. 06, no. 02, pp. 145–153, 2020.
- [11] Y. Farlina and D. Pribadi, "Sistem Informasi Pelayanan Publik di Kecamatan Warudoyong Kota Sukabumi Berbasis Website," *IJCIT (Indonesian J. Comput. Inf. Technol.)*, vol. 5, no. 2, pp. 180–



186, 2020.