Jurnal Mantik, 6 (2) (2022) 1449-1458

Published by:Institute of Computer Science (IOCS)

Jurnal Mantik

Journal homepage: www.iocscience.org/ejournal/index.php/mantik/index

Application Of The Waterfall Method In The Final Project Guidance Realization Information System

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ARTICLE INFO

Article history:
Received: May 30, 2022
Revised : Jun 10 , 2022
Accepted: Juni 25, 2022

Keywords:
UML, Black Box, Realization

ABSTRACT

The thesis guidance process cannot run smoothly and on time if the busyness between lecturers and students causes a lack of suitable time to meet, so this obstacle can make the problems in writing the thesis unable to be solved as soon as possible. In addition, lecturers also find it difficult to monitor their tutored students because there are not a few students who are mentored. The purpose of this research is (a) to build an information system for the realization of the final project by using the waterfall method and (b) to test using a black box. Based on the results and discussion, conclusions can be drawn as follows: (i) Development of an information system for the realization of the final project in the waterfall method using UML design where the design results include System Actors (List Actor), Use Case Diagrams, Activity Diagrams. (ii) System testing using Black Box. The results carried out using black boxes explain that the system created or the module used is running according to what is specified.

1. Introduction

Final project is a term used in Indonesia to illustrate a scientific paper in the form of an explanation of the results of undergraduate research that discusses a problem or phenomenon in a particular field of science by using applicable rules. In writing a thesis, students are guided by one or two supervisors who are lecturers at the college where the student is studying. For thesis writing which is supervised by two people, the terms are known as Supervisor I and Supervisor II. Usually, Supervisor I has a more dominant role when compared to Supervisor II.1

The thesis guidance process at the Computer System and Network (CSN) Laboratory involves several parties, namely the head of the laboratory, supervisory lecturers, and students. The student submits the thesis idea to the Head of the Laboratory (Head of Laboratory), then the Head of the Laboratory receives the thesis title idea and determines the first supervisor and second supervisor. The guidance process is carried out face-to-face between the supervisor and students. Each guidance session is recorded on a thesis guidance realization sheet which contains the date, the material discussed during the guidance, and the initials of the supervisor.

The thesis guidance process cannot run smoothly and on time if the busyness between lecturers and students causes a lack of suitable time to meet, so this obstacle can make the problems in writing the thesis unable to be solved as soon as possible. In addition, lecturers also find it difficult to monitor their guidance students because there are not a few students being mentored. 2 The realization sheet for thesis guidance is still a sheet of paper, it is not uncommon for students to lose the guidance realization sheet or the guidance realization sheet is damaged, this is a problem for students. Students forget the notes given by the supervisor so that students have to repeat the guidance process again. This makes the thesis guidance process longer. These problems can be detrimental to students regarding time, guidance schedules and lost or damaged files. These problems result in students being hampered or late in the thesis process and delaying the completion of the thesis on time.

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To solve these problems, the authors design an information system to replace the previous system, which can submit thesis ideas, determine supervisors 1 and 2 for students, conduct thesis guidance between students and supervisors, and write notes during guidance, so that the process of realizing guidance Thesis in the Computer System and Network (CSN) Laboratory is no longer paper which is converted into a system in the form of a website that facilitates data management of the realization of CSN student guidance which allows the guidance process as well as data that is stored neatly and not damaged by time.

2. Method

Metode penelitian yang digunakan pada penelitian ini dengan menggunakan Waterfall. metode waterfall adalah salah satu model SDLC yang sering digunakan dalam pengembangan sistem informasi atau perangkat lunak. Model waterfall menggunakan pendekatan sistematis dan berurutan. Tahapan model waterfall antara lain requirement, design, implementation, verification,dan maintenance.

3. Result

3.1 System Design

a. System Actors (List Actor)

System actors (List Actor) is a description of all actors who interact in the system [12].

TABLE 1
LIST ACTOR

Aktor	Deskripsi
Website administrator	In charge of inputting data, adding data, editing data, granting access rights to the user.
Students	Submitting skipsi ideas, uploading thesis progress
Lecturer	Downloading student thesis progress and providing revisions on progress
Head of Laboratory	Accept/reject student thesis ideas and choose 1st and 2nd supervisors for students

b. Use Case Diagram

Use case diagram is a diagram that describes the expected functionality of a system and can show the relationship between a list of use case diagrams and a list of actors.

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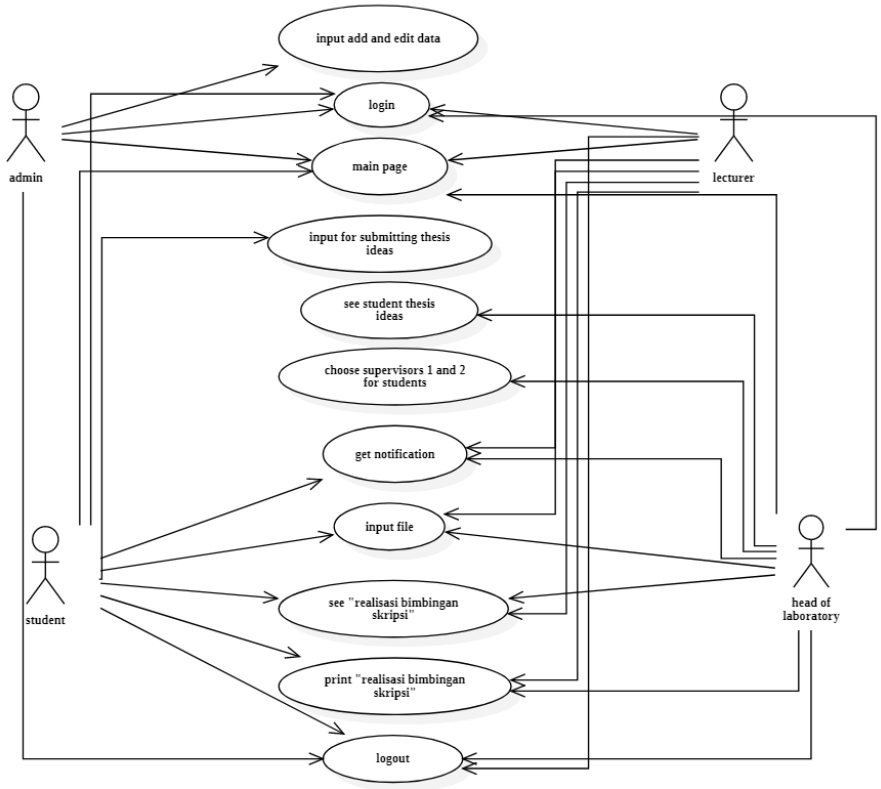

Figure 1. Use Case Diagram

c. Activity Diagram

1. Submission of Thesis Idea

This activity is carried out by students who will submit thesis ideas. Students write the title of the thesis idea and provide an explanation of the title of the thesis idea made.

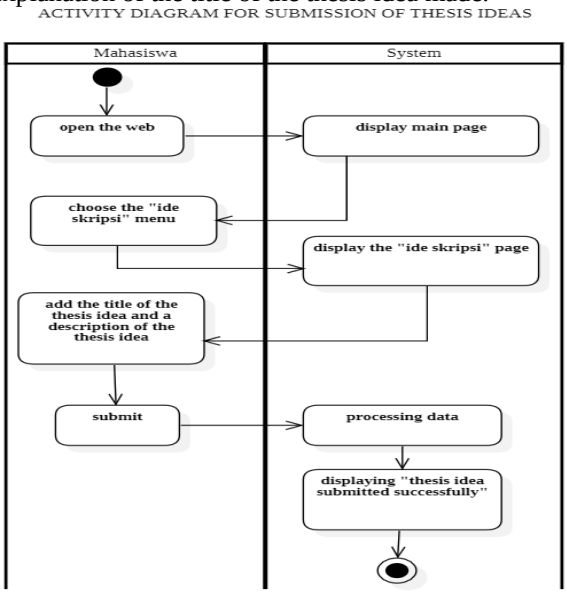

Figure 2. Submission of Thesis Idea

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2. Determine the Advisory Lecturer

This activity is carried out by Kalab. If the Kalab approves the submission of the student thesis idea, then the Head of the Lab will choose who will be the supervisor 1 and 2 of the students who submit the thesis idea.

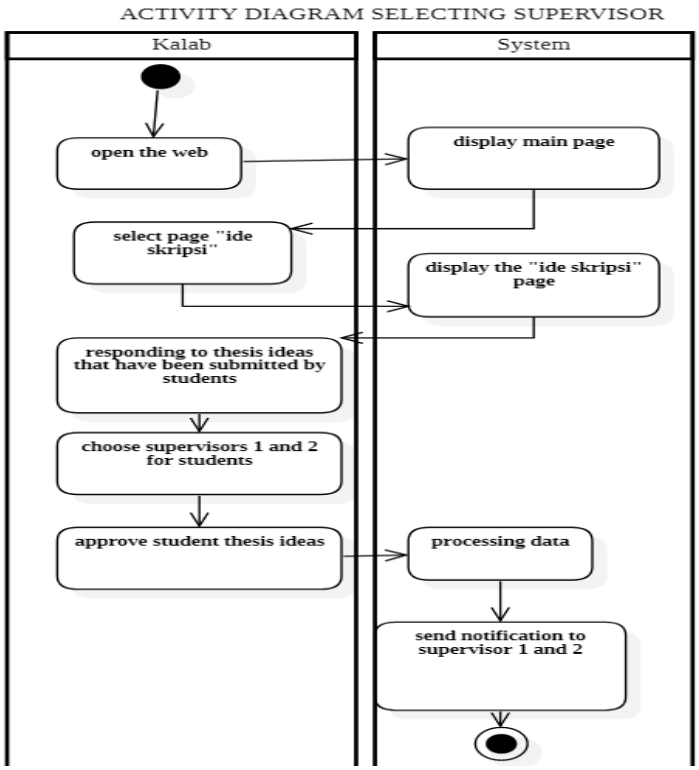

Figure 3. Determine the Advisory Lecturer

3. Upload the thesis progress file

This activity is carried out by students. Students upload thesis progress files in .pdf format to supervisors 1 and 2.

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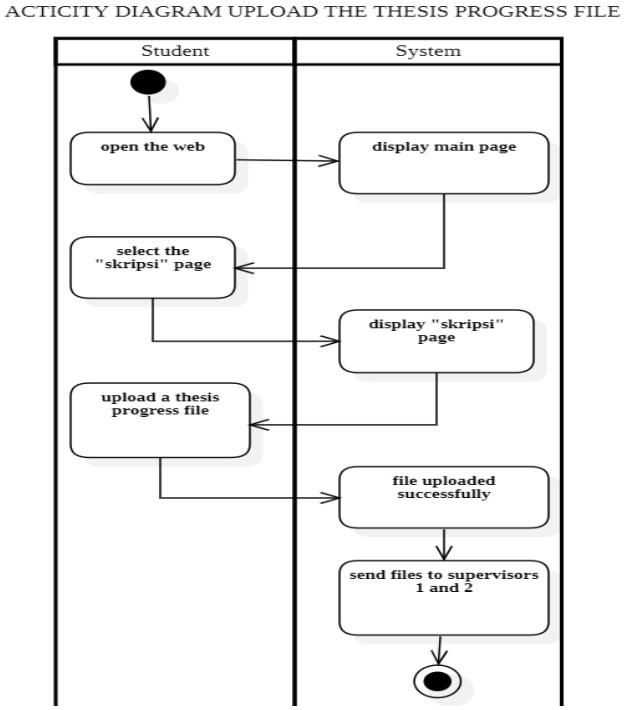

Figure 4. Upload the thesis progress file

4. Revise thesis progress

This activity is carried out by supervisors 1 and 2. Lecturers download progress files that have been sent by students, lecturers check student progress and provide notes for students, lecturers can also upload files (if necessary).

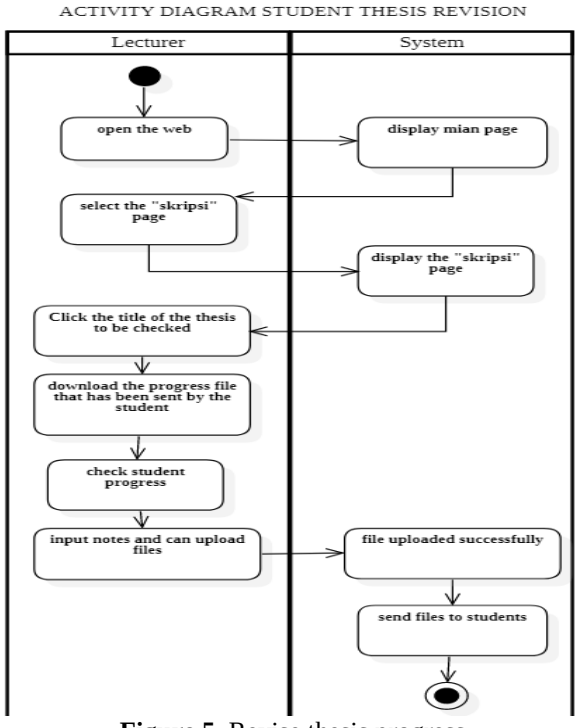

Figure 5. Revise thesis progress

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5. Print Thesis Guidance Realization

This activity can be done by students and supervisors. Realization of Guidance contains notes given by Lecturers to Students. Guidance Realization Sheets can also be downloaded in .pdf format.

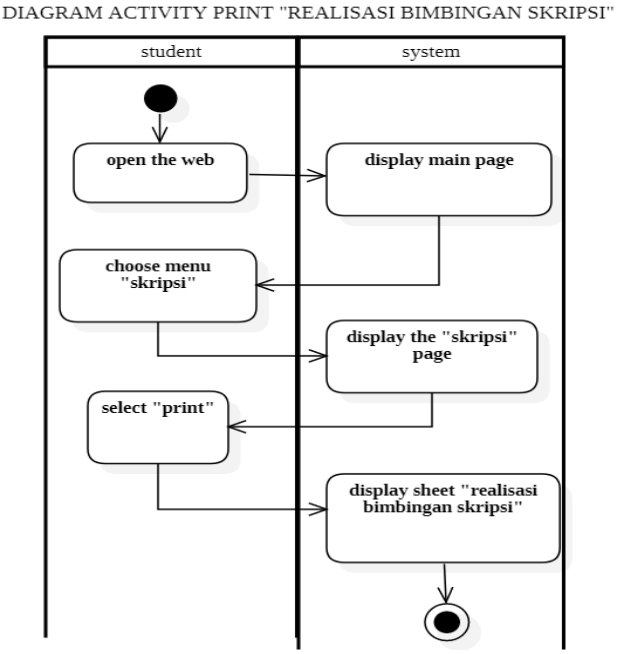

Figure 6. Print Thesis Guidance Realization

3.2 Implementation

1. Thesis Ideas Page

a. The Thesis Idea page for students displays a thesis idea title form and a description form about the thesis idea taken

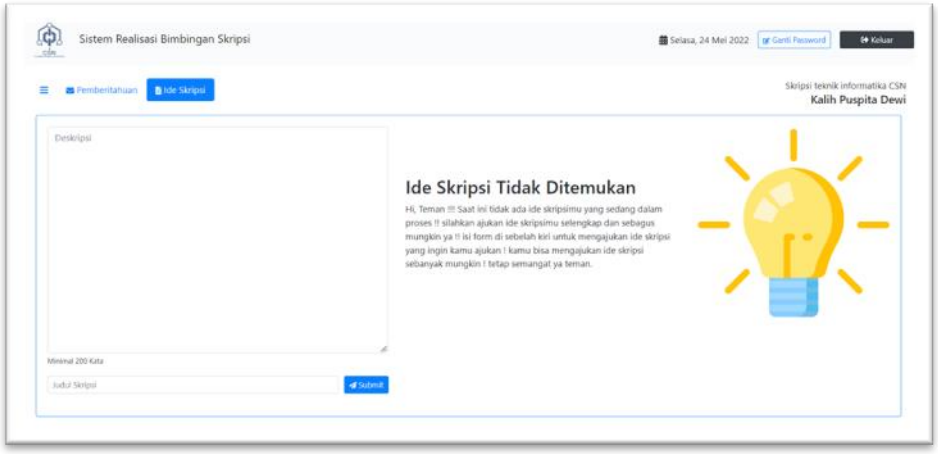

Figure 7. Thesis Ideas Page

b. The Thesis Ideas page in the Head of the Department displays a list of Thesis Ideas from students who submit thesis ideas. And the Kalab can directly validate the submission of student thesis ideas and determine supervisors 1 and 2.

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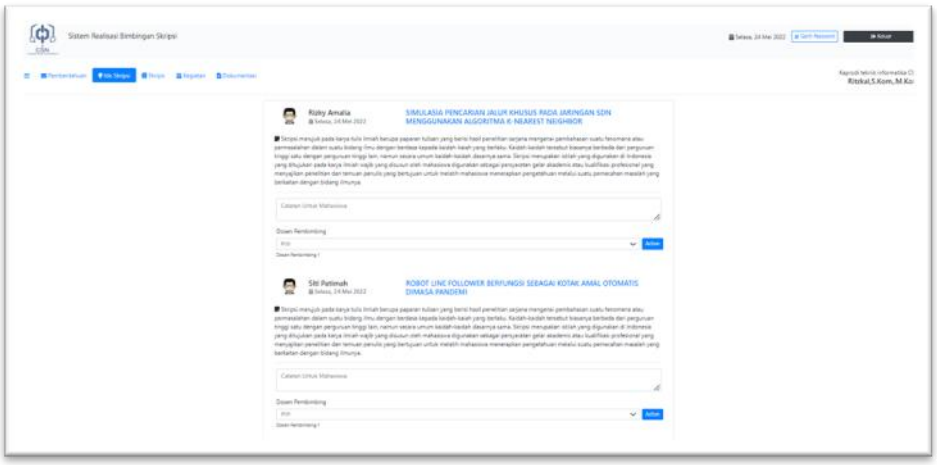

Figure 8. kalab thesis idea page

2. Thesis page

a. The thesis page for students displays a form for students to send a thesis progress file to the supervisor. Students can also see the guidance card containing notes given by the lecturer on this page and can print the guidance card / realization of thesis guidance.

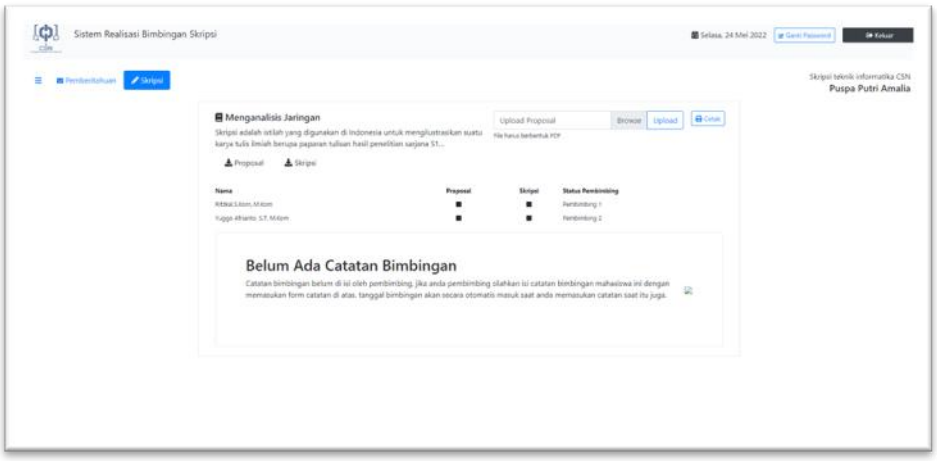

Figure 9. Student thesis page

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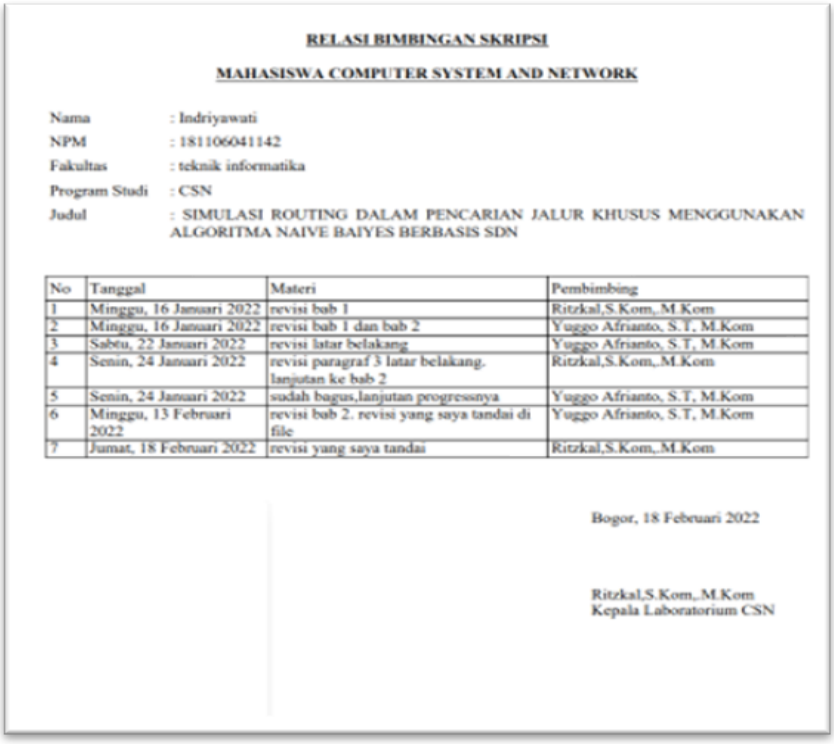

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No	Tanggal	Materi	Pembimbing
1	Minggu, 16 Januari 2022	revisi bab 1	Ritzkal,S.Kom,.M.Kom
2	Minggu, 16 Januari 2022	revisi bab 1 dan bab 2	Yuggo Afrianto, S.T, M.Kom
3	Sabtu, 22 Januari 2022	revisi latar belakang	Yuggo Afrianto, S.T, M.Kom
4	Senin, 24 Januari 2022	revisi paragraf 3 latar belakang. lanjutan ke bab 2	Ritzkal,S.Kom,.M.Kom
5	Senin, 24 Januari 2022	sudah bagus,lanjutan progressnya	Yuggo Afrianto, S.T, M.Kom
6	Minggu, 13 Februari 2022	revisi bab 2. revisi yang saya tandai di file	Yuggo Afrianto, S.T, M.Kom
7	Jumat, 18 Februari 2022	revisi yang saya tandai	Ritzkal,S.Kom,.M.Kom

Bogor, 18 Februari 2022

Ritzkal,S.Kom,.M.Kom
Kepala Laboratorium CSN

Figure 10. Print the realization of thesis guidance

b. The thesis page for the head of class and lecturer displays a list of students being mentored along with the title of the thesis. Can download progress sent by students by clicking on the title of the thesis, and can provide notes on student progress and can send files (if needed). Lecturers can also see the guidance card containing the notes that have been given on this page and can print the guidance card / realization of thesis guidance.

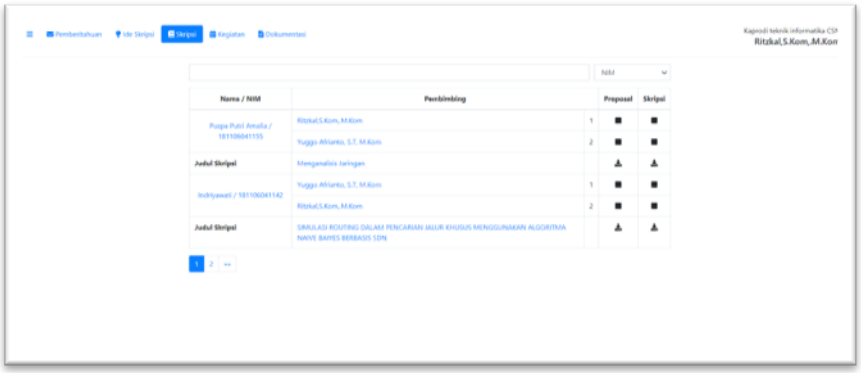

Figure 11. Lecturer thesis page

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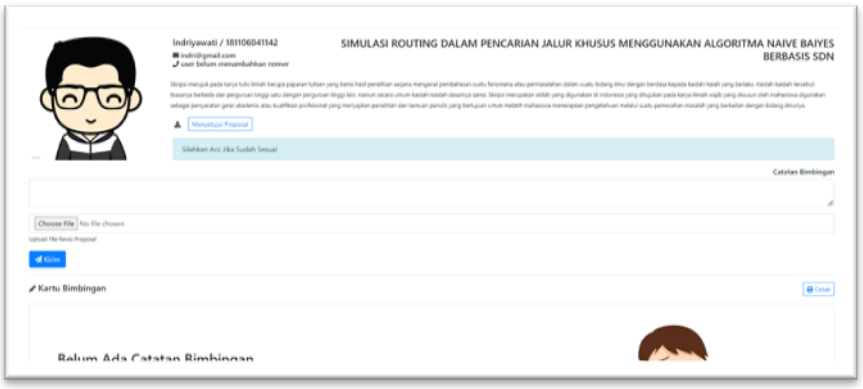
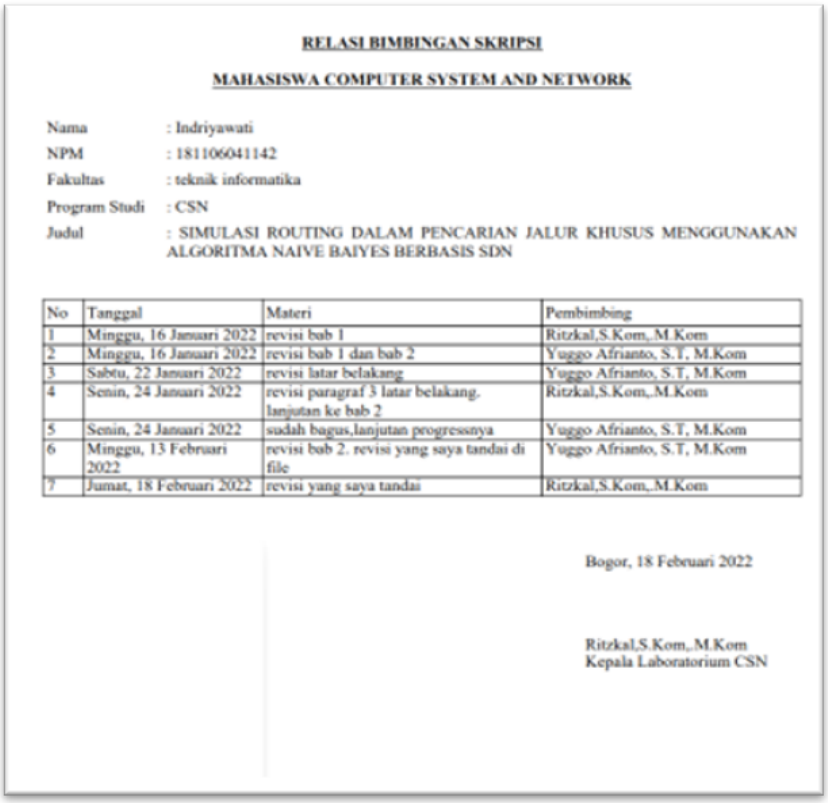


Figure 11. The page provides notes for thesis progress



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Bogor, 18 Februari 2022

Ritzkal,S.Kom,.M.Kom
Kepala Laboratorium CSN

Figure 12. print the realization of thesis guidance

3. Lecturer and Student data page

On this page displays Lecturer and Student data along with forms to add data, edit data, and change data that can be done by admin.

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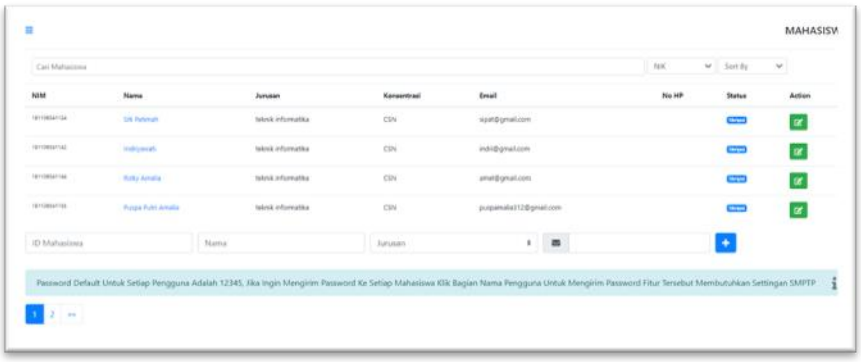

Figure 13. Student data page

4. Conclussion

Based on the results and discussion, conclusions can be drawn as follows: (i) Development of an information system for the realization of the final project in the waterfall method using UML design where the design results include System Actors (List Actor), Use Case Diagrams, Activity Diagrams. (ii) System testing using Black Box. The results carried out using black boxes explain that the system created or the module used is running according to what is specified.

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