

The Design of Final Project Information System

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Accepted 23 December 2021

Approved 19 January 2022

Abstract—The final project is an educational method to determine the competence of a student regarding the knowledge that has been obtained during lectures. The implementation of the final project activities is currently still done manually, causing problems that often occur such as misinformation of each actor involved, the difficulty of the supervisor in monitoring the development of his student guidance, besides that the final project form files are not well organized, which makes searching for files take a long time. The creation of a website-based Final Project Information System aims to make the final project implementation process more efficient and effective in solving current problems. In this study, the method used in system design is the Software Development Lifecycle method. While the testing method used is the black box testing method with the equivalence partitioning technique. The results obtained in this study are the design of the final project management information system with test results that there are still some bugs that must be fixed before being used in general.

Index Terms— Final Project Management; Information System; SDLC

I. INTRODUCTION

Most of the activities carried out during this period were related to information systems. Not only in developed countries, but in Indonesia information systems are also widely used in various sectors such as government, industry, and education. Management information systems provide added value to the decision-making process in problem-solving efforts, as well as a competitive advantage, which is certainly beneficial for business activities [1].

At this time, many universities in Indonesia provide services to their students with an information system. The use of information systems for the activities of the university will be a factor in the success and progress of the university [2]. One of the applications is the final project/thesis information system.

The final project is a term used to describe a scientific work by presenting the results of the investigation in written form following the applicable regulations. The final project contains the accumulation of scientific fields that have been obtained during the lecture period. The purpose of the final project is that students are expected to be able to formulate and compile a scientific work following the scientific aspects that have been studied, this has an impact on increasing the quality of human resources due to organized and systematic work system [3].

Final project data administration in the form of preparation activities, final project data archiving carried out by the final project commission. The administration of the final project carried out at the Bangka Belitung State Manufacturing Polytechnic is still done manually, for example, such as submitting proposals, mentoring, monitoring and scheduling sessions. With the current condition, there are problems such as frequent misinformation of each actor involved, and this affects the difficulty of the supervisor in monitoring the development of his guidance students besides that the final project form files are not well organized which makes searching for files belong. The current conditions result in the less effective delivery of information about the final project.

Taking into account the current problems, the purpose of this research is to design a management information system to support all student final project management activities.

II. LITERATURE REVIEW

A. Management Information System

The management information system at this time has become one of the indispensable vitalities. This is because the management information system is able to provide information and is also able to support decision making or management of activity using information technology [1]. Implementation in the field of education is very useful in making decisions of every

lecture activity, it can also be implemented for policies in achieving educational goals [4]. Not only present events but also past events are useful for evaluation and input for future planning. The main functions of a management information system (MIS) are data retrieval, data management, information media, and data storage. As information processing in general, management information systems can also be understood as a series that includes design procedures, supervision, instructions and can be processed so that they are of value to the organization [5].

B. Final project

The final project can be defined as a series of activities designed to assist Bangka Belitung State Manufacturing Polytechnic students in applying the knowledge and skills acquired during the study period by developing creative and constructive ideas [6].

In addition, research is a student's scientific paper that is formulated as an effort to fulfil the requirements to complete the Education program [7].

It can be concluded that the final project is an activity to determine the competence of a student to the knowledge gained during lectures.

C. Previous Study

In the research, M.A.Dharmawan et al. [3] explained that the existence of an information system for submitting a thesis title could speed up the data processing for submitting a student thesis title and speed up the validation of approval for the proposed title. Another research conducted by D. Lestari, et al [8] explained that the Final Project Information System is useful to support the final project management activities so that the final project activities can run effectively and efficiently. A.Sari et al's research [9] explains that this information system can help final project activities in scheduling exams, information on test scores and information on students and examiners lecturers. As well as in the research of F.J. Wibawa [10] explaining the impact of scheduling information systems and financial management on scheduling activities for seminars and Final Project / Thesis sessions to make it easier and minimize the possibility of conflicting schedules.

Based on the research above, the writer discusses the design of the final project management information system with the addition of several processes to support all student final project management activities. In designing this management information system, it is also based on research from Teguh [11] the author will design a website-based final project management information system which is expected to assist the approval, monitoring and scheduling process of this final project. In the process of modelling or designing the system, the author will use structural modelling as well as using several components of the UML model in accordance with the explanations of the research [11], [12], [13].

III. SYSTEM DESIGN METHOD

A. System Development Model

The method used in making this final project management information system is the Waterfall model. The waterfall model is one of the models in the Software Development Live Cycle (SDLC) method, where this model is suitable to be implemented in the development of a new system with several stages, namely: Requirements analysis, Design, Development, Testing, Maintenance. SDLC is an operating step used by a systems analyst and programmer when creating an information system. In addition, SDLC is also a tool in project management that can be used to plan, make decisions and control the information system development process [13]. Regarding the stages of system development with the waterfall model, it can be seen in Fig.1:

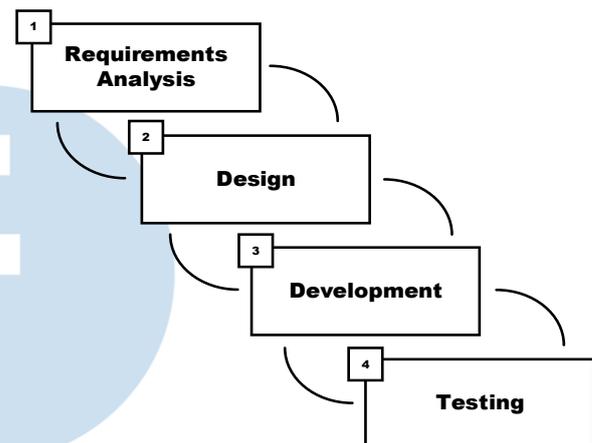


Fig. 1. Waterfall model

- **Requirements analysis**
Is the initial stage to identify problems and analyze system requirements needed in system development. This is a form of problem-solving so that it can be resolved properly and the expected data is in accordance with the results. At this stage, data collection in the form of literature was carried out using previous research articles and interviews with the final project commission.
- **Design**
At this stage, the design of the proposed system includes determining software specifications that are adapted to the system and compiling a final project management information system model framework in the form of programming algorithms.
- **Development**
The development stage is implementing the results of various design models that have been designed into a language that can be understood

by computers. At this stage, the results of the design are translated into machine language using the PHP programming language.

- Testing

At the testing stage, a test is carried out on the system that has been built, testing is carried out using one of the testing methods, namely the black box method with the Equivalence Partitions Technique. The Equivalence Partitions technique in this study is useful in testing each input data and then dividing the input into several modules based on their functionality. . Testing using the equivalence partitioning technique has stages that must be carried out such as: making test cases based on the existing functions in the tested module, creating a test model based on the functionality and modules tested, testing the previously created model.

B. Process Design

- Usecase

Use case diagram is a model that describes the behavior of a system to be built. Use cases are useful to describe the interactions that occur between one or more actors in the system created [14].

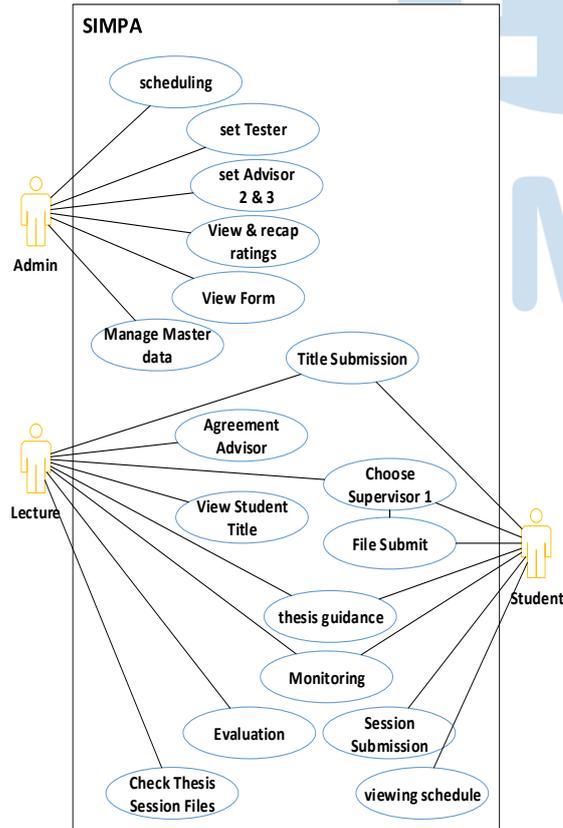


Fig. 2. Usecase

The use case depicted in Fig.2 can be seen that in general the application system built has 3 actors, namely admin, lecturer and students. The three actors have shared access to the system. Each actor can only access or perform according to the access grantedn.

- Activity Diagram

Activity diagrams useful for describing the workflow on the system or business processes contained in the software [14]. In the development of this research activity diagram is needed as a design of activities that occur in this system which can facilitate coding. The design of the Activity Diagram in this study can be seen in Fig.3.

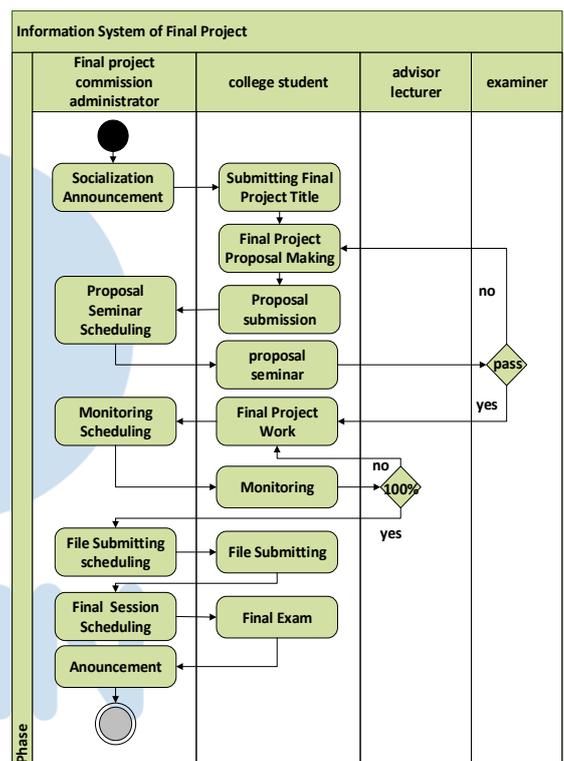


Fig. 3. Activity Diagram

Fig.3 shows specifically the actors involved in this system. The process flow of the system starts with the admin announcing the opening of the final project schedule, followed by students submitting titles and then preparing and submitting proposals. After all student proposals have been collected, the admin arranges the proposal seminar schedule along with the examiners. If after the seminar the student's proposal is approved, then proceed with the final project work, otherwise, the student is required to change the title and conduct the seminar again. When the monitoring process takes place, the student is said to be ready to take part in the final trial, then the student is required to collect supporting documents for the trial. After that, the admin will arrange the trial schedule and the examiners.

IV. RESULT AND DISCUSSION

Based on the results of the analysis of the system design that has been carried out, it produces a final project management information system. The results of the implementation of the system are divided into several user roles, namely admin, lecturer, student.

In the admin role there are several menus in the sidebar, namely:

- Home

On the home menu there is information related to the number of titles ready for seminars, completed seminars, titles ready for trial and finished sessions. On the admin home page there is also a list of lecturer recommendation titles.
- Master Data

The master data menu contains master data that can only be managed by the admin, such as departmental data, study programs, lecturer data, student data, room data, level data. Management on these pages such as adding new data, or making changes when desired.
- Schedule Setting

On the schedule setting page, the admin can schedule title settings, monitoring scheduling, scheduling early semester assessments, scheduling trial file collection.
- File Announcement

On the announcement menu, this file has 3 sub menus such as announcements, download files, and links. In the announcements sub menu, admins can make announcements related to the latest information. In addition, the download sub menu is useful for managing forms or files that can be downloaded by other users. As for the link sub menu, it is useful to provide a link to the user about the system connected to this system.
- Final Project Proposal

In the final project proposal menu, there is a process for scheduling seminars, viewing the seminar minutes form, and adding supervisors.
- Final project

The final project menu admin has access to scheduling trials and examiners, admins can also view proposed titles that have been completed in court.
- Rating Data

The assessment menu contains student data who have completed the initial semester assessment and guidance assessment.

- Initial Value Recap

The initial value recap menu contains student values that can be recapitulated
- Final Score Recap

The final grade recap menu contains student grades that can be recapitulated.
- Final Project History

The final project history menu contains the titles of students who have finished the trial and become references later. In the admin role, you can see detailed information on the proposal.

The student role is divided into 3 menus, namely:

- Final Project Proposal

The final project proposal menu contains the process of submitting a title, submitting a supervisor, and collecting proposals as well as viewing the session schedule that students can do.
- Final project

In the final project menu there is a process of filling out the guidance and monitoring form. In addition, there is a report collection page. In the final project menu, students can also see the schedule for their PA session.
- Final Project History

The final project history menu contains a history of the proposed final project titles that have been reviewed.

The lecturer role is divided into 5 menus

- Final Project Proposal

In the role of lecturer in the final project menu, there are 2 accesses as supervisors and examiners. As a supervising lecturer, there is a process for submitting the title of a lecturer recommendation, approving the list of student proposals and being able to see the schedule for the student guidance seminar. Meanwhile, the examiner lecturer can see a list of student proposals to be tested and can see the student's schedule.
- Final project

In the final project menu there is a process of filling out the guidance and monitoring form. In addition, there are lecturers who can also see the schedule for the session of the guidance student or those who will be tested.

- **Evaluation**
This assessment menu contains the process used by lecturers in conducting initial semester assessments and guidance assessments.
- **Final Project History**
The final project history menu contains a history of the proposed final project titles that have been reviewed.

After the development stage has been completed, it is necessary to test the information system. Tests carried out on this final project management information system use the black box testing method using the equivalence partitioning technique. By using this technique, testing is carried out based on the division of several modules.

From the test results, which are divided into 3 access testing roles for students, lecturers and admins and different modules for each role.

In the admin role there are 59 modules with details in TABLE I.

TABLE I. ADMIN MODULE DETAILS

Test Case	Module
Level Data	3
Department Data	3
Study Program Data	3
Religious Data	3
Lecturer Data	3
Student Data	3
Space Data	3
Scheduling	4
announcement	3
Files Download	3
URL Link	3
Seminar scheduling	5
Seminar Schedule	2
Set Advisor 2	2
Initial Assessment	2
Session Scheduling	5
Session Schedule	2
Completed List of Sessions	2
Guidance Assessment	2
Value Recap	2
Session History	1

In TABLE I. testing was carried out by the tester, the examiner is considered experienced because he is a

lecturer who is also a member of the final project commission and a head of a study program. From the results of the tests carried out by the examiner, a graph as shown in Fig.4 is obtained

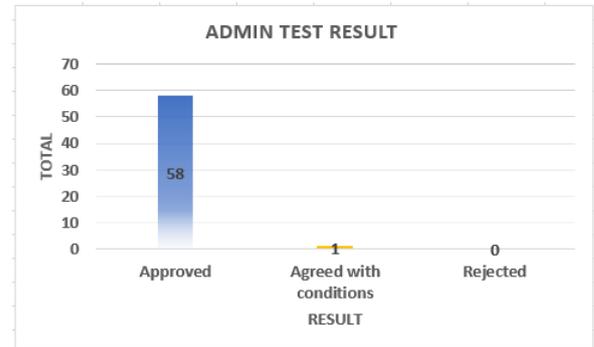


Fig. 4. Admin Test Result

From the results of the Fig.4 test, 58 approved results, 1 conditionally approved, and 0 rejected. In this test, 1 bug was found when the admin tried to set a trial schedule with a faster start time with the existing schedule, the bug was categorized not fatal so it can still be repaired.

In the Student role, there are 18 modules with details in TABLE II.

TABLE II. STUDENT MODULE DETAILS

Test Case	Module
Title Proposal	2
Proposal Information	3
Proposal Submission	2
Seminar Schedule	1
Guidance	2
Monitoring	2
Submit trial file	4
Session Submission	1
Session Schedule	1

In TABLE II. It is a breakdown of the number of student modules that will be tested by the examiner. The examiners here consist of 2 final year students who are working on a final project. From the test results obtained results in accordance with Fig.5

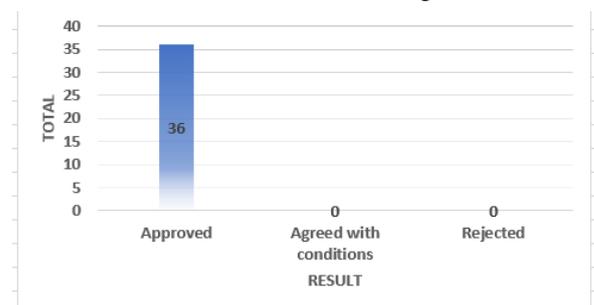


Fig. 5. Student Test Result

Based on the test results in Fig.5, it was found that all the modules tested were accepted by 2 student examiners in total.

In the Lecturer role there are 18 modules with details in TABLE III.

TABLE III. LECTURER MODULE DETAILS

Test Case	Module
Recommended Title	2
Title Approval	4
Seminar Schedule	2
Guidance Form	2
Monitoring Form	3
Session Schedule	2
Initial Assessment	2
Guidance Assessment	2
Session Assessment	2
Proposal Information	1
Event News Form	1
Session Assessment Form	2
Final Project History	1

In TABLE III. It is a breakdown of the number of lecturer modules that will be tested by the examiner. The examiners here consist of 2 lecturers who are experienced in guiding and testing students' final projects. From the test results obtained results in accordance with Fig.6

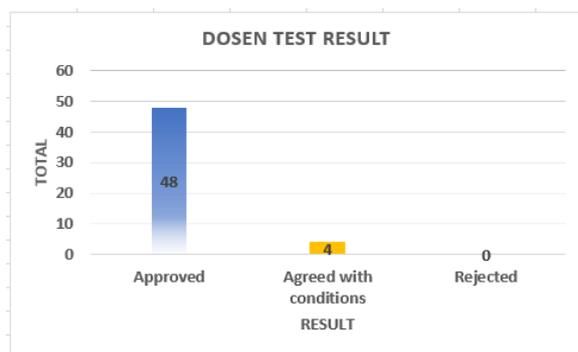


Fig. 6. Dosen Test Result

Based on the test results in Fig.6 there are 4 modules that have bugs. Where each tester gets the same 2 process bugs. The 2 modules are when printing the form and at the final trial assessment. But the bug is harmless so it can still be fixed.

Based on the results of the tests that have been carried out, the final project management information system is quite good in its functional process but still needs a little improvement so that it can run even better.

V. CONCLUSIONS AND SUGGESTIONS

Based on the results and discussion above, it can be concluded that the final project management information system was successfully developed, but during testing there were some bugs that were not dangerous and needed to be fixed as soon as possible so that they could be used in general in assisting the implementation of the final project.

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