Online thesis guidance management information system

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Abstract. The development of internet technology in education is still not maximized, especially in the process of thesis guidance between students and lecturers. Difficulties met the lecturers to help students during thesis guidance is the limited communication time and the compatibility of schedule between students and lecturer. To solve this problem, we designed an online thesis guidance management information system that helps students and lecturers to do thesis tutoring process anytime, anywhere. The system consists of a web-based admin app for usage management and an android-based app for students and lecturers.

1. Introduction
The development of technology is very fast and plays an important role to support human activities in order to time optimization. In the development of internet technology in the world of education nowadays is still not maximized, especially for the guidance process of student’s thesis to the lecturer. Thesis is a term used in Indonesia to illustrate a scientific paper in the form of exposure to the writings of undergraduate research that discusses a problem / phenomenon in a certain field of science by using applicable rules [1]. One of the problems is the limitation of communication due to limited meeting schedules. To overcome these problems, need to be designed a thesis guidance support system, which can solve the problems faced in the process of thesis guidance. The system will be built based on android and website.

There was several online management information system design research done previously in various fields such as finance [2], [3]. Some researchers have developed Information Management Systems in the health [4] - [6]. For the education field itself there have also been some research management information systems [7] - [9].

In contrast to previous research that had been done before, this application is expected to make students and supervisors may do the thesis guidance and mentoring easier, so as to minimize the final task duration that is caused by the bustle of students and lecturers. This application is also equipped with a Website that can be monitored by the Head of the Department, which final task guidance who have problems or the execution time of the final task is too long for the Head of the Department can evaluate the lecturer or student concerned.

2. Method

2.1 System requirement analysis
The system consists of 3 groups of users, i.e. Admin, Student, and Lecturer. Admin is the department manager who will organize and monitor the process of guidance. Student is a student user who will
perform thesis guidance. Lecturers are assigned to guide the thesis. The role of each user group can be seen in Use Case Diagram in figure 1.

![Use Case Diagram](image)

**Figure 1. Use Case Diagram**

Based on the Use Case Diagram in figure 1, it can be seen the interactivity between users on the system. Admin is assigned to register Student who register the submission of Thesis and also determine the mentor Lecturer for the student. Students will create a timeline of their activities in a system that can be monitored and discussed with lecturers from every stage of the activities in the timeline. Admins can also monitor the timeline to keep track of the student's thesis process. Lecturers will interact with students through a student-made timeline. Lecturers will set “Done” of each stage status in the timeline if the student has completed the current stage. Data Flow Diagram (DFD) of this system can be seen in figure 2.

![Data Flow Diagram](image)

**Figure 2. Data Flow Diagram**

2.2. Database design

Based on the needs of the existing analysis is done database design to store data transactions that exist on the system. After normalization, there are 6 tables used in this system. The tables are tbl_user, tbl_admin, tbl_lecture, tbl_student, tbl_timeline, and tbl_message. The relationships between tables displayed in the Entity Relationship Diagram (ERD) in figure 3.

After finished the database design, then continue to the MySQL database server design. MySQL was originally developed to handle large databases much faster than existing solutions and has been successfully applied in highly demanding production environments for several years. Connectivity, speed, and security make MySQL server very suitable for accessing databases on the Internet [10].
2.3. Interface design

Interface that built on this system consists of three types based on existing user groups i.e. admin, students, and lecturers. For admin interface, designed web-based applications using PHP programming language. PHP is a server-side script that can be inserted into html code [11]. For Students and Lecturers, it has been designed an android-based applications that can be used on android-based mobile devices. This is done so that the Students and Lecturers can interact anywhere with their mobile devices. The choice of mobile movements based on android because android mobile devices are popular mobile devices that are widely used because of many free apps provided [12], [13].

Admin application interface consists of Login interface, User Management interface, and also Management Guidance. The Login interface is used to validate the users who will be logged into the app. User Management is used to manage user data including students and lecturers. Management Guidance is used to determine the pair between students and mentor lecturers. Management guidance is also used to monitor the progress of the guidance process that occurs. All the interfaces are accessed through the web page by using the browser application.

For student application interface can be accessed through android application consisting of login interface, Timeline Management interface and Message interface. Same with the Admin app interface, the Login interface is used to validate the users who will be logged into the app. The Timeline Management interface is used by students to create timelines from the each work stages of the thesis. While the Message Management interface is used for student to interact with the lecturer.

Same with the student application interface, the lecturers’ application can also be accessed via android application and consists of the Login interface, Timeline Management interface and also Message interface. The difference in the lecturer Management Timeline interface’s status can only be changed if the current stage has been completed.

3. Results and Discussion

From the system designed, there are 3 applications that can be used by each user. For admin applications the process begins in the Login page on the website as shown in figure 4. Admin will login using the Employee Identity Number and password that have been registered before. To perform user management (lecturer and students), the admin will access the user management page shown in figure 5 and figure 6.

![Figure 3. ERD of system](image)

![Figure 4. Login Page](image)
Students and lecturers apps are accessed with an android application by doing Login at the application as shown in figure 7. For student login done by using Student’s Number, while lecturer use Lecturer’s Number and password that has been registered by admin. Furthermore, students will first make the stages of activity on the Timeline menu as shown in figure 8.
Lecturer will then interact with the students through the Message menu on the timeline as shown in figure 9 below. At each stage that has been completed by the student or the lecturer then the status of the stages will be changed into Done.

Figure 8. Management Timeline Interface

4. Conclusion

Online Thesis Guidance System is designed to assist the student’s thesis guidance process. The Design of Online Thesis Guidance System consists of a website for the Department to input both
students and lecturers’ data. And the android application design is used for students and lecturers to communicate by using smartphones. Based on application features that have been designed, Online Thesis Guidance Application could help the communication process between student and lecturer and make them being easier.

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