

The Development of Mobile-Based for Online Thesis Guidance

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Abstract—Nowadays, technology becomes more sophisticated. Especially in mobile technology, it already has various types and operating systems. One that is widely used by the community is Android. During the Covid-19 pandemic, students are difficult to conduct thesis guidance because the teaching and learning process in the university is not required to come. Sometimes, the schedules of did not match or the lecturers are out of town so they cannot do correctly. With mobile technology, thesis guidance can be used online, guidance and mobile. This application was designed for an online guidance support system. Moreover, it helps in solving problems encountered in the tutoring process.

Keywords: Guidance, Thesis, Smartphone

I. INTRODUCTION

The process of doing a thesis is the final stage for the students with two supervisors. In this thesis guidance, the activities are carried out with discussions, questions and answers, providing input and other activities. Informatics Engineering Study Program applies two stages in the preparation of the final project, namely outline or final project 1 (*Bahasa: Tugas Akhir (TA)*) (TA1) and thesis trial or final project 2 (TA2). These two stages go through an intensive guidance process with the two supervisors. The outline stage is to design and write a draft report which consists of Chapter 1 to Chapter 3. The outline stage ends when the supervisor states that the final project.

Thesis guidance still requires students to come to campus for meeting with the supervisor. The obstacle faced in the guidance process is the uncertain schedule of the lecturer, as well as students who sometimes cannot meet with the supervisor due to the lack of time match among them. For this reason, students and lecturers must jointly determine their own schedule for guidance. If there are lecturers who are on leave while there are still students who are writing thesis, the schedule will be made a new one or change the student supervisor. The final project or thesis is a scientific work compiled by a student at each university [15].

This Online guidance can be a paperless. Thus, it can save money on print-outs. Because the application to start a guidance without having to meet face to face also saves time for lecturers and students.

Due to the Covid-19 pandemic, the education field does not require students to learn to teach in a university environment for fear of the virus spreading to one another. Therefore, universities make regulations for teaching and learning using online methods. Because students are not required to

go to university, thesis guidance is hampered by this pandemic.

To overcome these problems, an online guidance support system was designed. Thus, it can recommend in solving the problems encountered in the current guidance process by applying information technology so that it can work like face-to-face guidance with an intermediary system.

II. THEORETICAL BASIS

A. Thesis Guidance

A guidance is one of the fields and programs of education, and this program is intended to help optimize student development [1]. Guidance is all programs or all activities and services in educational institutions that are directed at helping individuals so that they can develop and implement plans and make adjustments in all aspects of their daily lives. Guidance is a special service that is different from other fields of education [2].

B. Android

Android is an operating system for mobile phones and touch screen tablet computers based on Linux [3]. Android has also turned into a platform that is so fast in innovating. This is inseparable from the main developer behind it, namely Google. Google acquired Android, then developed a platform. The Android platform consists of an operating system based on Linux[4], a GUI (Graphic User Interface), a web browser and end-user applications that can be downloaded and also developers can freely work and create the best and open applications for use by various devices [5].

C. Java

Java was created by a team led by Patrick Naughton and James Gosling in a project from Sun Microsystems that has green code with the aim of producing a simple computer language that can run on simple devices without being tied to a particular architecture [6]. At first it was called oak, but because oak itself is the name of an existing computer programming language, then sun changed it to java.sun then launched a browser from java called hot java which was able to run apple. After that Java technology was adopted by Netscape which allows java programs to be run in the Netscape browser which was then followed by Internet

Explore. Because of its uniqueness and advantages, Java technology began to attract many vendors such as IBM, Symantec, Inprise, etc. Sun released the initial version of java officially at the beginning of the year [7]. 1996 which then continued to grow until JDK 1.1 appeared and then JDK 1.2 which began to be referred to as the java2 version because it contained many improvements and fixes. The main change is Swing which is a GUI (Graphical User Interface) technology that is able to produce portable windows. And in 1998-1999 J2EE technology was born (Java 2 Enterprise Edition) [8].

2.5 XML (Extensible Markup Language)

XML (Extensible Markup Language) is used to define documents with standard formats which can be read and supported by compatible xml applications [9]. The XML format language can be used with html pages, but XML itself is not a markup language. Instead, XML is a "metalanguage" that can be used to create markup languages for specific applications. For example, it can describe items that can be accessed when you need a web page. Basically, this XML can allow you to create databases of information without have a real database [10].

The main keyword of this XML is data (plural of datum) if it is processed it can provide information. XML also provides a standardized but modifiable way to describe the content of the document. By itself, XML can be used to describe any database view, but only in a standard way [11]

D. Firebase

Firebase is a Cloud Service Provider and Backend as a Service owned by Google [12]. Firebase is a solution offered by Google to make it easier to develop mobile and web applications and is a Realtime Database. Firebase has many SDKs that allow to integrate this service with Android, IOS, Javascript, C++ to Unity [13]. Using Firebase requires internet access to run the application. Due to data stored in online-based storage [14].

III. RESEARCH METHODS

Based on Rosa and Salahuddin (2018), it is explained that the waterfall SDLC model is often also called a linear sequential model or classical life cycle. The waterfall model provides a sequential or sequential software life flow approach starting from analysis, design, coding, testing, and support stages. The following is a diagram of the waterfall model and its explanation:

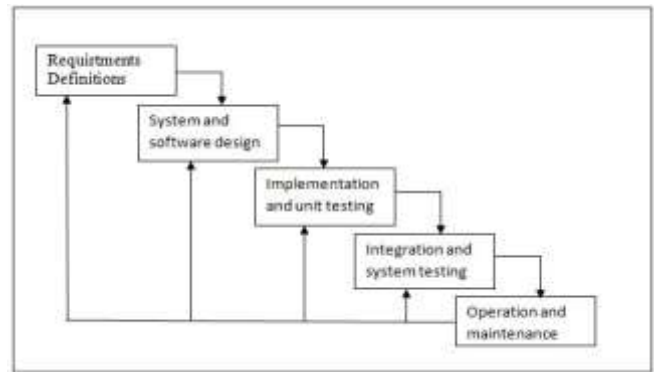


Fig. 3.1 Waterfall Model

1. Need Analysis

At this stage, an analysis of the existing development process and identification of information needs is carried out. Therefore, information related to system requirements is obtained. Data collection at this stage is carried out by interviewing or studying literature. This stage will produce a user requirement document or it can be said as data related to the wishes of the user in making the system. This document will be a reference for systems analysts to design or design the system.

2. Application Design

At this stage, the design is carried out using a system modeling device. This is done to model the application system to be built.

3. Creating Program Code

This stage is the process of translating the application design into a programming language. This is a transformation from a manual process to a computerized.

4. Program Testing

This stage is testing the system to measure the effectiveness and capability of the system being built. At the same time, improvements are made when deficiencies are found in the system. Therefore, the system is truly ready to be implemented.

5. Program Implementation and Maintenance

At this stage, the program installation is carried out to implement the final project application system. Over time, documentation and maintenance are also carried out because customer requests change from time to time.

IV. RESULTS AND DISCUSSION

4.1 Implementation

This stage is the process of implementing the system as a whole, both in terms of software and hardware. The stages

are carried out in accordance with the design process aimed at producing the system that the user needs. The programming language used is the Java programming language. The following is a presentation of the implementation.

4.1.1 Implementation of UI Design

The stages carry out the interface implementation process. It is adjusted at the design stage. The results of the implementation of the interface are as follows:

1. Homepage

The user first runs the guidance application. For this stage, the homepage explains the title with GoWisuda. It presents the function of this apps. Then an image like the one below will appear:



Fig. 4.1 Homepage

2. Login Page

In figure 4.2, this page displays a login form containing an email and password that can be used to enter the main menu of the application. This stage explains about the user activity such as user name and password. In this page, forgot password and sign-up entity is also enclosed.



Fig. 4.2 Login Page

3. Student's Sign-Up Page

In figure 4.3, this page is used to register a user account (if you don't have an account yet). There is an email and password that must be filled in to register. This page explains about user page as student's page. It has also login link if the student has created the account

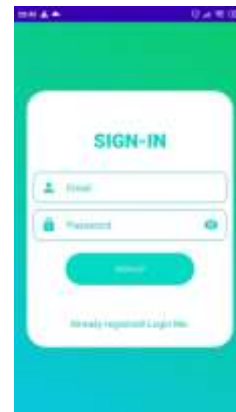


Fig. 4.3 Student's Sign-Up Page

4. Lecturer's Sign-Up Page

In figure 4.4, this page is used to register a user account (if you don't have an account yet). There is a name, email and password that must be filled in to register. Forgot password page has a function to user for manage their account.



Fig. 4.4 Lecturer's Sign-Up Page

5. Forgot Password Page

In figure 4.5, the user can reset the password if the user forgets. Only by entering the registered email after that the user email will get a message to immediately create a new password.



Fig. 4.5 Forgot Password Page

6. Creating Profile Page for Student

In figure 4.6, there is a student profile form. The user will create a profile containing a profile photo, name, thesis title and department and choose a supervisor.



Fig. 4.6 Creating Profile Page for Student

7. Resend Email Page

In figure 4.7, this page is to resend the verification email if the user doesn't get it after registration. How to get to this page with the user login first and there will be a resend email box after that the user will move to this page.



Fig. 4.7 Resend Email Page

8. Main Menu Page

In figure 4.8, there is a guidance box that will move to chat, the history box will display the history of student guidance.



Fig. 4.8 Main Menu Page

9. Navigation Menu Page

In figure 4.9, this page will appear if the user clicks on the three lines above on the main menu. Navigation menu contains buttons such as dashboard/ main menu, profile, logout, about application.



Fig. 4.9 Navigation Menu Page

10. Student's Profile Page

In figure 4.10, this page contains profile photos, names, titles and semesters that have been filled in when creating student profiles. Here also the name, title and semester can be changed according to the wishes of the user/student.



Fig. 4.10 Student's Profile Page

11. Lecturer's Profile Page

In figure 4.11, this page contains a profile photo, the name filled in when creating a profile. Here also the name can be changed according to the wishes of the user / lecturer.

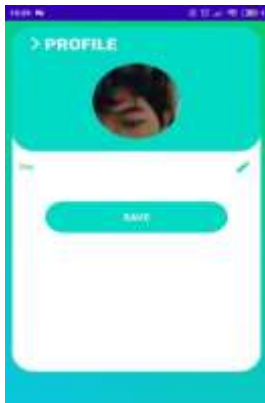


Fig. 4.11 Lecturer's Profile Page

12. Guided Students for Lecturer Page

in Figure 4.12, there are several guidance students who have been selected by the user (student) when creating a profile.



Fig. 4.12 Guided Students for Lecturer Page

13. Chat Page

In figure 4.13, users can interact/guidance with the supervisor who has been selected when creating a profile.



Fig. 4.13 Chat Page

14. History Menu Page

In figure 4.14, user can see the history of the tutorial. The history menu is a place that contains chats with supervisors according to the day, date and year.

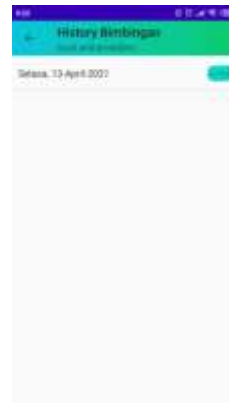


Fig. 4.14 History Menu Page

15. History Detail Page

In figure 4.15, the user can see the detailed history. This page will display the chats according to the tutoring date.



Fig. 4.15 History Detail Page

V. CONCLUSIONS AND SUGGESTIONS

Based on the analysis of the results and discussion of the research on the development of the mobile-based online thesis guidance application, it can be concluded that:

1. The android-based thesis guidance application has been successfully built and runs as expected.
2. Make it easier to carry out thesis guidance, especially during the current pandemic which requires people not to leave the house too much.
3. This android application is designed using the java language on android studio and uses firebase in database storage.
4. By using this application, users can easily send thesis scripts to supervisors without having to print them first.

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