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Mobile-Based Learning Application Concerning Religious Moderation at MTsN 2 Medan Using the Waterfall Method

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ABSTRACT

Religious moderation is a religious perspective by understanding and practicing religious teachings in a balanced or non-extreme way. Currently, learning about religious moderation is only carried out at school, which is explained by a teacher. Limited insight into religious moderation is one of the factors why students lack empathy towards religious communities. Therefore, a mobile-based learning application is needed that can be the right solution to bring learning about religious moderation into the hands of students, facilitating access and learning outside the classroom to create a young generation that understands differences, and understands that religious diversity is something that normal in society. The tools used to design this system are UML (Unified Modeling Language), which consists of Use Case Diagrams, Sequence Diagrams and Class Diagrams. The application system was built using Android Studio as the programming language and Firebase as the database. It is hoped that this application can be an effective means of increasing students' understanding of religious moderation so as to make a positive contribution in creating a young generation that respects differences, and becomes agents of peace in a society with diverse religions and beliefs.

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1. INTRODUCTION

The current development of Information Technology has greatly influenced various aspects of human life in carrying out daily activities, including in the field of education. Advances in information technology will increase productivity, making it possible to carry out various activities accurately and quickly [1]. The development of mobile-based applications has opened up new opportunities to present learning in a more interactive, accessible and effective manner [2]. In this context, the development of a mobile-based learning application regarding religious moderation at MTsN in the Ministry of Religion of Medan City is an innovative and relevant step to support quality religious education and maintain inter-religious harmony in a society with diverse beliefs.

MTsN 2 Medan is one of the madrasas in Indonesia which is located in North Sumatra Province,

Percut Sei Tuan District, Deli Serdang Regency. Referring to data from the Ministry of Religion of Medan City, in 2022 there were 1179 total students at MTsN 2 Medan City. Students as the younger generation have an important role in creating an inclusive environment, respecting differences, and being able to manage differences in views in religious diversity. Currently, learning about religious moderation is carried out only in schools where it is explained by a teacher. Limited insight into the importance of religious moderation is one of the factors why students lack empathy for religious communities. Therefore, a mobile-based learning application is needed that can be the right solution to bring learning about religious moderation into the hands of students, facilitating access and learning outside the classroom to create a younger generation who understand differences and understand that religious diversity is a normal thing in society [3].

Based on this, researchers will design a system that will help schools increase students' understanding of religious moderation. In developing this application, collaboration between MTsN, the Medan City Ministry of Religion, and the application development team became a strong foundation for achieving common goals. It also describes the steps taken in developing learning applications, including design approaches, learning content, interactive features, and evaluation methods. This application is designed to suit the needs of the MTsN curriculum and can be integrated into the existing learning process.

With this research, it is hoped that it can be an effective means of increasing students' understanding of religious moderation, inspiring them to internalize the values of tolerance, and strengthening the spirit to live in harmony with others, and this mobile-based learning application about religious moderation can make a positive contribution in creating a young generation who has an open outlook, respects differences, and becomes agents of peace in a society of diverse religions and beliefs [4].

2. RESEARCH METHODS

At this stage the system development method used is the System Development Life Cycle (SDLC) by applying the Waterfall method. The waterfall model is a simple, classic software development model with a linear system flow. The output from the previous stage is the input for the next stage. This means that each stage in this method is carried out sequentially and continuously [5].

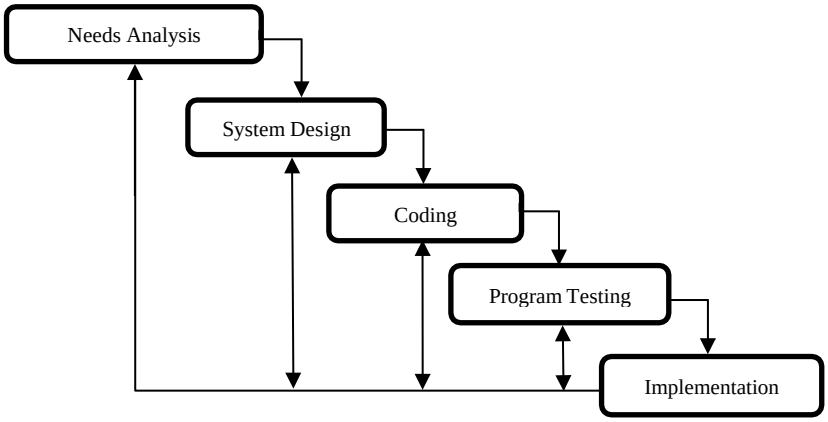

Figure 1. Waterfall Model

Here are the steps of the waterfall model, namely:

a. Needs Analysis

The initial stage in the research is that the author makes observations in the field to identify problems that occur, then looks for references that can provide solutions through the system that will be implemented [6].

b. System Design

The next stage is system design or system design stage, the aim of which is to create an overview and design that is needed in the application [7]. The tool used in creating this system design is UML (Unified Modeling Language).

c. Coding
Coding is the stage of translating a system design into commands that are understood by a computer using Android Studio as the programming language and Firebase as the database.

d. Program Testing
At this stage, the focus is on testing the software to ensure every element works according to the interface design. The aim of doing this is to minimize errors encountered during use [8].

e. Implementation
Program implementation is the final stage where developers implement applications that have been previously created and tested [9].

Then, there are several data collection techniques used by the author in this research, including:

a. Observation (direct observation)
The observation method requires researchers to make direct observations by observing the learning process regarding Islamic religious education at the research location, and trying to find any problems that occur during the learning process.

b. Interview
The interview or question and answer process was carried out directly by the author at a meeting between the school or teachers with the aim of exchanging information or input regarding the process of activities in the subject.

c. Literature review
The author carried out a literature study to obtain information and knowledge through reference sources from supporting theories related to the concept of scope that will be used in conducting research [10].

3. RESULTS AND ANALYSIS

3.1. Needs Analysis

At this stage, the author carries out analysis activities which consist of analyzing problems that occur in the current system being used as well as analyzing the needs of the new system to be built [6].

1) Problem Analysis
The analysis focuses on the teaching process system in religious moderation lessons at MTsn 2 Medan. Currently, learning about religious moderation is carried out only in schools as explained by a teacher. So, there are several problems that occur, namely limited insight into the importance of religious moderation making students less empathetic towards religious communities, monotonous learning methods make students less interested and short study time that cannot be reviewed causing students to often forget the lessons they have done.

2) Running System Analysis
The author is aware of the results of the ongoing system analysis and suggests a solution to solve this problem, namely building a mobile-based learning media application regarding religious moderation with the aim of facilitating access and learning outside the classroom to create a young generation who understands differences and has a broad understanding of religious moderation. quickly, easily and can be viewed at any time via an Android smartphone.

3.2. System Design

Unified Modeling Language (UML) is the tool used in designing the system in this research. Unified Modeling Language (UML) is a visual language used to describe models in the form of communication about a system by relying on diagrams and supporting text [11]. At this stage, the author creates a design model of the application that will be built using UML which consists of use cases, sequence diagrams, activity diagrams and class diagrams.

1) Use Case Diagram

The use case diagram below explains how users, namely admins and students, interact in accessing mobile-based applications regarding religious moderation.

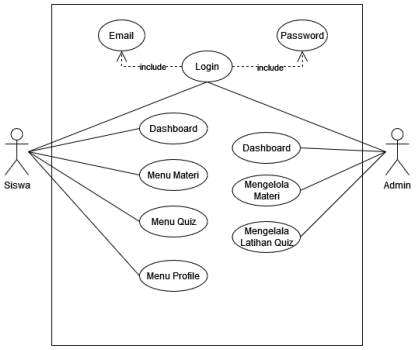

Figure 2. Use Case Diagram

2) Use Diagram

Sequence Diagrams describe interactions between objects based on time series. Sequence diagrams present a sequence of steps that must be followed to produce something [12].

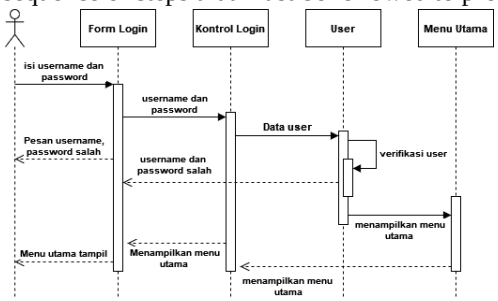

Figure 3. Sequence Diagram

3) Activity Diagram

Diagrams used to provide an overview of the activities or activities that can be carried out by the system when carrying out the functions carried out by the user [13]. The activity diagram can be seen in Figure 3.3.

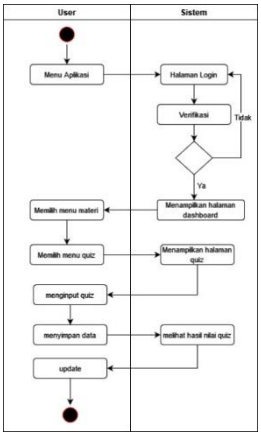

Figure 4. Activity Diagram

4) Class Diagram

A class diagram is a diagram that describes the interactions or relationships of each table or class that is still contained in the database to build a system [14].

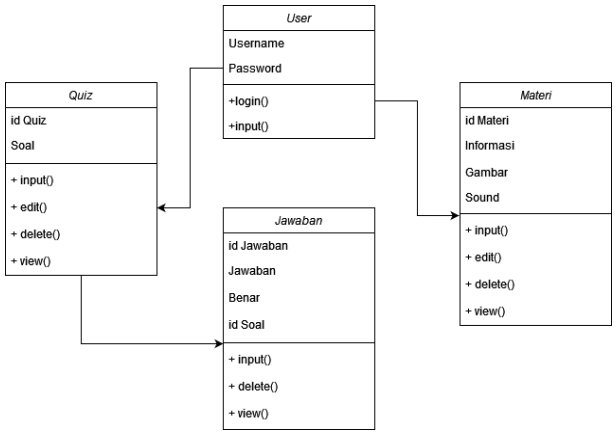

Figure 5. Class Diagram

3.3. Coding

At this stage, the author translates the design results that have been created into a language that the computer understands. In creating the program, the author used Android Studio with the Firebase database. Android Studio is the official Integrated Development Environment (IDE) for Android application development.

1) Display the login page

The main page in the religious moderation learning application is the login page, which is a page that displays the username and password login form which must be entered to be able to enter the application.

Figure 6. Login Page Display

2) Welcome Display

After successful login, the application will display a welcome greeting on the dashboard page. On this page the user can access the menu in the application.

Figure 7. Welcome Display

3) Learning Material Pages

Then, in the application there is a menu page for religious moderation learning materials. On this page, users can access several materials contained in the application. Material can only be edited or added by the admin or teacher.

Figure 8. Learning Material Page Display

4) Quiz Page Display

Another menu on the application is Quiz. On the quiz page, displays questions or quiz exercises that students can complete. After completing the quiz, the application will display the results of the questions that have been completed.

Figure 9. Quiz Page Display

5) Prodile Page View

The profile menu is a page that displays student personal data starting from name, nisn and grades obtained from quizzes that have been completed.

Figure 10. Quiz Page Display

3.4. Program Testing

System testing uses black box testing to ensure that all functions in the software are running as expected [15]. From the tests in the table below, it can be concluded that mobile-based applications regarding religious moderation are as desired.

Table 1. Blackbox Texting

Testing	Test Scenario	Test Result	Conclusion
Form Login	- Enter username and password. - Click Login	admin can enter the username and password then successfully access application	Valid
Dashboard Page	- Select Dashboard Menu	successfully displays the dashboard page	Valid

Lesson Material Page	- Select Material menu - Select one of the lesson materials want to view	successfully enter the material page and display the material want to access	Valid
Quiz Practice Page	- Select the quiz page - do the quiz practice - see quiz results	the application successfully displays the page, practice quiz questions and final quiz scores	Valid
Profile Page	- Select profile page - View account on profile page	successfully displays profile with student data and grades	Valid

4. CONCLUSION

Based on the previous description and discussion, several conclusions can be drawn, including the following:

a. Applications regarding mobile-based religious moderation can help schools, both teachers and students, in obtaining innovative teaching and learning activities outside the scope of the classroom.
b. The system development method used is Waterfall, providing a structured and directed framework in the information system development process.
c. The coding system uses the Android Studio programming language and Firebase as the database which provides convenience and flexibility in managing application data regarding mobile-based music moderation.
d. Data collection methods were carried out by means of interviews, observations and literature studies to provide an in-depth understanding of the religious moderation learning system at MTsN 2 Medan City.
e. Overall, this research shows that the mobile-based religious moderation learning media application at MTsN 2 Medan City has the potential to increase innovation and effectiveness of the teaching and learning process as well as providing information that is arranged in an interesting way in the application.

Based on the conclusions of the research results that have been described, suggestions can be given for further development of Mobile-Based Learning Media Applications Regarding Religious Moderation:

a. A continuous evaluation system is needed to avoid negative impacts that arise in the future.
b. Update the system, because as time goes by new features will be born that will pamper users even more.

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