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Design of Android-Based Prayer Learning Application

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Abstract− Prayer is one of the pillars of Islam that must be carried out by every Muslim. However, there are still many people, especially children and converts, who do not understand the correct way to pray. Digital technology, especially Android-based mobile devices, has great potential in helping the process of interactive religious learning. This study aims to design and develop an Android-based prayer learning application using the Research and Development (RnD) method. The development model used adapts the Borg and Gall model which is simplified into five stages: needs analysis, system design, implementation, testing, and maintenance. This application is equipped with prayer reading material features, prayer movements in the form of animation, audio guidance, and interactive quiz-based evaluation. Blackbox testing shows that all application functions run as expected without functional errors. The results of trials on a number of respondents also show an increase in understanding of prayer procedures. This application is considered effective as an independent learning media that supports Islamic religious education digitally. This study contributes to the development of Islamic educational media and can be used as a reference in developing similar applications for other religious education.

Keywords: Android Application, Prayer Learning, Interactive Media, Design, Blackbox Testing

1. INTRODUCTION

Prayer is the main worship in Islam which is a daily obligation for every Muslim. The quality of prayer implementation is closely related to the understanding of movements, readings, and their meanings (Anshari et al., 2020). However, in this digital era, many young generations do not understand the correct practice of prayer due to limited study time at school or mosque (Wahyuningsih et al., 2022).

The use of mobile technology, especially Android-based applications, is an adaptive and flexible educational solution to reach various age groups (Fauzi & Sari, 2020). With the rapid development of the era, technology has become something important for humans to follow (Ismail et al., 2019). Android has become the dominant platform in the development of learning media because of its easy access and development (Mulyadi et al., 2021). Studies show that digital learning media can increase learning motivation and understanding of concepts (Arifin & Nurdin, 2023). The movements in prayer have their own benefits that will make the body healthy (Sari et al., 2020).

Many Islamic education-based mobile applications have been developed, ranging from introducing the hijaiyah letters to daily prayers (Syamsudin et al., 2021). However, there are still few that present comprehensive, interactive, and multimedia-based prayer learning materials (Hakim et al., 2022). In fact, educational applications can be an effective independent learning medium, especially in the post-COVID-19 pandemic era which encourages the digitalization of education (Nurrahmah & Syarifudin, 2021).

Application-based learning methods allow for personalization of materials, visualization of prayer movements, and audio integration for readings (Rahman et al., 2020). This is very useful for early learners or converts (Hidayat et al., 2023). The application is also able to provide direct feedback through quizzes or evaluation features that encourage learning reinforcement (Sukardi et al., 2023).

Developing an Android-based prayer and dhikr application and successfully increasing user engagement significantly (Arifin & Nurdin, 2023). Meanwhile, the importance of a simple and attractive user interface (User Interface/User Experience) design in developing educational applications so that they can be used by all groups (Kamaludin et al., 2022).

Another challenge is ensuring that the content used in the application is in accordance with Islamic law and does not cause misunderstanding (Azhari et al., 2021). Therefore, validation of materials by religious experts and technical testing by users are essential.

With the support of the development of operating systems on mobile, especially Android, the problem of learning to pray can certainly be resolved. Interactive learning based on Android applications that can be done anytime and anywhere is an effective learning method. This study aims to design an Android-based prayer learning application that is interactive, user-friendly, and meets the principles of Islamic law.

2. RESEARCH METHODOLOGY

collecting the data needed in the study using several methods, namely as follows:

2.1 Data collection

The method used in collecting data is by means of literature study, then conducting interviews and also by conducting direct observations.

a. Literature Study

Collecting data from books, literature, modules, articles both from libraries and the internet. From all the data obtained, some information will be filtered which will then be used as a means to facilitate the creation of applications.

b. Interview

Collecting data by conducting oral interviews with parties related either directly or indirectly to the main problem in this study so that the completeness of the data becomes better.

c. Observation

Collecting data by conducting direct observations in places of learning that teach about prayer. This study also conducted observations of prayers performed in several mosques around the residence.

2.2 Application Development

The methods used in developing the application are as follows:

a. System Design Analysis

Conducting an analysis of the existing system by assessing its advantages and disadvantages.

b. Application Design Creation

Designing an application design with an attractive and easy-to-understand interface. Next, coding (translation into machine or computer language) of the application is carried out so that it can function properly.

c. Testing and Implementation

Testing the application that has been created so that analysis can be taken about the application. Furthermore, the application will be tried by the public to draw conclusions.

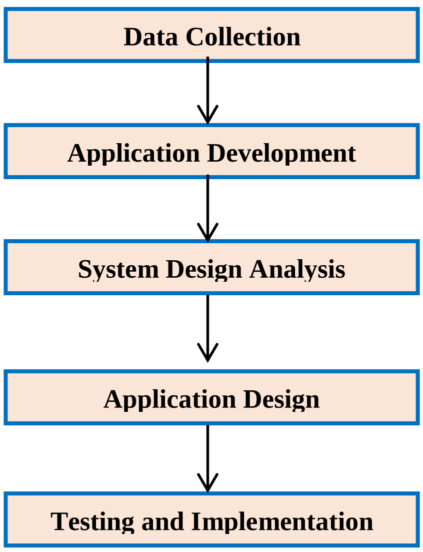

Figure 1. Research Flow

Figure 1 The following is a series of stages or steps carried out sequentially in a research process to achieve research objectives related to the design of a prayer learning application.

3. RESULTS AND DISCUSSION

System design is generally carried out with the aim of providing an overview of a new system or a proposed system. This design identifies the components of the information system being designed in detail.

3.1 Use Case Diagram

This diagram is used to understand the behavior of the system from the user's perspective, and helps identify the functions required by the system.

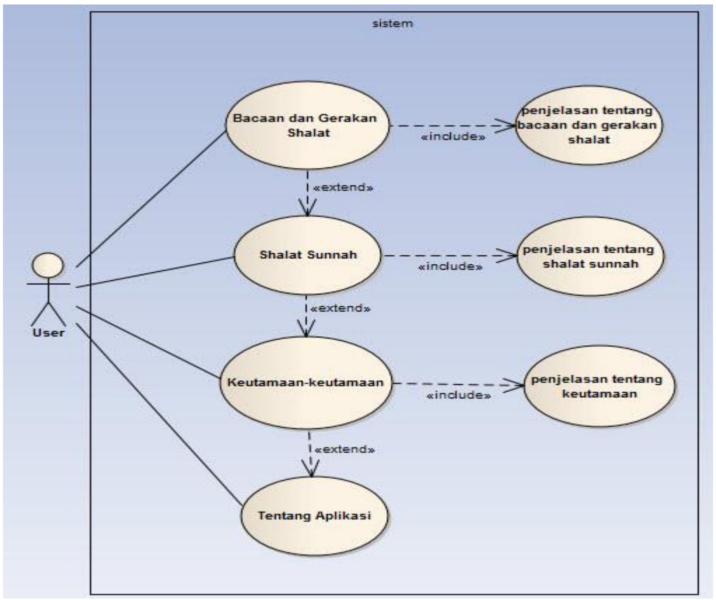

Figure 2. Use Case Diagram

Figure 2 This application contains several menu buttons, namely reading and movement buttons, sunnah prayers, advantages and a menu button about the application.

Table 1. Use Case Diagram

Actor	Use Case Name	Description
User	Reading and prayer movements	Users can select the reading and prayer movement menu. Users can select categories in the reading and movement menu (facing the Qibla, intention, takbir and so on). Users can select materials in the category.
User	Sunnah prayer	Users can select the sunnah prayer menu Users can select categories in the sunnah prayer menu (rawatib prayer, dhuha, witir and so on). Users can select materials in the category.
User	Priorities	Users can select the priority menu. Users can select categories in the priority menu. Users can select materials in the category.
User	About the app	Users can select the Select About menu.

3.2 Activity Diagram

Activity Diagrams make it easier to understand the steps of a workflow. These diagrams model the workflow steps from use cases so that it is clear who is responsible for each activity and the objects used in the workflow.

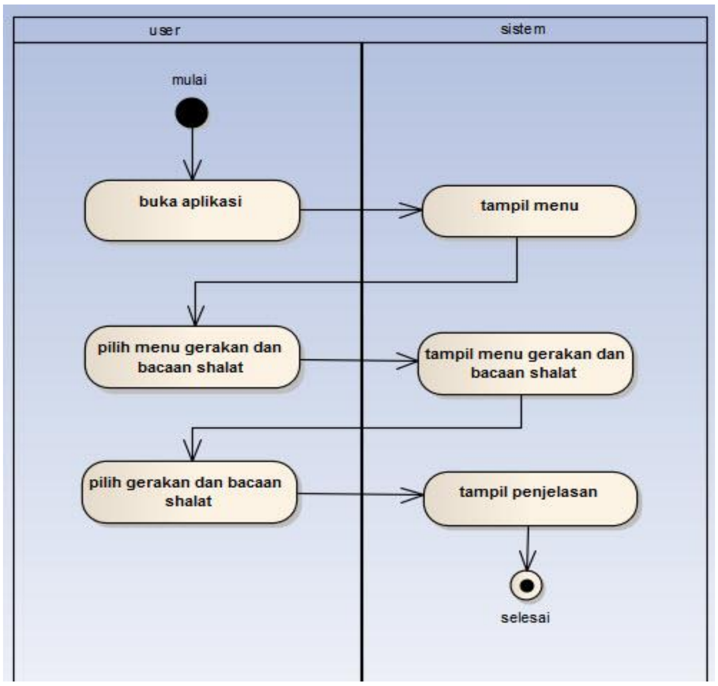

Figure 3. Activity Diagram of Prayer Reading and Movement

Figure 3 Describes how the user performs activities starting from the user opening the application, then the main menu will appear, then the user selects the reading and prayer movement menu, the reading and prayer movement categories appear, then select one of the categories, an explanation along with pictures of the category appears and it is finished.

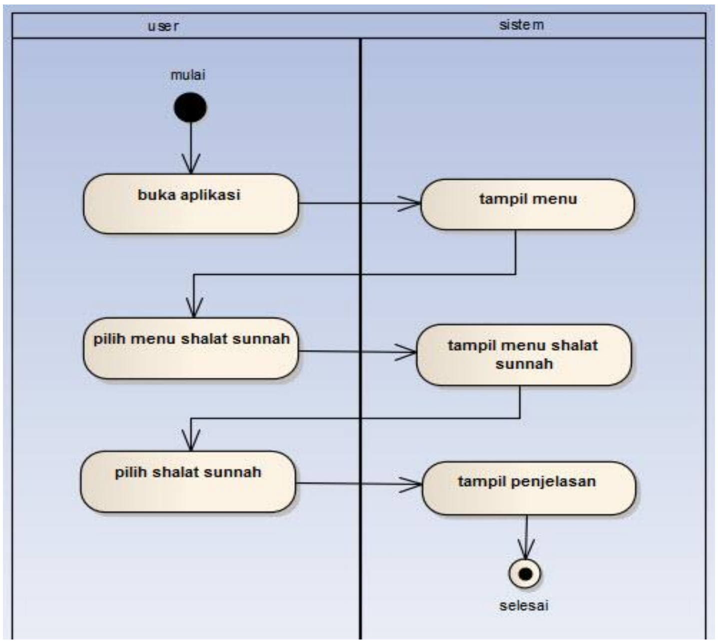

Figure 4. Sunnah Prayer Activity Diagram

Figure 4 Describes how the user performs activities starting from the user opening the application, then the main menu will appear, then the user selects the sunnah prayer menu, the sunnah prayer category appears, then selects one of the categories, an explanation along with pictures of the category appears and it is finished.

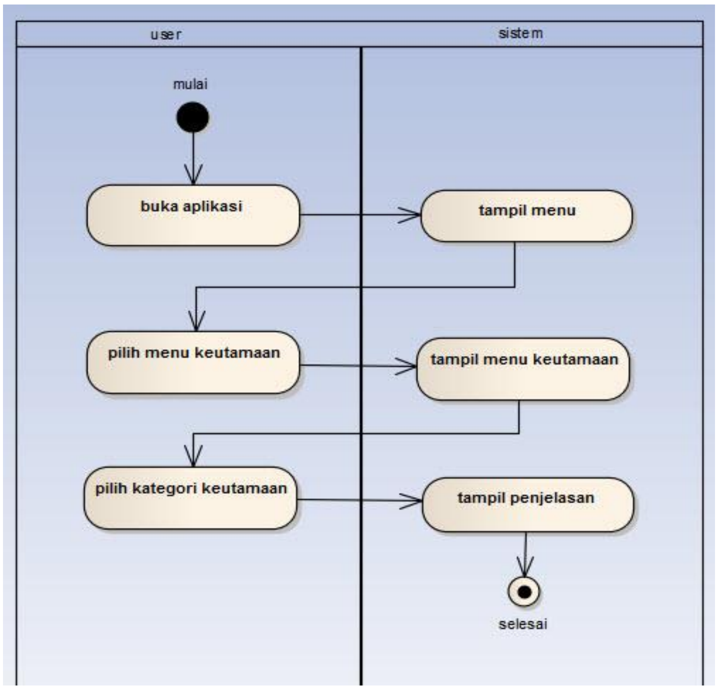

Figure 5. Priority Activity Diagram

Figure 5 Describes how users perform activities starting from when the user opens the application, then the main menu will appear, then the user selects the priority menu, the priority category appears, then selects one of the categories, an explanation of the category appears and finishes.

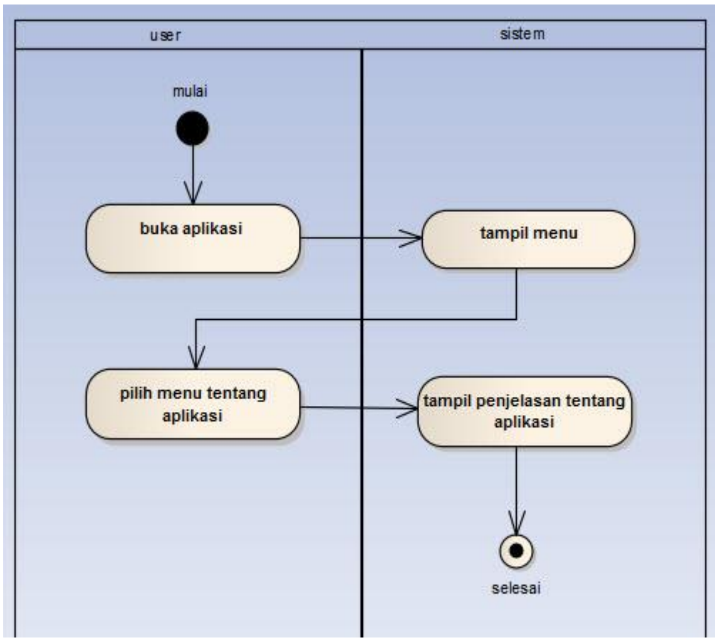

Figure 6. Activity Diagram About Applications

Figure 6 Describes how users perform activities starting from when users open the application, then the main menu will appear, then the user selects the menu about the application, an explanation of the application appears and is finished.

3.3 Sequence Diagram

Sequence Diagram describes the interaction between objects in and around the system (including users, displays, and so on) in the form of messages that are described against time. Sequence Diagram consists of a vertical dimension (time) and a horizontal dimension (related objects).

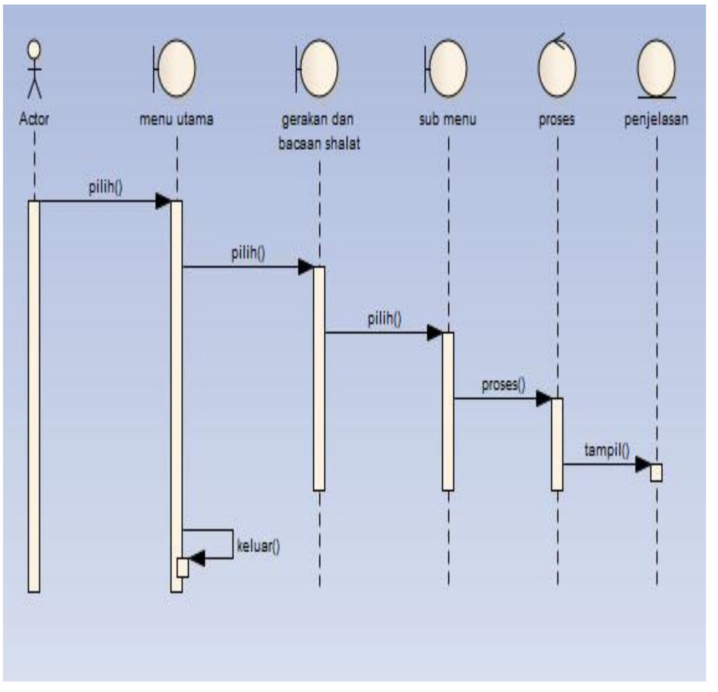

Figure 7. Sequence Diagram of Prayer Movement and Recitation

Figure 7 After selecting the main menu, the user can continue to the prayer movement and recitation menu or exit the application. If the user selects the prayer movement and recitation menu, a category selection will appear from the prayer movement and recitation menu. Then the user selects one of the categories and the system will process the category selection. Furthermore, the system will display the material accompanied by images and explanations.

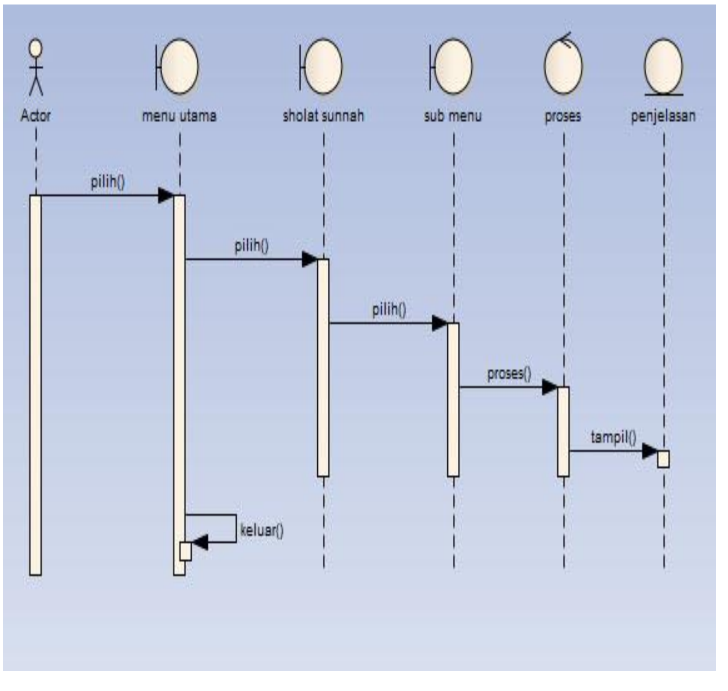

Figure 8. Sequence Diagram of Sunnah Prayer

Figure 8 After selecting the main menu, the user can continue to the sunnah prayer menu or exit the application. If the user selects the sunnah prayer menu, a category selection from the sunnah prayer menu will appear. Then the user selects one of the categories and the system will process the category selection. Furthermore, the system will display the material accompanied by images and explanations.

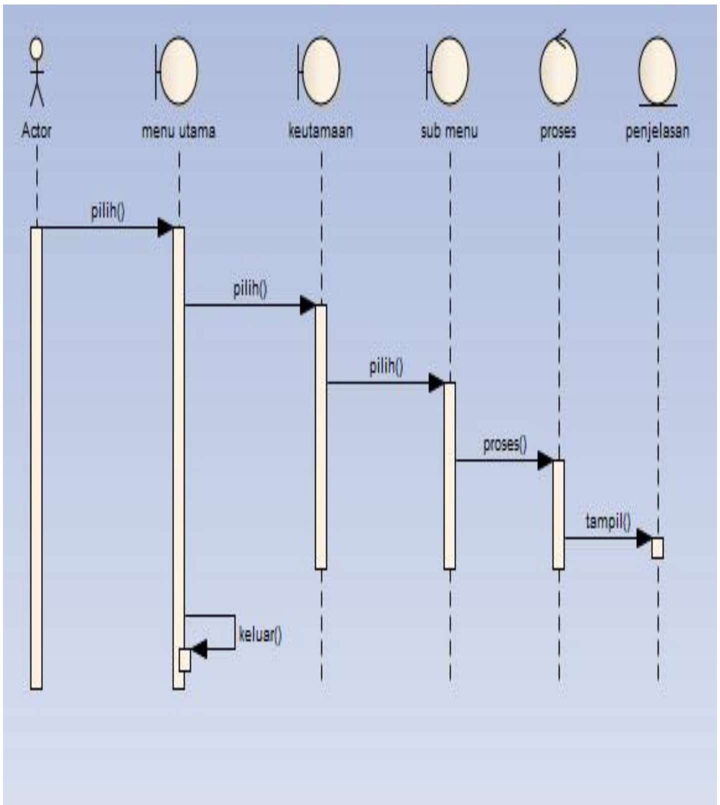

Figure 9. Sequence Diagram of Priorities

Figure 9 After selecting the main menu, the user can continue to the priority menu or exit the application. If the user selects the menu, a category selection from the priority menu will appear. Then the user selects one of the categories and the system will process the category selection. Furthermore, the system will display the material accompanied by images and explanations.

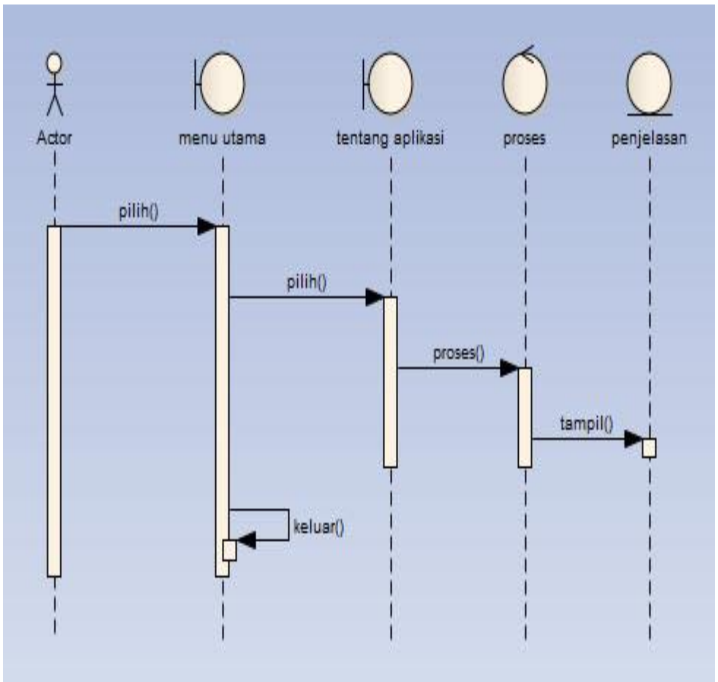

Figure 10. Sequence Diagram About Applications

Figure 10 After selecting the main menu, the user can continue to about the application or exit the application. If the user selects the about application menu, the system will process the menu selection. The system will then display an explanation of the application.

3.4 Class Diagram

Class Diagram is information about the number of classes in the creation of this application, in addition, class diagrams are widely used to explain the type of a system and its relationships which are divided into several classes, attributes that also have methods that will be run.

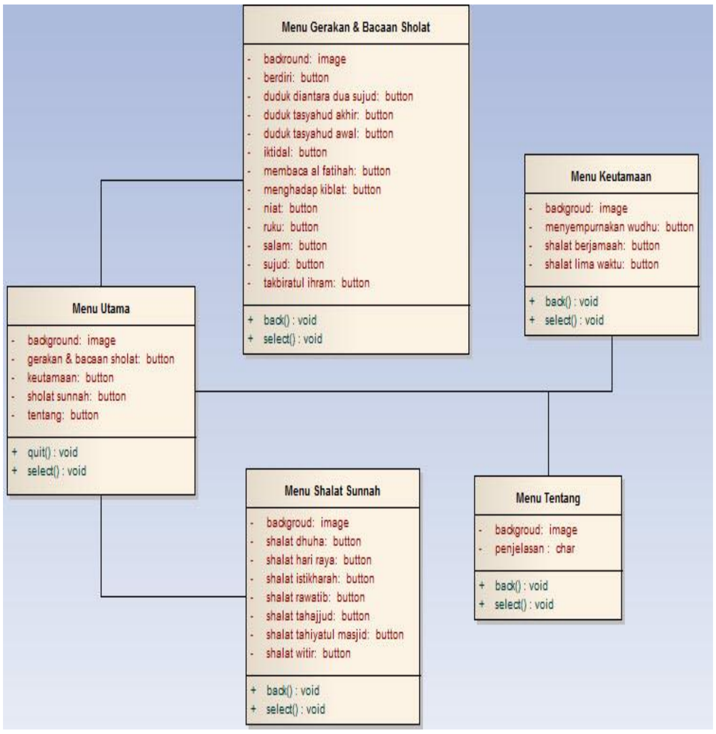

Figure 11. Class Diagram

Figure 11 Class Diagram shows how the classes in the system are connected to each other. This helps in understanding how the various components of the system interact with each other.

3.5 System Implementation

The hardware used to create the system application design using an Intel Core i5 Processor with Intel HD Graphics 1.00GHz Hard Disk 500GB RAM 4GB Monitor 14 Inch. While the software used to create the system uses the Windows 10 Operating System and Android Studio.

Figure 12. Application Logo Interface

Figure 12 Application logo with the application name Nature of the Prayer of the Prophet ﷺ.

Figure 13. Initial Application Display Interface

Figure 13 Initial display of the application when first opened. The initial display goes directly to the main menu. Users can immediately select which menu they want.

Figure 14. Movement and Prayer Reading Menu Interface

Figure 14 The display on this menu contains menu buttons for various movements in prayer. Users can choose which menu they want.

Figure 15. Sunnah Prayer Menu Interface

Figure 15 The display on this menu contains buttons for various sunnah prayers. Users can choose which menu they want.

Figure 16. Interface Menu Priorities

Figure 16 The display on this menu contains menu buttons regarding the priorities related to prayer. Users can select the desired menu.

Figure 17. Interface Menu About Application

Figure 17 The display on the menu about the application contains an explanation of the application and reference sources of the material explained.

3.6 Testing

Black box testing is carried out to test whether the system being developed is in accordance with what is stated in the functional specifications of the system. Black box is also used to test the specific functions of the designed software. The truth of the software being tested is only seen based on the output generated from the data or input conditions given for the existing function without looking at how the process is to obtain the output.

Table 2. Main Menu Testing Scenario

Test ID	Description	Expected results	Test results	Conclusion
1.	Open the application	enter the main menu	enter the main menu	valid
2.	Press the movement and prayer reading menu button	enter the movement and prayer reading menu	enter the movement and prayer reading menu	valid
3.	Press the sunnah prayer menu button	enter the sunnah prayer menu	enter the sunnah prayer menu	valid
4.	Press the about application button	enter the application explanation	enter the application explanation	valid
5.	Press the back button	return to the previous menu	return to the previous menu	valid

Table 3. Testing Scenario for Prayer Movement and Reading Menu

Test ID	Description	Expected results	Test results	Conclusion
1.	Press the button facing the Qibla	Show explanation about facing the Qibla	Show explanation about facing the Qibla	valid
2.	Press the button Intention	Show explanation about intention	Show explanation about intention	valid
3.	Press the button Standing	Show explanation about standing	Show explanation about standing	valid
4.	Press the button Takbiratul Ihram	Show explanation about takbiratul ihram	Show explanation about takbiratul ihram	valid
5.	Press the button reading Al-Fatihah	Show explanation about reading Al-Fatihah	Show explanation about reading Al-Fatihah	valid
6.	Press the button Rukuk	Show explanation about bowing	Show explanation about bowing	valid
7.	Press the button Iktidal	Show explanation about Iktidal	Show explanation about Iktidal	valid
8.	Press the button Sujud	Show explanation about prostration	Show explanation about prostration	valid
9.	Press the button Sitting between two prostrations	Show explanation about sitting between two prostrations	Show explanation about sitting between two prostrations	valid
10.	Press the button Sitting Tasyahud awal	Show explanation about sitting tasyahud awal	Show explanation about sitting tasyahud awal	valid
11.	Press the button Sitting Tasyahud Akhir	Show explanation about sitting tasyahud akhir	Show explanation about sitting tasyahud akhir	valid
12.	Press the button salam	Show explanation about Salam	Show explanation about Salam	valid
13.	Press the button Back	Back to previous menu	Back to previous menu	valid

Table 4. Sunnah Prayer Menu Testing Scenario

Test ID	Description	Expected results	Test results	Conclusion
1.	Pressing the button for the routine prayer	Show explanation about rawatib prayer	Show explanation about rawatib prayer	valid
2.	Pressing the button for the tahajjud prayer	Show explanation about tahajjud prayer	Show explanation about tahajjud prayer	valid
3.	Pressing the button for the witir prayer	Show explanation about witir prayer	Show explanation about witir prayer	valid
4.	Pressing the button for the dhuha prayer	Show explanation about dhuha prayer	Show explanation about dhuha prayer	valid
5.	Pressing the button for the tahiyatul masjid prayer	Show explanation about tahiyatul masjid prayer	Show explanation about tahiyatul masjid prayer	valid
6.	Pressing the button for the istikharah prayer	Show explanation about istikharah prayer	Show explanation about istikharah prayer	valid
7.	Pressing the button for the Eid prayer	Show explanation about eid prayer	Show explanation about eid prayer	valid
8.	Pressing the button for the eclipse prayer	Show explanation about eclipse prayer	Show explanation about eclipse prayer	valid
9.	Pressing the button for the istisqa prayer	Show explanation about istisqa prayer	Show explanation about istisqa prayer	valid
10.	Pressing the button for the funeral prayer	Show explanation about funeral prayer	Show explanation about funeral prayer	valid

Table 5. Priority Menu Testing Scenario

Test ID	Description	Expected results	Test results	Conclusion
1.	Pressing the button to perfect ablution	Show explanation of the virtue of perfecting ablution	Show explanation of the virtue of perfecting ablution	valid
2.	Pressing the button to pray five times a day	Show explanation of the virtue of performing the five daily prayers	Show explanation of the virtue of performing the five daily prayers	valid
3.	Pressing the button to pray on time	Show explanation of the virtue of performing prayers on time	Show explanation of the virtue of performing prayers on time	valid
4.	Pressing the button to pray in congregation	Show explanation of the virtue of performing congregational prayers	Show explanation of the virtue of performing congregational prayers	valid
5.	Pressing the button to perfect the row	Show explanation of the virtue of perfecting the rows	Show explanation of the virtue of perfecting the rows	valid

4. CONCLUSION

The Android-based prayer learning application developed in this study successfully meets the needs of users in understanding prayer procedures interactively. With a user-friendly design approach and sharia-compliant materials, this application can be an effective alternative media in learning Islam. The results of the blackbox test prove that all functions run well.

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