NUANSA INFORMATIKA ***p-ISSN :1858-3911* , *e-ISSN : 2614-5405***
Volume 19 Nomor 1, Januari 2025 https://journal.fkom.uniku.ac.id/ilkom

"Interactive Learning Daily Muslim Prayer Application for Children on Android at DTA Ghoniyyul Hikmah"

Hernawati[1] , Iezam Kamalul Basyar[2], Sugeng Supriyadi[3], Iswanto[4] , Suharjanto Utomo[5]
[1,2,3,4] Universitas Nurtanio Bandung
E-mail: [1]hernawatifiki@unnur.ac.id, [2]kamaliezam@gmail.com, [3]sugeng.supriyadi1978@unnur.ac.id, [4]isw789ng@gmail.com, [5]suharjanto.utomo@gmail.com

Abstract

Learning daily prayers is important for Muslim children. The learning process in DTA Ghonniyul Hikmah generally uses the talqin method. To make memorizing prayers easier and more engaging, interactive learning media is needed. This research developed a daily prayer application for Muslim children based on Android. The application was designed using UML and implemented with Canva, PowerPoint, Audacity, and Android Studio. The features in the daily prayer application include images, Arabic and Latin script, translations, and prayer audio. The size of the application after being built is 48 MB. The questionnaire results show a positive response from users. As many as 86.9% of users agreed that the application is easy to use, and 78.2% felt helped in memorizing prayers. Overall satisfaction reached 78.3%. The majority of respondents were satisfied with the appearance and features of the application, and felt helped in memorizing prayers. Researchers suggest for future development that this daily prayer application have additional features such as animated videos and add even more daily prayers.

Keywords*— application, daily prayer, muslim, child, android*

Submission: 2 December 2024 Accepted: 30 January 2025 Published: 31 January 2025

1. INTRODUCTION

1.1 Background of the Problem

Technological advancements have rapidly progressed, especially in communication devices such as Android-based smartphones. Android devices have been widely used by people worldwide, including children. While smartphones are generally used for communication, excessive use of smartphones can have negative impacts on children, such as addiction to online games, constant social media usage, exposure to inappropriate content, and more. These issues affect children's physical and mental development and may reduce their interest in learning.

On the other hand, many children use smartphones in beneficial ways, such as communicating, accessing educational information, and utilizing educational applications. One such application is the daily prayer app for Muslim children.

Daily prayers are simple yet essential supplications that play a significant role in daily activities and practices. Learning daily prayers is crucial for the everyday lives of Muslim children. Currently, at DTA (Diniyah Takmiliyah Awaliyah) schools, daily prayers are taught using the talqin or repetition method, where teachers guide students in recitation. To enhance memorization outside of teacher-led sessions, additional learning tools such as a daily prayer app for Muslim children are needed. These apps can be used anytime and anywhere on Android devices.

Based on interviews with teachers at DTA Ghoniyyul Hikmah Bandung, there is a need for a daily prayer application featuring a menu of prayer options, daily prayer content in Arabic text, Latin transliteration, and translations, along with animated illustrations and audio recitations. This allows children to learn daily prayers in a more interactive, accessible, and enjoyable way. Additionally, the app does not require an internet connection.

From the background above, the researcher aims to design and develop a daily prayer app for Muslim children based on Android.

1.2 Problem Formulation

Based on the background above, the following research problems can be formulated:

1. How to design and develop an Android-based daily prayer application for Muslim children?

p-ISSN :1858-3911* , *e-ISSN : 2614-5405
https://journal.fkom.uniku.ac.id/ilkom

2. Is the Android-based daily prayer application for Muslim children engaging and easy to understand for children?

1.3 Research Objectives

Based on the formulation of the problem above, the objectives of this study are as follows:

1. To design and develop an Android-based daily Muslim prayer application for children.
2. To create an Android-based daily Muslim prayer application that is engaging and easy for children to understand.

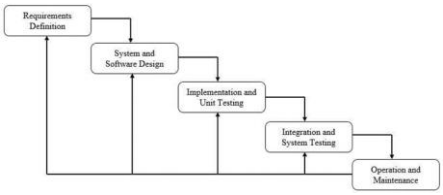
1.4 Scope of Problem

Based on the research objectives, the scope of this study is limited as follows:

1. The application is specifically designed for devices running Android version 5.0 and above.
2. The application only displays the 18 daily prayers taught at DTA Ghoniyyul Hikmah.
3. The content of the prayers is referenced from the book "100 Doa Harian Untuk Anak" by Nurul Ihsan, published by Cikal Aksara [1] and also from prayers commonly recited by students at DTA Ghoniyyul Hikmah.

2. RESEARCH METHODS

2.1 System Development Methods



Picture 3.1. Waterfall Method

In developing this application, the researcher applied the waterfall development model. There are five stages in the waterfall method, consisting of:

a. Requirement definition

This stage involves gathering all necessary requirements to analyze and identify the various needs that must be met by the program to be developed. The researcher conducted interviews with teachers at DTA Ghoniyyul Hikmah Bandung.

b. .System and software design

In the design phase, the researcher utilized the Unified Modeling Language (UML) method, including use case diagrams, activity diagrams, and class diagrams.

c. Implementation and unit testing

During implementation, the researcher used four software tools: Canva for creating the application's visual design as images, Microsoft PowerPoint to add text to the visual designs and save them as image files, Audacity to record and edit audio of prayers, and Android Studio to develop the application into an APK format using Java programming language.

This stage involves integrating program units and conducting comprehensive requirement testing using the black-box testing method. Additionally, user testing (beta testing) was conducted at DTA Masjid Ghoniyyul Hikmah Bandung by analyzing the results of questionnaires distributed to users.

d. Operation and maintenance

In the final stage, the completed software enters the operational phase. During this phase, the software is continuously monitored and maintained. Maintenance includes bug fixes, performance optimization, and adjustments to meet user needs.

3. RESULTS AND DISCUSSION

3.1 Needs Analysis

The following table outlines the functional requirements of the daily prayer application proposed as an alternative learning tool.:

Tabel 3.1 Kebutuhan Fungsional

p-ISSN :1858-3911 **,** ***e-ISSN : 2614-5405***
https://journal.fkom.uniku.ac.id/ilkom

No	Kebutuhan Fungsional
ADH-1	The system is able to provide a main menu view.
ADH-1.1	The system is able to provide a “start” option.
ADH-1.2	The system is able to provide a “about” option
ADH-1.3	The system is able to provide an option to exit the application.
ADH-1.3.1	The system is able to provide a confirmation pop-up message for exiting the application."
ADH 2	The system is able display the About application page.
ADH-3	The system provides an exit button on the 'About' page.
ADH-4	The system is able to display daily prayer selection page.
ADH-5	The system is able to display the selected daily prayer.
ADH-5.1	The system is able to display the Arabic, Latin and translation.
ADH-5.2	The system is able to display images corresponding to the selected daily prayer.
ADH-5.3	The system is able to displaying audio on/off options.
ADH-5.3.1	The system is able to play the selected daily prayer sound when activated.
ADH-5.3.2	The system is able to turn off the daily prayer sound.
ADH-5.4	The system provides an exit button from the daily prayer page.
ADH-6	The system provides a next button from the first page of daily prayer selection page.
ADH-7	The system provides previous button from the last page of daily prayer selection page.
ADH-8	The system provides exit button from the daily player selected page.

There are also non-functional requirements for the use of the developed application, which consist of hardware and software requirements.

a. The minimum hardware requirement is a smartphone with a quad-core processor or equivalent, 2 GB of RAM, and 8 GB of storage.
b. The required Android version is Android 5.0.

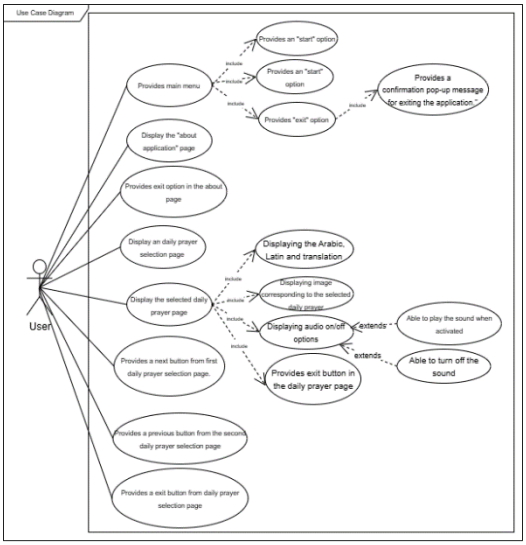
3.2 System Design

The system was designed using Unified Modeling Language (UML), incorporating use case diagrams, activity diagrams, and class diagrams. UML was employed to model the software system, thereby enhancing software development efficiency and quality. [2]

a. *Use case diagram*

A use case is a description of a system's functionality from the user's perspective. It works by describing the interactions between a system's users and the system itself through scenarios. A use case diagram is used to represent a high-level analysis of a system's requirements by visualizing its functionalities and the interactions among actors. [2]

The following is a design of the Use Case Diagram as depicted in the figure below.



Picture 3.1. *Use case diagram*

And below is the table describing the Use Case diagram:

Tabel 3.2. Description of the Use Case Diagram

p-ISSN :1858-3911 **,** ***e-ISSN : 2614-5405***
https://journal.fkom.uniku.ac.id/ilkom

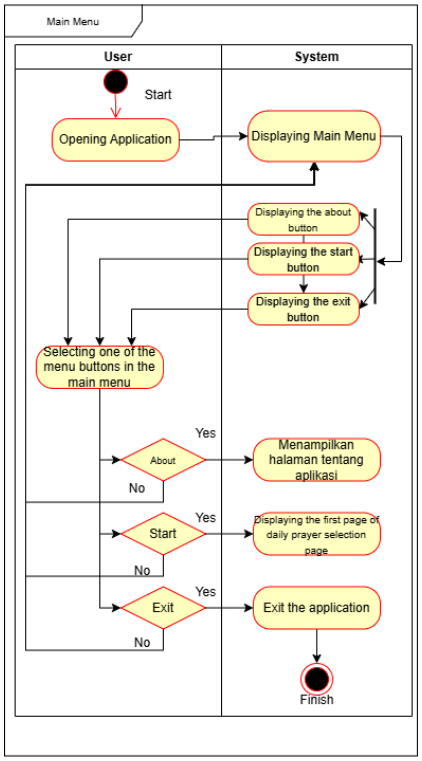
No.	Use case name	Requirements
ADH-1	Provide a main menu view.	The software must provide a main page interface.
ADH-1.1	Able to provide a “start” option.	The application must provide a start option on the main menu.
ADH-1.2	Able to provide a “about” option	The application must provide an "About the Application" option on the main menu.
ADH-1.3	Able to provide an option to exit the application.	The application must provide an exit option on the main menu.
ADH-1.3.1	Able to provide a confirmation pop-up message for exiting the application."	The application must display a pop-up confirmation message for exiting the application.
ADH-2	Able to display the About application page.	The application must display information about the Daily Prayer App.
ADH-3	Provides an exit button on the 'About' page.	The application must provide an exit option from the "About the Application" section.
ADH-4	Able to display daily prayer selection page.	The application must allow access to select one of the daily prayer buttons.
ADH-5	Able to display the selected daily prayer.	The application must display the interface according to the selected daily prayer.
ADH-5.1	Able to display the Arabic, Latin and translation.	The application must include Arabic text, Latin transcription, and translation.
ADH-5.2	Able to display images corresponding to the selected daily prayer.	The application must display an image related to the selected daily prayer.
ADH-5.3	Able to display audio on/off options.	The application must include an on/off audio option for the selected daily prayer.
ADH-5.3.1	Able to playing the selected daily prayer sound when activated.	The application must play the audio of the selected daily prayer when activated.
ADH-5.3.2	Able to turn off the daily prayer sound.	The application must stop the audio of the daily prayer when deactivated.
ADH-5.4	Able to provides the exit button from the daily prayer page.	The application must provide an exit button from the daily prayer page.
ADH-6	Able to provides the next button from the first page of daily prayer selection page.	The application must provide a "Next" button on the first page of the daily prayer selection page.
ADH-7	Able to provides the previous button from the last page of daily prayer selection page.	The application must provide a "Previous" button on the last page of the daily prayer selection page.
ADH-8	Able to provides the exit button from the daily player selection page.	The application must provide an exit button from the daily prayer selection page.

p-ISSN :1858-3911* , *e-ISSN : 2614-5405
https://journal.fkom.uniku.ac.id/ilkom

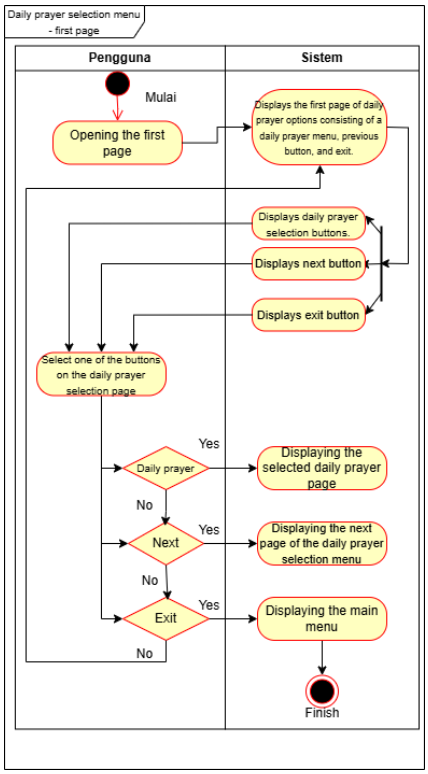
b. *Activity diagram*

An activity diagram is a part of UML that depicts the dynamic aspects of a system. The purpose of an activity diagram is to illustrate the flow of activities within a system, depict the sequence of activities from one to another, and represent parallelism, branching, and concurrent flows within the system.[2]

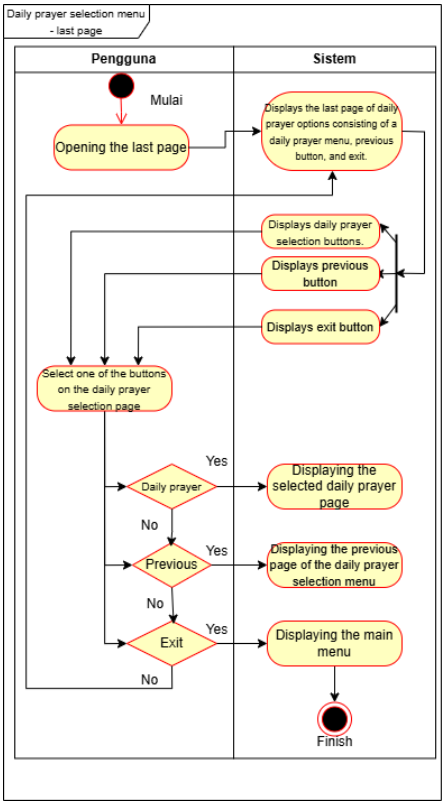
The following is a design of the Activity diagram in the image below.



Picture 3.2 Activity Diagram Main Menu

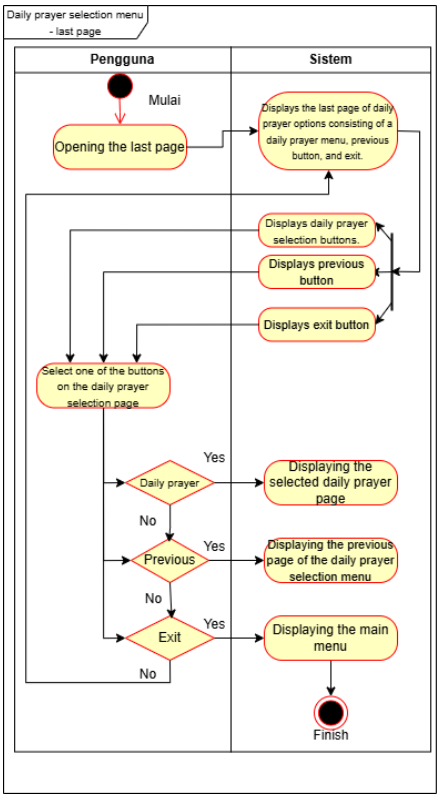


Picture 3.3 First page of daily prayer selection page activity diagram

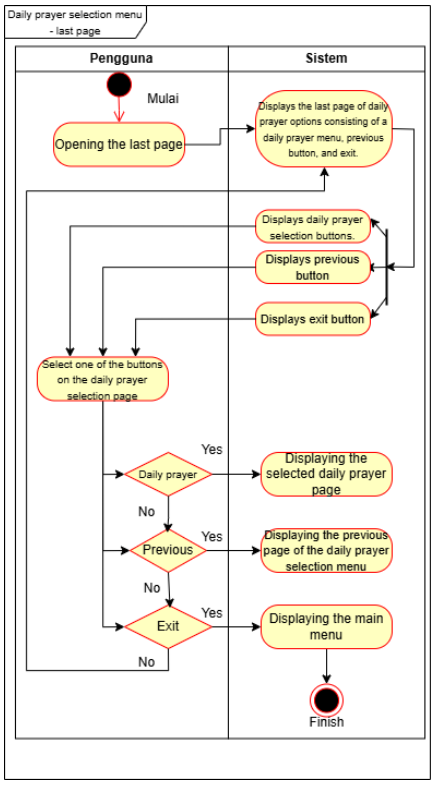


Picture 3.4 Last page of prayer selection page activity diagram.

p-ISSN :1858-3911 **,** ***e-ISSN : 2614-5405***
https://journal.fkom.uniku.ac.id/ilkom



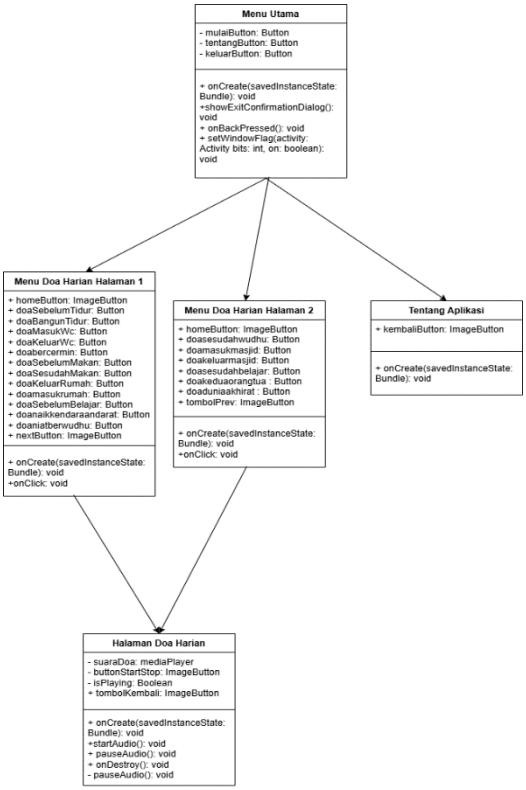
Picture 3.5. Daily prayer page activity diagram.



Picture 3.6. About page activity diagram

c. *Class diagram*

A class diagram is a type of structural diagram in UML that clearly depicts the structure and description of classes, attributes, methods, and the relationships between objects.[3] The following is a description of the Class Diagram for an Android-based daily prayer application. The Class Diagram of the Android-based daily prayer application illustrates the application's structure, including class names such as MainActivity for the main interface, MenuDoaHarianActivity1 for the first page of the daily prayer menu, MenuDoaHarian2Activity for the second page of the daily prayer menu, NamaDoaActivity for the selected daily prayer interface, and TentangAplikasiActivity for the about application interface. The following is a design of the Class Diagram as depicted in the figure below:



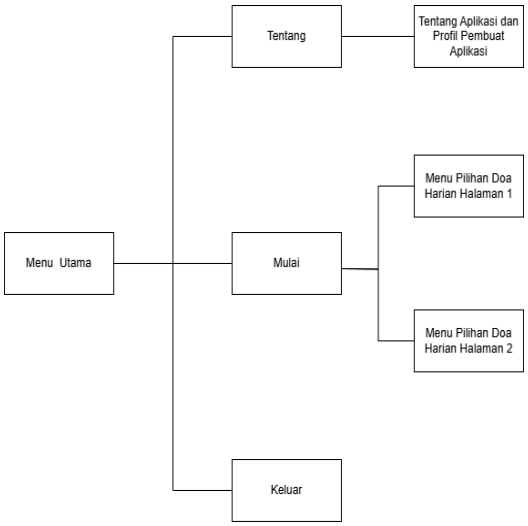
Picture 3.7 Class Diagram

3.3 Designing Page Structure and Interface

a. Page Structure Design

p-ISSN :1858-3911* , *e-ISSN : 2614-5405
https://journal.fkom.uniku.ac.id/ilkom

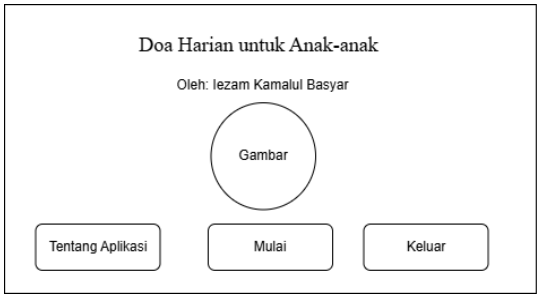
The following is the overall page structure in the image below:



Picture 3.8 All pages structure design

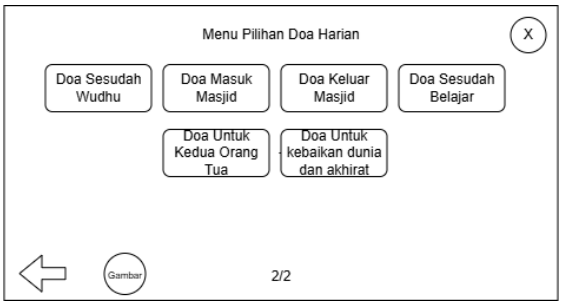
b. Page Interface Design

Interface design is done using UML software. The following is a page design for a children's daily prayer application consisting of a main menu, an application page, a daily prayer menu selection page, a daily prayer page, the daily prayer display menu is as follows:

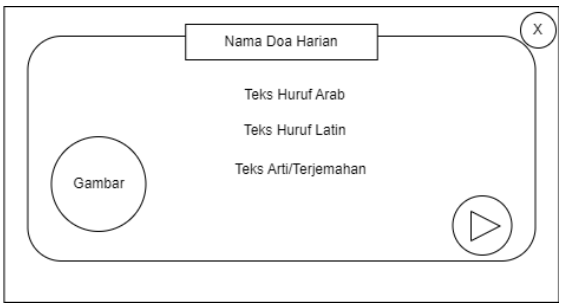


Picture 3.9 Main Menu Page Design

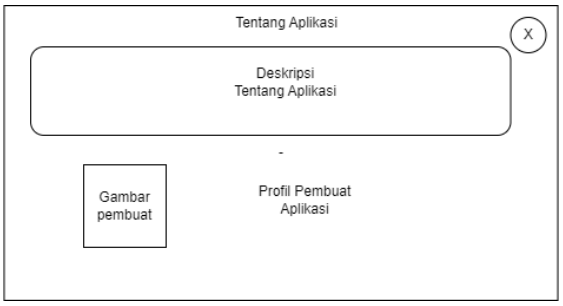
Picture 3.10. Design of First Page of Daily Prayer Selection Page



Picture 3.11 Design of Last Page of Daily Prayer Selection Page



Picture 3.12. Design of Daily Prayer Page



Picture 3.13. Design of About Page

3.4 Hasil Implementasi dan Pengujian

a. Interface Implementation Results

The main menu interface display is the menu that first appears when accessed by the user. The following is a display of the implementation results of the main menu depicted in the image below.

p-ISSN :1858-3911 **,** ***e-ISSN : 2614-5405***
https://journal.fkom.uniku.ac.id/ilkom

Picture 3.14. Main Menu

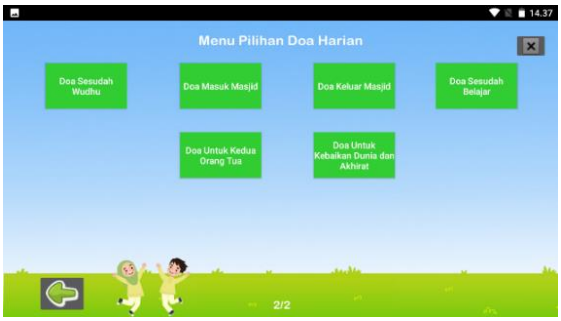
The About Application Menu interface page is depicted by the image below:

Picture 3.15. About page

The appearance of the Daily Prayer Selection Menu interface on page 1 is illustrated by the image below.:

Picture 3.16. Daily Prayer Selection Menu Page 1

The appearance of the Daily Prayer Selection Menu Page interface on page 2 or last page is illustrated by the image below.



Picture 3.17. Daily Prayer Selection Menu Page 2

The appearance of the daily prayer content page interface is illustrated by the image below.

Picture 3.18. Daily Prayer Page

The pop up message display confirming exiting the application is illustrated by the image below.

Picture 3.19. Pop up confirmation for exiting the Application

b. Functionality Testing Results

In this section, testing will be carried out to ensure that the system that has been built is in accordance with the existing requirements specifications as described. This testing uses the Black Box Testing method.

Table 3.3. Black Box Testing Table

p-ISSN :1858-3911* , *e-ISSN : 2614-5405
https://journal.fkom.uniku.ac.id/ilkom

No	Test Case	Scenario	Expected results	Test Results
ADH-1	Application Main Menu	Running Applications	Showing the main page	Succeed
ADH-1.1	Provides starting options	Press the start button on the main page	Displays the daily prayer selection menu on the first page.	Succeed
ADH-1.2	Provides options about	Select the about button	Displays the page about the application.	Succeed
ADH-1.3	Provides an exit option	Select the exit button	Displays a confirmation *pop up message* to exit the application.	Succeed
ADH-1.3.1	Provides a *pop up* confirmation message display to exit the application.	Select the yes button	Exit the application.	Succeed
ADH-1.3.2	Provides a confirmation *pop up display* to exit the application.	Select the No button	Return to main menu.	Succeed
ADH-2	Display the About application page.	Select the about application button on the main menu	Displays the page about the application.	Succeed
ADH-3	Provides an exit button on the 'About' page.	Select the exit button on about the application	Back to main menu	Succeed
ADH-4	Display daily prayer selection page.	Select the start button on the main menu	Displays selected daily prayers	Succeed
ADH-5	Display the selected daily prayer.	Displays the selected daily prayer after pressing the selected prayer button on the daily prayer selection menu.	Able to display the display according to the selected daily prayer.	Succeed
ADH-5.1	Display the Arabic, Latin and translation.	Displays Arabic, Latin and translation text on the selected daily prayer page.	Able to display Arabic, Latin and translation text on the selected daily prayer page.	Succeed
ADH-5.2	Display images corresponding to the selected daily prayer.	Displays images according to the daily prayer selected on the daily prayer page.	Able to display images according to the selected daily prayer on the selected daily prayer page.	Succeed
ADH- 5.3	Display an audio on/off options.	Displays audio on/off button	Displays audio on/off selection button	Succeed
ADH-5.3.1	Able to laying the selected daily prayer sound when activated.	Press the audio button	Produces the sound of the selected daily prayer when activated	Succeed
ADH-5.3.2	Able to turn off the daily prayer sound.	Press the audio button again while the sound is running	Able to turn off daily prayer sound.	Succeed
ADH-5.4	Able to provides the exit button from the daily prayer page.	Press the exit button	Return to the daily prayer selection menu.	Succeed
ADH-6	Able to provides the next button from the first page of daily prayer selection page.	Press the next button	Displaying the daily prayers selection page options on the next page	Succeed
ADH-7	Able to provides the previous button from the last page of daily prayer selection page.	Press the previous button	Displaying the daily prayer selection on the next page	Succeed
ADH-8	Able to provides the exit button from the daily player selection page.	Press the exit button	Displaying the main menu	Succeed

c. User Testing Results

User testing was conducted at the DTA Masjid Ghoniyyul Hikmah on Jl. Melong Asih Bandung, the application was tested and afterward users were given a questionnaire. The number of users given was 23 children. The results of the questionnaire are shown in the table below.

Table 3.3. Results of the user testing questionnaire

No.	Question	SS	S	N	TS	STS
1.	I like to use android based daily prayer application to learn to study daily prayer.	6 26.09%	15 65.22%	2 8.7%	0	0
2.	The overall appearance of the daily prayer application is very attractive.	7 30.4%	8 34.8%	8 34.8%	0	0
3.	The images of each prayer page of the daily prayer application are very attractive.	7 30.4%	12 52.2%	4 17.4%	0	0
4.	The prayer learning application makes it easier for me to understand Arabic, Latin and translation readings.	11 47.8%	9 39.1%	3 13%	0	0
5.	The voice of this daily prayer app is easy to understand and sounds very clear.	4 17.4%	12 52.2%	6 26.1%	1 4.3%	0
6.	I like the daily prayer app because it allows me to learn daily prayers anytime and anywhere.	10 43.5%	10 43.5%	3 13%	0	0
7.	I like the daily prayer app because it is very easy to use.	6 26.09%	14 60.9%	3 13%	0	0
8.	I like the daily prayer app because it makes it easier for me to memorize daily prayers.	8 34.8%	11 47.8%	4 17.4	0	0
9.	The daily prayer application can increase my enthusiasm in memorizing daily prayers.	5 21.7%	13 56.5%	5 21.7%	0	0
10	I am satisfied with the daily prayer app overall.	8 34.8%	10 43.5%	5 21.7%	0	0

Information:

1. SS = Strongly Agree
2. S = Agree
3. N = Neutral
4. TS = Disagree
5. STS = Strongly Disagree

3. CONCLUSIONS

The following are some conclusions from the thesis on the design and construction of a Muslim daily prayer application for children based on Android as follows:

1. This daily prayer application for children has been designed using UML and implemented with Canva, Powerpoint, Audacity and Android Studio software. This application has 28

p-ISSN :1858-3911* , *e-ISSN : 2614-5405
https://journal.fkom.uniku.ac.id/ilkom

types of daily prayers as well as features in the form of images, Arabic Latin readings and translations and daily prayer sound features. This application has a size of 48 MB if built into an .apk file.

2. Based on the results of the questionnaire, the majority of users felt that the Android-based Muslim daily prayer application for children was interesting and easy to understand. As many as 91.2% of respondents stated that they liked this application to learn prayers, 65.2% stated that the appearance of the application was very interesting, 82.6% agreed that the images in the daily prayer application were interesting, and 86.9% of respondents stated that the Arabic, Latin texts, and translations were easy to understand. As many as 69.6% agreed that the application's sound was clear, and 87% agreed that this application made it easy to learn prayers at any time. In addition, 86.9% considered the application easy to use, 82.6% stated that the application helped memorize prayers, 78.2% considered the daily prayer application to be able to increase enthusiasm in memorizing daily prayers and 78.3% were satisfied with the application overall.

4. SUGGESTIONS

The following are suggestions from researchers based on testing the thesis on the Design and Construction of a Daily Prayer Application for Muslim Children Based on Android as follows:

1. A Muslim daily prayer application for children based on Android is a learning tool for children to learn about daily prayers. Therefore, in further research, it is expected to add animation features, add more prayers to make children interested in learning daily prayers.
2. This Android-based daily prayer application for Muslim children is expected to run on iOS-based devices.

REFERENCES

[1] N. Ihsan, *100 Doa Harian Untuk Anak*. Jakarta: Cikal Aksara, 2018.

[2] Munawar, *Analisis Perancangan Sistem Berorientasi Objek dengan UML (Unified Modelling Language)*, 1st ed. Bandung: Penerbit Informatika, 2018.

[3] R. Setiawan, "Memahami Class Diagram Lebih Baik - Dicoding Blog," Dicoding. [Online]. Available: https://www.dicoding.com/blog/memahami-class-diagram-lebih-baik/

[4] N. Firly, *Create Your Own Android Application*. Jakarta: PT. Elex Media Komputindo, 2018.

[5] "Doa harian dan Pengertian doa," Himpunan doa | Zikir dari Al-Quran dan Sunnah. Accessed: Dec. 09, 2023. [Online]. Available: https://doaharian.blogspot.com/

[6] N. Safaat, *ANDROID: Pemprograman Aplikasi Mobile Smartphone dan Tablet PC berbasis Android*, Edisi Revi. Bandung: Penerbit Informatika, 2014.

[7] A. Ramadhani, *Jurus Rahasia Pintar Menguasai Android Untuk Pemula*. Depok: KIR Direction, 2013.

[8] A. Lawrence, "Apa itu Canva? Pengertian, Fitur, dan Cara Menggunakannya (Lengkap)," Makinrajin. Accessed: Jun. 23, 2024. [Online]. Available: https://makinrajin.com/blog/canva-adalah/

[9] S. El-Fikri, *Doa Harian Muslim dan Hikmahnya Berdasarkan Al-Quran dan Hadits*, 1st ed. Jakarta: AMP Press, 2014.

[10] R. J. Hosting, "Apa itu Java? Ini Fungsi, Cara Kerja & Contoh," Jagoan Hosting. Accessed: Dec. 12, 2023. [Online]. Available: https://www.jagoanhosting.com/blog/java-adalah/

[11] B. Santoso and O. Pebriyani, "Aplikasi Pembelajaran Do'a Harian untuk Anak Usia Dini Berbasis Android," *J. Inform. Univ. Pamulang*, vol. 2, no. 4, p. 220, 2017, doi: 10.32493/informatika.v2i4.1517.

[12] A. Khakim, "Membangun Aplikasi Pembelajaran Doa Harian Untuk Anak Muslim Berbasis Android," no. 25.

[13] T. R. S. A. Negara and F. Yasin, "Game Edukasi Menghafal Doa-Doa Harian sebagai Media Belajar untuk Anak Usia Dini berbasis Android," *Emit. J. Tek. Elektro*, vol. 18, no. 2, pp. 42–48, 2018, doi: 10.23917/emitor.v18i2.6347.

[14] D. Septiarini, "Pembuatan Game Edukasi Mengenai Materi Hafalan Doa

p-ISSN :1858-3911 **,** ***e-ISSN : 2614-5405***
https://journal.fkom.uniku.ac.id/ilkom

Harian Sebagai Media Pembelajaran Berbasis Android," *JoMMiT J. Multi Media dan IT*, vol. 4, no. 1, 2020.

[15] A. Afriansyah, "APLIKASI TUNTUNAN DO'A-DO'A HARIAN UMAT MUSLIM BERBASIS ANDROID," *J. Teknol. Inf. Dan Komput.*, vol. 9, pp. 18–25, 2018.

[16] Sri Sutjiningtyas, S. Utomo, H. Hernawati, and R. Kurniawan, "Perancangan dan Pembuatan Visual Novel Sejarah L.M.U. Nurtanio Berbasis Android", Nuansa Informatika, vol. 18, no. 2, pp. 55–66, Jul. 2024.