



Hajj Regsitratio Information Systems Based on Mobile Using Quota Base Method

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ABSTRACT

The Office of the Ministry of Religious Affairs of Medan City is a state ministry that provides hajj departure services for prospective pilgrims. In conducting the registration process for Hajj departure, the Office of the Ministry of Religious Affairs of Medan City has not provided a system, so the registration process is still carried out conventionally. Prospective pilgrims must come directly to register for Hajj by filling out the registration form and bringing the requirements needed for registration. By doing this, there are still problems that occur, especially in terms of time, cost, and energy spent. Therefore, the purpose of this research is to build a mobile-based information system using a quota-based method to facilitate Hajj registration. The system development method used is the Rapid Application Development (RAD) method, which consists of planning, design, and implementation workshops. While the tools used by the author in creating a visual information system design are UML (Unified Modeling Language), this mobile-based information system was built using the Kodular framework and the Airtable database. With this information system, it is expected to help prospective pilgrims register for Hajj easily and quickly through Android mobile.

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1. INTRODUCTION

The very rapid development of information technology makes everything easy. Especially since the existence of the internet network, communication and dissemination of information has become faster and easier. In the world of education, the use of information technology is something that must be implemented, one of which is the use of computer technology, apart from being a learning medium, it can also be used as a data processing tool and information storage medium [1].

Android is one of the smart telephone devices or smartphones that is developing very rapidly, the use of smartphones in Indonesia is increasing from year to year, but there are still many people who use smartphones not optimally. Most people only use smartphones for social media or entertainment [2].

Kantor Kementerian Agama Kota Medan is one of the Ministry offices in Medan City. One of the administrative services carried out by the Kantor Kementerian Agama Kota Medan is processing data on Hajj departures. Starting from the registration process to the congregation's departure to the holy land. In carrying out the Hajj registration process, the Medan City Ministry of Religion office has not provided a system or application. The Hajj registration process by prospective pilgrims is still carried out conventionally, prospective pilgrims must register directly and bring the requirements that must be met in

registering. By using this method, there are still problems that occur, such as time, energy and costs incurred in registering, prospective pilgrims do not receive enough information regarding the requirements for Hajj registration, estimated departures and the number of quotas that have registered.

One solution that can be done to resolve this problem is to provide a system or application that can be used to carry out the Hajj registration process. Apart from that, implementing the quota-based method is the right method to use to provide information regarding the availability and number of quotas that have registered so that Hajj registration can be more effective and on target.

Similar research was carried out by Rizki Adhi Saputra and Ucu Darusalam in 2022 discussing an information system for monitoring the distribution of cattle aid, where this application is devoted to covering monitoring of all aspects related to distribution. The monitoring information system for the distribution of cattle aid can support government programs according to the specified targets. Because this government program is aid in nature, this application will be able to accumulate distribution results so that they can be distributed evenly according to the data on potential recipients that have been set and algorithms that help in running it. This application is a first fit algorithm that can assist in inputting and determining memory locations that can be used to accommodate and minimize fragmentation. The monitoring information system for the distribution of cattle aid helps users check data efficiently in terms of timeliness and data accuracy [3].

2. RESEARCH METHODS

2.1. System Development Methods

Rapid Application Development is the information system development approach used in this research (RAD). The three key phases of this methodology are planning, RAD design, and implementation. Speed in the development process is also prioritized with the RAD development method. where the development process can be completed quickly [4].



Figure 1. RAD Models

The stages contained in RAD can be explained as follows [5]:

1. Planning, at this stage the author carries out problem analysis and identification of the needs of the information system to be built
2. RAD Design Workshop, at this point, the author explains about creating an information system. Modeling the information system to be created is the current process step. UML (Unified Modeling Language), which includes Use Case Diagrams, Sequence Diagrams, Activity Diagrams, and Class Diagrams, is used to model this system. and the single exponential smoothing method.
3. Implementation, which involves converting all previously completed work into an information system that utilizes the Kodular framework and Airtable database.

2.2. Method Of Collecting Data

The method used by the author to collect the data needed in this research activity is as follows:

1. Observation

The author made direct observations at the research site, namely the Kantor Kementerian Agama Kota Medan, to observe the problems that occurred during the registration process for prospective pilgrims' Hajj departures.
2. Interview

The author asked questions and answers to the admin of the Kantor Kementerian Agama Kota Medan and prospective pilgrims regarding the process of registering prospective pilgrims' Hajj departures and the problems faced in this process.

3. Literature Study

The author looks for reference sources needed in the research process and information system development, both from books, journals, the internet and from other sources.

3. RESULTS AND ANALYSIS

3.1 Problem Analysis

Before carrying out the design stages, the author first carried out a problem analysis of the system currently running at the Kantor Kementerian Agama Kota Medan. The analysis carried out by the author focuses on the registration process for Hajj departures. The process of registering for Hajj departures is manual, that is, prospective pilgrims must come directly to the Medan City Ministry of Religion Office. Based on this process, there are still several problems or obstacles that occur, including:

1. Time, energy and costs incurred in registering for Hajj.
2. Prospective pilgrims do not receive enough information regarding the requirements for Hajj registration, estimated departures and the number of quotas that have registered.
3. Kantor Kementerian Agama Kota Medan is experiencing difficulty in obtaining information regarding registration candidates who have registered.

3.2. System Requirements Analysis

One solution that can be done to solve this problem is to provide a system or application that can be used to carry out the Hajj registration process. Apart from that, implementing the quota-based method is the right method to use to provide information regarding the availability and number of quotas that have registered so that Hajj registration can be more effective and on target.

3.3. System Design

When creating applications with a visual approach, the author uses Unified Modeling Language (UML). UML is a modeling language specifically designed for frameworks and object-oriented programming. Modeling is employed to address intricate problems in order to facilitate their examination and comprehension. The diagrams employed comprise use case diagrams, sequence diagrams, activity diagrams, and class diagrams.

Use Case Diagram

Use case diagrams depict the customary interactions between users of one system and another by presenting a story that illustrates the utilization of the system. Use case diagrams to depict an actor and the specific interactions in which the actor is involved. The actors involved in the system's interaction can include individuals, objects, other systems, or other systems that engage in interaction with the system [6].

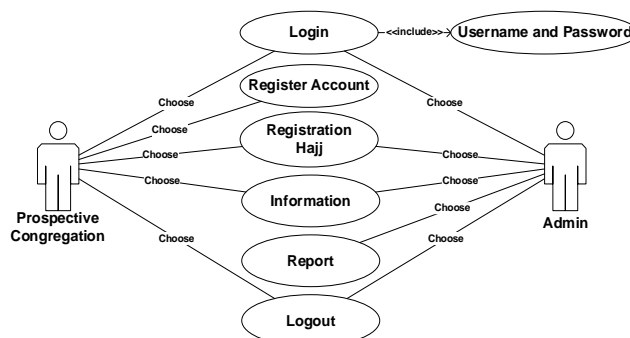


Figure 2. Use Case Diagram

Sequence Diagram

Sequence Diagrams depict how clients associate with applications to get the data they need [7]. A sequence diagram is a graphical representation that illustrates the dynamic interactions between different components. The objective of this is to showcase the exchange of messages between objects and their interactions [8].

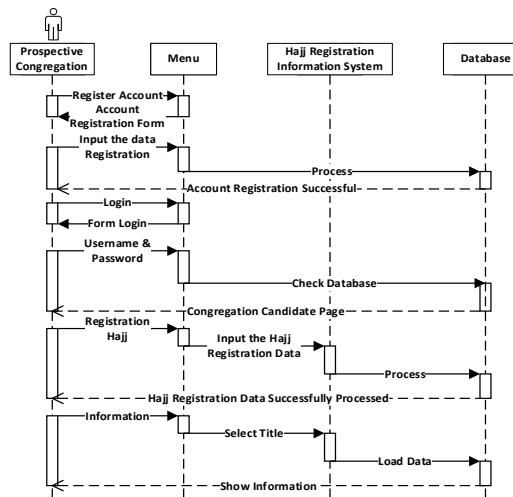


Figure 3. Sequence Diagram

Activity Diagram

An activity diagram is a functional system representation component that describes how the system executes an activity in carrying out certain functions selected by the user [9]. This diagram describes the logical process or function implemented by program code [10].

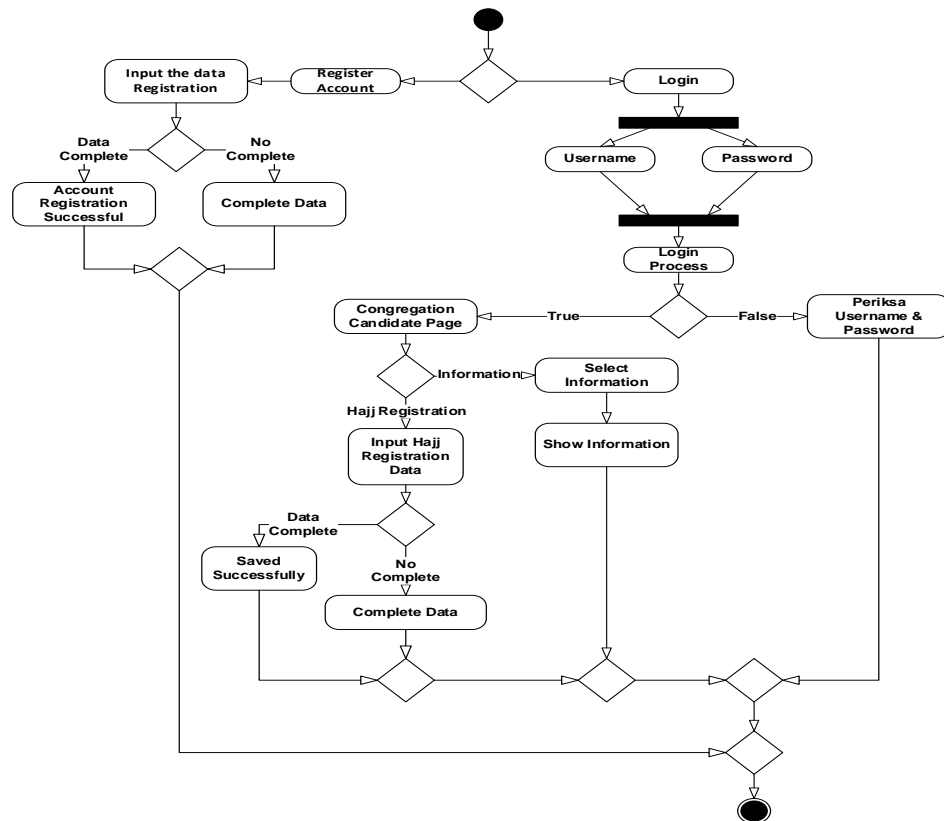


Figure 4. Activity Diagram

Class Diagram

A class diagram is a diagram that contains classes in an information system and the relationships between one class and another [11]. Class diagrams can also provide information about information system specifications that will be created using objects and object-oriented design [12].

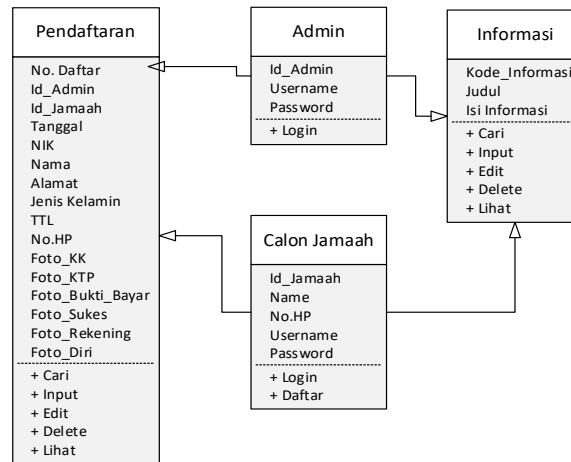


Figure 5. Class Diagram

3.4. System Implementation

The results of the analysis and design that were created in the previous stages were implemented using the Kodular framework and Airtable database into an Android mobile-based information system for Hajj registration. In this section, we discuss the interface display of the Hajj registration information system that was built. The interface display of the Hajj registration information system page consists of a login page, account registration page, Hajj registration page and report page.

Login Page Interface

Prospective pilgrims can enter the information system using the username and password provided on this page. The username and password entered by prospective congregation are then verified by the information system. If the username and password are incorrect, the prospective congregation cannot access the information system. If the username and password are correct, the prospective congregation can enter the information system.

Figure 6. Login Page Interface

Account Registration Page Interface

Prospective pilgrims can register an account by selecting the register button to get the username and password used in the login process. On this page, prospective pilgrims fill in the data contained in the registration form consisting of name, address, cellphone, username and password.

Figure 7. Account Registration Page Interface

Hajj Registration Page Interface

On this page, prospective pilgrims can register for Hajj departure by entering the specified data

Figure 8. Hajj Registration Page Interface

Report Page Interface

On this page, the admin can see the Hajj registration report for prospective pilgrims who have registered.

TGL DAFTAR	NIK	NAMA	No.HP
25 Desember 2023	1571789010883568	Annisa Hafhari	085282033908
25 Desember 2023	1571678778092349	Muhammad Ansori	082146778097
26 Desember 2023	1471907889234561	Irawan Nasution	081276889001

Figure 9. Report Page Interface

3.5. System Testing

The testing process is the final stage where the author looks for errors or deficiencies in the information system before the information system is implemented. In carrying out this testing process, the author used the black box testing method. Black box testing is an experimental strategy that highlights practical details of the product. Testing works by ignoring the control design so it is centered around the data area. Testing using the black box testing method can enable developers to create many information conditions that will provide all the requirements for all functional constraints in the framework [13].

Table 1. Table of Test Results

Testing Module	Testing Procedure	Input	Output	Conclusion
Admin Login	- Open system information - Enter the username "admin" and password "admin" - Click Login	Username "admin" and password "admin"	Admin can enter the information system and select the available menu	Valid
Information	- Open system information - Login - Select the information menu - Enter complete information data - Click input	Complete information	Information added successfully	Valid
Account Registration	- Open system information - Select the account registration menu - Enter complete account registration data - Click register	Complete account registration data	Account registration successful	Valid
Hajj Registration	- Open system information - Login - Enter complete Hajj registration data - Click register	Complete Hajj registration data	Hajj registration was successful	Valid

4. CONCLUSION

After conducting this research, the author draws conclusions from the research that has been carried out regarding the development of an Android mobile-based Hajj registration information system at the Medan City Ministry of Religion Office, namely:

- The Android mobile-based Hajj registration information system at the Medan City Ministry of Religion Office can make it easier for prospective pilgrims to register for Hajj via Android smartphone.
- The Hajj registration information system at the Medan City Ministry of Religion Office can make it easier for the Medan City Ministry of Religion Office to obtain Hajj registration information and make a summary of the Hajj registration via an Android smartphone.
- The Hajj registration information system that has been built can replace the manual Hajj registration system with an information technology-based Hajj registration system via an Android smartphone.

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