

DEVELOPMENT OF FAMILY TREE MOBILE APPLICATION

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ABSTRACT

The family is one group or group of people who live together as a unit or the smallest unit of society and usually there is always blood relations, marital ties or other ties. In a large family, of course there is a family tree, family tree is a chart that contains the origin of a family or records that describe family relationships for several generations. With the family tree, people can know who their families are and who has blood relations with them. Based on the results of the study, among them aged 15-37 years with 62.7% of men and 37.3% of women responding that 58.8% respondents were not familiar with their family tree. It can be concluded that this is due to lack of communication within the extended family. Therefore it will be built a chat application based on Signal-based android with family tree features with the aim of being able to help familiarize with the family tree and facilitate communication between family members.

Keywords: Family, Genealogy, Signal, Waterfall Method and UML

1. PRELIMINARY

The family is one group or group of people who live together as a unit or the smallest unit of society and usually there is always blood relations, marital ties or other ties. The family consists of father, mother and child, while the extended family also includes grandparents, grandmothers, nieces, cousins, uncles, aunts and other relatives. In a large family, of course there is a family tree, family tree is a chart that contains the origin of a family or records that describe family relationships for several generations. With the family tree, people can know who their families are and who has blood relations with him.

Based on the questionnaire given to 30 respondents, among them aged 15-37 years with 62.7% men and 37.3% women responding that 58.8% of respondents were unfamiliar with their family tree. It can be concluded that this is due to lack of communication within the extended family. Other questionnaires are the types of applications that are used most often. For the same respondents, the result is 63.4% most often use chat applications, 28.7% most often use social media applications, 5.1% games, and 2.8% other types of applications.

Chat application or commonly called Instant messaging (IM) is an application that is

used by two or more people to send messages to one another via the internet. Chat application is used to communicate with one or many people. Signal is a chat application that uses an end-to-end encryption mechanism, where only communicating users can read the message sent, so that privacy is maintained. Signal is classified as Free and open-source software, where the source is shared freely so we can use it for further development.

Family tree data if modeled and visualized will be a graph. Each node in the graph represents one person, and each edge represents the relationship between several people. So from that implementation using database graphs is expected to make development better. Neo4j is a graph type NoSQL developed by Neo4j, Inc. Neo4j is the most popular database graph according to the DB-Engines warning.

The chat application with family tree features is expected to help people get to know their extended family while simultaneously communicating with them. Therefore it will be built a chat application based on Signal-based android with family tree features with the aim of being able to help familiarize with the family tree and facilitate communication between family members. With this application family members in a large family can see their family tree, send messages between family members. The development of an Android-based application due to the results of a research report from StatCounter.com shows that in January 2017 to September 2017 Android is the operating system that dominates smartphone circulation in Indonesia with 71.98% in September 2017. Android is also an Open Source operating system designed for smart mobile devices

2.1 Theoretical basis

Platform Theory aims to provide an overview of related theories in application design. Platform Theory discussed is Definition of Simulation, Multimedia, Method used, and tools used.

2.1.1 Family

The family is the smallest unit of society consisting of the head of the family and several people who gather and live somewhere under a roof in a state of mutual dependence.

According to Salvicion and Celis (1998) in the family there are two or more persons who are joined because of the relationship of blood,

marital relations or appointment, in his life in one household, interacting with each other and in their respective roles and creating and maintaining a culture [1].

2.1.2 Family Tree

Genealogy is a chart that shows family relationships in a tree structure. This genealogy data can be displayed in various formats. One format that is often used in displaying genealogies is a chart with an older generation at the top and a younger generation at the bottom. The lineage showing all the offspring of one individual has the narrowest part at the top [1].

An ancestral chart, which is a tree that displays the ancestors of an individual, has a shape that is more like a tree, with the upper part being wider than the bottom. Some ancestral charts are displayed with an individual on the left and his ancestors on the right.

Family tree is a lineage of someone who has something to do with other people who are his wife and relatives. The genealogy is a family structure from top to bottom and to the side, by mentioning his family name on [1].

The meaning of the genealogy is universal, which means that people all over the world have genealogies and also, on all continents it will be understood, that everyone will surely glorify their ancestors. We often read the genealogies of kings, which include history or genealogy of the rulers who governed a region, both written on inscriptions and other objects which means not only to be known, but to be echoed by all the people, and remembered for their services.

2.1.3 Chat

Chatting is one of the facilities to communicate between fellow internet users by using written media online and in real time. Or Chatting is a communication relationship between computer users on the Internet online which is generally in the form of text.

Chats are like chat but with writing online. Chatting is usually done using social networks like Yahoo Messenger, Facebook, Google + or others. For a clearer picture like this, I just take the example of Facebook, when you are online and there is a friend of your Facebook online, too, then you write a message to your friend earlier and your friend replies that it is chatting..

2.1.4 NEO4J

Neo4J like other database graphs can be used, read: simplify, store and retrieve data in graph form. For example, social media, system recommendations, fraud detection, etc. In Neo4J the data is represented in the form of Node and Edge. A node is an edge point is a link between

two Nodes. Both Node and Edge have attributes that we can adjust. Before creating Node or Edge, we can define the attributes that exist in each Node or Edge. This is optional not mandatory but is a best practice to do. [2].

2.2 System Analysis

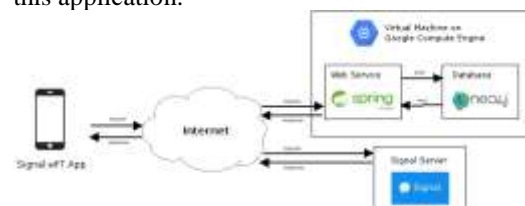
System analysis aims to describe and identify problems that exist in the system and intends to determine the obstacles that occur and the expected needs of the system to be built.

2.2.1 Problem Analysis

Based on the questionnaire given to 51 respondents, among them aged 15-37 years with 62.7% males and 37.3 females responding that 58.8% of respondents were not familiar with their family tree. It can be concluded that this is due to lack of communication within the extended family. Family tree data if modeled and visualized will be a graph. Each node in the graph represents one person, and each edge represents the relationship between several people. So from that implementation using database graphs is expected to make development better. The chat application with family tree features is expected to help people get to know their extended family while simultaneously communicating with them. Therefore it will be built a chat application based on Signal-based android with family tree features with the aim of being able to help familiarize with the family tree and facilitate communication between family members. With this application family members in a large family can see their family tree, send messages between family members.

2.2.2 Analysis of System Architecture

Architectural analysis aims to identify the system architecture to be built. Next is the System Architecture used in the construction of this application.

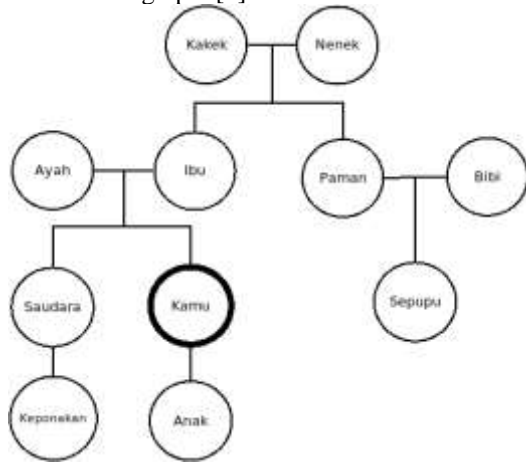


Picture 1. System Design Architecture

Built-in applications generally make requests to two servers, the first is the Signal server that is used for chat services, and the second is the server for web service and graph processing. Web services are built using the Spring Framework. The database used to store user data and data relations between users is Neo4j. Web services and databases are deployed to Virtual Machines on the Google Cloud Platform..

2.2.3 Graph Database Analysis

Family tree data if modeled and visualized will be a graph. Each node in the graph represents one person, and each edge represents the relationship between several people. The figure below shows an example of a family tree modeled with a graph. [4]



Picture 2. Graph Database Analysis

2.2.4 Analysis of Non-Functional Requirements

Analysis and non-functional requirements include analysis and hardware requirements as well as analysis and software requirements. The non-functional requirements for running this application include hardware requirements, software requirements and system users who will use the application. Analysis of non-functional requirements aims that the application built can be used in accordance with the needs of application users in finding the information needed..

2.2.4.1 Hardware Requirements Analysis

Analysis of hardware requirements is the decomposition of non-functional requirements related to hardware specifications to be used and related to the application development process that will be used to run the application..

No	Hardware	spec
1	Processor	Intel core i3 2,1 ghz
2	Memory (RAM)	4 GB
3	Hardisk	500 Gb
4	Connectivity	Koneksi Internet

No	Hardware	spec
1	Processor	1,5 ghz
2	Memory (RAM)	3 GB
3	Internal Memory	32 Gb
4	Connectivity	Internet

2.2.4.2 Software Requirements Analysis

Analysis of software requirements, it requires some supporting software to be used in development and implementation. In the table below is software needed in development.

Tabel 1. Minimum System Requirements on computer

Perangkat Lunak	Kebutuhan minimal
OS	Microsoft Windows 7
Integrated Development Environment	Android Studio

While the minimum requirements for software specifications on smartphones can be seen in Table 2..

Table 2. Minimum System Requirements on Smartphone

Perangkat Lunak	Kebutuhan minimal
OS	Ice Cream Sandwich

2.2.4.3 User needs analyst

This analysis is intended for users to find out an understanding of the use of this application.

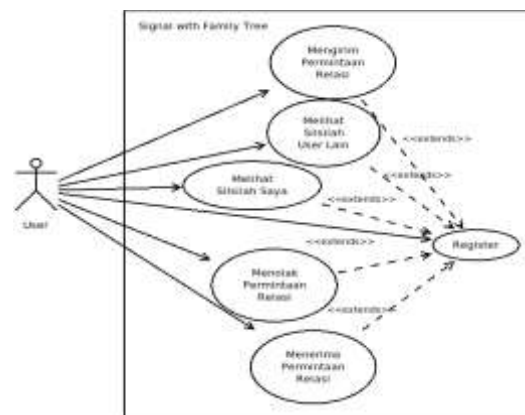
Table 3. User needs Analyst

No.	User	Specifications
1	User	a. Can operate a smartphone b. Understand using the internet

2.2.7 Functional Needs Analysis

Analysis of functional requirements can describe a plot that will be used so that the application development is right on purpose.

Use case diagrams are used to describe actors with the use case contained in the system can be seen in Figure 3.



Picture 3. Use Case Diagram

2.3 User Interface



Picture 4. Interface Register



Picture 5 Interface Verification



Picture 6. Interface Family Tree



Picture 7 Interface Send Relation

2.4 System Testing

System testing is an important part in the development of interactive election simulation applications. System testing is useful for detecting errors and deficiencies contained in the system. Tests are carried out to find out that the system has matched or not.

2.4.1 Functional Testing

From the results of testing functional testing can be concluded a conclusion that the application built can meet the required criteria .

2.5 Beta Testing

Beta testing is a test conducted objectively to find out whether the purpose of the application has been achieved or not by giving a number of questions to the user. Beta testing is done by giving a questionnaire to 30 respondents who were randomly selected with the age of 17 years and above to find out the results of the application objectives whether it has been achieved or not. [3]

Based on the results of beta testing through the submission of questionnaires using the Likert scale to calculate the intervals of each question that was submitted to 30 respondents, it was found that for the first purpose the respondents said that family tree applications can provide information about family tree and help users communicate using chat feature ..

2. CLOSING

3.1 Conclusion

Based on the results obtained from the research obtained in the preparation of the final assignment that leads to research objectives, it can be concluded.

1. The construction of the Family Lineage Application can help users to get to know their family tree.
2. Development This application can be a tool to help users establish communication between families.

3.2. Suggestion

The prototype of this automatic climatology station still needs further development, including:

1. Maximize the delivery of information that is not limited to family tree, so users can get to know the origin of their families
2. Testing that is less than optimal due to the limited time in completing writing, making conclusions on beta testing of communities that have large populations becomes difficult.

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