

Hospital and Clinic Location Search System Based on Android with a Combination of GPS Systems

Jeprianto¹, Dika Adi Pratama²

Prodi Sistem Informasi, STMIK Pringsewu, Lampung
Jl. Wisma Rini No. 09 Pringsewu, Lampung, Indonesia

E-mail : jevkikimlingsing@gmail.com¹, dikaadipratama3@gmail.com²

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Abstract-From the analysis obtained there is a need for sufficient availability of media effective in introducing the locations of hospitals and clinics in the Pringsewu district. The purpose of this paper is to produce an android application that can facilitate the community in finding information about the location of hospitals and clinics in the Pringsewu district. This application is an android platform. This application utilizes the global positioning system in user position search. The main facilities contained in this application are the map feature and road routes that can facilitate users in finding the destination location. The methodology used to build the application is the method of observation, interviews, and literature. While the system development used is the waterfall, this stage begins with needs analysis, system design, coding, testing. This application was developed with the concept of guiding hospital information and clinics based on android using GPS and maps to determine the distance traveled.

Keywords: hospital search, pringsewu

I. INTRODUCTION

Smartphones have always been items that you will carry around with you. Only by using one platform, you can enjoy it for various uses including navigation. Traffic reports. the advantage of smartphone navigation is up-to-date traffic condition information. You can plan a traffic-free route with this feature. Up-to-date maps. Navigation maps on smartphones are generally stored on a remote server. This means that every navigation map you access is always the latest version available. Whereas dedicated GPS maps are usually saved during the first installation, as a result, the update process can only be done manually. The search for goals is easier. finding an address on a smartphone is much easier. You just need to enter the destination address to find it. On dedicated GPS.

Several researchers previously developed a location search system for hospitals and clinics

based on android as was done by Budi Dwi Satoto (2013) with the conclusion of this study that the accuracy of the user's position on Google maps is influenced by the strength of the provider signal. and the GPS signal that reaches the location. Meanwhile, the data center can store data needed for road mapping and is implemented for service-based client-server technology to be accessed using Android mobile technology[1]. Pandu Tri Hartantyo (2014) examined with the results of the research that it was the map and route features that made it easier for users to find the intended location. The methodology used to build the application is to analyze the case then design the application, build the application, and finally test the application that has been created. The resulting application in making this program is a Location-Based Service Application for Locating Hospitals and Puskesmas in the Tegal Region[2].

To make it easier for the public to access services and information on the existence of hospitals and clinics in Pringsewu District, it is necessary to develop a search application system for Hospitals and Health Clinics. This research was created to produce a mobile application that can make it easier for people to find information about the location of hospitals and clinics in the Pringsewu Regency area using the waterfall method. This application makes use of the Global Positioning System (GPS) in searching the user's position. The main facility contained in this application is the Map and Route feature which can make it easier for users to find the intended location. Android-based hospital and clinic location search systems can be very useful and make it easier for people in Pringsewu Regency.

II. LITERATURE REVIEW

A. *The Concept of Information Systems*

Kadir (2014), Information Systems can be defined as a regular combination of people hardware, software, communication networks, and data resources that collect, modify, and disseminate information within an organization, this

combination works to obtain information to support retrieval of an organization. certain policies or decisions[3][4][5]–[7].

Stair (1992) in the book Muslihudin Oktafianto explains that a computer-based information system (CBIS) consists of the following components[8]:

- 1) Hardware, namely hardware components to complete data entry, data processing, and data output activities.
- 2) Software, namely programs and instructions given to computers.
- 3) Databases, namely a collection of data and information organized in such a way that it is easily accessible to users of information systems.
- 4) Telecommunication, namely communication that connects system users with computer systems together into an effective work network.
- 5) Humans, namely personnel of information systems, include managers, analysts, programmers, and operators, and are responsible for system maintenance[9], [10].

B. *Android*

According to Bidowi (2014) in the journal Agustian Noor (2016) Understanding Android is an open-source mobile operating system developed by Google. Android OS is used for tablet computers and smartphones. But based on the meaning of the word and its form, Android is a smart robot made to resemble a human. Android provides an open platform for developers to create their own applications for use by a variety of mobile devices. Initially, Google Inc. bought Android Inc, a newcomer to software for cell phones. Then to develop Android, the Open Handset Alliance was formed, a consortium of 34 hardware, software and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia[11].

C. *Geographical Information System (GIS)*

In general, the notion of GIS is a component consisting of hardware, software, human resources, and data that work together effectively to enter, store, repair, update, manage, manipulate, integrate, analysis and display data in geographic-based information [12].

D. *Java Programming Language*

According to Garling and Lestari (2010: 1) in the journal Achmad Fikri Sallaby (2015) Java is a scripting programming language that is often used in making mobile-based applications and can also be used to provide access to objects that are inserted in the application. Java functions as a behavior enhancer so that widgets can appear more attractive[13].

Java is a multipurpose programming language. Java can be used to create a program as we make it with a language like Pascal or C ++. More interestingly, Java also supports the currently popular Internet resources, namely the World Wide Web or what is often called the Web. Java also supports client / server applications, both in local networks (LAN) and wide-scale networks (WAN) [14].

E. *Google Map API*

Kindarto (2008), in the journal Rena Ariyanti (2015) Google Maps is a free service provided by Google and is very popular. Google Maps is a world map that we can use to see an area. In other words, Google Maps is a map that can be viewed using a browser. We can add Google Maps features to the web that we have created or on our paid or free blog even with the Google Maps API. The Google Maps API is a library in the form of JavaScript[15].

F. *Google Maps*

Google Maps is an online map application service provided by Google for free. The official Google Maps map service can be accessed through the site <http://maps.google.com>. At this site, geographic information can be seen on almost all surfaces on earth except the north and south poles. The created service is very interactive because in it the map can be moved according to the user's wishes, change the zoom level, and change the appearance of the map type[16].

Google Maps has many facilities that can be used, for example, a location search by entering keywords, the keywords in question such as the name of a place, city, or street, other facilities are the calculation of travel routes from one place to another.

III. RESEARCH METHODS

The waterfall method or what is often called the waterfall method is often called the classic life cycle, where it describes a systematic and sequential approach to software development, starting with the specification of user needs and then continuing through the planning stages, modeling, construction, and delivery of the system to customers / users (deployment), which ends with support for the complete software produced

(Pressman, 2012). The stages of the waterfall method can be seen in the image below.

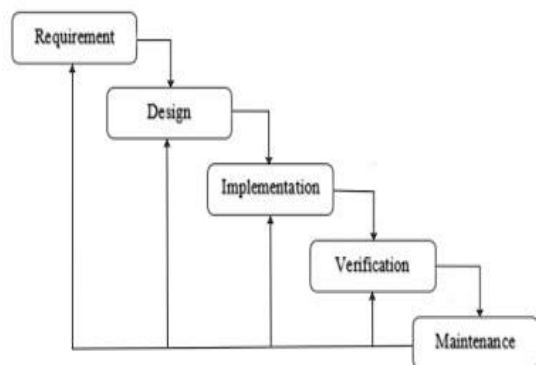


Figure 1 Waterfall Model[17]

a. Requirement Analysis

In this first stage, system developers need communication which aims to understand the software limitations of the software and the software expected by the user. This information can usually be obtained through discussions, interviews. In this stage the process occurs:

- Determine requirements, this is done by studying the existing system, eliminating redundancy, and determining the integrity of the structure.
- Produce an alternative system design.
- Comparing the system design alternatives that have been produced.
- Recommend the best alternative designs to clients.

b. System Design

The specifications from the previous stage will be studied in this phase and the system design is prepared. System Design helps in determining system requirements, hardware and helps define the overall system architecture.

c. Implementation

At this stage, the system is first developed in a small program, which is integrated into a later stage. Having a unit (Small Program) is tested and developed for functionality is known as unit testing. In this stage the process occurs:

- Hardware evaluation.
- Software development and modification.
- Data conversion, repair, and filtering of unwanted data and data consolidation occur.
- Documentation.
- Testing / Testing.
- Software training that has been formed.

d. Integration and Testing

All small programs (units) developed in the implementation stage are integrated into the system

after testing carried out by each small program / unit. This aims to check for any failures or errors.

e. Operation and Maintenance

The final stage of the Waterfall model is Operation and Maintenance. Software that has been finished, is run and carried out maintenance / maintenance. Maintenance includes fixing errors that were not found in the previous steps.

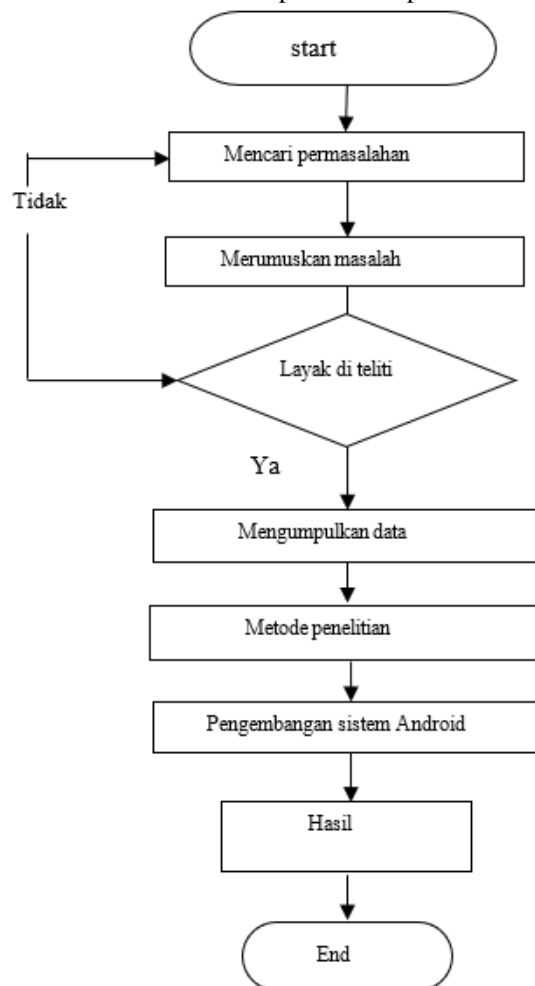


Figure 2. Research framework

In the picture, it is explained that:

1. Start or start looking for problems, before doing research first look for a problem that exists in the object that is used as research
2. Formulate the problem, After getting the problem then try to formulate the problem, what about solving the problem.
3. Worth scrutinizing (yes / no), When we have searched for and formulated the problem here, we can know whether this research is feasible or not. If "no" then the research can be stopped while "yes" then the research can be continued by determining a research title.
4. Collecting data, While doing research, make a data collection using observation data

collection methods, interviews, and literature study.

5. After carrying out all the above processes, the development of an Android system that is used for the search system for Hospitals and Clinics in the Pringsewu Regency was created.

IV. DISCUSSION

A. System Flow Design

System design is a system formed which can be in the form of drawing, planning, and sketching. The application starts directly from the home page and then follows the selection of a house or clinic in Pringsewu Regency, after the user selects one of the objects of the hospital or clinic, the choice of hospital will appear, the route to the hospital will appear . Figure 3 below is a Flowchart flowchart:

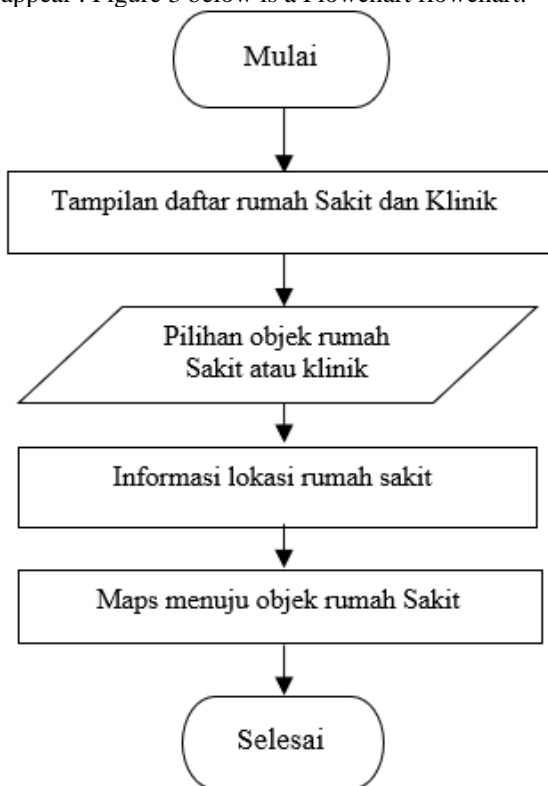


Figure 3. Flowchart Flowchart

B. Implementation

Implementation is the result of the system that has been built. The Main Menu Display is the first display when the system is opened or run by the user selecting. The main menu display can be seen in Figure 4 below:



Figure 4. Main Menu Display

After the main menu appears, then go to the hospital list menu and hospital object information. This page contains a list of hospitals and clinics in Pringsewu Regency. Figure 5 is a display of the hospital object list and information.

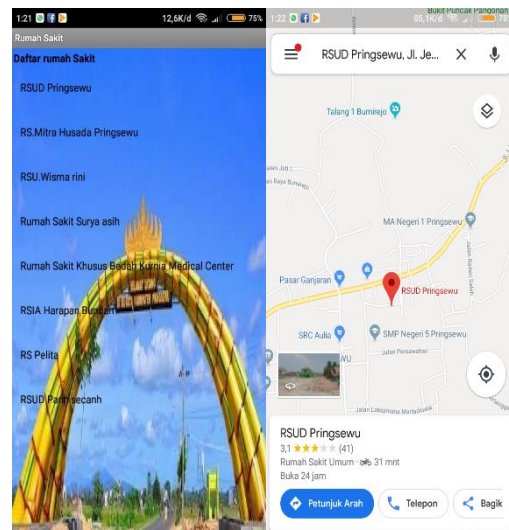


Figure 5. Is a display of information on Hospitals and Clinics

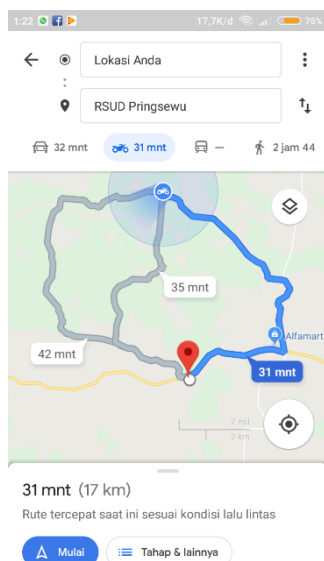


Figure 6. Hospital mileage information

C. Analysis of Research Results

This research produces a map application for searching hospitals and clinics in Pringsewu Regency based on android with GPS features. This application can confirm the object of a hospital or clinic. In this system, testing is carried out by providing a questionnaire to find out whether the system is built has been in accordance with expectations. In the questionnaire that has been given to 25 respondents, some respondents can get results that the appearance of this application is interesting and very easy to use, the application for searching hospitals and clinics is also very helpful for patients to find information on hospitals and clinics in Pringsewu Regency.

V. CONCLUSION

Based on the results of the analysis and implementation of the map information system for searching hospitals and clinics in Pringsewu Regency, it can be concluded that the application is designed to make it easier for patients who want to seek treatment to know the routes and roads. The application built has a simple design and is easily understood by patients who want to go to the hospital.

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