

ANDROID-BASED GEOGRAPHY INFORMATION SYSTEM AND TOURISM OBJECT LOCATIONS (A CASE STUDY: FAKFAK REGENCY, WEST PAPUA PROVINCE)

Riyadh Arridha¹, Andi Roy²

^{1,2} Politeknik Negeri Fakfak

Jalan TPA Imam Bonjol Atas, Air Merah, Kelurahan Wagom, Fakfak

E-mail: riyadh.rridha@gmail.com¹, andiroy@polinef.id²

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ABSTRACT

Android Application is one of an effective, efficient, and innovative way as promotional media. The rapid development of technology makes Android as an option for delivering information easily by the target audience. Currently, Fakfak district has not widely known by tourists, but there are still tourists in finding these tourist sites. Therefore, it needs a media that provides information on the location of tourism in Fakfak district. This android application is included a way that can promote effectively and efficiently. This Android-based tourists location information system application aims to make easier for the tourists in finding tourism locations in Fakfak. So, it made easier for tourist to find any tourist destinations in Fakfak. This approach methodology used is a SWOT analysis by understanding all the information in a problem. The analysis is in the form of strategic planning which is used to evaluate the strengths, weaknesses, opportunities, and threats in a design process. So, the selection of android application media was more affective and the message to be conveyed was easily understood by the target audience. The result of this tourist location information system began with a choice of 12 tourist location areas in Fakfak. After selecting the home menu, all choices of tourist attractions in Fakfak will appear and when the desired tourists spot is selected, a tourist information will appear, tourist pictures and maps navigator that serves to direct the audience to the desired tourist spot.

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1. Introduction

The development of science and technology in the 21st century is experiencing very rapid development, it has an impact on the entire order [1]. The 21st century is marked by the development of information technology and automation where a lot of work done by workers is replaced by machines, both production machines and computers. [2],[3]The internet is one of the most developed media in the 21st century, it can make it easier for everyone to share and find information. To access the internet, apart from using a computer, it can also be accessed using a mobile phone [4],[5]. Mobile is an object that is high-tech and can move without using cables. One of the most widely used mobile operating systems is Android, for example, a smartphone [6].

Internet and mobile devices in recent years have developed very rapidly. This is due to the increasing human need for information [7]. The developers of mobile devices and the internet are also increasingly aggressive in producing products that can produce information according to user needs. The products created are in the form of hardware which can be in the form of cellphones, smartphones, GPS (Global Position System) and so on [8]. GPS is a technology system designed to show the location of a place. The existence of GPS technology that has been integrated into mobile devices or smartphones makes it easy for developers to take advantage of the geographic values of GPS technology in the form of coordinates to develop applications based on LBS (Location Based Service) [9]. LBS is a location-based service system in the form

of geographic information services that are accessed using mobile via a network connection to map locations precisely [10].

Fakfak is one of the regencies located in the province of West Papua, Indonesia which has tourism potential that is no less enchanting and interesting to visit, such as Air kiti-kiti, Toran Beach, Kali Ubadari, Ugar Island and many more [11]. However, it is rare for foreign and local tourists to deliberately visit Fakfak Regency to enjoy the beauty of tourist attractions in Fakfak Regency. Lack of information and no media that promotes tourist attractions in Fakfak district is one of the causes of the infrequent visits of tourists.

From the problems mentioned above, it is necessary to establish an information system that can provide information related to tourist attractions in Fakfak district. Based on this, the researcher raised the research with the title "Application of Geographic Information System for Android-Based Tourist Locations in Fakfak Regency" this system aims to introduce and show tourist attractions in Fakfak Regency so that it can make it easier for tourists who want to visit thereby increasing tourist visits. and stimulate the local economy. in other words, if the tourism object is known by the general public and international community then this will be an advantage for the Fakfak area.

2. Method

2.1 Method of Collecting Data

The data collecting methods used un this research are:

1. Observation

This data collection technique is to make observations and record directly the data needed in this study.

2. Documentation

This data collection technique is to collect data in the form of archives and photos that will be analyzed by the author and then used as material for this research.

3. Literature Review

This data collection technique is to look for materials related to the problems in this study through books and journals that support the process of solving these problems.

2.2 System Development Method

The method used in system development in this study is the Waterfall model. The Waterfall method is a method that suggests a systematic and sequential approach through the stages in the SDLC to build software. [12]. The authors use the Waterfall model, because this method emphasizes an order in the software development process. The Waterfall method is an appropriate method for building software that is not too large and the human resources involved are limited. In general, the stages in the waterfall model can be seen in Figure 1.

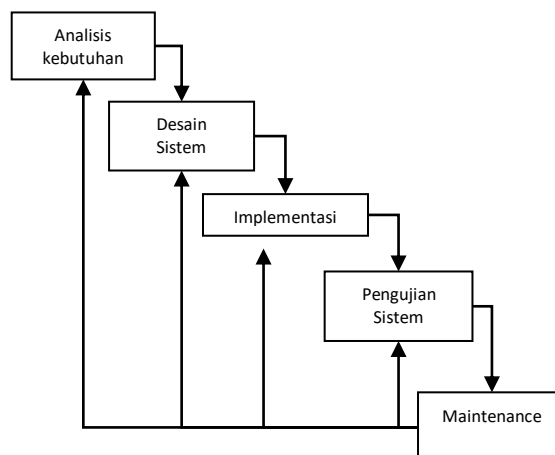


Figure 1. Waterfall Model

2.3 System Planning

2.3.1 Flowchart

Flowcharts have functions including to describe, simplify a series of processes or procedures so that they can be easily understood and easily seen based on the sequence of steps of a process [13]. The flowchart can be seen in Figure 2.

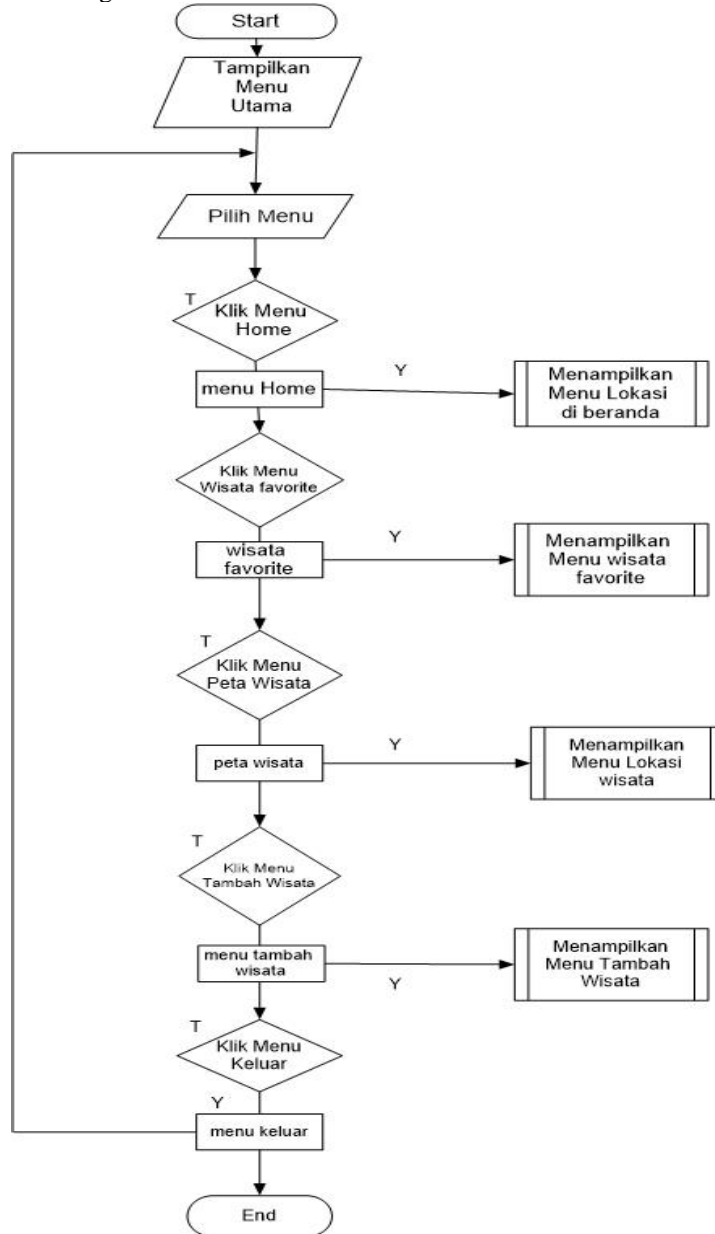


Figure 2. Flowchart

2.3.2 Context Diagram

The context diagram in Figure 3 explains the flow of the system in which the admin performs activities including, logging in, managing tourist site attribute data, tourist location information, and managing user data. While the user can do login activities where to access tourist sites along with tourist location information.

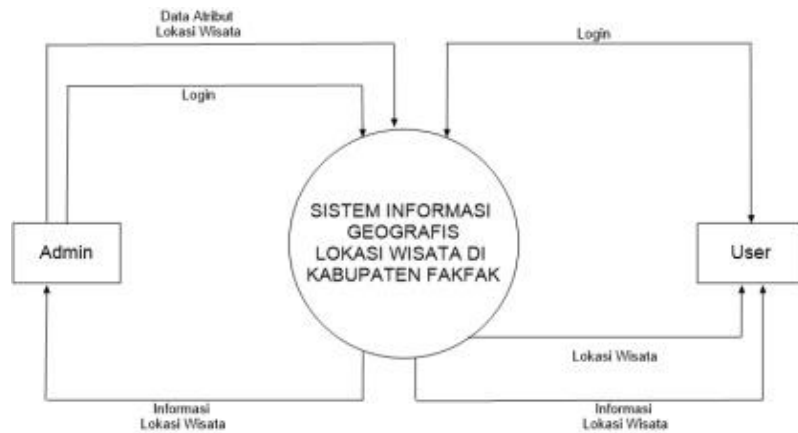


Figure 3. Context Diagram

2.2.3 Data Flow Diagram

The DFD shown in Figure 4 is a derivative of the Context Diagram which describes the design of the data flow that moves in a system. There are several levels in the DFD design, including DFD Level 0.

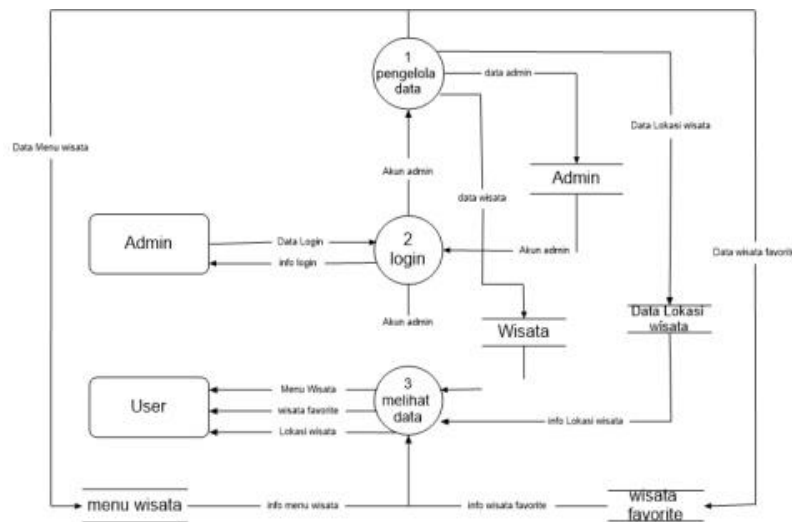


Figure 4 Data Flow Diagram Level 0

2.3.4 Entity Relationship Diagram

Users can access tourism by entering user id, name, email, address, password. After entering tourism, there will be an address, id, info, user id, tourist id, fav tour, name of tourist location. After that it produces the favourite tour where the favourite tour id and name, ERD can be seen in the figure 5.

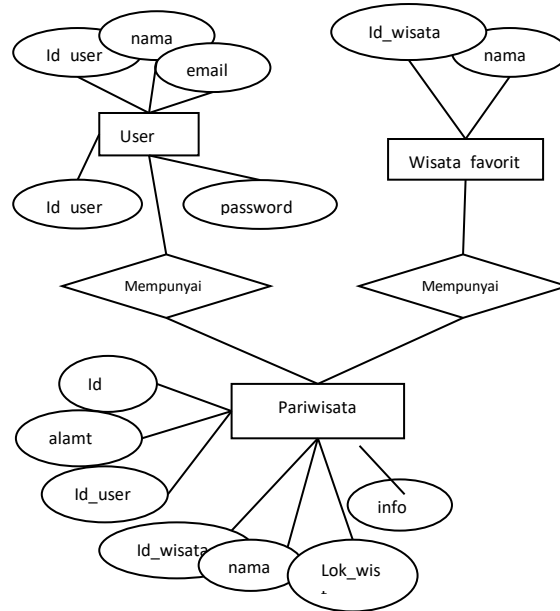


Figure 5. Entity Relationship Diagram

2.3.5 Use Case Diagram

The design of the Use Case Diagram on the Geographic Information System application for Tourism Locations in Fakfak district describes the interaction between the user (user) and the use case used by the author, can be seen in Figure 6.

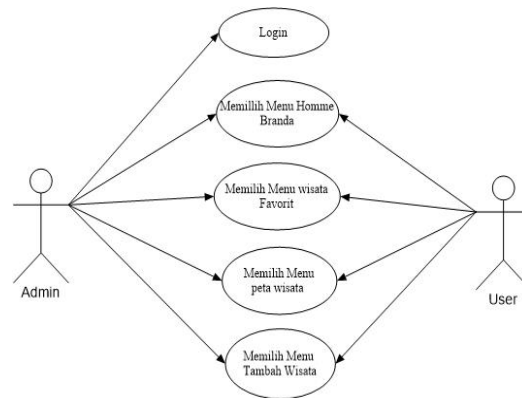


Figure 6. Use case Diagram

2.3.6 Activity Diagram

Activity diagram is a technique to describe the procedural logic and workflow of the application to be designed. In Figure 7 is a procedural diagram of users who can choose tourist locations based on user choices.

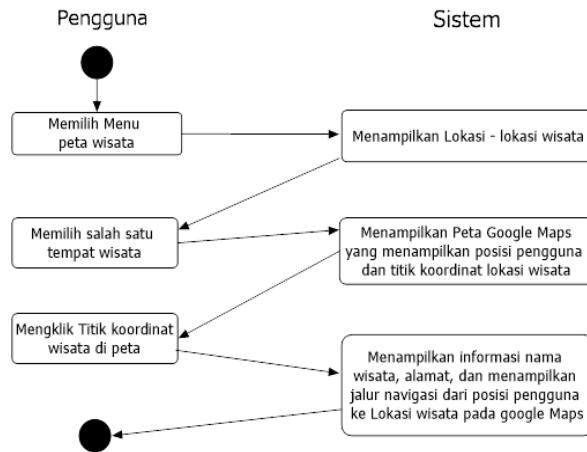


Figure 7 Activity Diagram

2.3.7 Application Face-to-face Design

a. Main Page

Figure 8 is the program design for the main page of the Geographic Information System (GIS) application for tourism locations in Fakfak district. On this main page there are 8 options that users can choose to go to each menu.

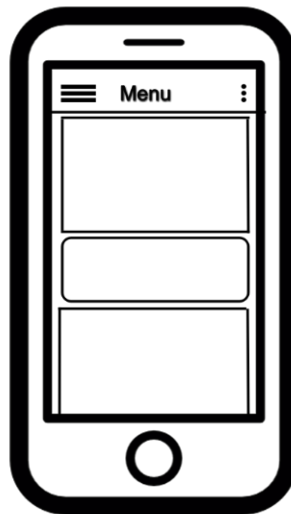


Figure 8 Main Menu Page

b. Favourite Menu Page

In Figure 9 is the design of the Favourite Tour location page. Here there is a list of names of favourite tours in Fakfak Regency. Users can display and choose the favourite tours that users want in this menu.

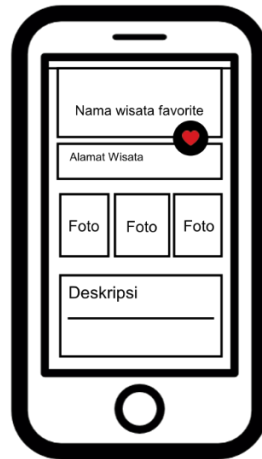


Figure 9. Favorite Menu Page

c. Tourist Location Display

In Figure 10 is a tourist location page on google map. Here users can find out tourist locations based on the results of the user's choice of tours on the Favourite Menu page. On this page there is a pin point along with information on the name of the tour and its address.



Figure 10. Display Tourist Locations on Google map

3. Result And Discussion

In making the Geographic Information System for Tourist Locations in Fakfak Regency, the back end is used for the admin using the php and mysql programming languages in the form of a website, then for the front end the user page (users) uses the android java programming language and to connect two different languages using the web. service in the form of jason.

3.1 Front End

Geographic Information System Tourist attractions in Fakfak Regency were tested on the smartphone device "Vivo Y17" with android version 6.0.1 Marshmellow, following the results of the implementation and the

finished results of the information system that has been created as well as several script commands that exist in this Geographic Information System, among others:

a. Splash Screen Page Display

The splash screen page is the page that is first seen by the user when the user accesses the Worship Place Application, this page is directly connected to the main menu of the application. The splash screen page can be seen in Figure 11.



Figure 11. Splash Screen Application Tourist attractions

b. Main Menu Display

The main menu page is the page that will be displayed after the splash screen page. In this main menu there are 12 (twelve) choices of tourist locations, namely, Location of Tourist Attractions,. Users can choose any available menu on this Tourist Places Application. Main Menu display can be seen in Figure 12.



Figure 12. Main Menu Application Tourist attractions

c. Menu Page Display

This display serves to display the home menu, favorite travel menu, tourist map menu, add data/add tourist locations and about applications as shown in Figure 13.

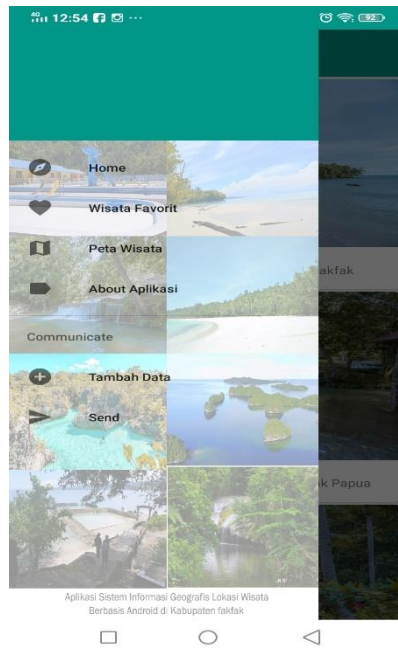


Figure 13. Application Menu Page Tourist attractions

d. Favorite menu page

The favorite menu is a menu display that is frequently visited or liked, the favorite menu display can be seen as Figure 14.



Figure 14. Favorite Page Menu

e. Display menu add tourist data

This view serves to add tourist locations. By users and admins in this view users can only add and admins can add, edit, change and delete. Display Menu added tourist data can be seen in Figure 15.

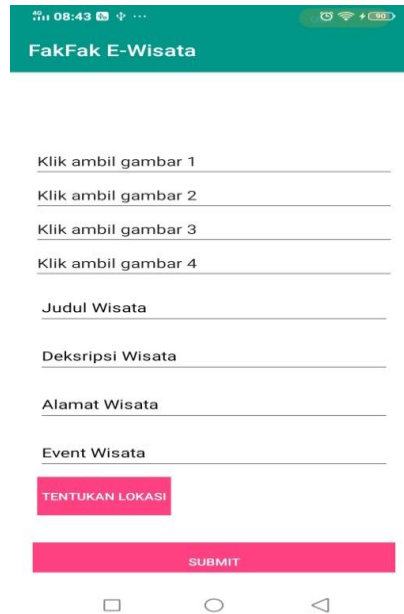


Figure 15. Menu Add Travel data

f. User location display the current location of the user so that the user can find out the distance from the user to the location of the tourist destination to be addressed, Display User Distance and Tourist Location. Can be seen in Figure 16.

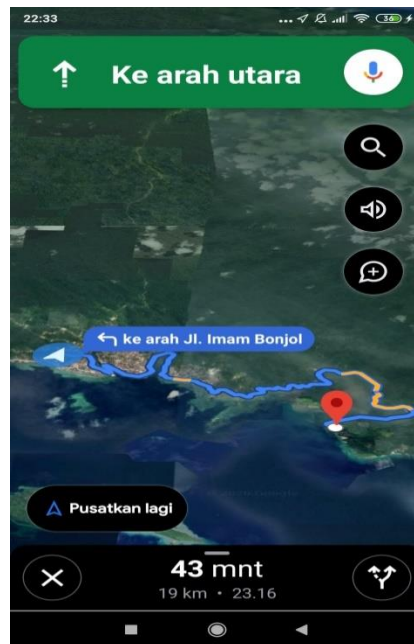


Figure 16. User Locations and Tourist Attractions

g. Tourist Map Display

The details of the application display the name and address of the tourist attractions that are clicked on the selected marker and can see which tours are closest to the user, the Tourist Map Display can be seen in Figure 17.

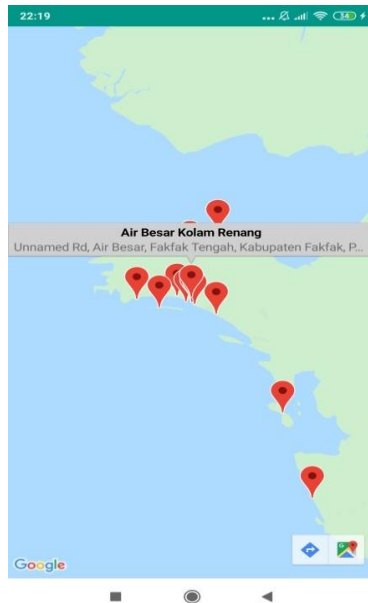


Figure 17. Tourist Map

h. About Display

The About menu is a menu that displays about the application, the name and version of the application made, the About display can be seen in Figure 18.



Figure 18. About Display

3.2 Balck Box Test

In this test, the authors use the Black Box Testing method by utilizing the Vivo Y53 smartphone with a Screen Resolution of 540 x 960 pixels, 220 ppi Android system marshmallow 6.0.1. In the testing process, the first stage that must be done is planning the test. The test plan can be seen in Table 1.

TABLE 1
Test Planning

Users	Tested Item
User	Log in
	Home display menu
	Favorite Tour display menu
	Tourist Map display menu
	Application About display menu
	Data Add data display menu

Tests are carried out on the user's initial display, on this page the user can enter after getting an application that is in accordance with the application that has been made. The results of the Menu display test can be seen in the Table 2.

TABLE 2
Menu display test results

Menu Display Test			
How to test	Scenario	Result	Information
Entering Application	Move to the menu: Home, Favourite tours, Travel maps, About application, Add data	Displays the menu page: Home, Favourite tours, Travel maps, About application, Add data	√

Based on the results of the black box testing by testing the functionalities of the Geographic Information System application for tourist attractions in Fakfak Regency which displays application access, menu access, menu page access, access to favourite tours, access tourist maps, access About applications, and add data running according to or successfully no bugs or errors.

4. Conclusion

From the results of designing an Android-Based Tourist Location Information System Application in Fakfak Regency, the authors conclude as follows:

In designing a tourist location information system application through this android application media, it can make it easier for tourists to find tourism locations in Fakfak Regency. So that tourists do not need to be confused about what tourist destinations are in West Sumatra. The existence of this application is expected to increase the attractiveness of tourists who previously only opened the play store and saw the Fakfak tourist application, became interested in downloading this application and then using it to visit Fakfak City. Thus the Design of a Tourist Location Information System Application through the android application media and its supporting media can reach the target target, namely tourists aged 20-40 years wanting to visit Fakfak district. At that age, tourists are still quite productive so it is easy to understand about technological developments and are also well established in terms of finances so that they can bring their family and friends to travel.

5. Suggestions

The suggestions for further research that discuss or develop the same topic as this research to make it even better include:

- a. For designers, it is necessary to add facilities to write experiences for tourists who have visited Fakfak city tourism.

- b. The designer has not grouped tourist objects into several categories in order to make it easier for tourists to find tourist attraction information according to the desired tourism category.
- c. It is necessary to adjust the appearance of the application so that the application looks more attractive and attractive to tourists.
- d. There is a need for additional videos in the application about tourism in Fakfak Regency.

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