DEVELOPMENT OF PLANNING AND TOURISM GUIDE APPLICATION BASED ON ANDROID FOR JEMBER REGENCY

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ABSTRACT

Tourism is one sector that plays an important role in economic growth in a region. In Jember Regency, there are several tourist attractions that attract many local and foreign tourists to visit Jember Regency. Jember Regency also has tourism activities which can also attract tourists to visit Jember Regency, one of which is carnival activities, namely JFC (Jember Fashion Carnival) which is well-known to international. The number of tourism enthusiasts to visit Jember Regency, so many tourists who often search about the existing tourist attractions in December, what tourism activities will take place in December, and many tourists also want to use the services of the Tourism Agency to travel in Jember Regency. Many tourists who will visit Jember Regency are still confused because the information they receive is not clear enough. To help tourists obtain tourism information in Jember Regency, planning applications and tourist guides are made where this application will be open and accessible to tourists by utilizing an Android smartphone. Tourism planning and tour guides are expected to be able to provide information needed by tourists and can make it easier for tourists to travel to Jember Regency.

Keywords : Tourism, Tourism Agency, Jember, Guides, Android.

1. PRELIMINARY

Tourism is positioned as one of the mainstay sectors in Indonesia's national development [1]. Jember Regency covers an area with a topographic character of fertile terrain and is surrounded by elongated mountains. Jember Regency is also on the path from Surabaya to Bali, so many tourists make Jember Regency an alternative tourist visit. Tourism activities or events are also one of the factors that attract tourists to visit Jember, one of the most well-known and international tourism activities or events, namely a carnival that presents the longest catwalk in the world, which is 3.6 km called JFC (Jember Fasion Carnaval).

Information dissemination of tourism activities or events that take place is still low, the results of the questionnaire distributed in early September 2017 with a total of 130 respondents distributed to tourists who have visited Jember, stating that 61.9% of tourists do not always get information about tourism activities in Jember. This causes tourists who want to visit Jember for tourism activities are late to get information, while tourism activities or events are also a major influence to increase tourist visits to Jember.

Based on the results of the questionnaire stated that 63.4% of tourists had difficulty in obtaining complete information on tourist attractions in Jember. Based on the results of the questionnaire stated that 82.8% of tourists only know some tourist objects in Jember, from the results of the questionnaire it can be concluded that information on tourist objects in Jember is less than optimal so that only a few tourist attractions are always crowded with tourists.

Based on the results of the questionnaire 61.9% of tourists only know the public transportation routes to get to tourist attractions in Jember. Based on the questionnaire, it can be concluded that there are still many tourists who have difficulty going to tourist attractions using public transportation.

Tourists who want to take a vacation and want to be more practical to prepare for their tour trips are choosing tour agency services as an alternative to help travel travel ranging from transportation to attractive tour packages offered by travel agencies [2]. Tourist Needs about information or booking tour packages that can be accessed easily [3]. Ordering driver services and tour and travel services by way of the customer coming to the place or the customer doing the data to the place or the customer making an order by telephone still makes the cut off having trouble [4]. Based on the results of the 63% questionnaire, it was difficult to get information about the travel agency that serves tours in Jember.

Research conducted by Uswah and friends [5] which discusses the application that can provide a path to the mosque using android, information on the name of the mosque, pictures, addresses, congregation of

Friday prayers and history. The mosque map path utilizes google fire directions. Location-Based Service (LBS) is needed to get a route to a tourist attraction [6].

Based on the description above, the title of the research is "Development of Android-based Application Planning and Tourism Guide for Jember Regency" which can help tourists to get information on tourism activities, tourist sites, public transport to reach tourist attractions, recommendations for travel and tourist information. Questionnaire results 88.8% of tourists use an Android smartphone. Android is a Linux-based operating system for mobile devices that includes operating systems, middleware and applications. Android provides an open platform for application developers [7].

2. LITERATURE REVIEW

2.1. Tourism

Tourism is a trip made for a stopover or a temporary activity to a place outside the residence or outside the usual workplace. Tourism is a series of activities in the form of people moving activities that occur temporarily to a destination outside their place of residence or outside their usual workplace, activities carried out while in the destination, and various facilities provided to meet their needs both during the trip towards the destination or even when it is at that destination [8]. Tourism has several basic components generally agreed upon, namely:

1. Traveler, namely people who travel between two or more localities.

2. Visitor, namely people who travel to areas that are not their place of residence, less than 12 months, and the purpose of the trip is not to engage in activities to earn a living, income, and livelihood in a destination.

3. Tourist, that is, part of the visitor who spends at least one night (24 hours) in the area visited [9].

2.2. Android

Android is an operating system for mobile that is intended for touch screen devices. Android provides an open platform for developers to create applications. Applications built using the Java programming language. At first android was developed by a newcomer company that made software for mobile namely Android Inc. which was later purchased by Google Inc. Currently Android has released version 8.0 and continues to grow [10].

2.3. Global Positioning System (GPS)

GPS (Global Positioning System) is a satellite-based navigation system that can be interconnected in its orbit. The satellites belong to the United States Department of Defense (Department of Defense) which was first introduced starting in 1978 and in 1994 it has used 24 satellites. To be able to find out the position of a person, it is necessary to have a device named GPS receiver which functions to receive signals sent from GPS satellites. The position is converted to a point known as the Way-point name which will be the points of latitude and longitude coordinates of the position of a person or a location then screened on an electronic map.

Since 1980, GPS services that were only used for military purposes have now begun to be open to the public. This satellite orbits at an altitude of about 12,000 miles from the surface of the earth. This position is ideal because satellites can reach a wider coverage area. This satellite will always be in a position that can reach all areas above the earth's surface so as to minimize the occurrence of blank spots (areas not covered by satellites). There are several GPS categories for use [11]:

1. *Lokasi*
   Used to determine where the location of a point on the surface of the earth is.
2. *Navigasi*
   Helps in finding the location of a point on earth.
3. *Tracking*
   Helps map certain positions, and calculates the closest network.
4. *Timing*
   Can be used as a basis for determining the clock around the world, because it uses an atomic clock that is much more precession than regular hours.

2.4. Google Maps API

Google Maps API is a library that originates from Google Maps services in the form of JavaScript, which contains programming functions that can be integrated into the web or applications that are being created [12]. Only by using the Key Google Maps API, the application created can access maps on Google Maps.

The Google Maps API can be used for free and there is no need to issue fees as a license. But maximum requests on a map are only allowed as much as 2500 requests / day. If more users must purchase a Google Maps API license for business. Because the Google Maps API is Web-based, it is only necessary to use the Text Editor tool to create the application, and other devices that must be prepared, namely the Browser, and an internet connection.

This planning and tour guide application also requires a map display as an information medium for an accurate location therefore applying the Google Maps API technology to the application to be built, in addition to displaying the geographical location on Google maps. The Googel Maps API technology can also identify the presence of the application user.

Here is an example of how to get the Google Map API key that can be viewed on Figure 1:
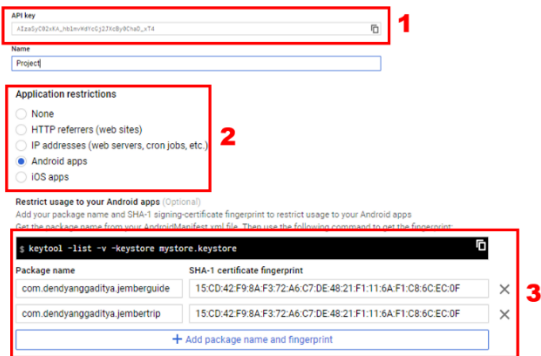

Figure 1 Create Google Maps API key

The following is an explanation of the creation of the Google Map API key :

1. The API key that is obtained from the creation of the API key on the page https://console.developers.google.com/apis/cred entials/key/ which will be used on Android.
2. Selection of type of API usage on the platform system that will be built.
3. Add the package name to the application that is or will be made.

4. RESEARCH METHODS

The research method used is descriptive. Descriptive method is a method of researching the status of human groups, objects, conditions, systems of thought or tourism classes in the present.

The software development method used is a waterfall method. This model will approach systematically and sequentially. Stage by step must be passed before progressing to the next stage. The stage of the waterfall model is as shown in Figure 2 below:
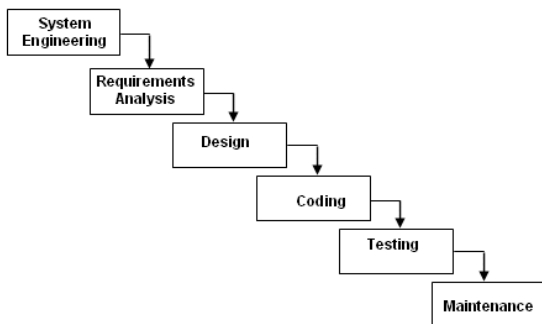

Figure 2 Waterfall Model

1. **System / Information Engineering and Modeling**

   This modeling begins with looking for the needs of the entire system that will be applied in the form of software. This is very important,

considering that software must be able to interact with other elements such as hardware, databases, etc. This stage is often referred to as Project Definition.

2. **Software Requirements Analysis**

   The needs search phase is intensified and focused on software. To find out the nature of the program to be made, the software engineers must understand the information domain of the software, for example the functions needed, the user interface, and so on.

3. **Design**

   This stage is used to change the above needs into representation in the form of "blueprint" software before coding begins. Design must be able to implement the needs mentioned in the previous stage.

4. **Coding**

   This stage is the stage where applications begin to be built by writing code according to the programming language used. This stage is the implementation stage of the design that was done before.

5. **Testing**

   This stage is the stage where the application that has been built in the previous stage is coding is tested. All software functions must be tested, so that the software is free of errors, and the results must be truly in accordance with the needs that have been defined previously.

6. **Maintenance**

   This stage is the stage where after being tested, of course the application needs maintenance for development because the software created is not always just like that. When it is run, there may still be small errors that were not found before, or there are additional features that are not available in the software.

5. RESULT AND DISCUSSION

4.1. Technology Analysis

Technology analysis is an explanation of technology and methods used for work and development in an application that will be made as well as research that is being carried out. This technology analysis aims to explain in more detail the techniques used in making the application system for Jember Regency tourism guide.

4.2. Data Analysis

The data used for the application is obtained from the Jember Regency Tourism and Culture Office for data on tourist attractions accompanied by the price of admission tickets and facilities from tourist attractions, and data from the Jember Regency Transportation Agency is data on public transport, pioneer transportation along with the lines and rates of each transportation in Jember Regency.

4.3. Google Maps API analysis gets distance

Google Map API analysis to get the distance to function to get the distance from the user is the starting point with the tourist place as the end point. Here's an example of Google Map API analysis to get the distance:

1. Getting the distance to the destination requires a starting point and an end point to determine the route or path that is traversed.
2. The starting and ending points in the form of longitude and latitude are then processed with the calculation logic of the Google Maps API distance so as to get distance and travel time.
3. The distance from the starting point and end point (destination location) that has been obtained and then displayed in the form of text via TextView.

4.4. Estimation Analysis of Tourism Travel Costs

This cost estimate is used to help estimate the travel costs of tourists visiting Jember. The following is described how a case scenario might occur in the application that was built :

1. Estimated travel with private vehicles :

Estimates of travel with private vehicles involve vehicle fuel costs, entrance ticket fees, and tourist facilities. Planning trips with private vehicles also utilize the technology of google maps direction API to get the mileage to calculate fuel costs based on liters/kilometers. Users get information about the estimated fuel costs that may be needed on a tour. Following is the calculation of the estimated cost of using a private vehicle in Table 1:

Table 1 Estimation of Cost of Using Private Vehicles

User Input Data	
Person	5
Day	1
Departure	Alun-Alun Jember
Destination	Taman Botani Sukorambi Jember
Facilities	Person
1. Riding	3
2. Swimming pool	5
Car type	Mobil
Car brand	Jazz
Fuel type	Pertalite

Calculation of entrance fee		
entrance fee	person	Total
20000	5	100000
Calculation of Facilities fee		
Facilities	Price	Person	Total
Riding	10000	3	30000
Swimming pool	10000	5	50000
Sub Total			80000

Calculation of fuel useage costs	
Mileage	8.1 Km
Roundtrip	8.1 Km x 2 = 16.2 Km
Fuel costs	(7800 x 16.2) / 9 = 14040

Calculation of Total Cost	
Total of entrance fee	Rp 100,000
Total of facilities fee	Rp 80,000
Fuel useage costs	Rp 14,040
Total cost	Rp 194,040

2. Estimates of travel with travel agents:

Estimates of travel with travel agents involve the cost of tour packages provided by tour agencies starting from vehicles, meals, entrance tickets, facilities. Planning a tour with a travel agency service involves a comparison with several tour agencies that have the same package with farina prices and different services so that tourists can compare or choose a travel agency that matches the desired criteria. Processing tour packages to be submitted as offers to tourists.

Tourism package input data for estimation of travel agency calculations can be seen in **Error! Reference source not found.**:

Table 2 Travel Package Data Input For Estimating Calculation of Travel agency

Travel Agency Input Data		
Day	1	
Vehicle Type	Mobil	
Vehicle Brand	Mobilio	
Minimum person	4	
Maximum person	7	
Tour Leader	0	
Driver	1	
Insurance	1000	
Meal	25000	
Tourism spot		
1. Taman Botani Sukorambi	40000	
Vehicle calculation		
ITEM	Amount	Total
Vehicle	1	250000
Driver	1	50000
Sub Total		300000
Individual service facilities /day		
Asuransi	1	1000
Meal	3	75000

Sub Total		76000
Calculation of tour packages		
Vehicle	300000	
Service facilities	76000	

After the tour bureau submits a tour package on the system, then tourists make a travel search using the bureau services on the system. User input data for estimating travel trips using a travel agency can be seen in **Error! Reference source not found.**:

Table 3 User Input Data For Estimated Tourist Travel Using the Travel Agency

User Input Data	
Person	5
Day	1
Destination	Taman Botani Sukorambi Jember

When there is a suitable tour package from the length of the day, the number of people and location, the system calculates the costs that can be seen in **Error! Reference source not found.**:

Table 4 Calculation of estimated costs using a travel agency

Calculation of travel costs		
Person	5	
Day	1	
Vehicle	Day	Total
300000	1	300000
Service facilities	amount	Total
76000	5	380000
Total		680000

4.5. Analysis of System Architecture

Architecture analysis discusses technology and an overview of the technology flow that is carried out on the system that is created. This analysis can also be used to see the infrastructure that supports the system being built. The following is an analysis of the application system for tour guides in Jember Regency which can be seen in Figure 3:
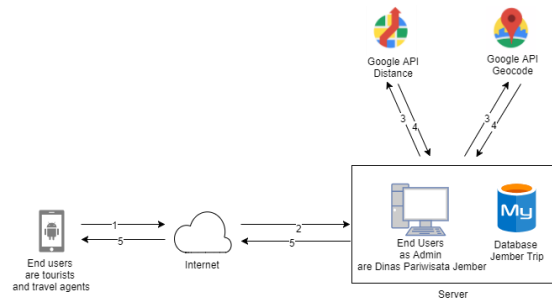

Figure 3 System Architecture

The following is an explanation of the analysis of Jember Trip application architecture:

1. End users are tourists and travel agents using the android application. Android to see tourist attractions, promotional activities or events in Jember Regency. Tourists can estimate the travel planner. Tour operators can plan tour packages, submit bureaus to provide tour services and agree to book tour packages. End users must be connected to the internet to be able to access the application to get available information.
2. Application for end users accessing the server to get can send data that has been entered or call the URL of the API that has been entered into the application.
3. The server does a Google API request to obtain location and map data.
4. The server processes the storage or retrieval of data received from the API and data received from end users.
5. The data that has been obtained is returned to the application used by end users, namely tourists and travel agents.

4.6. Usecase Diagram

Use Case Diagram is a diagram that illustrates the activities and scope that is carried out by each actor. The following is the use case diagram on the application that is built which can be seen in Figure 4:

Figure 4 Usecase Diagram

4.7. Class Diagram

Class diagram is an analysis of the relationships between classes in the application to be built. This relation is conveyed in the form of a diagram. Class diagrams are graphical descriptions of classes to make it easier to see relations between classes. Following is the diagram class of the application to be built which can be seen in Figure 5:

Figure 5 Class Diagram

4.8. Implementation

implementation is an explanation of system implementation that supports the running system. The system that is built is used for servers and accessing ie users. Explanation covers three parts, namely: hardware, software, and servers.

A. Hardware Implementation

This stage explains the hardware implementation in the field. This hardware is a device used to access a system. The hardware implementation can be seen in Table 5:

Table 5 User hardware implementation

No	Component	Minimum requirements
1.	Processor	Qualcomm Snapdragon 800 @ 2.20 GHz
2.	Memory	2 GB
3.	RAM	512 MB
4.	Smartphone Feature	GPS, Internet

B. Software Implementation

At this stage explain the implementation of the software contained in the field. The software includes software components found in the access system, namely the public. Software implementation can be seen in Table 6 :

Table 6 Implementation of software requirements

No	Component	Specification
1.	Operating System	Android
2.	Android Version	4.0 (Kitkat) ke atas

C. Interface Implementation

Interface Implementation is a display of the Jember Trip application. Interface implementation can be seen in Figure 6 and Figure 7:
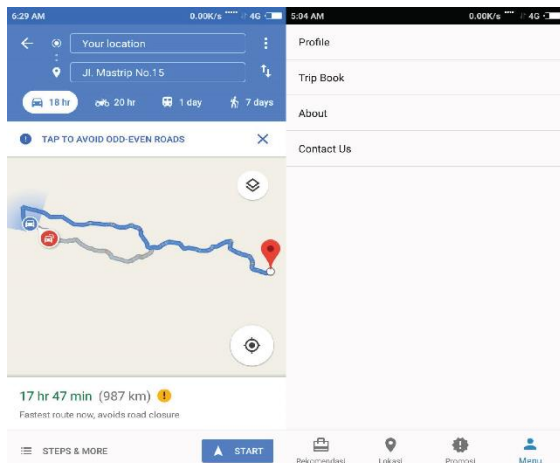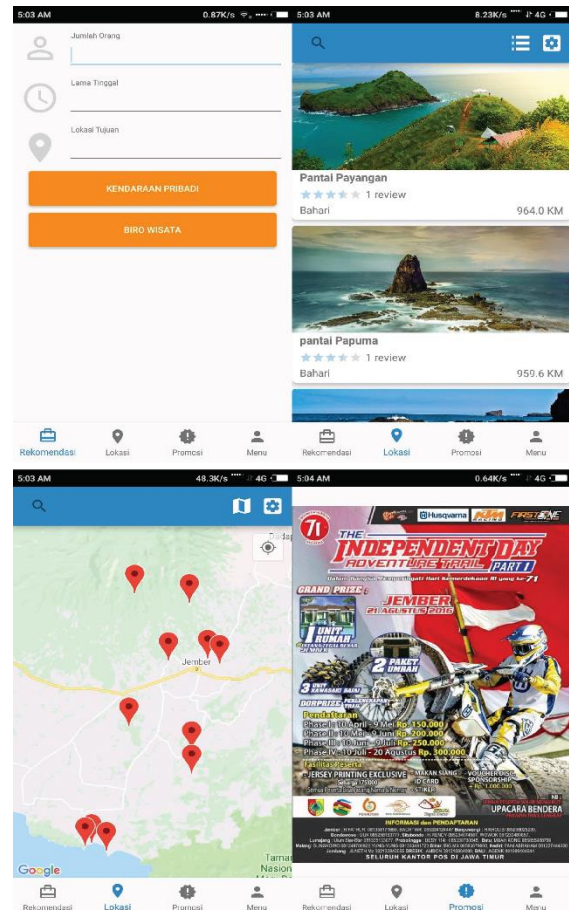

Figure 6 Interface Implementation

Figure 7 Interface Implementation

4.9. System Testing

System testing is a stage to check the results of the program being worked on. This test aims to make the program run well without interruption and allow for further development. The questionnaire is used to get an assessment from the end user of the application that was built. The questionnaire submitted to 30 tourists on June 25-July 7 2018 has 4 questions using a Likert scale of 1-5 values. The following are the results of the questionnaire testing

1. Do you agree that the JemberTrip application makes it easy for you to get information on tourism activities taking place in Jember Regency ?
   The average of the first question is : 84%

2. Second statement: Do you agree that the JemberTrip application makes it easy for you to get tourist information ?
   The average of the second question is : 82%

3. Third statement: Do you agree that the JemberTrip application makes it easy for you to determine the public transportation that is used to go to the tourist attractions to be visited ?
   The average of the third question is: 77%

4. Fourth statement: Do you agree that the JemberTrip application makes it easy for you to

determine the tour agency that you will choose for your tour in Jember Regency ?
The average of the fourth question is: 84%

Based on the results of the beta testing questionnaire based on the questionnaire filled in by the respondents is:

Tourists can be facilitated to get information on tourism activities that will take place to determine the date of their travel to Jember or in progress to participate in enlivening tourism activities in Jember.

6. CONCLUSION

A. Conclusion

From the results obtained from the stages that have been done through the process of planning, implementing, and testing applications, conclusions can be drawn regarding the development of planning applications and tourist guides in Jember Regency as follows:

1. Tourists can be facilitated to get information on tourism activities that will take place to determine the date of their travel to Jember or in progress to participate in enlivening tourism activities in Jember.
2. Tourists can be facilitated to get information on tourist attractions in detail starting from the tariff, activities that can be done at the place, distance, route to the location, facilities that can be used, and households of public transport that can be used to go to tourist attractions.
3. Tourists can be facilitated to determine what public transportation can be used to go to a tourist spot that has been chosen to visit.
4. Tourists can be facilitated in getting information and comparing travel agents with other travel agencies so that it is easier to choose which travel agency to use.

B. Suggestion

The suggestions that can be developed for further research so that the application can provide information on the number of visitors up-to-date, to be able to know the statistics of visitors from each tourist spot and the application can also display the open weater feature to get weather information that aims to make it easier to determine the time of visit to the place tour by adjusting the weather that will occur and also the booking feature of the tour agency and booking tickets for tourism activities and payment transactions.

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