NAVIGATION APPLICATION DEVELOPMENT AND THE DETERMINATION OF THE ROUTE CLOSEST TO FASTEST TIME IN PLANNING TO GIFT SHOP IN THE CITY OF BANDUNG ON ANDROID PLATFORM

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ABSTRACT

Bandung city has a souvenir center that is often visited by tourists. However, due to lack of information about the location of the store by so many tourists have difficulty finding the location of a gift shop in the city of Bandung. Actually access of information about place souvenirs in Bandung can be accessed on the website. But never found this site, and make the tourists do not know the location everywhere the nearest and fastest. The purpose of this research is to operate GPS on android smartphone. Research method with life cycle model. Use of Case Diagram, Sequence Diagram, Activity Diagram, Class Diagram. For that very needed an application that is able to accommodate and provide the closest and fastest route to reach the destination. The closest and fastest distance is a problem that often arise in the user of transportation, because the user in transportation to travel that requires a solution to be traversed. Time efficiency can be met.

Keywords: Navigation Route Store souvenir, nearest, fastest, android, GPS, Bandung route

1. INTRODUCTION

Bandung city is the capital of West Java province. The city was in ancient times known as Parijs van Java (Dutch) or "Paris from Java". Because it is located in the highlands, Bandung is known as a cool place. This makes Bandung as one of the tourist destination city. The number of tourism potential souvenirs and shopping places by souvenirs in the city of Bandung. Make residents outside the city of Bandung interested to come to the city of flowers to travel and buy souvenirs in Bandung, from the usual or well-known. If talking about tourism of course can not be separated with souvenirs, souvenirs, or souvenirs. Each area that became a tourist destination has a wide range of souvenirs that are sought after by tourists. During this time in Bandung not everyone knows the information about the place to get the souvenirs, but Because of the extent of Bandung and the number of tourist attractions and precisely souvenirs make the tourists and indigenous people of Bandung difficult to find information about the souvenirs is in Bandung, and often makes it difficult for tourists or indigenous people to find a route or road to the souvenir site in the city of Bandung with the fastest time by looking at the state of congestion and get a recommendation by the nearest gift shop with tourist residence location and displays The distance to the location of the shop by the

souvenir. So that the tourists or indigenous bandung can find the location information store the nearest and fastest souvenir. For that it is necessary an application that is able to plan and provide the shortest route to reach the destination. Shortest distance is a problem that often arise in the user of transportation, because the user of transportation in travel needs a solution how the route will be passed. So that time efficiency can be fulfilled.

1.1 Formulation Of The Problem

Based on the background of the problems that have been submitted, then the problem is how to build the nearest route determining navigation system to the fastest time to place souvenirs in bandung city. How to implement android app to help users know location information How to create an application that is able to provide information on the state of the road congestion through GPS. How to make it easier for tourists or the public in finding a gift shop in Bandung on andorid based mobile devices.

1.2 Purpose and Objective

The purpose of the problems in the research is intend to build the nearest route application in determining souvenirs in Bandung on the android platform. The purpose of this application is to simplify the user find the location information store gift. Simplify the user to find the location of the closest gift shop. Provide Recommendation of gift shop location.

2. THEORETICAL BASIS

2.1 Android

Android is the operating system for mobile phones based on Linux. Designed for touch screen mobile devices such as smart phones and tablet computers. The Android user interface is generally a direct manipulation, using similar touch gestures With real actions, such as shifting, tapping to manipulate objects on the screen, as well as a virtual keyboard to write text. Android provides an open platform for developers to create their own applications and for use by various mobile devices. This allows developers to write managed code in the Java programming language, controlling devices via the Java library developed by Google.

1. Fitur Android
2. How GPSA Works. Multi-process and App Widgets
   The android operating system does not prohibit the processor from running more than one application at a time. Android operating system can manage applications and threads that run multitasking. The advantage is that when an application runs and interacts with users on the operating system's front layer, processes from other applications can run to update information. For example, for example when a user plays a game, another process can run behind an app like checking stock quotes and raising warnings. App Widgets are mini apps that can be embedded in apps like home screen. App widgets can run the request process such as streaming music or detect the room temperature in the background. Multi-process can provide benefits in the form of more user experience, but the use of these features can consume a lot of battery energy if usage is incorrect.
3. B. Touch Gestures and Multi-touch
   Touchscreen is an intuitive user interface that used many smartphones in the world. With this feature interaction can be made easier because it is enough to use a finger. Multi-touch is a capability that can track more than one hand at a time. This feature is often used for interaction magnifying

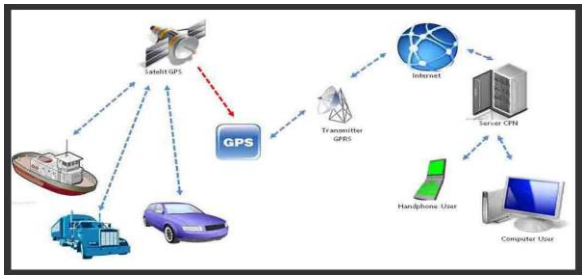
or rotating objects. In addition developers can create new interactions by utilizing these features.

4. C. Hard and Soft Keyboard
   One feature on smartphone devices is the physical and non physical buttons, physical buttons used for navigation support in android operation. The app developer does not need to manually to integrate the key in the app. Non physical buttons are buttons made by operating systems such as virtual keyboards, and application navigation buttons.

2.2 Global Positioning System (GPS)

1. Understanding GPS

The population of applications created on the Android operating system is increasing. One of them is the application that utilizes the function of the location by using GPS (Global Positioning System) or commonly called location based services (LBS). For readers who do not understand the notion of location-based services, let's see the explanation below.



Gambar Cara Kerja GPS

2. How GPS Work

How GPS works logically there are 5 steps: 1. Using the satellite triangulation calculations.

1. For "triangulation" calculation, GPS measures distance using travel time radio signals.
2. To measure travel time, GPS requires require high time accuracy.
3. For the calculation of distance, we must know with certainty the position of the satellite and the desire in its orbit.

5. Lastly must correct the signal delay travel time in the atmosphere until acceptable reciever.

GPS can perform calculations and determine the user's position and display in maps. If it is able to store the position of the next user GPS can calculate other information, such as speed, direction of destination, route, destination travel and distance of destination. Accurate time calculation greatly determines the user's location information.

2. Location Based Service (LBS)

Location based services are location-based services or commonly used terms to describe the technology used to locate the devices that users use. This service uses Google's global positioning service (GPS) and cell-based location technology. In addition, the LBS consists of several components including mobile devices, communication networks, position components, and service and content providers. Mobile devices are very important components. Mobile devices include smartphones, PDAs, and others that can serve as navigation tools or just like GPS-based navigation devices. The main components of LBS have five major supporting components in location-based service technology, including:

1. Mobile Device, is an important component in LBS. This tool serves as a tool for users to request information. The result of the requested information can be text, sound, image and so on. Mobile devices that can be used can be PDAs, smartphones, laptops In addition, mobile devices can also serve as a navigation tool in the vehicle as well as GPS-based navigation.

2. Communication Network, this component serves as a connecting lane

Can transmit data by the user from his mobile device to then addressed to the service provider and then the results of the request are sent back by the service provider to the user.

1. Positioning component (position / location position), any service provided by the service provider will usually be based on the position of the user requesting the service. Therefore, the required component that serves as a processor / processor that will determine the position of service users at that time. Position users can be obtained through mobile communications networks or also using the Global Positioning System (GPS).

2. Service providers and applications, are LBS components that provide a wide range of services that users can use. For example, when a user requests a service to know its current position, the application and service provider directly process the request, from calculating and determining the user's position, determining the route of the road, searching for Yellow Pages on demand, and more.

3. Data providers are content, service providers do not always store all data and information they process. Because it can be a variety of data and information is derived from developers or third parties who do have the authority to save it.

2.3 Google Maps Distance Matrix API

Google Maps Distance Matrix API Is a service that provides travel time and distance for the matrix of origin and destination, based on the recommended route between the starting and ending points.
This document is intended for developers who want to calculate the distance and travel time between the number of points in the map provided by one of the Google Maps APIs. This document provides an introduction to using APIs and reference materials on available parameters. The Google Maps Distance Matrix API returns information based on the recommended route between the start and end points, as calculated by the Google Maps API, and consists of lines containing duration and distance values for each pair

a. Required Parameters

- origins - Starting point to calculate the distance and travel time. You can provide one or more locations separated by pipeline characters (|), in the form of addresses, latitude / longitude coordinates, or place IDs:

- If you forward an address, the service will geocode the string and convert it into latitude / longitude coordinates to calculate the distance. These coordinates may differ from those returned by the Google Maps Geocoding API, such as building entrances rather than their centers.

  origins=Bobcaygeon+ON|24+Sussex+Drive+Ottawa+ON

- If you continue the latitude / longitude coordinates, the coordinates will be used without modification to calculate the distance. Make sure there is no space between the values of latitude and longitude.

  origins=41.43206,-81.38992|-33.86748,151.20699

- If you provide place ID, you must start it with place_id. You can only specify place IDs if the request includes an API key or Google Maps APIs Premium Plan client ID. You can retrieve the place ID from Google Maps Geocoding API and Google Places API (including Place Autocomplete). For examples using place

IDs from Place Autocomplete, see Place Autocomplete and Directions. For more information about place IDs, see the place ID summaries.

origins=place_id:ChIJ3S-JXmauEmsRUcIaWtf4MzE

- destinations One or more locations to use as end points to calculate the distance and time of travel. The options for the destination parameters are the same as the options for the origins parameters described above.



Example Image of Google Maps Distance Matrix API Response

3. SYSTEM ANALYSIS

System analysis aims to identify problem problems that exist in the system and determine the needs of the system built. The analysis includes problem analysis, similar application analysis, system architecture analysis, non-functional requirements analysis and data analysis.

3.1 Non Functional Needs Analysis

Non-functional requirements analysis determines the needs of hardware, software, and users as the material needs analysis that must be met in system design. The required software is Google maps, Android Developments tools, SQLite, Eclipse IDE Java as the framework. While the programming language used Java and XML. For the hardware required during implementation is mobile Android. User analysis is the actors involved in running the system ie Mobile users. In using this system, the user is required to have Assisted-Global Positioning System (A-GPS) network connection and Administrator as the application's contents manager.

3.2 Functional Needs Analysis

Apppliance capability of the planned app can display visual information about the direction and route of the souvenir location of the user's position and the short description. Required data needs in the form of store location by band in bandung. Each location is longlatnya.

3.3 Modeling System

System Modeling is a formal way to describe how the system operates. Illustrates the activities performed and how data moves between them. To represent the process of this model in this study using the use case diagram

3.4 Use Case Diagram

The use case diagram is a model to describe the behavior (behavior) of the system will be made. The use case diagram describes an interaction between one or more actors with the system to be created. With a quick understanding, use case diagrams are used to find out what functions exist within a system and anyone who is entitled to use those functions.

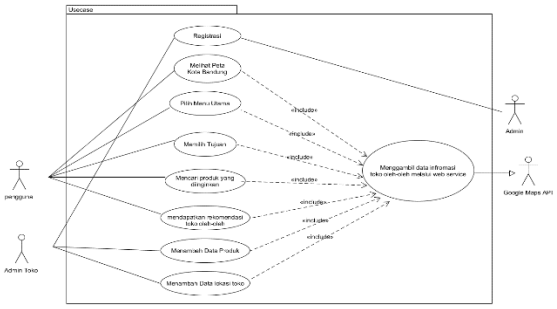


Image Use Case Diagram Navigation Software Determine Location Route Souvenirs

3.5 Class Diagram

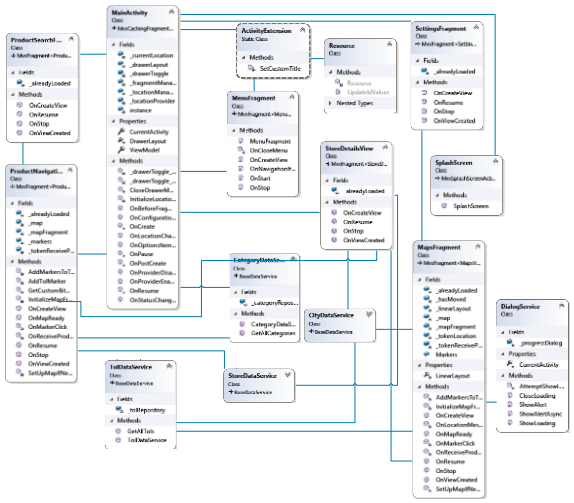


Image Class Diagram Software

3.6 System Planning

The design of the system is the depiction, planning, and sketching or arrangement of some elements contained in software by-by Bandung.

3.7 Relation Schema

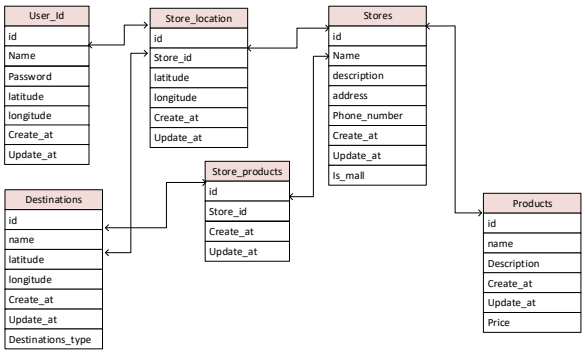


Image Relation Scheme

3.8 Stuktur Menu

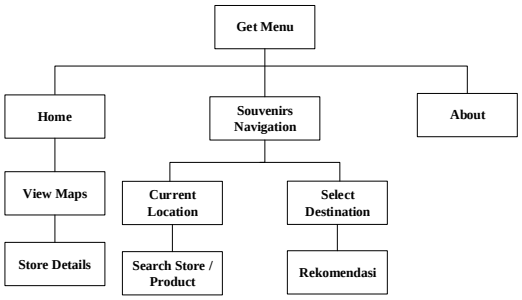


Image The structure of the Mobile Platform menu in Bandung Souvenir software

3.9 The design of the table

Name Field	Type
id	int(10)
name	varchar (191)
latitude	double
longitude	double
created_at	timestamp
updated_at	timestamp
destination_type	smallint(5)

4. IMPLEMENTATION OF INTERFACE

Implementation of the following interface is the result of interface design built on the development of Banudng souvenir applications.

1. Main View

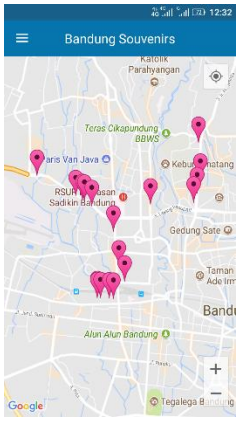


Image Implementation Interface Home Page Map Location on Mobile Platform

2. Menu View

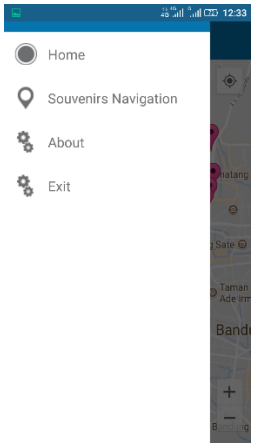


Image of Interface Implementation of Bandung Souvenirs Menu Page in Mobile Platform

3. Menu View Search

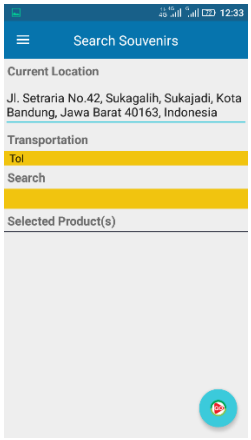


Image Implementation Interface Page Options Menu Search Souvenirs on Mobile Platform

4. Menu View Choice of Destination

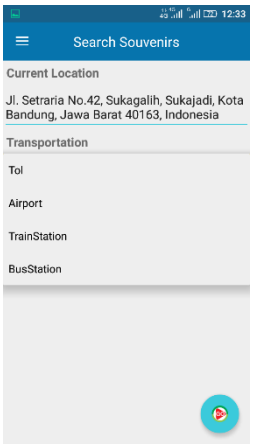


Image Page Interface Implementation Selecting Final Destination in Mobile Platform

5. Menu View Search Product

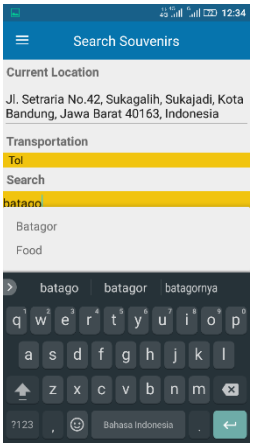


Image Implementation Interface Page Options Menu Finding Products Bandung Souvenirs on Mobile Platform

6. Menu view Product Selection Result

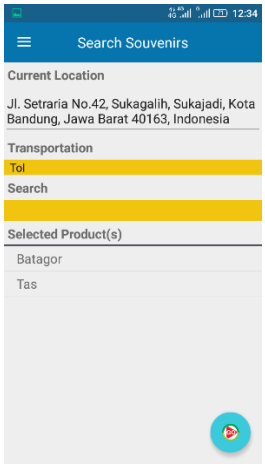


Image Implementation Interface Result Product Selection Pages On Mobile Platform

7. Menu View Recomendation

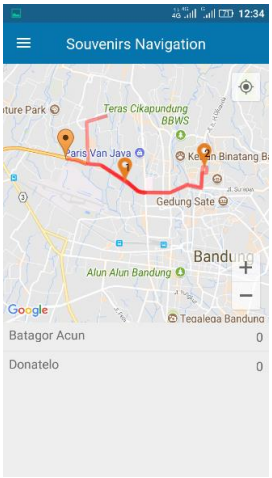


Image Implementation Interface Result Page Product Selection with Recommendations Provided By System on Mobile Platform

5. CONCLUSION

Conclusion

1. The need for information center of souvenirs can not be accessed anywhere and anytime in realtime so that the service to the community is still less than the maximum. To overcome this basic problem then the application of information applications by Android-based souvenir is very precise.
2. The tourists or indigenous bandung can find the location information store nearest and fastest souvenir.
3. This application can be implemented on mobile phone with Android 4.0 operating system and can be operated well.
4. To operate this souvenir center application requires internet connection and GPS must be in active state.

Based on the above and by seeing the function of Location Based Service technology that can visualize information interactively then, the author raised the title DEVELOPMENT OF NAVIGATION

APPLICATION AND DETERMINING THE NEAREST ROUTE WITH THE FASTEST TIME TOWARD PLACE GIFT SHOP IN BANDUNG CITY ON ANDROID PLATFORM which will help the user Knowing the location of any place that will be in and passed souvenirs.

Suggestion

Suggestions for subsequent developments are enhanced or updated coding to better detect routes and searches. Development by adding a call feature that can contact directly where the destination, ordering products on the mobile so as to facilitate the tourists / users in making purchases of gift products.

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