APPLICATION DEVELOPMENT DAILY REPORT OF BHABINKAMTIBMAS UTILIZE GPS CENSOR FOR DECISION SUPPORT FEATURES FOR ANDROID

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ABSTRACT

Bandung Polrestabes located on Merdeka street number 18-21 Babakan Ciamis, Bandung Sumur Bandung City has as many as 151 Bhabinkamtibmas members, each Bhabinkamtibmas member is assigned to the village or kelurahan. Bhayangkara is a Trustee of Security and Order of Society or commonly abbreviated as Bhabinkamtibmas is a member of the Republic of Indonesia (POLRI) state police who is responsible for fostering community security and order (KAMTIBMAS) and also developing community policing functions (POLMAS) in the village. Based on interviews and observations with Bhabinkamtibmas officers, one of the usual activities carried out by Bhabinkamtibmas is to conduct house-to-house visits in all of its assignment areas. When making a home visit to the house, members of Bhabinkamtibmas must bring paper reports of activities and carry out documentation as evidence of activities carried out. After the visit, members of the Bhabinkamtibmas must attach a photo of the activity. Based on the description above, the writer draws conclusions to make a mobile application that can help Bhabinkamtibmas, the application built can help validate reports on activities using geo tagging and gps.

Kata kunci : Haversine, Google Maps API, Geo Tagging, GPS Censor, Android application

1. INTRODUCTION

1.1 Latar Belakang

Bandung Polrestabes located on Merdeka street number 18-21 Babakan Ciamis, Bandung Sumur Bandung City has as many as 151 Bhabinkamtibmas members, each Bhabinkamtibmas member is assigned to the village or kelurahan. Bhayangkara Pembina Security and Order of Society or commonly abbreviated as Bhabinkamtibmas is a member of the Republic of Indonesia State Police (POLRI) who is tasked with fostering public security and order (KAMTIBMAS) and also developing community policing functions (POLMAS) in the village / kelurahan. Bhabinkamtibmas is a change of name from Babinkamtibmas (Guardian of Community Security and Order) in accordance with the decision of the head of the Republic of Indonesia state police, number: KEP / 8 / II / 2009, regarding changes to the Kapolri field manual number: BUJUKLAP / 17 / VII / 1997, concerning the term Babinkamtibmas (Guardian of Security and Public Order) becomes the Bhabinkamtibmas (Bhayangkara Pembina Security and Order) which is carried out by each member of the National Police from the rank of Brigadier to the Inspector [1]. Bhabinkamtibas is divided into three regions, namely the western region, the central region and the eastern region where each region has one supervisor.

Based on the interview of Mrs. Lilis Nunung, S.AP and a questionnaire with Bhabinkamtibmas officers, one of the usual activities carried out by Bhabinkamtibmas is to conduct house-to-house visits in all of her assignment areas. When making a home visit to the house, members of Bhabinkamtibmas must bring paper reports of activities and carry out documentation as evidence of activities carried out. After the visit, members of the Bhabinkamtibmas must attach a photo of the activity. Constraints that are often faced are members of Bhabinkamtibmas often experience difficulties when recap reports because there are often missing or damaged report files. The problem of the two police chiefs cannot monitor the Bhabinkamtibmas members who carry out activities. So often police chiefs do not know which Bhabinkamtibas members are diligent in carrying out tasks.

Based on the description above, the writer draws conclusions to create a mobile application that can help Bhabinkamtibmas, the results of which will be stated in the form of a final project report with the title

"APPLICATION DEVELOPMENT DAILY REPORT OF BHABINKAMTIBMAS UTILIZE GPS CENSOR FOR DECISION SUPPORT FEATURES FOR ANDROID".

1.2. Purpose and Objectives

Based on the problems that have been mentioned, the magsud of this study is to build a daily report android application in Bhabinkamtibmas to help daily report tasks using photo tagging and Google Map API, while the objectives to be achieved in this research are.:

a. Make it easier for Bhabinkamtibmas members to carry out task reporting activities and recap data.
b. Facilitate Polres in terms of monitoring members of Bhabinkamtibmas.
c. Polres do not know about fuel consumption every day Bhabinkamtibmas in carrying out tasks.

2. CONTENTS OF RESEARCH

2.1 Basic Assigment of Bhabinkamtibmas

Bhabinkamtibmas main tasks carry out community development, early detection, and mediation / negotiation in order to create conducive conditions in the village / kelurahan. In carrying out the main tasks, as referred to in paragraph (1) Bhabinkamtibmas conducts the following activities [1] :

a. Door-to-door visits to all assignments.
b. Do and help solve problems (Problem Solving).
c. Arrange and safeguard community activities.
d. Receive information about the occurrence of a crime.
e. Provide temporary protection to stray people, victims of crime and violations.
f. Participate in providing assistance to victims of natural disasters and disease outbreaks.
g. Providing guidance and guidance to the community or community in relation to the problems of the police and police services.

2.2 Wewenang Bhabinkamtibmas

Bhabinkamtibmas dalam melaksanankan kegiatan Polmas, berwenang untuk :

a. Menyelesaikan perselisihan warga masyarakat atau komunitas.
b. Mengambil langkah-langkah yang diperlukan sebagai tindak lanjut kesepakatan FKPM dalam memelihara keamanan lingkungan.
c. Mendatangi Tempat Kejadian Perkara (TKP) dan melakukan Tindakan Pertama (TP) di TKP.

2.3 *Location Based Service* (LBS)

Location Based Service (LBS) or location-based services is an information service that can be accessed with mobile devices through the network and capable of displaying the geographical position of the mobile device. Location Based Service can function as a service to identify the location of a person or a particular object, such as finding the location of the desired place or other location [2].

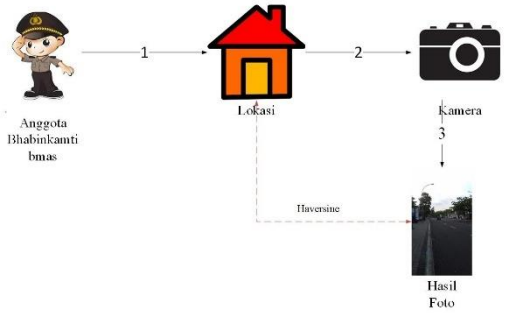
2.4 *Global Positioning System* (GPS)

Global Positioning System (GPS) is a navigation system that uses satellites that are designed to provide instant positioning, speed and time information in almost all places on the face of the earth, at any time and in any weather conditions [3].

While the device for receiving satellite signals that can be used by users is generally called a GPS Tracker or GPS Tracking, by using this tool it is possible for users to track the position of vehicles, fleets or cars in Real-Time

2.5 Analisis Metode Validasi Laporan

Dalam penelitian ini untuk memvalidasi laporan dengan menggunakan data gambar dan *Haversine formula*. Berikut ini gambar analisis validasi laporan pada aplikasi E-Bhabin.



Picure 1 Report Validation Analysis

The following is a description of the analysis of the E-Bhabin application mobile platform validation method :

a. Bhabinkamtibmas members make a visit to the location.
b. After the location, the members fill in the form according to the task being carried out.
c. After performing the task and filling out the form according to the task, members of Bhabinkamtibmas take pictures as proof of the task.
d. To validate the report whether the report is valid or invalid by comparing the data from the photo of the proof of the task and the location of the officer using Haversine formula, if the distance of the location with the photo is less than 100 meters then the report is valid, if the distance of the location is more than 100 meters then the report is invalid.

2.6 Report Validation Calculation

Haversine method is used to calculate the distance between points on the earth's surface using latitude and longitude as input variables. Assuming that the earth is perfectly round with a radius of R:

6371 Km, with a slope of 10: 0.0174533 radians and locations of 2 points on the sphere coordinate (latitude and longitude). The following is the Haversine formula:
x = (Lon2 – Lon1) * cos ((Lat1 + Lat2) / 2)
y = (Lat2 – Lat1)
d = sqrt (x*x + y*y) * R
Information :
x = Longitude
y = Latitude
d = Distance
R = Earth Radius = 6371 km
10 = 0.0174532925 radian

Table 1 Report Validation 1

NRP	75100681
Name	Muhamad Ali
Latitude Officer	-6.901900
Longitude Officer	107.708778
Latitude Photo	-6.901903
Longitude Photo	107.708780

Location : Lat1 = -6.901900, Long1 = 107.708778
Photo : Lat2 = -6.901903, Long2 = 107.708780
Lat1 = -6.901900 * 0.017453293 radian
= -0.1204608829567 radian
Long1 = 107.708778 * 0.017453293 radian
= 1.879872861105954 radian
Lat2 = -6.901903 * 0.017453293 radian
= -0.120460935316579 radian
Long2 = 107.708780 * 0.017453293 radian
= 1.87987289601254 radian
x = (long2 - long1) * cos ((lat1 + lat2) / 2)
= (1.87987289601254 - 1.879872861105954) * cos ((-0.1204608829567 + (-0.120460935316579) / 2))
= -0.000000034906586 * cos -0,1204609091366395
= -0.000000034906586 * 0.992753354
= -0.0000000254917
y = (lat2 - lat1)
= (-0.120460935316579 - (-0.1204608829567))
= -0.00000005235
d = sqrt (x*x + y*y) * R
= sqrt (-0.0000000254917 * -0.0000000254917 + -0.00000005235* -0.00000005235) * 6371
= sqrt (0.00000000000000339) * 6371
= 0.00000005822 * 6371
= 0.000371km
So the distance between Aiptu Muhammad Ali and the location of the photo is 0.000371km or 0.3 meters because of the distance of the officer with a photo taking distance of less than 100 then the report is valid.

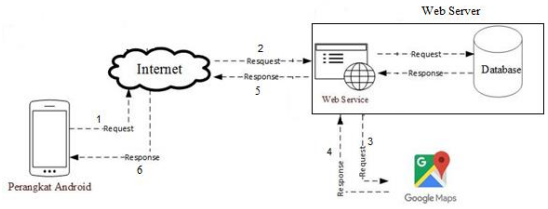
Tabel 2 Validasi Laporan 2

NRP	82030471
Name	Robi Sukarsa
Latitude Officer	-6.973805
Longitude Officer	107.626970
Latitude Photo	-6.973825
Longitude Photo	107.626985

Location : Lat1 = -6.973805, Long1 = 107.626970
Photo : Lat2 = -6.973825, Long2 = 107.626985
Lat1 = -6.973805 * 0.017453293 radian
= -0.12171587 radian
Long1 = 107.626985 * 0.017453293 radian
= 1.878445042 radian
Lat2 = -6.901903 * 0.017453293 radian
= -0.121716211 radian
Long2 = 107.708780 * 0.017453293 radian
= 1.878445304 radian
x = (long2 - long1) * cos ((lat1 + lat2) / 2)
= (1.878445304 - 1.878445042) * cos ((-0.12171587 + (-0.121716211) / 2))
= -0.0000002617 * cos - 0,12171604
= -0.0000002617 * 0.992602
= -0.00000025986
y = (lat2 - lat1)
= (-0.121716211 - (-0.12171587))
= -0.000000349
d = sqrt (x*x + y*y) * R
= sqrt ((-0.00000025986 * -0.00000025986) + (-0.000000349* -0.000000349)) * 6371
= sqrt (0.000000000000189) * 6371
= 0.0000004351 * 6371
= 0.002772km
So the distance between Bripka Robi Sukarsa and the location of the photo is 0.002772km or 2. meters because of the distance of the officer with a photo taking distance of less than 100 then the report is valid.

2.7 Analysis of System Architecture

System architecture analysis aims to identify the architecture to be built. The following is the architecture of the E-Bhabin application system that will be built. The following is the mobile system architecture of the E-Bhabin application that will be built :

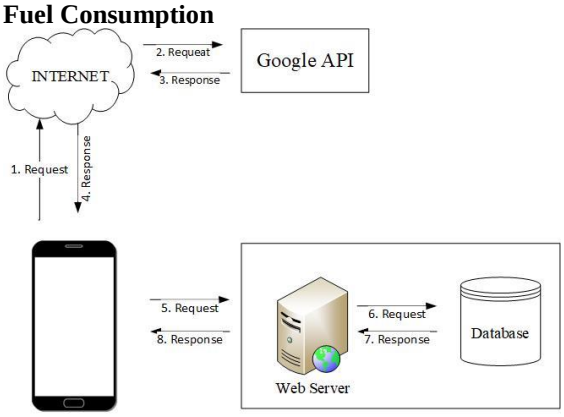


Picture 2 Analysis of System Architecture

The following is a description of the system architecture :

a. Perangkat android pengguna melakukan request data ke server melalui internet.
b. Web Server menerima request data dan menentukan jenis request yang diminta.
c. Web server menerima request data lokasi, maka web server akan langsung mengirim request ke google maps, sedangkan jika menerima request data text maka server akan langsung mengieim request data ke database.
d. Google map menerima request data lokasi dan menirim data lokasi ke web server.
e. Setelah web server menerima respon untuk data yang diminta, data akan dikirim ke perangkat android pengguna untuk memproses data dalam bentuk JSON.
f. Setelah diproses, maka data akan dikirim kepada pengguna sesuai dengan request yang diminta oleh pengguna.

2.8 Architecture Analysis to Get Distance for Fuel Consumption



Picture 3 Architecture Analysis to Get Distance for Fuel Consumption

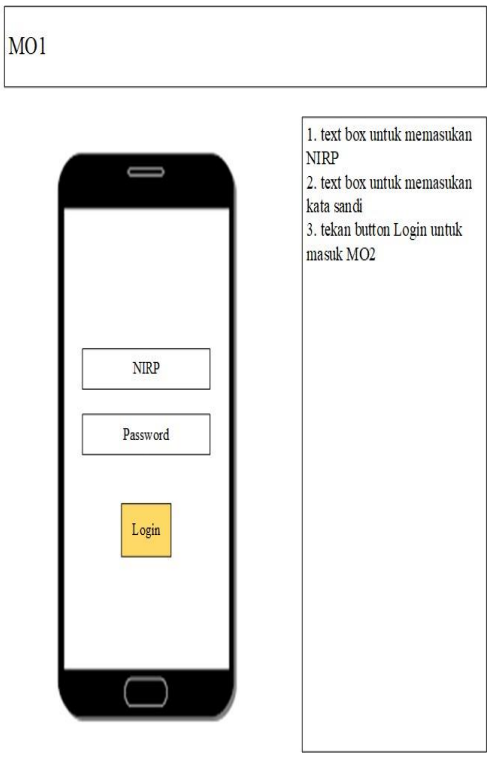
The following is a description of the picture :

a. The Application Requests distance data to Google API using the internet network.
b. Google Map accepts requests for distance data requests over the internet.
c. Google Map responds to distance data requests and sends data over the internet network.
d. The application accepts distance data requests via an internet connection.
e. The application requests the fuel consumption data to the web server.
f. The web server sends request data requests to the database.
g. The database responds to data requests from the web server.
h. The web server responds and sends fuel consumption data to the application, then the application calculates fuel consumption costs based on the distance data requested.

2.9 Interface Design

Interface design aims to describe the application that will be created. Following is the interface design in the E-Bhabin application.

1. Login Page



Picture 4 Login Page

2. Main Course

MO2



1. text box untuk memasukan Lokasi Laporan
2. text box untuk memasukan Nama/Judul Laporan
3. tekan button Cari untuk masuk MO9
4. Menampilkan Statistik Laporan yang Sudah Masuk
5. Menampilkan Foto terbaru dari laporan
6. tekan button kunjungan penduduk untuk masuk MO3
7. tekan button kunjungan usaha untuk masuk MO4
8. tekan button pemecahan masalah untuk masuk MO5
9. tekan button laporan kagiatan untuk masuk MO6
10. tekan button laporan indormasi untuk masuk MO7

Picture 5 Main Course

3. Menu of Population Visit Report

MO3



1. text box untuk memasukan nama
2. radio button untuk memilih jenis kelamin
3. text box untuk memasukan tempat tanggal lahir
4. text box untuk memasukan suku/warga negara
5. text box untuk memasukan alamat lengkap
6. text box untuk memasukan nomor telepon
7. text box untuk memasukan info pekeraan
8. button unggah foto kegiatan laporan untuk menyisipkan foto kegiatan yg sedang dilalukan
9. tekan button kirim untuk mengirim data laporan

Picture 6 Menu of Population Visit Report

4. Report Menu for Business Visits

MO4



1. text box untuk memasukan nama perusahaan/kantor
2. text box untuk memasukan jam kerja
3. text box untuk memasukan jenis usaha/bidang
4. text box untuk memasukan nomor telepon
5. text box untuk memasukan alamat perusahaan/kantor
6. text box untuk memasukan nama penanggung jawab usaha/kantor
7. radio button untuk memilih jenis kelamin
8. text box untuk memasukan alamat penanggung jawab usaha/kantor
9. text box untuk memasukan nomor telepon penanggung jawab usaha/kantor
10. button unggah foto kegiatan laporan untuk menyisipkan foto kegiatan yg sedang dilalukan
11. tekan button kirim untuk mengirim data laporan

Picture 7 Report Menu for Business Visits

5. Troubleshooting Report Menu

MO5



1. text box untuk memasukan hari tanggal dan waktu
2. text box untuk memasukan tempat kejadian perkara
3. text box untuk memasukan uraian kehadian
4. text box untuk memasukan nama pelapor/korban
5. text box untuk memasukan alamat pelapor/korban
6. text box untuk memasukan pekrjaan pelapor/korban
7. text box untuk memasukan nama terlapor
8. text box untuk memasukan alamat terlapor
9. text box untuk memasukan pekrjaan terlapor
10. button unggah foto kegiatan laporan untuk menyisipkan foto kegiatan yg sedang dilalukan
11. tekan button kirim untuk mengirim data laporan

Picture 8 Troubleshooting Report Menu

6. Report Menu for Bhabinkamtibmas Activies

MO6



1. text box untuk memasukan hari tanggal dan waktu
2. text box untuk memasukan tempat kegiatan
3. text box untuk memasukan nama kegiatan
4. text box untuk memasukan keterangan kegiatan
5. button unggah foto kegiatan laporan untuk menyisipkan foto kegiatan yg sedang dilalukan
6. tekan button kirim untuk mengirim data laporan

Picture 9 Report Menu for Bhabinkamtibmas Activies

7. Information Report Menu

MO7



1. text box untuk memasukan nomor info
2. text box untuk memasukan nama dari sumber info
3. text box untuk memasukan pekerjaan dari sumber info
4. text box untuk memasukan alamat sumber info
5. text box untuk memasukan hari
6. text box untuk memasukan tanggal
7. text box untuk memasukan waktu
8. text box untuk memasukan tempat
9. radio button untuk memilih bidang laporan informasi
10. button unggah foto kegiatan laporan untuk menyisipkan foto kegiatan yg sedang dilalukan
11. tekan button kirim untuk mengirim data laporan

Picture 10 Information Report Menu

8. Profile Menu

MO8



1. text box untuk menampilkan nama Bhabinkamtibmas
2. text box menampilkan NRP
3. text box menampilkan alamat
4. text box menampilkan nomor telepon

Picture 11 Profile Menu

9. Menu View Profile

MO9

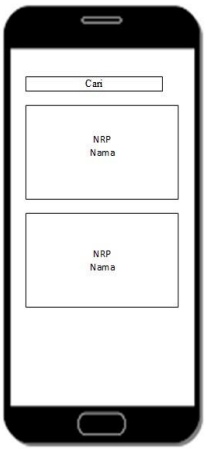


1. text box untuk memasukan nama laporan yang ingin di cari
2. pada menu lihat laporan terdapat tampilan gambar dari hasil laporan

Picture 12 Menu View Profile

10. Manage Menu Officer

MO10

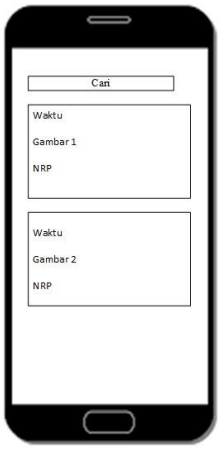


1. text box untuk memasukan nama anggota Bhabinkamtibmas yang ingin di cari
2. pada menu data petugas terdapat nama dan NRP

Picture 13 Manage Menu Offier

11. Menu Data Report on Population Visits

MO11

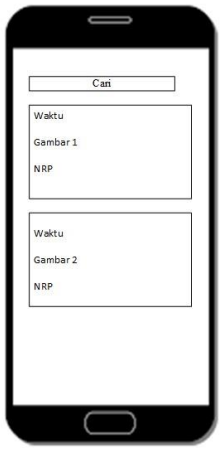


1. text box untuk memasukan data laporan yang ingin di cari
2. pada menu data laporan kunjungan penduduk terdapat gambar, waktu pelaporan dan NRP

Picture 14 Menu Data Report on Population Visits

12. Menu Data for Business Visit Report

MO12

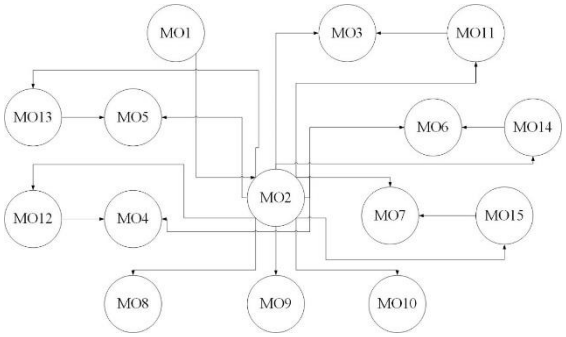


1. text box untuk memasukan data laporan yang ingin di cari
2. pada menu data laporan kunjungan usaha terdapat gambar, waktu pelaporan dan NRP

Picture 15 Menu Data for Business Visit Report

2.10 Semantic Network

The Semantic Network is an illustration of graphic knowledge that shows the relationships between objects (circles) and lines that describe the formation between objects.



Picture 16 Semantic Network

Table 3 Display Code

No.	Display Code	Description
1	MO1	Login Page
2	MO2	Main Course
3	MO3	Menu of Populaion Visit Report
4	MO4	Report Menu for Business Visit
5	MO5	Troubleshooting Report Menu
6	MO6	Report Menu for Bhabinkamtibmas Activies
7	MO7	Information Report Menu
8	MO8	Profile Menu

9	MO9	Menu View Profile
10	MO10	Manage Menu Officer
11	MO11	Menu Data Report on Population Visits
12	MO12	Menu Data for Business Visit Report
13	MO13	Data Menu Troubleshooting Report
14	MO14	Menu Data Report on Bhabinkamtibmas Activities
15	MO15	Information Report Data Menu

2.11 Conclusion of Alpha Testing

Based on the results of the tests that have been carried out, it can be concluded that all processes in the application have run as expected.

2.12 Conclusion of Beta Testing

Based on the results of beta testing, it was concluded that :

a. Bhabinkamtibmas officials agree if this application helps in recap reporting data.
b. Supervisors at the Polres agree if this application helps in monitoring officers when performing tasks.
c. Supervisors at the police station do not agree if this application helps to know the fuel consumption because the results are still not accurate.

3. CLOSING

3.1. Conclusion

Based on the results of the testing and discussion that has been made, it can be concluded that:

a. E-Bhabin application makes it easier for Bhabinkamtibmas members to carry out report tasks.
b. E-Bhabin application makes it easy for Bhabinkamtibmas members to recap data.
c. E-Bhabin application helps supervisors in sending assignment letters to officers.

3.2. Suggestion

The advice that can be given for the development of this E-Bhabin application is:

a. Add features to see the location of the officer so that the supervisor can find out the location of the officer.
b. Optimizing features see fuel consumption because the results are still less accurate.

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