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GEOGRAPHICAL INFORMATION SYSTEM DESIGN ANDROID-BASED CHILDREN SERVICES

Ada Udi Firmansyah
Information System, Sekolah Tinggi Manajemen Informatika Dan Komputer Royal, Indonesia

Corresponding author:
audi.ciyanda@gmail.com

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ABSTRACT

Day Care Centre (TPA) is a form of Early Childhood Education (PAUD).through the non-formal education as a place for welfare functions as a substitute for the family for a certain period of time for children who have parents who are very busy with their work and career. There are many Day Care Centres in Indonesia, but the society members do not know about it. The community still uses the old system in solving the child care day problem namely; they ask the neighbor to care their child(ren) or call other people to come their house to care their chid(ren). But the system is not full of effective and efficiently because by this system, not a few parents are so sorry because they do not have time to care their child(ren) by themselves. To solve the problem, searching the locations of the Child Care Houses have been made a geographical information system based on Android in searching the location of DayCare Centre, especially in Padang City in order to help the society members in searching the location in particlarly the parents find out the place more easily by using Android Application.

INTRODUCTION

Daycare Centre is a business which focuses on the service to the society especially to all parents who have works or jobs, but they have a baby which they must care. The child care service is done by some caregivers with some available facilities. DayCare Centre (TPA) is usually combined by the Early Childhood Education (PAUD) or Kinder Garden (TK) which have provided the play areas for the child(ren) as function to train their creativities and imaginations. But not all the DayCare Centre have the play areas. Some DayCare Centre also have the activities and habits such as study together, discuss, and other.

The development of the age, the parents must work harder to get much money for their family. And at the same time, the parents must think how their children are safe and comfortable to live. This is certainly a challenge for parents who have toddlers. With the conditions they face, an alternative solution is found, which entrust

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their children to the caregiver services of children who are in the DayCare Centre (TPA).[1],[2].

By the problems which the society is having at present, Day Care Centre in the big cities especially in Padang West Sumatera it must be available. It certainly is different shapes and facilities. But where is the position of the landfill? How does the landfill look like? And what information is there about the landfill ?. So far not many people know where and how the daycare center. Not infrequently people ask where the Child Care Park is located.

By the current information technology at this time, to find the information is not difficult. Even just sit on the sofa, the people can get the information they need. Likewise in the cases discussed. Finding childcare locations in the city of Padang is not a difficult thing for the community. Using Geographic Information Systems we can easily find information about the existence of an object location. Coupled with features that people are familiar with Android. Communities can access the information they need whenever and wherever they are.[3]–[8].

METHOD

The Geographical information system (GIS) is a form of information system that presents information in graphical form using maps as an interface. GIS is composed of the concept of multiple layers and relationships. The basic capability of GIS is integrating various database operations such as queries, analyzing them and displaying them in the form of mapping based on their geographical location.

The function of GIS is to improve the ability to analyze spatial information in an integrated manner for planning and decision making. GIS can provide information to decision makers for the analysis and application of spatial databases.

Mobile GIS is an integration of the work of software / hardware for accessing data and geospatial services through mobile devices via wired or wireless networks. In general, mobile GIS is implemented in two main application areas, namely Location Based Services and GIS for field activities.

Android is a Linux-based operating system designed for touch screen mobile devices such as smartphones and tablet computers. Android was originally developed by Android, Inc., with financial support from Google, which later bought it in 2005. The operating system was officially released in 2007, in conjunction with the establishment of the Open Handset Alliance, a consortium of hardware, software, and telecommunications aimed at advancing the open standards of cellular devices.

GPS, short for Global Positioning System, is a satellite network that continuously radiates radio signals with very low frequencies. The GPS receiver passively receives this signal, with the proviso that the view of the sky must not be obstructed, so usually this device only works in open space. GPS satellites work on precise time references and emit data that shows the location and time of the moment. The operation of all existing GPS satellites is synchronized so that it emits the same signal. The GPS receiver will work if it receives signals from at least 4 GPS satellites,

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so that its position in three dimensions can be calculated. At present there are at least 24 GPS satellites that operate every time and are equipped with several backups. The satellite, operated by the United States Department of Defense, orbits for 12 hours (two orbits per day) at an altitude of about 11,500 miles and moves at a speed of 2000 miles per hour. There is a receiving station on earth that carefully calculates the orbits of each satellite.

GPS can provide information about position, speed and time anywhere on earth at any time, with the accuracy of positioning in fractions of a millimeter to meters. Positioning with GPS satellites is bound by distance, which is measuring the distance to several GPS satellites whose coordinates are known.

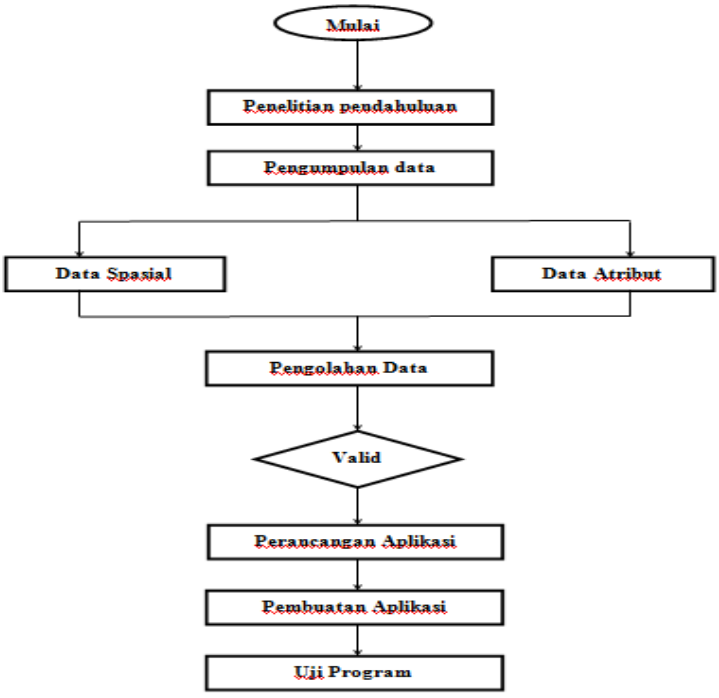
GIS Cloud is the first web-based GIS application supported by cloud computing that provides full desktop GIS enriched with web features. GIS Cloud offers the ease and efficiency of visualization, analysis and exploration of geographical information.

A. Research Location

Research in finding information on daycare parks in the city of Padang was carried out along the Padang city area. The first data search starts from the Jati area, then the Alai, Padang, Purus, Pangilun and Kurao regions. The second data search starts from the areas of Air Fresh, Pauh, Tabing, and Lubuk Buaya. The third data search starts from Lubeg, Kp Jua, Pegambiran, Gaung, Bandar Buat, Gadut, Banuaran, Aur Duri, Simpang Haru

B. Research Flow Chart

The form of Research Flow Chart of this final assignment is:



Picture 1. Research Flow Chart

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1. Introduction of Research

It is the beginning step in this research, where information about the location of child care services in the city of Padang is first sought for information through the Google search engine. The information sought is in the form of name, address, picture, cost information, capacity, and customer facilities that they provide.

a) Data Collection

It is done by observing directly to various location of DayCare Centres in Padang City, in searching the location where the DayCare Centres are, and getting the pictures and the point of coordinate location of DayCare Centres by using the GPS or GPS Application available. Before doing the observation to the locations of DayCare Centres, firstly, it will be done the survey by exploring the various areas in Padang City.

1. Spatial Data

The Spatial data were collected in the form of a map of the overall Padang and its districts, sub-districts and sub-districts

Picture 2. The Padang Map of Spatial Data

1. Attribute Data

The *attribute data* were collected by getting the information about the DayCare Centres in Padang City. Thecollected infomation were the name of location, the coordinate of taken location are taken by using 10th Garmin Etrex GPS, the capacities of children, facilities and pictures of locations.

b) Processing Data

the Spatial and attribute data were collected then they are converted by using some hardwares:

1. Hardwares

The Hardwares were used in converting the data, namely:

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a. Toshiba Laptop Icore 3
b. 10th Garmin Etrex GPS
c. Android Smartphone

2. The Softwares

The softwares were used, namely:

a. Windows 7
b. MapInfo Profesional 9.0
c. Eclipse Juno
d. Photoscape / Photoshop
e. One Touch Location

RESULT AND DISCUSSION

A. Application Performance Test

This test is carried out to see the process of running the GIS application for Android-based child care parks. The purpose of this test is to see whether the basic functions of this software are running as intended or not.

The first show that will appear when the user opens the Android SIG TPA application is the login page. The user must choose to log in to access the information in it

Picture 3: Entering Page

After the user enters then a home page will appear where an information access menu is available.

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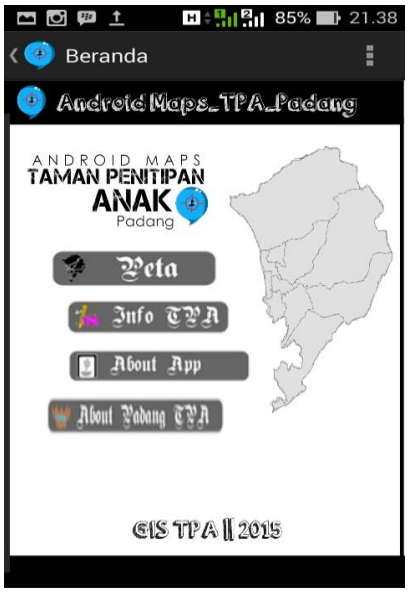
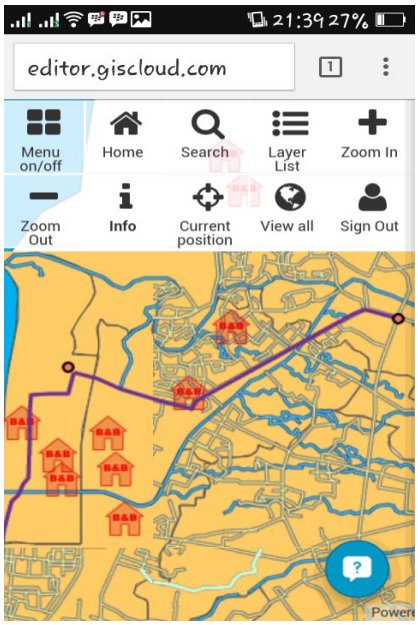


Picture 4. Home Page

When the user opens the map menu, the system will display the giscloud browser link and display a map of the field with its objects and paths.



Picture 5. Map Page

When the user accesses the tpa info menu, the system displays the DayCare Centre (TPA) data from the parse.com database. The following displays the DayCare Centre (TPA) info page.

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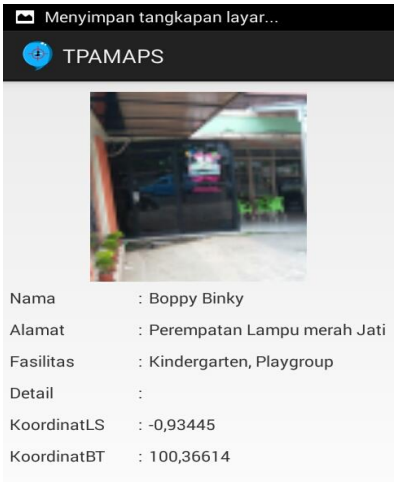
Picture 6. DayCare Centre (TPA) Information Page

When the user selects one of the DayCare Centres (TPAs), the system will display information about the selected the DayCare Centres (TPA).



Picture 7. DayCare Centre Information Page

When the user selects a menu about Padang TPA, the system will display information about Padang City and Daycare Park.

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Picture 8. DayCare Centre in Padang Page

When the user selects the about app menu, the system will display information about the Android TPA GIS application and the author's data.

Picture 9. Application Page

B. Analysis of Data Collection Results

From the results of data collection at the Child Care Park in Padang City, the following data were obtained

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Tabel 1. data collection at the Child Care Park in Padang

Name	Address	LS	BT
PAUD IT Abqoriy	Jln. Teuku Umar No 1D, Simpang Pasar Alai	0,92707	100,36733
TK IT Adzkia 1	Jln. Perintis Kemerdekaan No 91, Jati Baru	0,9299	100,42866
Boppy Binky Daycare	Perempatan Lampu merah Jati	0,93445	100,36614
Ar Raudah	Jln. Bandar Buat No 29	0,95124	100,4267
Citra Al Madina	Jln. Purus 1 no 8	0,94129	100,35351
Istana Pelangi	Kurao Pagang	0,88885	100,3695
Amalia Syukra	Jln. Palupuh No 5, Jati	0.93979	100,36516
Yayasan Amanah	Jln. Padang Pasir IX No 59	0,93656	100,35845
Kepompong Kids	Jln. Sisingamangaraja No 49 Simpang haru	0,94576	100,37586
PAUD tunas bangsa	Jln. Aur No 7 Ujung Gurun	0,93298	100,35893
TPA Jabal Rahmah	Jln. Garuda 1 No 3, depan asrama haji Tabing	0,89616	100,35154
Asma Ul Husna	Jln. Adinegoro Ganting, kec. koto tangah	0,85322	100,33608
TK IT Husnul Khatimah	Jln. Prof Dr Hamka No 236, Air tawar timur	0,89325	100,35227
TK islam Tharifah	Jln. Lubuk Gajah no 83, Pisang	0,9352	100,41191
TK Alya Zahira	Jln. Kp Jua Simp. Perum Griya Lestari	0,96472	100,40992
Yayasan Ashabul Kahfi	Jln. Kolam Indah Raya No 9, Anak air	0,98116	100,3807
Ummi Khalifah	Perum Jala Mitra Blok E 4 no 8, Kel. Pampangan	0,97606	100,38325
Yayasan Dian Andalas	Komp. Perum Unand Blok B, Ulu gadut	0,94919	100,45145
Ridotullah	Ulu Gadut	0,94953	100,45997
Telkom School	Jln. Aur Duri Indah Raya	0,95554	100,38155

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CONCLUSION

This geographical information system can provide information on the location of the DayCare Centre, DayCare Centre photos, and the DayCare Centre information. This geographical information system is made based on Android so that it can be used on smartphones so users don't have to go to internet cafe. This geographical information system is made online so it can be accessed anywhere and anytime. This geographical information system was created in order to facilitate users in finding information on Child Care Parks in the city of Padang.

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