Android Application for Crime Prevention with GPS Integrated Technology

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Abstract. Vigilance is a top priority in carrying out daily activities considering the number of various crimes that arise due to the increasingly rampant social conflicts regardless of economic class. During 2019, the crime rate in the Labuhanbatu police area (Labuhanbatu, Labuhanbatu Selatan, Labuhanbatu Utara) increased by approximately 10 percent from the previous year, and is still dominated by criminal theft with ballast, motor vehicle theft and drug cases, as for the case data in 2018 there were 4,412 cases and in 2019 4,663 cases. Based on the case, the researcher wants to help the community and the police in preventing crime, especially in Labuhanbatu. The research method used is descriptive method that is research based on actual data by comparing theories and then drawing conclusions. This research will create an Android-based application that helps the community and the police in preventing or overcoming crime. This crime alarm application makes it easy for people who use when a crime occurs because it can be accessed directly on the phone and help the police in handling crime.

1. Introduction
Currently, nowadays crime in Indonesia is increasingly rampant. The complexity of modern society requires a variety of abundant material needs and accompanied by social constraints that are not constructive. Desire in owning assets obtained from improper paths encourages a person or group to commit a crime. Crime or crime is a form of action that violates the rules of law that have been set by the government and deviates from social norms and disturbs the community. According to data from the Central Statistics Agency, in 2019 the Metro Jaya Regional Police recorded the highest number of crimes in all provinces in Indonesia, in North Sumatra with 40,498 cases. the crime rate in 2017 was 0.31% with a population in North Sumatra of 13,339,353 and an increase in 2018 the crime rate to 0.35% with a population of 13,103,596 and in 2019 the level crime decreased to 0.32% with a population of 13,215,40. Responding to the things that have been described above, the author provides a new solution to help the community in preventing crimes that occur in themselves and their environment, then for the police it is very easy for them to know the location and position where the crime occurred [1].

To find out where the crime occurred, the system will be based on Android so that the system can be accessed through a smartphone mobile device that has been equipped with GPS (Global Positioning System) so that it can find out the coordinates of the location of the crime, which is in the form of latitude and longitude data [2]. This will make it easier for the police and the public who want to ask for help to get crime protection because this system utilizes services from Google Maps [3]. This system will be made into two parts, the application used by the community and the application used by the police [4]. Applications used by the public can be directly downloaded from the internet and installed on each smartphone, then the application used by the police will be given directly to the police and can be directly
installed on the smartphone [5]. This system can be connected to the nearest user, if a crime occurs the community can immediately ask for help from the closest police. So with this application it is expected that for the year 2021, particularly for Labuhanbatu regency, it can help and reduce crime rates in all fields, and for the police it is very easy to handle a crime case.

2. Methodology
A smartphone is generally equipped with various advanced features so that it can be used for various purposes. Some of these features are like telephone, sms, camera music and video players, internet, editing document, ebook viewer, game application and others. Android is a communication tool from mobile devices that includes an operating system [6]. Android provides an one of platform for developers smartphone [7]. Smartphone is a cell phone or smart cell phone equipped with the latest features and high capabilities like a computer [8]. AVD consists of a hardware profile that can set options to determine the emulator hardware features. Whether to use a physical QWERTY keyboard or not, how much internal memory, and others. AVD also has an Android version represent, which means we determine which version of the Android platform will run on the emulator [9].

The design tools explains the activities that can be carried out by the community and the police in the application system [10] [11]. The use case above explains that the public can register so that the data can be stored as community data and the police can also do the same thing then log in. Activity Diagram serves as a model of the workflow process and the sequence of activities in a process. Activity diagrams in crime alarm applications, Figure 1. Sequence Diagram illustrates the interaction between objects in and around the system, its purpose is to show a series of messages sent through several objects, as well as interactions between objects that occur at certain points in the system execution, Figure 2.

![Activity Diagram](image1)

![Sequence Diagram](image2)

the Activity Diagram explains that [12] [13]:
1. Community / Police running Applications and Applications Showing Splash Screen.
2. The Community / Police Then Register by clicking Register.
3. Society / Police enter Biodata.
4. The data entered will be stored and the output can be seen in the admin system.
5. Admin does the login to the Crime Alarm system.
6. Admin can see the Community / Police Data that has registered.

the Sequence Diagram explains that [14] [15]:
1. Community / Police running Applications and Applications Showing Splash Screen.
2. The Community / Police Then Register by clicking Register.
3. Society / Police enter Biodata.
4. The data entered will be stored in a database with the name of the new community/po
cilce.

3. Result and Discussion
Smartphone can also be interpreted as a cellular phone that doing by with an methods system OS type
software application that center network a general and standards used for application cellular investors. The
drawing design of the Crime Alarm Application interface has two interfaces namely:

1) Community / Police Interface

2) Admin Interface

Figure 3. Component User Diagram

Figure 4. Admin Component Diagram

In Figure 3, component Diagram of the user from the crime alarm registration application explains
the design on the system there is a Splash Screen To start the application, then enter the main menu
registration, in which there is a community biodata form and police biodata form which aims to input
the registrant data into the MySQL database. In Figure 4, Component Diagram Admin crime alarm
application explains the design of the system there is a Login To start the system so that confidential
data is maintained, then enter the main menu home, then there is a community / police data menu, and
also logout. In building an application that has been designed, an implementation needs to be made,
because the implementation is used as a benchmark or test and analysis of the results of the program
that has been made. The application implementation phase is the process of changing system
specifications into an executable application. At this stage the results will be explained as part of all the
functions that exist in the application such as the registration display, the display requesting help and
the exit display, which will be explained in the steps below. So that the community/polic
can understand in detail how to use it.

Figure 5. Display Starting Menu

Shows the login menu for the user, and if the user has to log out, he must login again to enter the
next menu. Then in this view the user must log out if they do not use this crime alarm application, because if
they remain logged in, the user will continue to incur internet costs that are wasted. Display this
registration menu will be divided into two parts as shown below, Figure 5. From Figure 5 above it can
be seen that the appearance for the registration menu is divided into two parts, namely for the community and for the police. For the community must register first in accordance with the identity card such as Identity Card, Family Card, Passport etc. The community is obliged to fill in their data accordingly, in the event of data falsification, for the future the community will get sanctions if caught using the application incorrectly. Then for the police must also fill in the data in accordance with the identity of the police in his unit, if the data provided is not appropriate it will be immediately visible on the personal server which does not fill in the correct data.

![Figure 6. Display the menu asking for help](image1)

![Figure 7. Display of the location of assistance](image2)

From Figure 6, above it can be seen that the menu asking for help will be directly connected to the location of the community asking for help, then in case of crime to the community can directly press the menu asking for help and will be directly connected to the nearest police force. At this stage the community can immediately know its location and position based on the assistance of Google Maps by the police, so the police can quickly help the community. From Figure 7, above it can be seen that the display of the aid location provides the direction and purpose of the police towards the community asking for help, the police can find the best and fastest route. The route given will provide the fastest route and anticipate traffic jams.

4. Conclusion

Can be conveyed as a conclusion that the application used can be accessed easily by people who have an android mobile phone, the public can also easily use the application. For the police it is also very helpful in their performance in providing the best service to the community. This application is also universal for the public, so for anyone who wants to access this application can be done easily for free, the public does not need to first pay to get this application.
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