# EMERGENCY ALERT SYSTEM FOR REPORTING CRIME ISSUES TO NEAREST POLICE STATION

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**Abstract**- In the recent past there had been a tendency of crime rates to increase and the main reason for this is the lack of possible means to keep the Police informed immediately. Thus there is a possibility of the criminal escaping the crime scene when the Police arrive. A mobile application with an Emergency Alert System to report crimes to the nearest Police Station has been proposed to overcome this issue. There are different types of Crime Alert Systems used all around the world. However in Sri Lanka there is no properly developed computer-based Emergency Alert System to report crimes to Police. The utilization of the introduced application will allow the witness or the victim to inform the nearest Police Station and Mobile Police. The application allows the user to mention the location and share the type or nature of the crime which will allow the Police Officer to be aware of the nature of the crime before he/she arrives at the place of crime. Using the tracking facility available in the application the Police Officer will also be able to identify the exact location of crime. Therefore, this application will assist in the process of decreasing crimes.

**Keywords**- GIS, Location Tacking, Policy, Crime

## I. INTRODUCTION

Generally, the definition of crime is an act punishable by law, usually considered to be a bad act. Crime refers to many types of abuse prohibited by law. Crime includes such things as murder, theft of a car, arrest, possession or dealing with illegal drugs, being naked in public, drunkenness, and theft of the bank. Crime is an act that has been timeless and has been done practically since the beginning of time.

Crimes against people include assault, kidnapping, murder, and sexual assault. Such crimes usually bring serious penalties. Offenses against property include fire incidents, automobile theft, theft, embezzlement, forgery, fraud, negligence, and vandalism. In most cases, in these crimes, there is a slight penalty against the person against the specified crimes. Crime is the most difficult thing to commit. According to this case, the law treats the crime against theft or crime against the person. By using this mobile application anyone can inform the locations of that crime happens. Anyone can use this mobile application from anywhere by typing their name and their mobile number. And then he/she can track the locations and send it to the nearest police station. Then user will get a confirm message whether the tracked location and other information's are send to the police station.

Nowadays there is a possibility to increase crimes in Sri Lanka; there are no strong strategies to control those crimes. Thus because of limitations of informing crimes to police and because of people has no proper way to inform to police about crimes increase this conflict most manner.

Using this application, it happens a crime people can inform police immediately through informing current location to police. The message which generate this application basically send to nearest policeman mobile and nearest police station. In case of information confirm police, officers can arrive crime location in correct, manners in correct time. Basically, this application will help up to certain point reduce the crimes in Sri Lanka.

The initial aim of this project is support police to identify the exact places and aware the people about crimes. Generate a report regarding crime arias. Through this application possibility to reduce happening of crimes in Sri Lanka. We have identified the following objectives.

- To critically study the existing computer-based solutions for Crimes in Sri Lanka.
- To conduct a detailed study on current mobile applications, database and web technologies.
- To design the system and develop the prototype properly.
- Testing and evaluation of the new Emergency alert system for reporting crime issues to nearest police.
- To get the results of the evaluation criteria.

## II. LITERATURE REVIEW

Through the review, it will be thought about regarding the procedure and available practices in crime issues and alert systems.

Jonathan, Klickjonathan.Klick (2003) has presented, using terror alert levels to estimate the effect of police on crime. Changes in the terror alert level set by the Department of Homeland Security provide a shock to police presence in Washington, D.C. Utilizing day by day wrongdoing information amid the period the dread ready framework has been set up, we demonstrate that the level of crimes diminishes essentially, both factually and monetarily, amid high-ready periods. The diminishing in the level of crimes is particularly huge in the National Mall. This gives solid confirmation of the causal impact of police on the level of crimes and proposes an exploration system that can be utilized as a part of different urban areas.

LI YUAN, (2007) has developed a system for this Problem by developing wireless messaging used to fight crime. At the point when police in The Hague in the Netherlands got a report that a vessel had been stolen, they conveyed an instant message about the case to inhabitants who had joined to get neighbourhood crimes cautions on their phones. After a hour, a lady bicycling along a channel who got the message told police through a telephone call that she saw a boat that met the portrayal. The boat was found, and the thief arrested.

Hartman, Ginger. (2012) has developed a system for this problem by developing Wisconsin Crime Alert Network. The Wisconsin Crime Alert Network from the Wisconsin Department of Justice permits neighbourhood, state, government, and ancestral law implementation offices to convey crime ready notices to organizations and people in general focusing on beneficiaries in light of sort of business and area. Law Enforcement Officers from all through the State of Wisconsin will convey cautions about crime and criminal suspects. The officer will choose which of roughly 50 gatherings ought to get the alarm. Gatherings will incorporate drug stores, comfort stores, and banks, and additionally associations and offices, for example, neighbourhood watch, hospitals and schools/ colleges, and private natives. Officers can likewise transfer photographs to send with the alarm. Next the officer will choose a geographic territory to get the alarm. Once the officer sends the caution it goes out immediately to beneficiaries.

Maguire, Ken. (2006) has developed a system, Crime alerts at your fingertips in Boston. Boston is launching a crime alert system that will send text messages, and faxes to inhabitants when crime happen in their neighbourhoods, police and city authorities said yesterday. The framework, keep running by the Boston police and the Internet organization CitizenObserver.com, is meant to disseminate crucial information about crimes, including times, areas, portrayals of suspects, and photos, under the control of those most influenced and those in the best position to enable police to discover suspects. Authorities said they would like to draw in inhabitants, particularly network and crime watch gatherings, as police battle a noteworthy upsurge in crime in some Boston neighbourhoods. By giving at times prompt data and routes for inhabitants to message tips back to agents, police would like to pick up a great apparatus in recognizing and getting offenders. The electronic tips that inhabitants can send back to police would be mysterious, conceivably liberating some from fears of reprisal for helping specialists. The program, which is likewise being utilized as a part of Cincinnati and in a few different urban areas the nation over, enables police to take the data they have gathered from a break-in or bank theft and post it on a site, where it is then consequently transmitted to anyone who login to get the messages. The alerts are also available online.

Witte, Ann Dryden.(1996)Research suggests that some social and criminal justice policies can affect the Crime rate. This is about major criminal justice and social policy issues related to urban crime, such as drugs, domestic

violence, property values, and the underground economy. Family disturbance, drugs, constrained financial openings, and vacant and unsupervised youth are altogether observed to be related with urban crime. The article presumes that real reductions in crimes are probably going to come about just from expanded monetary and social open doors for families and youth, especially for young males. Escalated programs coordinated at families and in danger youth will probably bring lower crime than are programs coordinated at individuals as of now vigorously associated with unlawful exercises. It costs less to keep youngsters in education and training programs than to detain them, and will probably create gainful and balanced grown-ups.

## III. METHODOLOGY

### *A. Data Gathering*

Qualitative and quantitative data required for designing the requirement specification for the new system were gathered by conducting a survey.

### *B. Approach*

In the Emergency alert system for reporting crime issues to nearest police station, process first user should login to the Mobile application by providing user's name and phone number to the system. Then the mobile application will track the coordinates (longitude and latitude) of the location where user is in (where the crime happens). Then those information; User name, User mobile Number, Date and time, small message and coordinates of the tracked and will send to the web server that is in nearest Police station. After taking the information from the mobile application those details will be displayed on those web servers. The location of the crime will be display on a map according to the coordinates that sent from the mobile application. And the web application will send a notification for the user whether the information send successfully or not and give a compliment for the sender for his service Each information that users send will stores in SQL server database successfully and for the work with the application it required continuous internet connection.

### *C. Technology Adopted*

It is necessary to use new technological methodology for the system. It is very important to use acceptable tools so as to develop productive system. Use on any inappropriate tools can solely ends up in develop a system with unnecessary errors and faults and use of those badly chosen technologies additionally can ends up in crashed when the new system implementation. Badly chosen technologies which can be extremely advanced and complicated will enable manufacturing a system with a top quality, however these technologies may result in develop a system that spend lots of time and resources so as to perform a task that is anticipated by the system. It is very important to use applicable programming language and the other necessary tools in order to develop a productive system. Therefore, these technologies and tools can help to develop the system among a minimum development time the most objective of developing this type of an application is to produce the users more efficient work system instead of doing manual approach. Because of that we should use the most applicable tools available in the market to develop the system. Technological considerations - followed during the development of the system Efficiency and Performance Re-usability and flexibility object-oriented development support so according to the Emergency alert system for reporting crime issues to nearest police station. Java and android studio used to develop the mobile application. According to that requirement system has developed by using C# and using SQL database to run on windows operating system.

**• Web Application**

The programming language that is going to apply as the developing language for the system development turned into significantly trusted accuracy, performance. When considering all these technologies which can be associated with the Emergency alert system for reporting crime issues to nearest police station can be applied a web-based technology. The .NET Framework comprises of the regular dialect runtime and the .NET Framework class library. The regular dialect runtime is the establishment of the .NET Framework. You can think about the runtime as an operator that oversees code at execution time, giving providing core services such as memory management, thread management, while additionally authorizing strict write wellbeing and different types of code exactness that advance security and power. The class library is a thorough, question situated gathering of reusable kinds that you can use to create applications extending from customary charge line or graphical UI (GUI) applications to applications in view of the most recent advancements gave by ASP.NET, for example, Web Forms and XML Web services'# programs run on the .NET Framework, it runs on a virtual execution system called the common language runtime (CLR) and a combined set of class libraries. The CLR is the implementation by Microsoft of the common language infrastructure (CLI) and it helps to create execution and development environments in which languages and libraries work together without any flaw. C# source code is compiled into an intermediate language (IL) that conforms to the CLI specification. The IL code and resources such as bitmaps and strings are stored on disk in an executable file called an assembly. It contains a manifest that provides information about the assembly such as types, version, culture, and security requirements.

When the C# program is executed the assembly is loaded into the CLR. Based on the information in the manifest CLR might take various. When the security requirements are met, the CLR performs just in time (JIT) compilation and convert the IL code to native machine code. CLR also provides other services such as exception handling, and resource management. It illustrates the compile time and run-time relationships of C# source code files and the .NET Framework. It demonstrates the relationship of the common language runtime and the class library to our applications and to the general framework. The representation likewise indicates how overseen code works inside a larger architecture.

**• Mobile Application**

Android gives you opportunity to put into impact your own gadget details and drivers. The equipment reflection layer (Hal) presents a notable approach for creating programming snares among the android stage stack and your equipment. The android working machine is in like manner open source, so you can make a commitment your own interfaces and upgrades. Android is an open source, Linux-based programming stack made for a wide exhibit of gadgets and shape factors. Android moreover comprises of an immovable of center run time libraries that offer the majority of the ability of the java programming dialect, which incorporates some java 8 dialect works that java API system employments. Applications, which broaden the usefulness of gadgets, are composed utilizing the Android programming advancement unit (SDK) and, frequently, the Java programming language. Java might be joined with C/C++,together with a decision of non-default runtimes that permit better C++ support. The Go programming dialect is likewise bolstered, in spite of the fact that with a restricted arrangement of use programming interfaces (API)

**• Database Selection**

Consistent with the above eventualities most of the structures are used square database to keep facts. It seems it is simple to control and perform. So, the database put in force on the server has to able to supply efficiencies operations. Consequently, the proposed system decided on the Microsoft SQL server as server. SQL server is the inspiration of Microsoft's data base platform, delivering challenge critical performance with in-reminiscence technology and quicker insights on any information, whether or not on-premises or in the cloud, and also Microsoft SQL Server is an application used to create computer databases for the Microsoft Windows family of server operating systems. Microsoft SQL Server provides an environment used to produce databases that can be accessed from workstations, the Internet, or other media too. Database management or DBMS, store user's data and enables them to transform the

information into statistics. Those systems allow users to create, replace and extract facts from their database.

A database is an established collection of information. Facts refer to the characteristics of human beings, things and activities. Square server stores every statistic item in its very own fields. In square server, the fields related to a particular character, thing or occasion is bundled collectively to shape a single complete unit of records, known as a document. Each record is made up of some of fields. No two fields in a record will have the equal area name.

Throughout an SQL server database design project, the evaluation of your project wishes identifies all of the fields or attributes of interest. If your commercial enterprise desires trade through the years, you outline any extra fields or alternate the classification of present fields.

### *D. Overall Architecture.*

Overall architecture outlines general structure of whole software improvement. Overall system will be part into three layers as presentation layer, application layer and data layer. In light of this structure, the parts will be isolated into particular modules to deal with the operations of all parts. Overall architecture of the proposed system. General framework engineering of the proposed framework is given beneath. (Figure 1.)

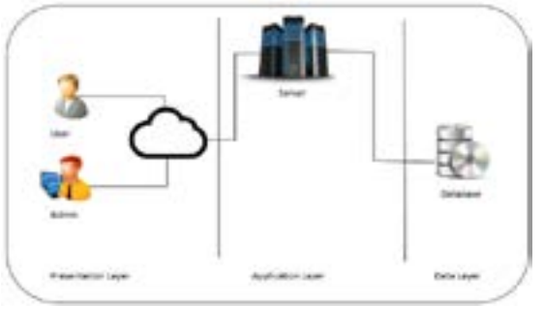

*Figure 1. Overall Architecture*

***E. Functional Requirements.***

- Mobile application should be able to track the location of the Place that Crime happen.
- Mobile application should be able to send the particular details (user details, user mobile no, date, details about crime)
- Web application should be able to get the information that sent from the mobile app.
- Web application should show the place that crime happen places on the map by using the coordinates.

***F. Non-Functional Requirements.***

- The Mobile application enables to access multiple users simultaneously.
- The system allows the data stored to be available for later analysis.
- The system did not allow unauthorized access to the web application.
- The system protects the information of the users.
- The mobile application can be accessed anytime and anyplace which has internet connection.

## IV. EVALUATION AND RESULTS

In this, we describe evaluation of our approach and the developed system while evaluating the objectives achieved how the project deviated from its original specifications and the circumstance identified during the time period of the project. This will give the idea of the measure that have been taken to handle the problem occurred and knowledge which have been gathered by supplying solutions for such issues.

Summative evaluation was used as the evaluation method to find how the system functions and whether it is up to the expected level to fulfil the clients' requirements. At the system finalizing stage this evaluation is done to evaluate the product's stability. In summative evaluation a prototype with most stable build is shown to the client and the feedback is taken to find how far the system is success. In here the using prototype must be very much alike to the final product's functions and features.

The overall Evaluation of the product was carried to verify whether the system's final outcome meets the functional requirements of the users and the successfulness of the system tasks and the functions of each component are also evaluated here. This was done by considering the functional requirements specified by the system specifications. The prototype was given to ten people and they were asked to rate the system based on the following attributes their responses have been recorded and summarized as below (Table 1).

**Table 1. Summary on Used Technologies**

| Mobile App | Developed System |
|---|---|
| Efficiency | 94% |
| Accuracy | 78% |
| Cost Reduction | 96% |
| User Friendliness | 98% |

**Table 2. Summary on Used Technologies**

| Algorithm | Accuracy |
|---|---|
| Nearest policemen Identification | 96% |

According to the results, more than 95% of candidates have been satisfied by proposed system.

## V. CONCLUSION

The results and outcomes generated in relative to the specificity of the problem domain are enlarged into wider concepts depending on logical assumptions. This chapter aims to clearly emphasize the outcomes and findings of the project and to determine way of these outcomes and findings can be matched in different contexts that are similar to the problems which are solved by the developed Emergency alert system for reporting crime issues to nearest police station. Furthermore, future enhancements for the developed System have suggested finding out ways to give in addition features to the system and using it outside the business subject in use.

Using this application, it happens a crime people can inform police immediately through informing current location to police. The message which generate this application basically send to nearest police mobile and nearest police station. In case of information confirm police, officers can arrive crime location in correct, manners in correct time. Basically, this application will help up to certain point reduce the crimes in Sri Lanka. The initial aim of this project is support police to identify the exact places and aware the people about crimes. Generate a report regarding crime arias. Through this application possibility to reduce happening of crimes in Sri Lanka. The development team implemented this system to determine its ability to satisfy the entire functional and non-functional requirement with special qualities such as flexibility, reliability efficiency and etc., to overcome the drawbacks identified in the system. The study found out that it is feasible to use the language ASP.NET in C#, SQL Server 2012 as database and java in android studio used to develop the mobile application to develop the project.

It's is a mobile application and web-enabled project, so this mobile application offers user to install the application and enter data. This is very helpful for the user to enter the desired information through so much simplicity. The user is mainly more concerned about the validity of the data, whatever he is entering. In Web server admin provided the option of monitoring the records entered earlier. Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a database. Decision making process would be greatly enhanced because of faster processing of information since data collection from information available on computer takes much less time than manual system.

This system allows to get information about the crime issues in the relevant city. This gives efficient and cost effective. Mobile application can be access by defined user categories by verifying their username and telephone number and web server can only be access by the admin by verifying the username and password. Client machines can be Windows xp, Windows 7, Windows 9 or Windows 10. Server computer should have operating system Windows xp, Windows 7, Windows 9 or Windows 10 and should be installed Visual Studio 2012, SQL Server 2012 and tool set.

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