

Unique Model of Criminal Record Management System in the Perspective of Somalia

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Abstract— The project Criminal Record Management System in the perspective of Somalia is a Criminal record management system that uses to record crime activities of criminals. It can be used to report criminal activities. This project is mainly useful for law and enforcement agencies in Somalia. The law and enforcement authority can preserve records of the criminals and search for any criminal using the system. This is an online web application with a database system in which police will keep the record of criminals who have been arrested. We have used HTML, JavaScript, CSS, PHP, MySql and Bootstrap to develop this system. We have also used binary search algorithm to find a criminal from the database. The project's interface is very user-friendly and helpful for authority.

Keywords— Criminal Record System, Crime, perspective of Somalia, Criminal Database, CRMSS.

I. INTRODUCTION

We see that when a group or society is formed the people make some rules and laws, for the people and to the people. The purpose of these rules and laws are to give a peaceful life to all who are living in that society. Whenever any law is violated by anyone we say that crime is committed and who break that law is called criminal. To have a peaceful life we need a well-organized law enforcement system. In Somalia, have very good facilities in the law enforcement sector. But, due to lack of facilities, some works cannot be done in a very good way [1], [2].

In modern years, as a result of the universal rise in application of computers in various aspects of life, desktop and laptop applications such as Microsoft Excel were adopted, thereby causing the approach to become both manual and considerably computerized in Somalia. However, this method of record keeping results in inconsistencies, wastage of disk space and poor control and management of data [3].

The proposed CRMSS enhances the crime recording operations of the SPF. The data used by the CRMS is stored in a centralized database, which holds information about criminals, crimes and users of the system. The database is the basis for all actions in the system and can be easily updated and used to aid in all of the system's processes, that is, all of the required information is stored in one central location and thus is easily accessible. Furthermore, the correctness of the centralized database will allow functions

such as criminal information record and crime report generation. This is a more effective storage method than a paper-based file system. In addition to the functions highlighted above, the system performs the basic functions of storage, retrieval and manipulation of crime and criminal data and information.

The benefits of the proposed system are as follows:

- To keep record of the criminals
- To record improvement, and decline the rules and regulation activities of the Country.
- To keep record of criminals details for future investigation
- To keep record of criminal's crime activities
- Reduce manual and redundant records keeping
- Facilitate interaction and sharing of information among police departments, districts, state/headquarters and other police agencies.
- Building security and monitoring control to ensure only authorized personnel have access to the criminal information

II. LITERATURE REVIEW

Prakruthi Prakasha et al [4]. In this research work, the web-based criminal record system (CRS) aims to use mobile devices in place of traditional GPS devices in order to facilitate the police to record the location of the committed crime. Despite from the location-based service, the CRS offers the police to describe the detail and simultaneously attach the images or multimedia files. The online crime

reporting system has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate in some cases reducing the hardships faced by the existing system. Another research has been conducted by Murat Dağlar, et. al [5]. As essential apparatus in crime analysis, crime mapping and Geographical Information Systems (GIS) are being progressively more accepted by police agencies. Development in technology and the accessibility of geographic data sources make it feasible for police departments to use GIS and crime mapping. GIS and crime mapping can be utilized as devices to discover reasons contributing to crime, and hence let law enforcement agencies proactively take action against the crime problems before they become challenging. And there is another research done by Prof. V. V. Bhujade, et al [6]. This feature is made available to the public for interaction with police indirectly. This system registers the complaints from people through online and is helpful to the police department in identifying criminals. In this system, any person can register their complaint online. The aim of this project is to develop an E-cops reporting and management system which is easily accessible to the public, police department and the administrative department. Generally, many crimes seen by the public will not reach to the police due to many reasons like fear, lack of time, ignorance. Likewise Sahar Bayoumi, et al [7]. Geographic or cartographic Visualization is a form of information visualization includes principles of cartography, geographic information systems (GIS) and Exploratory Data analysis (EDA). Throughout this work, we will introduce related works in the field of crimes, which we classified based on either spatial or spatial and temporal aspects. Crimes remain a social problem of grave concern where police departments have to suppress and detect crimes. In addition, there is a research of R. Subhashini et al [8]. Geographical Information System (GIS) is one of the aiding domains of technology where a number of applications are being deployed to assist people in understanding and visualizing data rather than having it in other complex forms. Implementing one of such kinds of technology for crime analysis will help people in knowing the crime rate of their place in comparison to other places and will also provide hand-in-hand support to the police for providing additional focus on those regions. Oludele Awodele et. al [9], designed a Real time Crime Records management system. The aims of this research were to design and implement a computerized real time (CRMS) for the (NPF) and the research based on Nigeria.

III. BINARY SEARCH ALGORITHM

A binary search algorithm is used to find the position of a specific value contained in a sorted array. Working with the principle of divides and conquer, this search algorithm can be quite fast, but the caveat is that the data has to be in a sorted form. It works by starting the search in the middle of the array and working going down the first lower or upper half of the sequence. If the median value is lower than the target value, that means that the search needs to go higher, if not, then it needs to look on the descending portion of the array. A binary search is also known as a half-interval search or logarithmic search. A binary search is a quick and

efficient method of finding a specific target value from a set of ordered items. By starting in the middle of the sorted list, it can effectively cut the search space in half by determining whether to ascend or descend the list based on the median value compared to the target value [10].

For example, with a target value of 8 and a search space of 1 through 11:

The median/middle value is found and the pointer is set there, which in this case is 6.

The target of 8 is compared to 6. Since 6 is smaller than 8, the target must be in the higher half.

The pointer is moved to the next value (7) and compared to the target. It is smaller, therefore the pointer moves to the next higher value.

The pointer is now on 8. Comparing this to the target, it is an exact match; therefore the target has been found.

3.1 Binary Search algorithm

Input: key, List

Initialization: $LI \leftarrow 0$, $HI \leftarrow \text{SizeOf}(\text{list})-1$

Repeat steps 1 and 2 until $LI > HI$

$Mid \leftarrow (LI+HI)/2$

If $\text{List}[mid] = \text{Key}$ then

Return Mid //success

Else if $\text{Key} < \text{List}[mid]$ then

$HI \leftarrow Mid-1$

Else

$LI \leftarrow Mid+1$

Return -1 // failure

IV. SYSTEM DESIGN

4.1. Use Case Diagram

Use case diagram is valuable for visualizing the practical requirements of the system that will translate into design choices and development priorities.

Use case diagrams are valuable UML diagram type and commonly used to analyse various systems. They enable you to imagine the different types of roles in a system and how those roles cooperate with the system [11].

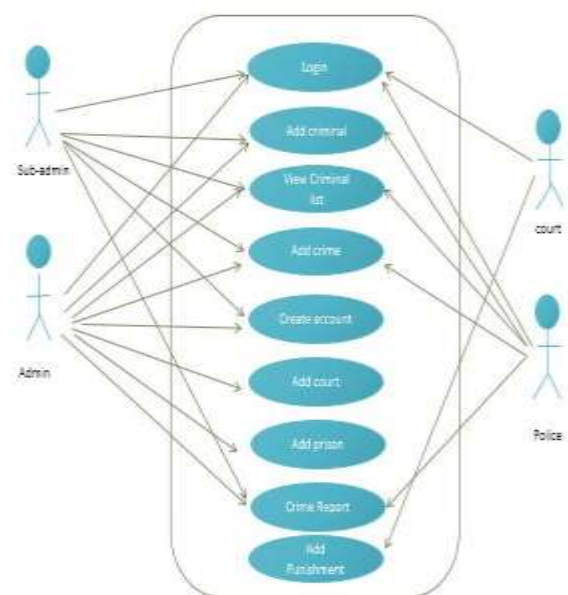


Fig. 1 Use Case Diagram for CRMSS

The above figure 1 shows the use case diagram for Criminal record management system in the perspective of Somalia where the admin and sub-admin can use the software for adding criminal, viewing criminal list, adding crime report, viewing crime report and creating accounts, on the other part police can also add criminals and crime reports, viewing criminals lists and crime reports, where the court can use the software for giving punishments to the criminals.

4.2. Flowchart Diagram

A flowchart is formalized clear representation of logic sequence, work or manufacturing process, organization chart or similar formalized structure. The purpose of a flowchart is to provide with a common language or reference point when dealing with a project or process [12].

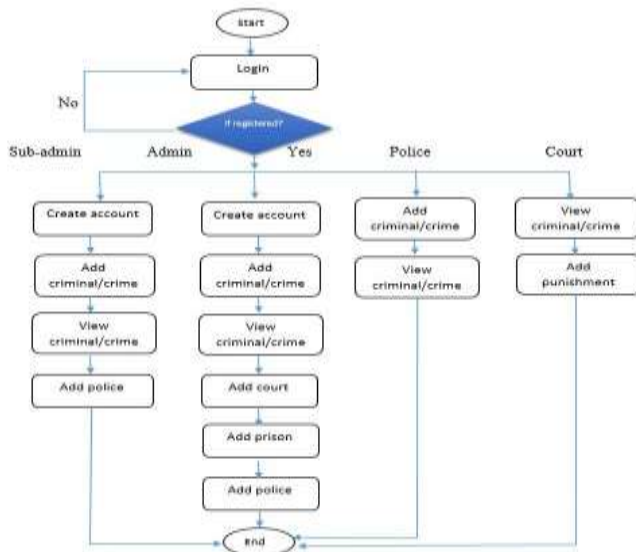


Fig. 2 flowchart for CRMSS

The above figure 2 shows the application process flowchart using symbols, where any user can log in into the System, if the user has no account then the admin or sub-admin can create an account for the particular user. User can access different types of functionalities based on their access privilege as shown in the above flowchart diagram.

Implementation

A product software implementation method is a systematically structured approach to effectively integrate a software-based service or components into the workflow of an organizational structure or an individual end-user.

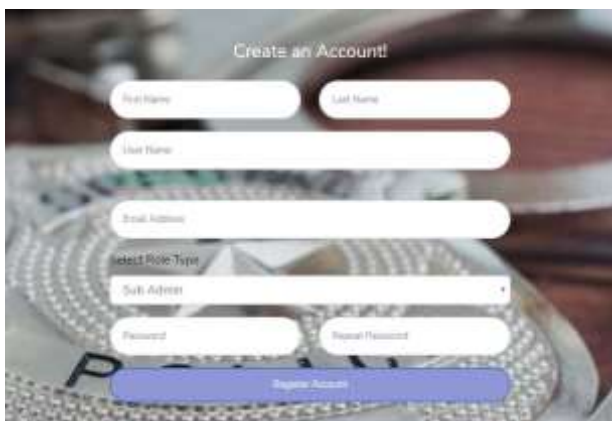


Fig. 3 Create an account

The above figure 3 shows create an account of the Users, where only admin and sub-admin have permission to create an account of the other users of the system.



Fig.4 Admin Home Page

The above figure 4 shows the home page of admin; after the admin puts their username and password they will go directly to the admin home page as shown the figure above.

Case No	Image	Criminal	Type	Prison	Crime Location	Court	Date	Police	Punishment	Date
12345678		Abdullah Mohamed	murder	prison	crime location	Police Court	2023-03-25	Yusuf Ahmed	1 year	2023-03-25
12345679		Abdullah Mohamed	murder	prison	crime location	Police Court	2023-03-25	Yusuf Ahmed	1 year	2023-03-25
12345680		Abdullah Mohamed	murder	prison	crime location	Police Court	2023-03-25	Yusuf Ahmed	1 year	2023-03-25

Fig. 5 Crime Information Report

The above figure 5 shows the list of crimes and their information as one report, authorized users can also search the crime or case no.

Information	Identity	Date Of Birth
Abdullah Mohamed Father's Name: Yusuf Ahmed Mother's Name: Hafsa Mark Symbol: no	ID: 19981027009 Contact No: 24355234	1998-10-27
Abdullah Mohamed Father's Name: Yusuf Ahmed Mother's Name: Hafsa Mark Symbol: no	ID: 19981027009 Contact No: 24355234	1998-10-27
Abdullah Mohamed Father's Name: Yusuf Ahmed Mother's Name: Hafsa Mark Symbol: no	ID: 19981027009 Contact No: 24355234	1998-10-27

Fig. 6 Criminal List Report

The above figure 6 shows the criminal list and their personal information; authorized users can also find their details, cases or crime information by clicking the eye icon shown in figure 6.

V. RESULT AND DISCUSSION

6.1. Result

This section explains the results along with the discussion of the system, which is organized as follows.



Fig. 7 Login page

The above figure 7 shows the page of the system where admin and other users can log in their accounts by entering username and password. After that, they can go directly to their account home page.



Fig. 8 Court Home Page

After going court user home page, the user is able to access the court user's home page and other options by giving user id and password as shown figure no 8.



Fig. 9 Police List

The above figure 9 shows the police list and their personal information; authorized users can also find their details by clicking the eye icon shown in the figure above.



Fig. 10 Police Details

After going the police list, there is an eye icon right side of the form, clicking by that icon you will get a result of more details about the police information as shown figure no 10.



Fig. 11 Criminal List

The above figure 11 shows the criminal list and their personal information you can also find their details, cases or crime information by clicking the eye icon shown in the figure above.



Fig. 12 Criminal Details

The above figure 12 shows the criminal details, after clicking the eye icon that we mentioned as Figure no. 11, any one will get the result of more details of the criminals and their crime information.

Case No.	Image	Criminal	Type	Person	Crime Location	Court	Duty Police	Punishment	Date
122/12004		Oslye Hassan	murder	murder victim	murder, murder, murder	Police Court	Police Court	1 year 5 month	2019-03-13
122/12010		Abdullah Hassan	Sexual orientation	Sexual offense	Sexual, sexual	Police Court	Police Court	1 year 5 month	2019-03-13
122/12011		Oslye Hassan	Sexual orientation	Sexual offense	Sexual, sexual	Police Court	Police Court	1 year 5 month	2019-03-13
122/12012		Abdullah Hassan	Sexual orientation	Sexual offense	Sexual, sexual	Police Court	Police Court	1 year 5 month	2019-03-13

Fig. 13 Crime List

The above figure 13 shows the list of crime and their information as one report, anyone can also search for their crime or case no.

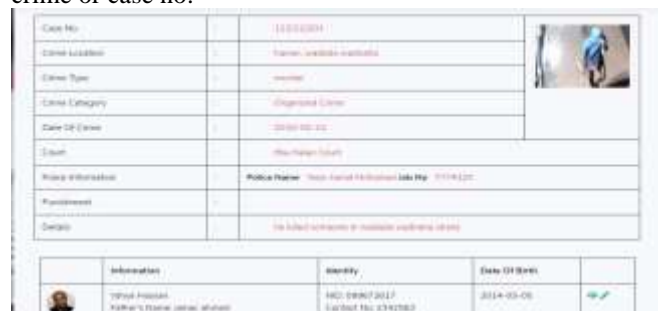


Fig. 14 Crime Details

The above figure 14 shows the criminal details, after clicking the eye icon that we mentioned as Figure no 13, you will get the result of more details of the crimes and their criminal information.

VI. CONCLUSION

The "Unique model of Criminal Record Management System in the perspective of Somalia" will be very useful for the police department. It designed, implemented and tested successfully. This research work is found to be working effectively and efficiently. The simplicity and friendly are the advantages of this system. The application is made user-friendly and securely so that anyone can use and access the application by providing login id and password. The research is conducted and is built with all possible options such as a searching option for criminal for future investigation, criminal and crime registration, etc. this application has different features like the police can record

criminals in the database, also can view the details of the Criminals. The research accomplished by giving priority or giving focus on the law and order situations and social conditions of Somalia so that the research can be helpful for law and enforcement authority of Somalia.

REFERENCES

- [1] "Criminal Records Ohio Information System", [online]. Available: <http://www.society.ezinemark.com/criminal-records-ohio-information-system-171e851d4ae.html>[accessed 18 April 2019]
- [2] Mr.Sandeep D. Nawale, Ms.Poonam C. Songra&RashmiKarnik, "Online Criminal Record", International Research Journal, Volume 12 , Issue 8 , April 2012
- [3] Anu Sharma, Mohd. Shahnawaz, "Crime Records Management System" , 3rdInternational Conference on System Modeling& Advancement in Research Trends (SMART), Moradabad, India 2014
- [4] PrakruthiPrakasha, Veekshitha, Rashmitha R, ShettyDiksha Dinesh, Shilpa, developed , "A Web-based Criminal Record System Using Mobile Device for recording criminals", International Journal of Research and Scientific Innovation (IJRSI),Volume V, Issue V, May 2018
- [5] Murat Dağlar, UğurArgun , "Crime Mapping and Geographical Information Systems in Crime Analysis", International Journal of Human Sciences, Vol. 13, Issue. 1, Year: 2016
- [6] Prof. V. V. Bhujade, Teena N. Tadas, Sweta P. Lende, RohiniR.Hiwarkar , "eCOPS - Electronics Police Record Management System", International Journal on Recent and Innovation trends in computing and communication,Vol. 2 Issue 3, 2014.
- [7] SaharBayoumi, Sarah AlDakhil, Eman Al Nakhilan, Ebtehal Al Taleb, Hana AlShabib, "A Review of Crime Analysis and Visualization. Case Study: Maryland State, USA", in Proc 10.1109/NCG, 2018, pp.56-57.
- [8] R. Subhashini and V. Milani, "Implementing Geographical Information System to Provide Evident Support for Crime Analysis", International conference on intelligent computing, communication and convergence, vol. 48, pp. 537–540, 2015
- [9] Oludele Awodele, Onuri Ernest E., Olaore Olufunmike A., Sowunmi Oluwawunmi O. Ugo-Ezeaba Anita A, "A REAL-TIME CRIME RECORDS MANAGEMENT SYSTEM FOR NATIONAL SECURITY AGENCIES", European Journal of Computer Science and Information Technology, Vol.3, No.2, pp.1-12, May 2015
- [10] Binary search algorithm "Definition - What does Binary Search mean?",[online]. Available: [https:// www.techopedia.com /definition /14270/binary-search](https://www.techopedia.com/definition/14270/binary-search) [Accessed 29 April, 2019].
- [11] Creately. "Use Case Diagram Tutorial (Guide with example)", [online]. Available:<https://www.creately.com/blog/diagram/use-case-diagram-tutorial>.
- [12] American Society for Quality. "What is a process Flowchart?", [online]. Available: <https://www.asq.org/learn-about-quality-process-analysis-tools/overview/flowchart.html>