Secured Web-Based Criminal Diary

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Abstract: With persistence increase and complexity in the rate of crime activities in developing countries like Nigeria where criminal act has become the order of the day, it is an understatement if consideration is not given to criminal records keeping, for such is a necessity for law agencies and the general public in a bid to minimize atrocities such as criminal offence denial, record manipulation and criminal record insecurity to mention few. Nigeria among developing countries is known to manage criminal records manually which is prone to criminal's record misplacement, removal, replacement and sometimes change in the content of criminal record. In other to improve on this conventional approach of keeping record as well as minimize the level of atrocities observed, a secured criminal record keeping is necessary. In this study, a web-based criminal diary with security features that prevents all forms of data manipulation, irregularities and theft was developed.

Index Terms: Crime, Record keeping, Criminal Act, Diary, Web, Security, Developing Countries, Law Agencies, General Public

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1 INTRODUCTION

Acrime also called an offence or a criminal offence is an act harmful not only to some individuals but also to the community or the state [1]. It is also an act or the omission of an act that is hidden or the omission of a duty that is commanded by a public law and that makes the offender liable to punishment by that law (Merriam n.d). A criminal is a law breaker, convict, offender, villain, culprit, sinner, felon [2]. A criminal is convicted when found guilty by the laws of the country. In Nigeria, a criminal is convicted when is found guilty under the constitution which is the supreme law of the Federal Republic of Nigeria. A diary is a record with discreet entries arranged by date reporting on what has happened over the course of a day or other period, it is originally in handwritten format [3]. A criminal diary is a pad or manual arranged in a calendar order whereby records of a person that has committed or has been legally convicted of a crime in a country, while a web- based criminal diary is an online based record of people that has committed or has been convicted of a crime arranged in a calendar order.

1.1 Crime and The Society

As far back as existence of man, criminality has become part and parcel of human nature and society. That is 'why no society can claim to be completely free of crimes. But the types of criminal behaviour tend to follow the pattern of social and economic development of a given society. It is therefore not unexpected that a society at a low level of development tends to experience an upsurge in the rate of violent crimes such as armed robbery, politically motivated killings, the use of illegal weapons, ethnic and religious clashes and the like. It is however worrisome, that the security personnel, members of public, lawmakers as well public figures etc. which are meant to be the antidote to criminality appear to be found and fully involved in the act.

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There is clear evidence that since the mid-seventies, Nigeria has been experiencing what is referred to in criminological literature as a "crime-problem" i.e. when crime, in terms of incidence and seriousness, passes from the normal or tolerable level to the pathological and becomes a "social problem". In other words, crime has become not only ubiquitous but has reached a Frankenstein dimension. In actual fact, the incidence and sensational press reporting of assassination, armed robberies and big-time fraud only serve to undermine the required appreciation of the enormity of the burden on the average citizen in terms of so called "common" thefts, burglaries, assaults, by the working and under classes, and petty frauds by artisans and middle-cadre workers. Below is a table showing types of crime, the victims and the level of public concern.

TABLE 1: TABLE SHOWING TYPES OF CRIME, THE VICTIMS AND PUBLIC CONCERN

S/N	Types of crime/criminal victimization	The Direct Victims	The Degree of Public concern
1.	This include common crimes which includes Burglary, Stealing/Theft, Assault/harrasement, impersonation, street fighting, Pick-pocketing, Raping etc.	This involves mostly working class Nigerians	Low (Feeling of helplessness)
2.	Violent Crime such as Assasination, Abduction and Armed Robbery	This involves mostly Middle-class Nigerians but often the power elite	High (sensationalisation and feeling of insecurity)
3.	Elite crimes such as 419, corruption, money laundering etc.	The Economy (and the morale and morality of the polity)	Low(Feeling of powerlessness)

From the table, we can clearly deduce that crime has become part of our social life in Nigeria. Furthermore the method

adopted by Nigeria government in keeping criminal records and information lacks security, durability etc. and it is therefore prone to all forms of manipulation, exchange in content, misplacement, impersonation among others. In other to improve on the existing manual criminal record keeping and as well as eliminating all forms of manipulation in the existing system a web-based criminal diary is considered to be a better alternative. This system is expected after its implementation to bring about several advantages such as quick and real time access to the records of criminal in Nigeria, safe and easy way to store the records of criminals for future purposes.

2 LITERATURE REVIEW

2.1 Criminal Information Record Sharing Practice
Today's global environment has added on significance to need for good record-keeping and information-sharing practices. Good records keeping do not only provide crucial internal information for business operations and case management support but also as official memory of an agency's investigations. It is the duty of law enforcement agencies to communicate agency-to-agency and across continents in order to protect the Nation's citizens. Nothing is more important to accomplishing that mission than having accessibility to accurate and timely records. Criminality is part and parcel of human nature and society. That is 'why no society can claim to be completely free of crimes. But the types of criminal behaviour tend to follow the pattern of social and economic development of a given society. It is therefore not unexpected that a society at a low level of development tends to experience an upsurge in the rate of violent crimes such as armed robbery, politically motivated killings, the use of illegal weapons, ethnic and religious clashes and the like. The International Council on Archives (ICA) [4]. Committee on Electronic Records defines a record as, "recorded information produced or received in the initiation, conduct or completion of an institutional or individual activity and that comprises content, context and structure sufficient to provide evidence of the activity." There are much benefits attach to keeping records to an individual, organization or society. It is seen as vehicles of communication and interaction, consistency, facilitators of decision making, enablers of continuity, and effectiveness in human action, repositories of experience, memory stores, evidence of rights and obligations. And on a darker note, records can also be used as instruments of repression and abuse of power [5]. According to ICA, it defines an electronic record as a record that can be manipulated, transmitted or processed by a computer. It is

- written on magnetic or optical medium (including magnetic tapes, cassettes, CD-ROMs, hard disks and diskettes)
- recorded in binary code
- accessed using computer software and hardware
- easily manipulated (that is, updated, deleted and so on) [6].

2.2 Crime Management System
Crime also called an offence or a criminal offence is an act harmful not only to individuals but also to the community or the state. But crime goes beyond the above definition, a normative definition view crime as deviant behaviour that violates prevailing norms- cultural standards prescribing how humans ought to behave normally. Crime, in its simplest definition may refer to any action that may be considered as the breach of law [1]. Crime management involves types of crimes, crimes in

Nigeria, crimes and punishment, national check fraud centre, types and schemes of white collar crime, social control and order. It also consists of the initial response to crime by police officers such as the detention of offenders, preliminary investigations, responding to requests for assistance, the commencement of prosecutions and the investigation of major and serious crime. It also includes crime operations and criminal investigations conducted throughout the state by specialist's officers, generally targeting large-scale offences.

2.3 Crime Record Information System
Information is very important in crime record keeping, arguably the most important weapon in law enforcement has always been information recording and management especially location information, the correct use of information is highly dependent on the available information system [7], [8]. Law enforcement agencies, in their endeavour to improve efficiency and effectiveness in their service provision embarked on computerizing their information systems. Different data such as location, crime and socio-demographic are being integrated using the capabilities offered by technology. Non-traditional sources of law enforcement data have been identified to provide data to the law enforcement agencies [9].

2.4 Crime Analysis
Crime analysis is a law enforcement function that involves systematic analysis for identifying and analysing patterns and trends in crime and disorder. Information on patterns can help law enforcement agencies deploy resources in a more effective manner, and assist detectives in identifying and apprehending suspects. Crime analysis also plays a role in devising solutions to crime problems, and formulating crime prevention strategies. Quantitative social science data analysis methods are part of the crime analysis process; though qualitative methods such as examining police report narratives also play a role [9]. Crime analysis can occur at various levels, including tactical, operational, and strategic. Crime analysts study crime reports, arrests reports, and police calls for service to identify emerging patterns, series, and trends as quickly as possible [10].

2.5 Nigerian Organized Crime
Nigerian organized crime, or Nigerian OC, may refer to a number of fraudsters, drug traffickers and racketeers of various sorts originating from Nigeria. Nigerian criminal gangs rose to prominence in the 1980s, owing much to the globalization of the world's economies and the high level of lawlessness already in the country. Below are explanations of some of the criminal activities:

1. Drug trafficking: According to the Federal Bureau of Investigations Nigerian criminal groups are involved in shipping heroin from Asian countries to Europe and America; and cocaine from South America to Europe and South Africa. The large numbers of ethnic Nigerians in India, Pakistan, and Thailand give their gangs ready access to around 90% of the world's heroin. In the United States, Nigerian drug traffickers are important distributors of heroin, from importing it into the country to distribution level and selling it to lower-lever street gangs. Also according to the National Drug Threat Assessment 2009 In the United States, Nigerian drug traffickers are important distributors of heroin, from importing it into the country to distribution

level and selling it to lower-lever street gangs. These criminal groups are also known to launder drug money through domestic football clubs in the Nigeria Premier League, and are rumored to make additional money through match fixing activity within football matches.

2. Area Boys: area boys (also known as *Agberos*) are loosely organized gangs of street children and teenagers, composed mostly of males (but with few females), who roam the streets of Lagos, Nigeria [11]. They extort money from passers-by, sell illegal drugs, act as informal security guards, and perform other "odd jobs" in return for compensation. Area boys, who are largely Yoruba, have existed in the city since the early 1980s [12]. However, under various names, types of Area Boys have been traced back to the 1920s [13]. Some of their illegal acts are: Extortion whereby they surround pedestrians, drivers, and passengers in vehicles, which are stuck in traffic, and force them to pay (for some actual or pretended service) before letting them go, Illegal sale of drugs whereby they are both sellers and users of illegal drugs; this drug use has been fingered as the cause of further crime. Momoh states "most of them use drugs (cocaine, heroin, marijuana, etc.) either as occasional users or addicts, or as peddlers." (Of 77 respondents to Momoh's survey, 12.2% dealt drugs, while 60.3% were addicts themselves.) Sale of drugs takes place both in Nigeria and abroad, and sales abroad have earned a small percentage of the seller's significant amounts of money. They are also in states like Yankari national park in Bauchi, Ibadan and other states in Nigeria.

3. Confraternities: In Nigeria, a confraternity is a group that is nominally university-based, though 'street and creek' confraternities began in the 1990s. The first confraternity, the Pyrates confraternity was created as a social organization for promising students. However, as new confraternities were formed, they became increasingly violent through the 1970s and 1980s. By the 1990s, many confraternities largely operated as criminal gangs, called "campus cults" in Nigeria. Besides normal criminal activity, confraternities have been linked to political violence, as well as the conflict in the Niger Delta.

3 RESEARCH METHODOLOGY

3.1 Analysis of the Existing System
Criminality is part and parcel of human nature and society. That is why no society can claim to be completely free of criminal [14]. In Nigeria today people commit so many crimes every day and some of the crimes for which people are serving jail terms are: drug trafficking, confraternities, stealing, rape, kidnapping, murder and the likes that is why the need of criminal diary for keeping records arise. Criminal diary design and development requires a collective and cohesive effort. As a matter of fact it is very pertinent to study and understand the existing system properly, its problems and lapses, its efficiencies and inability. This however will determine the efficiency of the resulting system. The existing system of storing information on criminality record based on the judgment from the law court is done by the records department in the prison and is being kept in the department. The method used in storing the information of criminals, is manual which is

subject to human emotions, sentiment and manipulation. It is devoid of any form of automation; as a result, the honesty of the individual(s) involved in the storing of the information may be questioned, especially where such individual lack integrity and ethics of his or her profession. After a criminal has been convicted by a judge in the court of law the criminal is taken to the prison and information like name, age, sex, date of sentence, offence committed is being collected and stored by the records department personnel for reference.

3.1.1 Fact Finding Method Used
This is the most important part of any analysis. Indeed, much of the analysis is concerned with what fact to find, how to find them and how to record them for the purpose which it is collected. Several visits were made to the prison in order to obtain detailed and comprehensive information about how the records are being kept and the short comings of the present system which are:

1. The first challenge is that the information is not accessible by the general public.
2. The criminal records are kept manually which is very tedious and not safe or secured for the kind of information being stored.
3. With the present system being manual, loss of information, inaccuracy of information and damage of information is possible.
4. Since nobody can have access to the information except personnel at the records department criminals can easily run away and deny their identity since they can't be recognized by the general public.

3.2 Analysis of the New System
The new system is a web based criminal diary whereby criminal records i.e. name, picture, their identification number, the crime committed, the name of the judge that convicted the criminal, the number of years of the criminal is to serve in jail, convicted date   that was formerly stored at the records department by their personnel is stored on the internet immediately the criminal has been convicted of any crime by a judge in Nigeria. The advantages of the new system over the old one are:

I. Due to the upload of the criminal's picture which will be uploaded on the web and biometric features, there will be no denial of identity by criminals

II. It will be web based so the records of the criminals can be accessed by the general public.

III. Also the loss and damage of criminal records will be impossible since it will be web based.

IV. Since it is web based, storing of criminal records is not tedious and the information is secured.

3.3 System Design
The new system will be designed using the following processes:

3.3.1 Output Design
The output is a website whereby faces of criminals can be seen by all and sundry on the internet and whereby their identity will be known together with the crimes committed.

3.3.2 The Input Design
The input stage specifies when the registration officer collects bio-data of the criminal for upload on the website together with

their pictures and fingerprint, which will be saved on the system for compilation and latter to be uploaded on the website for easy access by the court officials and the general public.

3.3.2.1 Input specification
The input to this web based criminal diary is via the keyboard, and mouse. During this operation, there are some variables that are required for the acceptance of the data. These input variables are criminal's name (surname and other names), identification number, sex, date of birth, date convicted, picture, fingerprint etc. The essence of the identification number and the biometric is to ensure maximum security and to avoid mistaking the identity of criminals. Once this is achieved, the security of the system is at its optimal level.

3.3.3 Database design
This process is assigning the space and the character that will be used at the back end of the webpage and the data used for the following relations with their corresponding table structure.

TABLE 2: ADMIN USER DATABASE TABLE FOR CRIMINAL RECORDS STORAGE

Field name	Field Type	Field Width	Comment
Id	Integer	5	It is the number that is used to identify user
User name	Var char	30	Name used to identify users
Password	Var char	30	Known only to the personnel used to access the database
First name	Var char	30	Personnel's surname
Last name	Var char	30	Other names of the personnel
Picture	Blob	-	Face of the personnel
e-mail address	Var char	30	

TABLE 3: PRISONER TABLE SHOWING THE DESCRIPTION OF THE FIELD AND INFORMATION REQUIRED FOR CRIMINALS DATA STORAGE IN THE DATA BASE

Field name	Field type	Field width	Comment
Case id in the law court	Integer	10	Case number in the law court
Judge	Var char	30	The name of the judge that convicted the criminal
Address	Var char	30	Address of the criminal
E-mail	Var char	30	e-mail address of the criminal
Prison-id	Integer	10	The unique number given to each criminal
Sex	Var char	10	Either male or female
Age	Integer	5	Age of the criminal
Nationality	Var char	30	Country that the criminal is from
Date convicted	Date	20	Date convicted in the law court
State of origin	Var char	15	State criminal is from
L.G.A	Var char	30	Local Government Area
Crime committed	Var char	30	

TABLE 4 : USERS TABLE SHOWING HOW USER'S INFORMATION WILL BE STORED ON THE DATABASE.

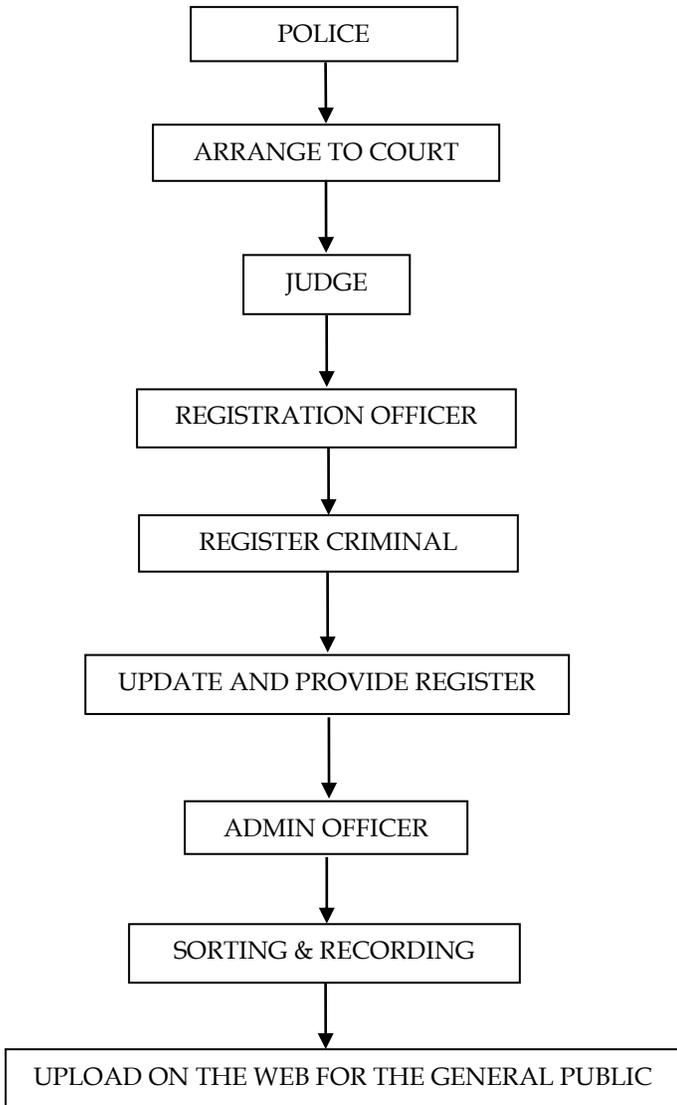| Field name	Field type	Field width	Comments
Id	Integer	5	Number to identify each registered user
First name	Var char	30	User's surname
Last name	Var char	30	User's other names
User name	Var char	30	The user's surname
Password	Var char	25	Used to log into the website
People suggested	Text	-	In case the user knows a criminal and it's not on the website, such user can suggest and it will be looked into by the admin
e-mail	Var char	30	e-mail address of user
Address	Var char	30	Home address of user
Phone number	Integer	20	Telephone number of user
Picture	Blob	-	Face of the user

3.3.4 Design of the new system
The goal of this new system is to provide solution to the shortcoming associated with the manual system. In the course of designing this system, there are challenges that emanated. It is a statement of fact that every web based criminal diary differs in its goal and objectives as well as the type and amount of information of criminals it intends to serve the general public. The following are suggested factors needed to consider in designing a web based criminal diary;
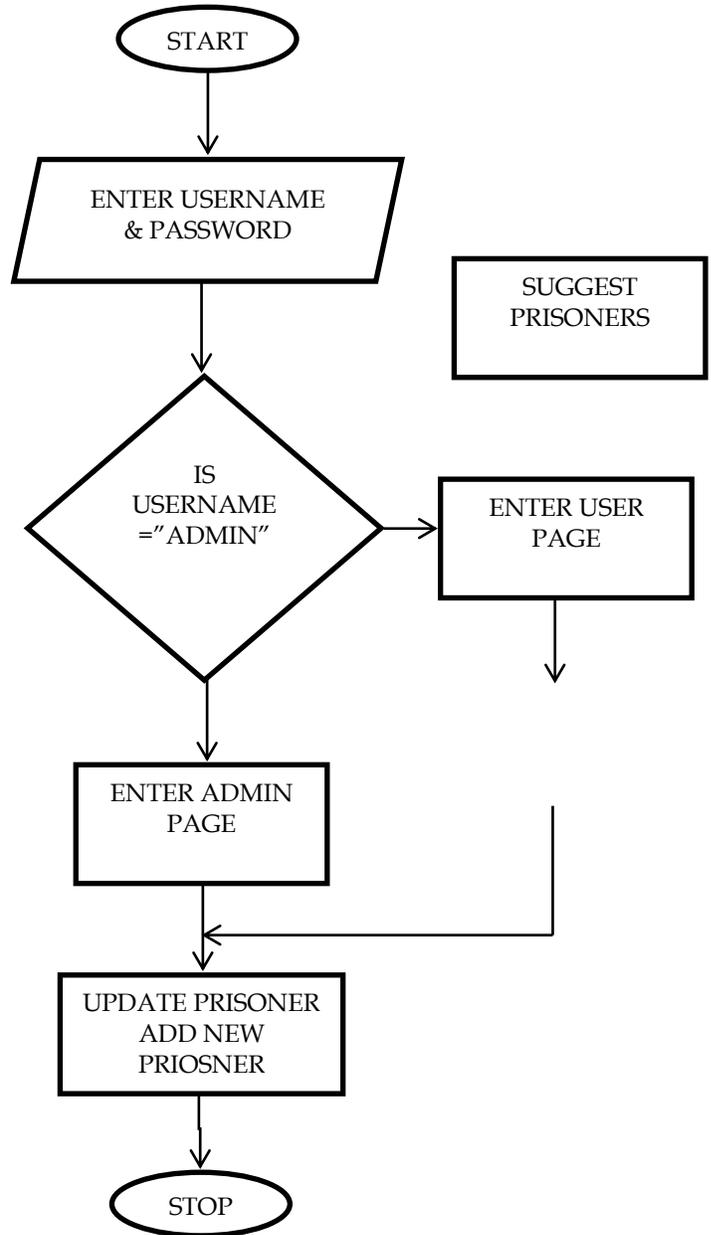
1. **Performance:** A web based criminal diary should be designed in a way that records of the criminal that are convicted daily should be uploaded and should always be up to date.
2. **Fact:** The web based criminal diary must contain factual and detailed information.

3. **Security:** Security of information of criminals is highly considered in order to prevent alteration.

3.3.5 The New System Architecture (Block Diagram)

```
          ┌──────────────────┐
          │      POLICE      │
          └──────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │ ARRANGE TO COURT │
          └──────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │      JUDGE       │
          └──────────────────┘
                   │
                   ▼
    ┌────────────────────────────┐
    │   REGISTRATION OFFICER     │
    └────────────────────────────┘
                   │
                   ▼
    ┌────────────────────────────┐
    │     REGISTER CRIMINAL      │
    └────────────────────────────┘
                   │
                   ▼
  ┌──────────────────────────────────┐
  │  UPDATE AND PROVIDE REGISTER     │
  └──────────────────────────────────┘
                   │
                   ▼
    ┌────────────────────────────┐
    │      ADMIN OFFICER         │
    └────────────────────────────┘
                   │
                   ▼
    ┌────────────────────────────┐
    │    SORTING & RECORDING     │
    └────────────────────────────┘
                   │
                   ▼
┌──────────────────────────────────────────────┐
│ UPLOAD ON THE WEB FOR THE GENERAL PUBLIC     │
└──────────────────────────────────────────────┘
```

3.3.6 The New System Flow Chart

```
            ( START )
                │
                ▼
       ╱ ENTER USERNAME ╲
      ╱   & PASSWORD      ╲            ┌──────────────┐
                                       │   SUGGEST    │
                │                      │  PRISONERS   │
                ▼                      └──────────────┘
          ◇ IS        ◇
          ◇ USERNAME  ◇ ──────►  ┌──────────────┐
          ◇ ="ADMIN"  ◇          │ ENTER USER   │
                │                 │    PAGE      │
                ▼                 └──────────────┘
       ┌──────────────┐                 │
       │ ENTER ADMIN  │                 ▼
       │    PAGE      │
       └──────────────┘
                │
                ▼
       ┌──────────────┐
       │UPDATE PRISONER│
       │  ADD NEW     │
       │  PRIOSNER    │
       └──────────────┘
                │
                ▼
           ( STOP )
```

4 SYSTEM IMPLEMENTATION AND RESULT

4.1 System Implementation

The new web-based criminal information system was developed and implemented using pre hypertext processor (PHP) as the front end and Wampserver as the back end. The two programming were considered for the implementation because PHP produce an easy, interactive and user-friendly interface and Wampserver has robust features for data management.

4.2 Change over Method

The system will be changed using the direct change over method from the manual which is presented using Pre Hypertext Processor (PHP) for the automation. The new system will have a database whereby criminal record will be stored instead of the records department which consists of

files and papers which will make it more secured because it will be manage strictly only by the admin and unauthorised personnel will be restricted from gaining access to the system. The new system will be web based thereby making the faces of the criminals to be seen by the entire public.

4.3 The Result

4.3.1 The home page
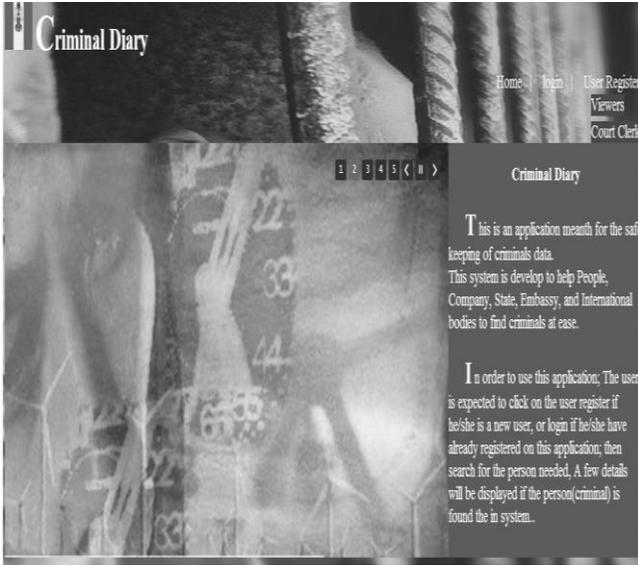The home page is an interface that serves as startup environment and as well as indicates the link between the criminal diary web page and the user..

Fig.1 Criminal Diary Home Page

4.3.2 Log In / User Authentication page
The log in page requested new user to create a username and a password for accessibility to the web page information and existing users can log in to the diary with their username and password for authentication.

Fig.2 Criminal Diary User Log In Page

4.3.3 User Search Page
This page allows search of criminals, either by the court admin or the general public. A criminal can be searched using any of the three ways: Local Government Area, State, and name.
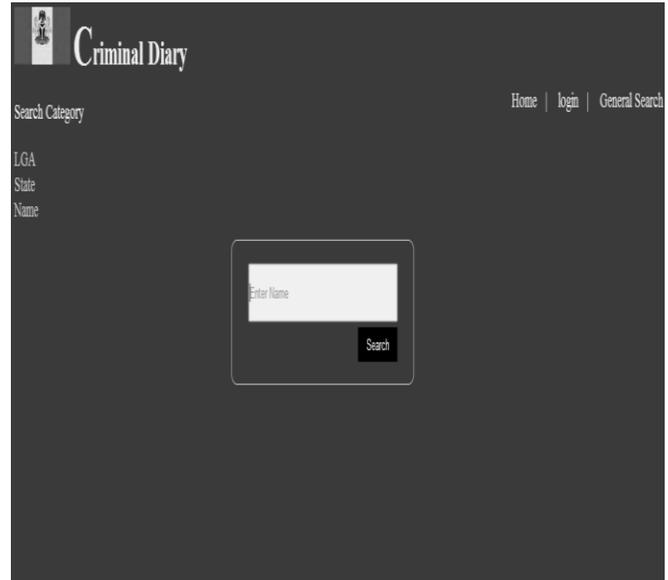
Fig.3 User General Search Page

4.3.4   Admin Users Registration Page
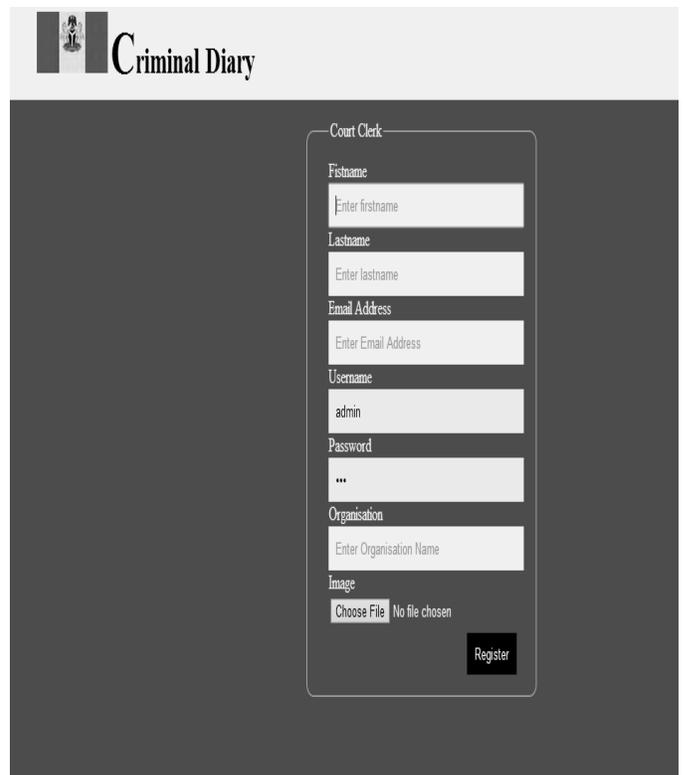This page allows all administrative staff users to register that details.

Fig.4 Admin staff Registration Page

272

4.3.5   Criminal Registration Page
This page is used for criminal registration by the admin user after criminal has been convicted.

Fig.5 Criminal Registration Page

4.3.6   Criminal Record View Page
This page allows users to view the records of registered criminal in the criminal diary as well as search for any criminal's information.

Fig.6 Criminal View Page

4.3.7   Registered Users View Page
This page shows list of registered viewers who had gained the access to view or search for criminal records in the criminal diary.

5   CONCLUSION
This research work has successfully developed a web based criminal diary which will eliminate the deficiencies associated with manual process of keeping criminal records as well as provide security feature that prevents all forms of criminal record theft, removal, replacement and misplacement.

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273

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