



## Design and Implementation of Computer Based Police Investigation System Using Biometric Approach (Lasupolis)

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### ABSTRACT

A software application for handling police investigation system using biometric approach was designed. The software is implemented completely as a php application; manage code in php, JavaScript, Ajax, Css and Html incorporated with MySQL relational database technology. Management of suspect identity, records and automatic intelligent backups and recovery procedure of data is an important problem in police investigation process. Biometric recognition are increasingly been used as irreplaceable part of many identification systems. This paper deals with the design and development of a computer based police investigation system using fingerprint in order to provide high performance with high security to the investigation system, also we use web technology to make the investigation system more practical.

**Keywords:** Security, biometrics, Investigation, Fingerprint, Software

### INTRODUCTION

The need for good information-sharing practices has taken on added significance in today's global environment. Not only do good records provide crucial internal information (i.e., security operations and case management support, not to mention the official memory of an agency's investigations), law enforcement agencies now need 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. Calls for service records to investigative, arrest, criminal identification, detention, and even civil records hold information that by themselves mean little; however, when pieced together with information from other jurisdictions, the result can help with all levels of investigations and aid in safeguarding the Nation. The Police play important roles without which the sustenance of order, legality, development and democracy may be difficult. The primary role of Police is policing-securing compliance with existing laws and conformity with precept of social order.

The Nigeria Police have statutory powers to investigate crimes, apprehend offenders, interrogate and prosecute suspects to grant bail to suspects pending completion of investigation or prior to court arraignment to serve summons and to regulate or disperse processions and assemblies. They are also empowered to search and seize properties suspected to be stolen or associated with crime and to take records for purpose of identification, measurements, photographs and fingerprint impressions of all persons in their custody. The problem that are encountered in the manual system of operations in any organization and the Nigerian Police system of investigation is Delay in accessing information in paper files, paper files are sometimes damaged by water, pest or fire outbreak and can easily be altered by an unauthorized user.

However, Biometrics has proven to be a reliable method of identifying individuals. This method is far superior to older

methods, such as branding, tattooing, distinctive clothing, photography, and body measurements (Bertillon system). While many cases of mistaken identification have occurred through the use of these older systems, to date the fingerprints of no two Individuals have been found to be identical.

The implementation of this system an investigation system that register criminal details with their fingerprint stored in the database, and an administrator panel that register offenders into the system with the pictures and information, the administrator panel also has control to edit offender details or delete offender from the system, even fixing offender into various categories of their allegations, there is no limitation to the numbers of offenders that can be added to this system, eight categories are features in this system. The choice of database used is MYSQL database which holds all information of offenders, and programming language used in the development of this system are JavaScript (client side scripting language), Ajax also known as asynchronous JavaScript (enables client to communicate with server without page refresh), PHP (A server side scripting language), The fingerprint scanner used in the development of this system is Secugen Hamster plus with Secugen software development kit (SDK).

### METHODOLOGY

The design and implementation of this computer based police investigation system using biometric adhere to the rules of software requirements analysis; Design, Code generation and debugging, Testing, Implementation and support.

Software design is actually a multistep process that focuses on four distinct attributes of a program: data structure, software architecture, interface representations, and procedural (algorithmic) detail. The design process translates requirements into a representation of the software that can be assessed for quality before coding begins. Like requirements, the design is documented and becomes part of the software configuration. The requirements gathering process is intensified and focused

specifically on software. To understand the nature of the program(s) to be built, the software engineer (“analyst”) must understand the information domain for the software, as well as required function, behavior, performance, and interface. Requirements for both the system and the software are documented and reviewed with the customer or users.

**SYSTEM IMPLEMENTATION TECHNOLOGIES**

The computer based police investigation system using biometric approach is developed as online information and eliminates the inadequacies in the security of records within the police command. Tools used in the implementation are listed below:

**Php** – (Personal Home Page\_ now known as hypertext processor. A dynamic server side scripting language. PHP code is interpreted (not compiled by a server with a PHP processor module, which generates the resulting web page. PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also been evolved to include a command-line interface capability and used in standalone graphical applications.

**Java Script** – Dynamic client side scripting language that response to users’ events. JavaScript is very loosely based in Java, an object-oriented programme language popularized for use on Web by way of embedded applets. Although JavaScript has a similar syntax and programming methodology, it is not a “light” version of Java. Instead, JavaScript is its own dynamic language, finding its home in web browsers around the world and enabling enhanced interaction on web site and web applications alike.

**Ajax** – (asynchronous JavaScript) enables client side and server side to communicate without page refresh. Ajax is an all-encompassing term surrounding the use of asynchronous server without unloading the page. These requests may be executed in any number of ways and using any number of different data transmission formats. Combining this remote data retrieval with the interactivity of the Document Object Model (DOM) has bred a new generation of web applications that seem to defy all the traditional rules of what can happen on the web. Big companies such as Yahoo and Microsoft have devoted resources specifically towards the goal of creating web applications that look and behave like desktop applications.

**MySQL**- MySQL works on many system platforms, including AIX, BSDi, FreeBSD, HP-UX, eComStation, i5/OS, IRX, Linux, OS X, Microsoft Windows, NetBSD Novell, NetWare, OpenBSD, OpenSolris, OS/2 Warp, QNX, Solaris, Symbian, SunOS, SCO OpenServer, SCO UnixWare, Sanos and Try64. A port of MySQL to Open VMS also exists.

**HTML** – (Hypertext Markup Language is the main markup language) for layout and displaying information that can be displayed on the web. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>), within the web page content.

**Css** – (Cascading Style Sheets) for describing looks and formatting documents. CSS is designed primarily to enable the separation of documents content from document presentation, including elements such as the layout, color and fonts.

**Web browser** – (commonly referred to as a browser) for retrieving and presenting information resources on the World Wide Web.

**Wampp Server** – Testing is done through wampp sever.

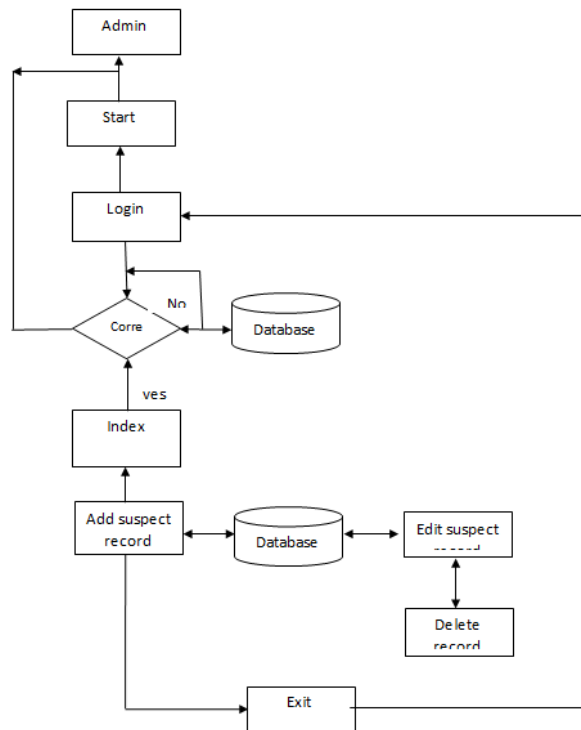
**Windows Operating System** - This system is developed and deployed on a windows operating system – windows 7 ultimate precisely.

**SYSTEM DESIGN**

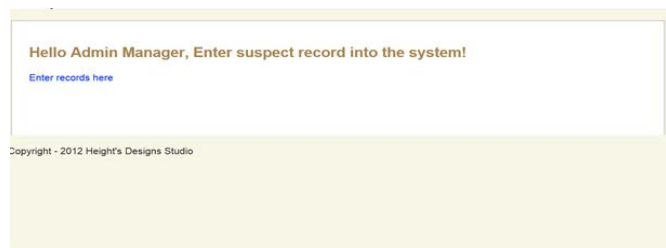
This system suggests an investigation system that feature unlimited registration of police suspect which are murder, robbery, cultist, scam, suspect, trespassers, defaulters, criminals and other unlisted suspect can be enlisted into any of this arrays, and the choice of the core programming and database language used in the development of this project is php – Hypertext processor and YSQL database, MySQL holds the tables that contains all the information and functioning of this system and these tables are: Admin tables which holds information about the administrator, suspect tables which holds the information about all the suspect in the database, the testing tables holds several crime category that will be available in the system, the student table contains all the information about voters and users to develop this system which are JavaScript, Ajax, CSS and HTML, both JavaScript and Ajax have been basically used for styling and positioning of web component and HTML is known as Hypertext markup language which is the structure that builds any web page. This system contains the administrator page, registration page, fingerprint identification page, new arrest, crime category and all suspect pictures.

The flow chart illustrates the workings of this computer based police investigation using biometric approach.

**SYSTEM DESIGN FLOW CHART**

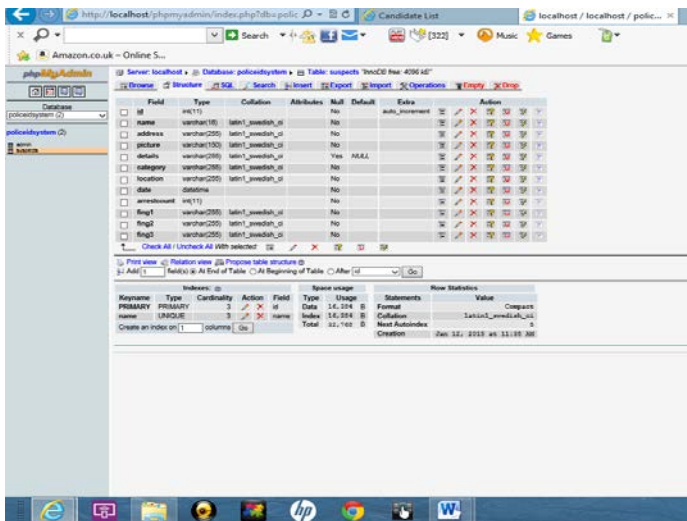


**ADMINISTRATIVE LOGIN PAGE**



The Suspect list page





### SUSPECT DATABASE



### ADMIN LOGIN DATABASE

### CONCLUSION

A successful implementation of the Biometrics-Based Police Investigation System will greatly increase the efficiency of the Nigerian Police Force officers and will help to ensure that criminal records are managed properly monitoring of criminal suspects in the country. the problem of delay in retrieving criminal suspects records for reference purposes and for appropriate court action or prosecution to be taken can be reduced drastically and the efficiency in the management of criminal records and investigation of criminal case being rendered by the Nigerian Police Force will greatly be improved upon.

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