Prison Inmate Information System: The Case of Yola Central Pri[1]son, Nigeria

Oye, N. D[1]. and Ibrahim Inuwa[2]

[1]Department of Computer Science MAUTECH- Yola Nigeria, oyenath@yahoo.co.uk, +2347037460352
[2]Department of Information Technology MAUTECH, Yola- Nigeria, +2348065273810. Ibrahiminuwa1985@gmail.com

Abstract

The development in technology has brought about using computer system to solve practical problems in various fields of work. This advancement leads to automation of system processes. This paper studied the manual processing of Prisoners Information in Yola Prison of Adamawa state, with a view to developing an "Automated Prison Information System". This system is expected tol provide an easier way of computing prisoner's information, reliable storage of data, easy access and retrieval of information to authorized users, and also to provide high security for prisoners' record. The software has features for adequate registration of prisoners both on the day of jail and discharge. In addition, there is provision to search and view reports of both current and discharged prisoners. In comparison to the current system, the prison inmate information system is more secure, flexible, provides more user feedback, reduces the workload, prevents erroneous data and provides more functionality.

Keywords: *Automation, Discharge, Inmate, Information, Prison, Systems,*

1.0 Introduction

Computer today is one of the most important tools people use. It has helped a lot in compiling data which used to be in hard records. One of the uses or benefit of computer is that it enables storage and retrieval of information so quickly that it has decreased information and work complexity. The increase in the speed of work has helped us to do many things with fewer resources. In the past lots of manpower was used in keeping the records safe. It also helps us to work with machines which have the ability to produce the best quality of products with maximum speed and efficiency. In today's world it is necessary to cater for such heavy permissions. Things are made at the higher pace with best quality.

A Prison, penitentiary, or correctional facility is a place in which individuals are physically confined or interned and usually deprived of a range of personal freedomctr. Prisons are conventionally institutions, which form part of the criminal justice system of a country, such that imprisonment or incarceration is a legal penalty that may be imposed by the state for the commission of a crime. In popular parlance of many countries, the term Jail (goal) is considered synonymous with Prison.

Prison tended to be a place where people were held before their trial or while sweating punishment. It was very rarely used as a punishment in its own right. Men and women, boys and girls, debtors and murderers were all held together in local level and convicted criminals serving a term of years or less. Evidence suggests that the Prisons of this period were badly maintained and often controlled by negligent Prison warders. Records of Prisoners in most Nigerian Prison are kept in manual files. This project targets the development ofu Prison information system which will handle processes involved in keeping records for Prisoners such as those under awaiting trials, warrant return date and transfer from other Prisons etc. Sanction for criminal behaviour tended to be

public event which were designed to correct the person and deteer others. These included the ducking stools, the pillory, whipping, branding and the stocks [15].

Background of the Study

The Nigerian Prison Service, Yola Provincial Prison was established in the year 1914 which derived its operational powers from CAP 366 laws of the Federal Republic of Nigeria 1990 to perform the following functions:

- Take into lawful custody all those certified to be so kept by courts of competent jurisdiction.
- Produce suspects in court as and when due.
- Identify the causes of their anti-social dispositions.
- Set in motion mechanisms for their treatment and training for eventual reintegration into society as normal law abiding citizens on discharge.
- Administer Prisons farms and industries for this purpose and in the process generate revenue for the Government.

The Prison service in Nigeria is a Federal phenomenon. That is to say, the Prison is exclusively a Federal Government concern, which means that no state for now has the power in law to operate or maintain Prisons. According to the official website of the Nigerian Prison Service, the following Prisons and Prison related Institutions are spread across the length of Nigeria

i) A total of one hundred and forty five (145) Convict Prisons.
ii) Eighty three (83) Satellite Prison Camps.
iii) Twelve (12) Major Farm Centers
iv) Nine (9) Subsidiary Farms
v) Nine (9) Cottage Industries
vi) One Hundred and Twenty-Four (124) Market Gardens
vii) Three (3) Borstal Institution
viii) One (1) Open Prison Camp
ix) One (1) Staff College, and
x) Four (4) Training School

The conventional Convict Prisons are for the remand of both the convicted and awaiting trial inmates. There are two major types of convict Prisons operational in Nigeria today. These are the maximum and the medium security Prisons. The maximum security Prisons take into custody all classes of Prisoners including condemned convicts; lifers, long term Prisoners etc. Even though, we have an unofficial classification of these maximum security Prisons in terms of heightened security. This explains why a high risk Prisoner could be sent to one maximum security Prison as against another. The medium security Prison on the other hand also takes into custody both remands inmates and convicts. However, short term convicts constitute the bulk of the inmates that should ordinarily be found in the medium Prison. The satellite Prisons can be described as intermediate Prisons camps setup mainly in areas with courts that are far from the main Prisons. They serve the purpose of providing Remand Centers especially for those whose cases are going on in courts within the areas. When convicted, long term Prisoners could be moved to appropriate convict Prisons to serve their terms.

The Farm Centers are Agricultural Prison camps setup to train inmates in Agro-based vocations so that when they are discharged they will have Agro-based skills to depend upon. The convicts are expected in addition to be taught to appreciate the dignity of labour. The farm centers are large mechanized farms that are located in the food-producing areas of the different geopolitical regions of the country. Subsidiary Farms and Market Gardens are Agricultural extension projects usually attached to some Prisons Headquarters for the same purpose as stated above. They are making up of vegetable – producing market gardens, poultry and piggery farms etc. apart from training inmates in all these agro-based vocations, these endeavors are expected to yield revenue to the state. From the discussion above, Yola Prison falls under the category of Convict Prisons.

Statement of The Problem

In Yola Prison, criminals' records are kept in manual files. The traditional manual way record keeping system of file jackets, file cabinets and shelves where searching, sorting and decision makes searching very tedious and time consuming with accompanying errors and data

loss. Besides this, most of the Prison warders in Yola Prison are not computer literate and do not appreciate the power of automation when it comes to information technology.

Large volume of data handles in the Prison constitute great problem to the present manual system. The storage file or books are subject to constant damages by termites and other destructive insects and rodents. Also natural hazard like weather (wet season), which causes damages on papers and books, even human being can ontribute to such storage hazard. There is lack of security also because Prisoners record kept manually on papers and books are not secured in terms of confidentiality.

Objectives of The Study

Record management is a crucial aspect of survival for any organization no matter the size. Not only is keeping track of information vital to the smooth operation of an organization, trying to track down and find documents (both paper and electronic) can be a very costly process. Having Management Information System in place to manage the admission of Prisoners, storage of data, discharging due Prisoners and applying reliable security measures to Yola Central Prison, this can help to avert costly and potentially damaging situation. The essence of Management Information System in Yola Central Prison is to assist management in making administrative decision. Therefore, this project aims at developing Prison inmate information system which will handle processes involved in keeping records for Prisoners such as those under awaiting trials, warrant return date and transfer from other Prisons.

i. To keep Prisoners personal and warrant details on admission, personal details include details like: name, address, date of admission etc. and warrant details include the court and the crime details, crime number, laws and sections, sentence for convicted Prisoners, etc. into databases..

ii. To handle disposal of Prisoners and their warrants. This includes type of disposals like bail, release on completion of sentence, transfer and other details like disposal date, warrant return date, generating comprehensive report of Prisoners by date of disposal or release, date jailed, etc. for easy sorting.

iii. To provide an effective and reliable method of data and file management which will reduce the movement of files and limit the problems.

Significance of the Study

The significance of the study is that through the use of this software, Yola Prison will be able to:

i. Efficiently manage the Prisoners records,
ii. Have better security for Prisoners record,
iii. Facilitate communication among the Prison officers,
iv. Have easy method of accessing and retrieval of records,
v. Have a comprehensive report of both current and discharged Prisoners.

Definition of terms

- **Convicts:** to declare somebody guilty of a crime in a court of law.
- **Awaiting trial**: is a period which accused person stay in a Prison waiting for court hearing.
- **Warrant:** written letter by the judge to jail an accused person.
- **Ex-convict:** person released after jailed.
- **Prison:** a source place where somebody is confined as punishment for a crime or while waiting to stand trial.
- **Penitentiary:** A prison for people convicted of serious crimes.
- **Inmate:** A person living in an institution such as a prison or hospital.
- **Remand:** Place on bail or in custody, especially when a trial is adjourned.

Literature Review

Prison is defined as a custom and tradition of society according to the law of the land to punish anyone or person who commits a crime. This is to prevent (a lawless society which invariably help secure) lives and properties of the people living in such a country or state. It is also a place in which individuals are physically confined or interned and usually deprived of personal freedom. This is usually a legal penalty that may be imposed by the state for committing a crime. It is also defined as the criminal law forbids the commission or omission of certain acts in order to preserve public order protect

person or property from what is offensive and injurious and provide sufficient safeguards against corruption of the state [13]. The prison, as an institution and an environment, is manipulated by both inmate and guard to help ease the passing of time and work and to sustain some individual identity within the institution, which can undermine the intended purpose of the prison. In short to understand the prison and its purpose, "we must see prison life as something more than a matter of walls and bars, of cells, and locks...we must see the prisons as a society within a society" Once an inmate is surrounded by the prison walls, he or she becomes subject to the operation and function of the institution [6].

The prison environment contains a large number of stimuli (i.e. factors) that impacts both the behavior of inmates and their attitudes of the prison environment. This sectiona presents and reviews information about the following areas: prison environment; types of prison security (i.e. minimum, medium, close, and maximum); consequences of the prison environment incorporating personal inmate accounts; and methods of reducing inmate stressors of the environment [14].

Information System

Information system in a general sense, refers to a system of people, data records and activities that process the data and information in organization and it includes the organization's manual and automated processes. In a narrow sense, the term information system (or computer based information system) refers to the specific application software that is used to store data records in a computer system and automates some of the information processing activities of the organization. The disciplines of business process modeling describes the business processes supported by reformation system which is in the same way with the Prison Information System. Also Information System is a system that accepts data from its environment (input) and manipulates the data (processing) to produce information (output). Information System can be manual or automated [1].

Overview of Prison Information System Development

Based on the scope and objectives of this project work, new system is outgrowth of a process of "Yola Prison" problem solving. A new system will be built as a solution to the type of problems or set of problems that "Yola Prison" is currently facing.

Therefore, the activities that go into producing a new system solution to "Yola Prison" problems are called system development. These activities consist of system analysis, system design, program solution and distinct activities [7].

Database

According to Flavin, database is defined as "a systematic and logical organized collection of facts". Any organized system of information storage and retrieval is technically a database. Whether that data is on computer or file cabinet. But for this research work, the major concern is to develop a computerized database for "Yola Prison." The term database also implies to a series of related properties which include: data sharing, data integrity, data security, data abstraction and data independence [3]

- Data sharing: data stored in a database is not usually held solely for the use of one person. A database is normally expected to be accessible by more than one person, perhaps at the same time [1].
- Data Integrity: another responsibility arising as a consequence of shared data is that a database should display integrity. In other words, the database should accurately reflect the universe of discourse that it is attempting to model. This means that if relationship exists in the real world between objects represented by data in a database then changes made to other partners in that relationship [5].
- Data Security: one of the major ways of ensuring the integrity of a database is by restricting access. The main way of doing this in contemporary database system is by defining in some details a set of authorized users of the whole, or more usually parts of the database [4].
- Data Abstraction: a database can be viewed as a model of reality. The information stored in a database is usually an attempt to represent the properties of some

objects in the real world. Hence, we say relevant, because no database can store all the properties of real world objects. A database is therefore an abstraction of the real world [12].

- Data Independence: one immediate consequences of abstraction is the idea of buffering data from the processes that use such data. The idea is to achieve a situation where data organization is transparent to the users or application programs which feed off data. If for instance, a change is made to some part of the underlying database, no application programs using affected data should need to be changed. Also, if a change is made to some part of an application system then this should affect the structure of the underlying data used by the application.

Database Management System

Database Management System (DBMS) is an organized set of facilities for accessing and maintaining one or more database or series of database and through which all interactions take place with the database. The interactions catered for by most existing DBMS fall into four (4) main groups [13].

i. Data definition: defining new data structures for a database, removing data structures from the database, modifying the structure of existing data.

ii. Data maintenance: inserting new data into an existing database structures, updating data in existing data structures, deleting data from existing structure.

iii. Data retrieval: querying existing data by end users and extracting data for use by application programs.

iv. Data control: creating and monitoring users of the database, restricting access to data in the database and monitoring the performance of database.

Program Coding

Certainly, the graphical user interface control and menus would not work or function especially with the database without a series of codes working behind the scene, or at the background. Therefore, Visual Basic codes relevant to make each control and menu workable were written to activate their functionalities. Compilation is the final phase of system development of any newly built system, which is the same way with the Prison Inmate Information System, whereby all the final codes were compiled into an executable file and also deployed in a form that can have maximum security self-dependent. That is, the program can run as an application on its own [11].

Development Model

The primary objective of this research is to develop a workable computerized prison inmate information system for Yola Prison, Adamawa State. Thus, to achieve this objective, water fall model of software development process which is classical software model initiated by Winston Royce in 1970 was deployed to develop this system. This is because it is characterized with linear or sequential execution of the various phases of the software development life cycle as presented in figure 1.

It support proper documentation of each phase, discourages phase skipping and permits testing. Furthermore, it is iterative and permits systematic revisit of previous phases which is a good feature for system improvement. Thus, the system to be studied will take the following phases:

1. System analysis
  a) Functional requirement
  b) System requirement
2. System design
3. Implementation and integration
4. Testing and quality assurance
5. Maintenance

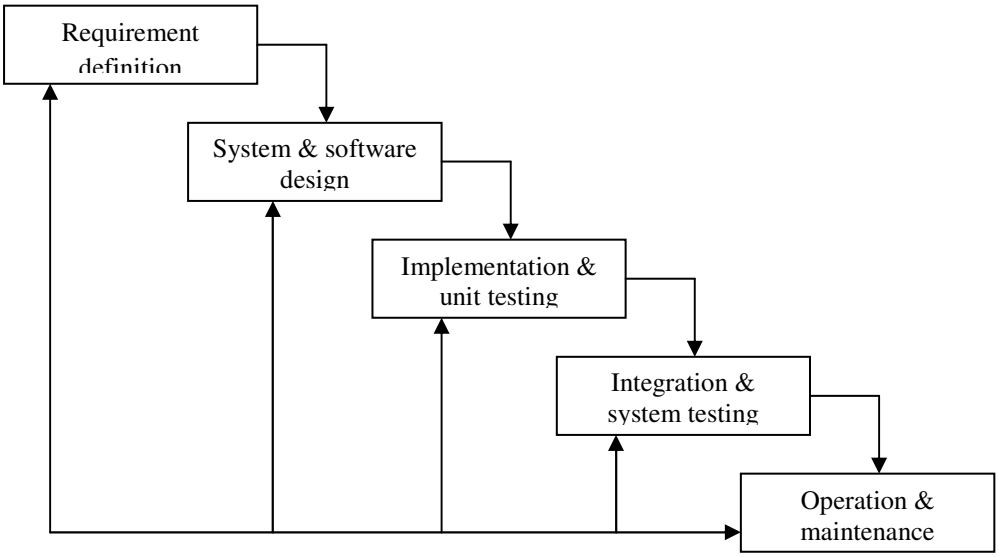

Figure 1: simplified water model for designing and implementation [16].

System Analysis

Jeffrey defines system analysis as a problem solving technique that decomposes a system into its component units for the purpose of studying how well those component parts work and interact to accomplish their purpose. The aim of system analysis is to review the existing system, problem imminent in the use of the existing system, ways in which the identified problems could be tackled or curbed and possibly the refinement of the system if necessary for better efficiency and productivity. Use-cases and other unified modeling language (UML) tools [8].

Method of Data Analysis

In other to have an easy understanding of the result in this work, the data collected from above will be examine and analyzed using data structure dictionary. This is to enable the researcher to determine the input, process and output that are need for the propose system. Thus, the needed component for the system will be best on the information gathered from data collected [10].

Description of the Existing System

The descriptions of the existing system are as follows:

i) The existing system is operated semi-manual in a way that inmates records are kept on shelves which is not secure but need to be secured.

ii) Delays encountered in the processing of inmates file; the rate of processing speed need to be increased.

iii) The method of record keeping in the existing system is manual, not efficient. Therefore, efficient method of record keeping need to be considered to enhance the speedy of the system.

An automated system performs the same function as a manual system, but by means of information technology. Thus, information system component includes; people, procedures, data, software and hardware.

Feasibility Analysis

Having made some observations from the finding in the system investigation, there is a need for propose system to be tested against several parameters. These include; financial feasibility analysis, technical and operation feasibility analysis.

Financial Feasibility

This report is required in order to determine whether the development of the new system is technically, operationally, socially, economically feasible and beneficial. The points below will be considered during feasibility report.

1) The speed and accuracy in processing data

2) The ability to handle large volume of data will be considered

Cost Benefit Analysis

The main ingredient of the feasibility study report is the cost/benefit analysis which must be accurate and understandable and should provide management with enough information to decide whether the development of the new system is cost effective. Because of its long lasting benefits of the new system it's cost effective.

Design and Technique

Tools that will be used to design and develop the software include Use-case diagram (UML), Waterfall model and Flowchart.

The flowchart shows the graphical representation of program execution.

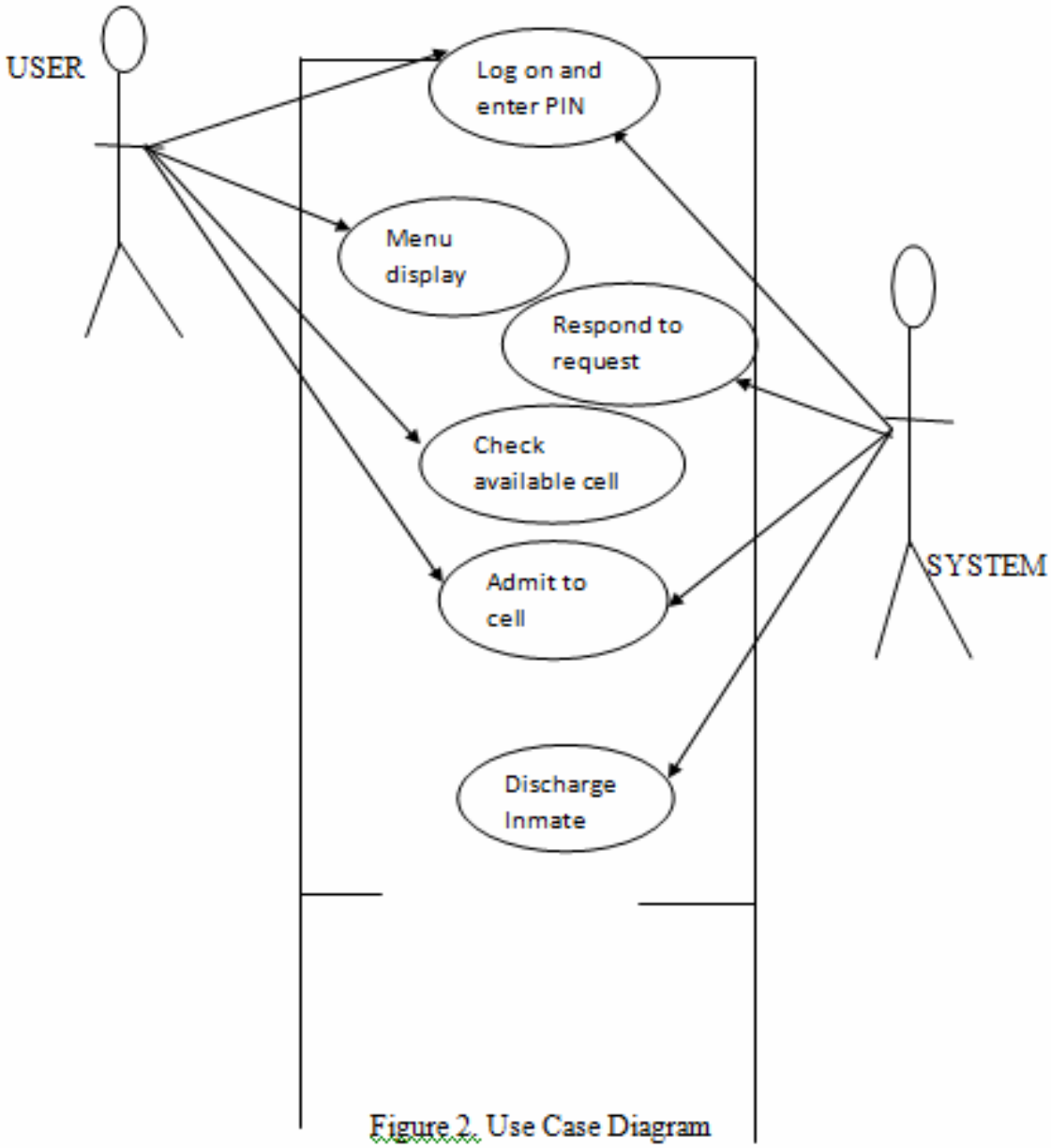

Figure 2. Use Case Diagram

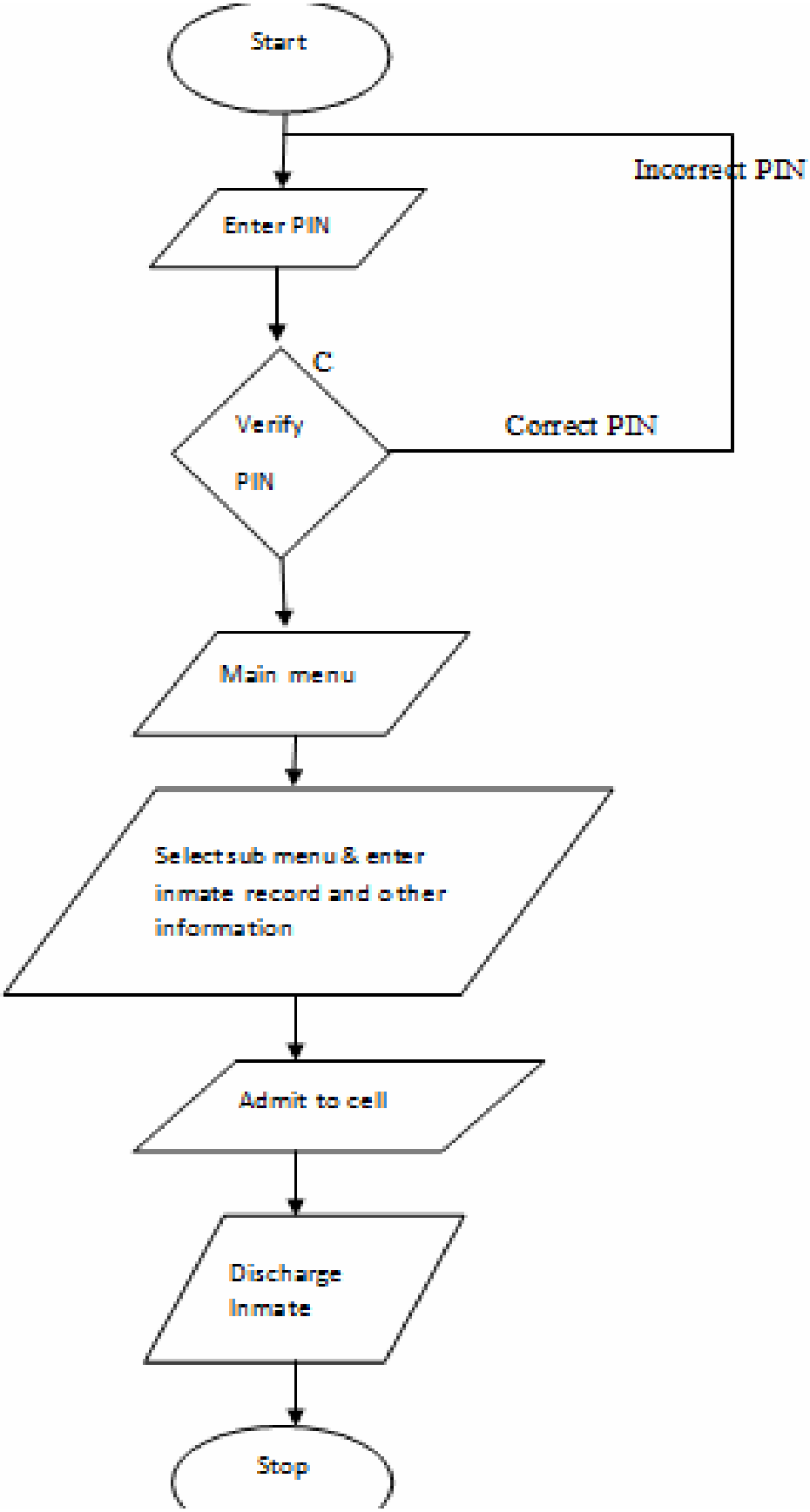

Figure 3. **The Program Flowchart**

Input Specification

The input starts when data are from the source. Input specifications strictly guide against the length and type of data items that are acceptable in particular file name. This input specification id is the designed input for the output to be generated. The specification is given in Table 1

.

S/No	Field Name	Data Type	Description
1	ID/No.	Text	IM 001
2	full name	Text	
3	Contact address	Memo	
4	Nationality	Text	
5	State	Text	
6	LGA	Text	
7	Marital status	Text	Married/single
8	Crime committed	Text	
9	Cell No.	Number	
10	Sex	Text	M/F
11	Age	Number	
12	Height	Text	
13	Date of sentence	Text	
14	Time duration	Text	
15	Discharge date	Text	

Table 1: Input Specification Guide.

Detail Design

The designed system consist of different modules, each of this modules can be selected from menu hence, followed by a processing actions. These various modules are described below:

- Create prisoner's record: This module deals with creation of creation of prisoner's record**.** Users are allowed to enter data that are peculiar to a prisoner. Previous record can also be reviewed in this process especially when prisoner's code already exists.
- Update record: hence user types the prisoner's code, which uses to search an update the database to select which record to be updated. If the code is found then necessary modification can be made to existing record .Process file: this module deals with all computational process of the system.
- Report: Report module is used to generate all sorts of reports include list of prisoners, list of discharged prisoners and report of monthly population analysis. Any of the report needed can be selected in the report menu.

Implementation

This is the process of proceeding from a given of a system to a working version of that system, or the specific way in which some parts of a system are made to fulfill their functions,

both individually and collectively. System implementation is the final phase in the development and operation of the new or revised system. Its goal lies in a system completely debugged, operational and is accepted by the end user. Most system designs, this one not being an exception, are based on the concept of modularity whereby the overall designed system is broken down into a series of sub-units (modules), each one being thoroughly tested before putting into use. As each module proves satisfactory, it will be integrated into the overall development system.

System Testing

This is a written report of the entire operations of the designed and implemented system. The lack of sufficient documentations at all levels plagues most computer installations where the average programmer spends most of his or her time working with programs which are written most likely by other programmers who may no longer be around to consult for the details of their code. Unless the programs are initially and adequately documented, maintenance is an extremely un-attractive past time. The production of the documentations must be seen as the written code itself. Provision for documentation is one of the greatest points of separation between amateurs and professional programmers.

Parallel Conversation

This method of system conversion allows implementation of new system whereby the new system and the old system are operated together for period of time. The old system is operated because if any fault may arise from the new system. The system of conversion determines the accuracy between the new system and old system because they are operated together, so as to find out if the new system meets the requirements that are needed to be achieved.

System Requirement

This refers to the facilities that are required for the new system to run smoothly, which involves the details of the hardware and software needed.

The Proposed system hardware will be developed on a system with the configuration of 160 GB of HDD, 2GB of RAM, Processor (Celeron) Dual –Core, 2.00GHz. The system software (that is, operating system such as windows 2000, windows XP, or windows Vista, windows 7), is an essential set of programs that manage hardware, data files and work with application programs. The operating system is a foundation on which the intended applications and work process are built [9].

Application software is a computer program designed to help operators produce documents and do some computations. Application software thus differs from an operating system (which runs a computer utility that performs maintenance and general purpose chores, and a language which computer programs are created), depending on the work with which it was designed for. An application program can be manipulated text, numbers, graphics or a combination of these elements. In general, application software is divided into: Application package: such as spread sheet, word processor and a database program.

i. Specialist application package: are programs designed specifically to help end users perform a task related to a particular field. A typical example of this is a package developed to handle the prisoner's record Processing system. However, for this project work, the programming language that is be used as the application development tool is Visual Basic Version 6.0 for application. Also to develop the required database, Microsoft Access Version 2010 is used as the development package.

Inmate is a suspect who has been charged with or is likely to be charged with a criminal offence may be held or remanded in Prison if he or she refuses or unable to meet conditions of bail, or is unable to post bail. This may also occur where the court determines that the suspect is at risk of absconding before the trial, or is otherwise a risk to society. An inmate defendant or trial verdict if found guilty, a defendant will be convicted and may receive a custodial sentence requiring imprisonment [15].

Graphics User Interface (Gui)

This is a menu driven windows environment through which the users interact with the system either by the use of mouse or hot keys. This is designed in Microsoft Visual Basic 6.0 in order to provide windows application that is friendly. A Multiple Document Interface (MDI form)

containing many child forms, which could be opened within that single MDI form. Also menu and submenu which users can select and click to access the functionalities, or by the use of key press event [11].

Operators Main Menu Form

The menu form is shown in figure 4. It contains all the operations in the program which are designed under each menu item. In addition figure 5, is the inmate registration form.

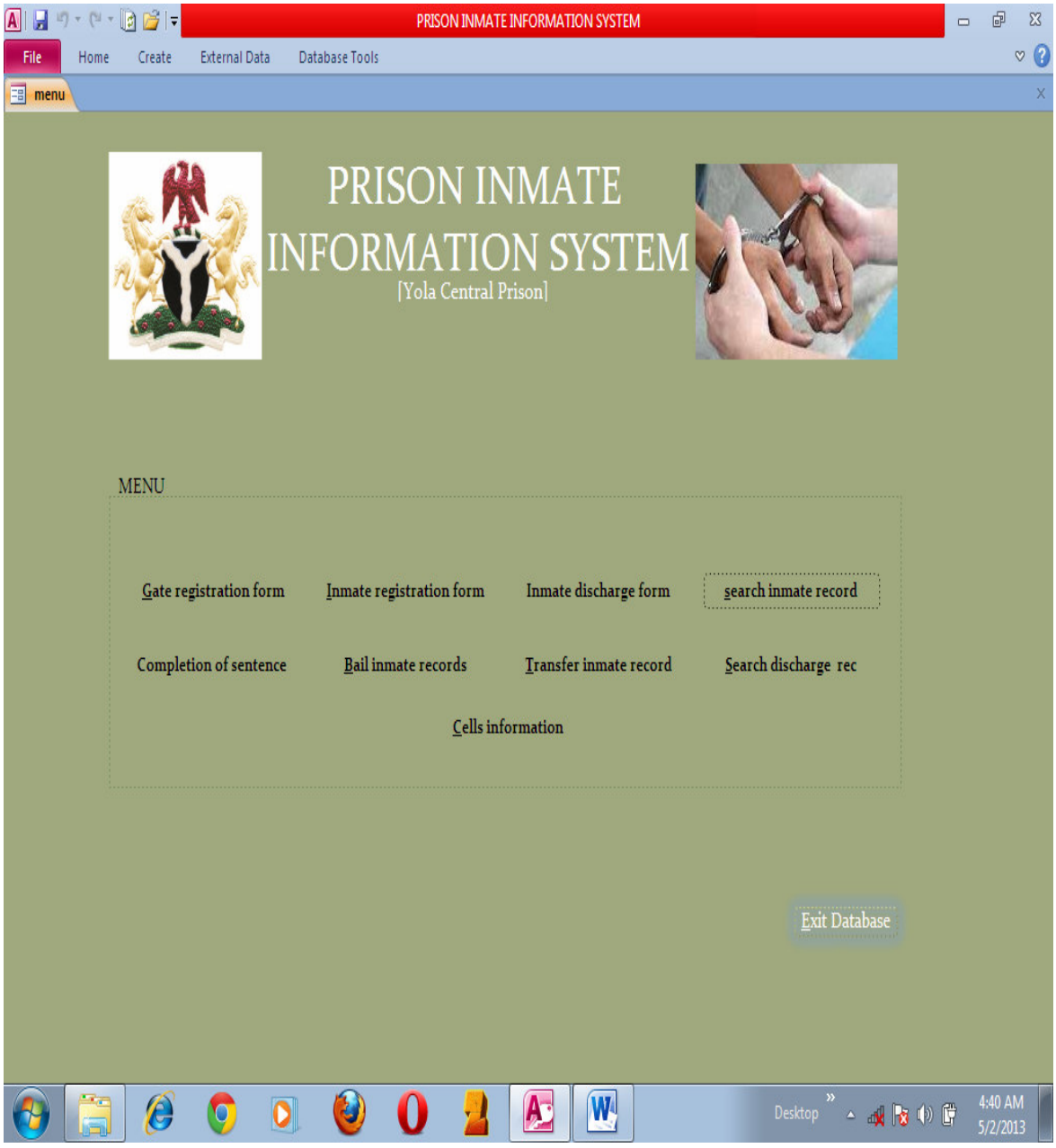

Figure 4: main menu form display

Inmate Registration

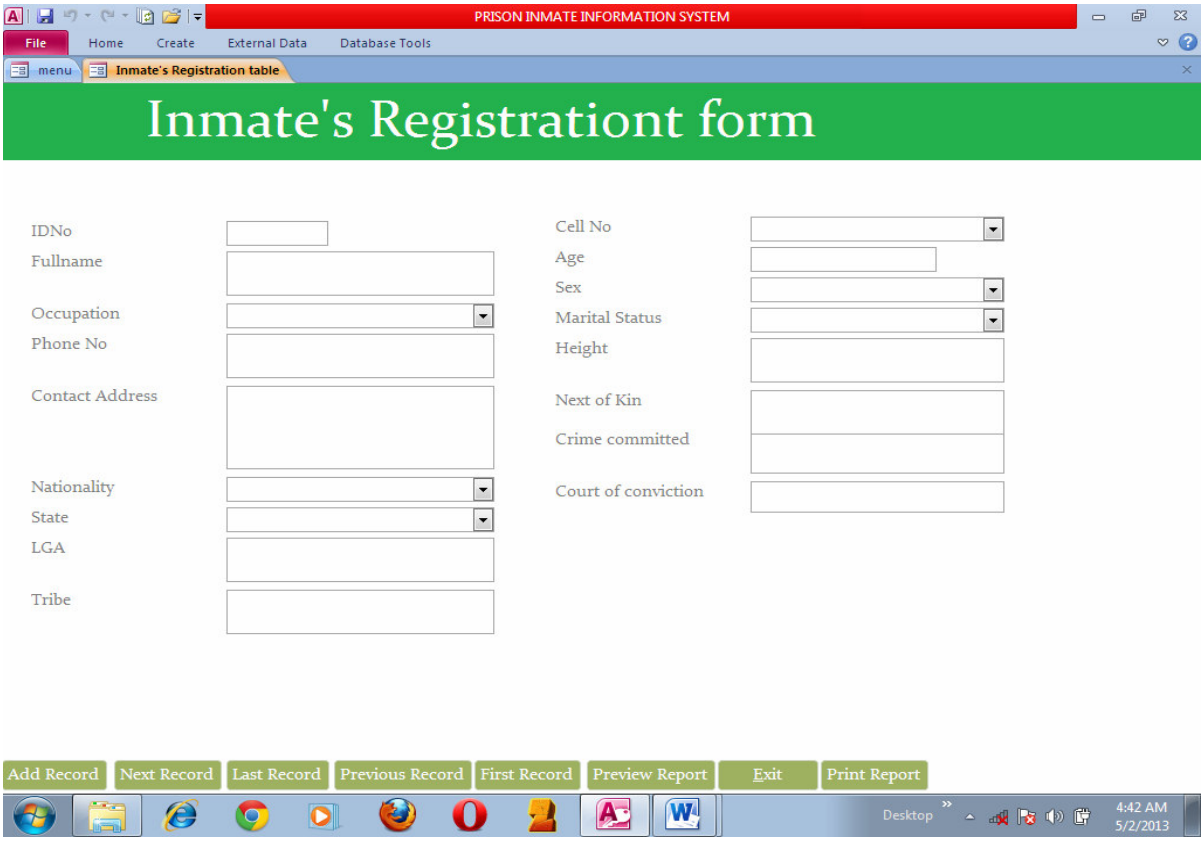

Figure 5: Inmate Registration Form

Conclusion and Recommendations

The new system has been successfully tested, implemented and meets all the specified requirements. In comparison to the current system (manual system), the system is more secure, flexible, provides more user feedback, reduces the workload, prevent erroneous data entry and provides more functionality. This program should be implemented not only to ease the work load of Prison Inmate Information System, but to encourage continuity and improvement in record keeping. We also recommended the following.

i) This system should not be used for any criminal or un-authorized purpose as it is still a prototype and subject to error if not used by a professional.

ii) The prison should be networked so that when a prisoner is registered at gate his or her record can be accessed at record office and other offices.

iii) Lastly, all operators that may likely group to use this system must be computer literate whoh have undergone a short training on how to use the system to avoid errors.

References

[1] Bently, D. (2013). System Analysis and Design Methods 5th Edition. Published by Sandra Donaldson Dewitz, San-Jose State University.

[2] Beynon-Davies P. (2013). *Business Information + Systems*. Palgrave, Basingstoke. ISBN 978-0-230-20368-6

[3] Flavin, M. (2012). Database Management System Published by Hoummele Printer Inc.
[4] French, C. S. (2010). Data Processing and Information Technology 10th Edition. Published by British Library Cataloguing Publication Data.
[5] Gerald, V. (2010). Database Management System 2nd Edition. Published by Palmohills prints.
[6] Goldsmith, L. (2012). History from the inside out: Prison life in nineteenth-century Massachusetts. *Journal of Social History, 31*, 109-125.
[7] Grey, J. (2011). Information System Development Essentials Published by McGrew-Hill Companies
Inc. USA.
[8] Jeffrey, L. (2012) System Analysis and Design Method 4th Edition. Published by Palgrave Macmillan, New York.
[9] Knowpap, J. (2009). Computer Maintenance and Management Published by Mangraw Publishers Inc.
[10] Kroenke, S. (2009). Management Information System Published by Hoummele Printers Inc.
[11] McKen, B. (2011). Visual Basic 6.0 Progamming Made Easy Published by Palmote Mangrills, New York.
[12] Michael, V. (2010). Database Design, Application, Development and Administration, 5th Edition. Published by Palgrave Houndmills, Basingstoke, Hampshire, New York.
[13] Paul, B. (2013). Database Management System 3rd Edition. Published by Palgrave Houndmills, Basingstoke, Hampshire, RG216XS. New York.
[14] Suedfeld, P. (2012). Environmental effects on violent behavior in prisons. *International Journal of Offender Therapy and Comparative Criminology, 24*, 107-116.
[15] Wikipedia, free Encyclopedia 2009 (www.wikipedia.com) www.prisons.gov.ngn.
[16] www.model 6956.net/child-model-site.html, July 12, 2010.