PRISON RECORDS MANAGEMENT INFORMATION SYSTEM (PRMIS).

CASE STUDY: KISORO PRISON IN TORORO

(UGANDA)

BY

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A RESEARCH REPORT SUBMITTED TO THE FACULTY OF SCIENCE AND EDUCATIONFOR THE PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE EDUCATION IN COMPUTER STUDIES BUSITEMA UNIVERSITY

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DECLARATION

I, KIPYEKO JOHNSON hereby declare that this piece of work is original to my effort and that it has never been published or presented to any University for any academic award. Where other works have been used, this has been acknowledged in the references.

Sign.....date...21.01.2024.....

APPROVAL

This Project report has been submitted for examination purposes with the approval of my caring supervisor.

Signed..... Date...3.1.2024.....

Dr NAKASI ROSE

Department of computer studies

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DEDICATION

In a special way I dedicate this book to my family and precisely to my parents Mr. and Mrs. LAWENDI GEORGE for the seemingly little yet huge impact they have made in my life in shaping me and making me believe in my strength rather than my weakness and daring me to dream as imagination is precious and makes you see what's on the other side of too far.To my younger brother Michael, for believing in me and making me work hard to be anexemplarily role model

Lastly, I want to extend my sincere gratitude to my wife cheptoek sylivia for her endless support, encouragement and proof reading this work. She even went to an extent of correcting whatmy English grammar teacher failed to drill into me at school. Thank you!

Thanks to everyone else who toiled in the pursuit of making me better. If there were wordsgreater than thank you very much, I would have used them to show how grateful I am.

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ABSTRACT

This project report is a summary of the requirements and the process that the researcher wentthrough in developing a prison records management information system for Kisoko prisons. It highlights the background, literature review, methodology, data presentation, analysis,implementation, findings, recommendations and conclusions.

The main objective was to develop a computer-based prison records management information system for the above-mentioned prison.

The research was also supplemented by library materials, the internet and other sources ofinformation which provided the already existing literature on the elements of an informationsystem, the strength and weaknesses of the pillars of developing a prison record management information system.

The method used in the survey was a longitudinal study in which used prison warders and visitors of the inmates as respondents.

In the study, the data collection methods used was questionnaires and interview that wereadministered to the prison warders attached to the prison and some visitors. The analysis of data

included the use of quantitative and qualitative methods. Statistical tables were also adopted toanalyze the results of the study.

The findings indicated that the number of inmates was escalating and the current manual system could not handle the records well and the required operations in real time and efficiently asrequired. Most of the respondents acknowledged the immediate need for a computer-basedsolution.

The recommendations included urging the management of the prison to take up a computer-based solution towards the problem by procuring the developed prison management informationSystem which would solve the problem of data security, accessibility, timely report productionand avoid redundancy.

LIST OF ACRONYMS

PRMIS	Prison Records Management Information System
IS	Information System
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
UML	Unified Modeling Language
HTML	Hypertext Mark-Up Language
RDMS	Relational Database Management System
PHP	Hypertext Pre-processor
CSS	Cascading Style Sheets
MYSQL	My Structured Query Language

CHAPTER 1 INTRODUCTION

1.1 Introduction

Kisoko prison is one of the prisons in Uganda located in Kisoko central, barracks village, Tororo district. It started way back in1931, under local government, originally it was a cell for those who used to fail to pay graduated tax, before it became a prison. The prison I characterized by two main unites that I to say the remand and conflicts both under one umbrella

1.2 Background of the study

Due to high crime rate in the region, Kisoko prison has of late exceeded its intended number of inmates from 70 to over 110 inmates. This necessities for a lot of records keeping for the inmates both in the remand and convicts. Also records about visitors coming to see the inmates had to be kept making the records environment explodes with millions of paper documents in the form of file system all of which must be managed. This mean that record of approximately 3000 inmates on their cases deflects of where they come from, record about the block and room they are allocated, health records and records of people who visits them are maintained in file system creating a bunch of files. When reports are needed especially about prisoners, it takes a long time to produce a single report for management to make decisions. At times reports disappear and tracing them becomes a problem since the system is not automated. Producing timely reports for decision making becomes hazardous(Oye.N et al., April 2015).

In the age of information technology, the need for timely information to support management in making decisions is escalating. This calls for developing a prisons records management information system as an answer to the above problems of managing prisons' records at Kisoko prison.

The developments in information technologies have been useful in saving time and money and reducing the costs by accelerating transactions and communication through tools like management information systems. An automated Management Information System is indispensable for management of Kisoko Prison. Unfortunately, the system seems to be far-fetched, especially when it is done manually using many different methods of report production. The time for solving such problems soars with exponential speed when there are delays of report production (Lemuria Carter & France Bélanger 2005). However, the use of computer system and the web could mitigate the problems caused by delay of reports production.

1.3 Statement of the problem

Continuous use of a file-based system in Kisoko Prison has led to inconsistency, redundancy, data insecurity, lack of proper backup measures leading to untimely reports production, difficulties in accessing data and underutilization of resources like time(Emeje Gideon Daniel et al., 2020).

Such complex scenarios are often not easy to satisfy manually; thus, call for computer software to handle. To compound the problem further, to date the concept of teleworking is fast catching on. Management would wish not only to access but as well to update their information from anywhere on the globe at any time so that they could have optimal use of their personal time.

1.4 Purpose of the Study

The purpose of the study is to develop a prison records Management Information System for Kisoko Prison to have their reports instantly, effectively and efficiently as and when required.

1.5 Objectives

1.5.1 General Objective

To develop and implement a prison records Management Information System for Kisoko Prison.

1.5.2 Specific objectives

i) . Togather the requirements for developing a prison records management information system.
ii) To design the records managementinformation system.
iii) To implement the prisons records managementinformation system.
iv) To test and validate the prisons records management information system.

1.6 Scope of the study

The study will be conducted in Tororo District in eastern region of Uganda among the inmates and the staff of Kisoko Prison. The distance covered from Tororo town to Kisoko prison is approximately 10 kilometers. The study will focus on the current system of records management in the prison.

1.7 Significance of the study

The information system shall curb the problem of redundancy and increase the accuracy and consistency hence making the system efficient. The information system will as well aid rapid access of data and quick reports generation. It will also provide a centralized data location by pooling resources together.

The researcher also hopes that the study will serve as informative scholarly work to other scholars pursuing related or similar studies.

1.8 Definition of terms

• **Convicts:** to declare somebody guilty of acrime in a court of law.

• **Prison:** a source place where somebodyis confined as punishment for a crime or while waiting to stand trial.

• **Inmate:** A person living in an institutionsuch as a prison or hospital.

• **Remand:** Place on bail or in custody,

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter comprises of a comprehensive analysis of information on theoretical and practical views of other research projects conducted for Kisoko Records Management Systems. This research study combines factors that other researchers have done that would result in the better management of prisoners at Kisoko prison.

This chapter is subdivided into different sections for example information systems, prison Records Management information System, current prison Records Management System, loopholes of the current system, relevance of the management information system that is to be developed as well as the requirements established. This chapter presents a detailed critical view of the research work from different sources such as journals, the internet and other already done projects related to the prisons management system as well as an analysis on the existing literature on the subject to reveal contributions, weaknesses and gaps within. Information Systems

An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products(Kenneth.C & Laudon., 2016).Information systems contain information about significant people, places, and things within the organization or in the environment surrounding it. Byinformation we mean data that have been shaped into a form that is meaningful and useful to human beings. Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use. Querying the heterogeneous data sources, combining the results, and presenting them to the user is performed by the integration system. When multiple sources are to be integrated into a single and consistent view, at least the following three steps need to be performed: Uncertainty is a conflict between a non-null value and one or more null values that are used to describe the same property of an object. Usually, it occurs as a result of missing information. Three interpretations of null values can be distinguished as follows: The other type of conflict is a contradiction. It is the conflict between two or more different non-null values that are used to describe the same property of an object.

An example is the case of if two or more data sources provide two or more different values for the same attribute on the same object. One good reason for regarding uncertainty as a special case of conflict is the fact that it is easier to deal with uncertainty than contradiction. Several forms and reports are used in day-to-day processing of documents. A database can integrate these several components hence resulting in improved and more efficient operations.

2.2 Management Information Systems

A management information system (MIS) is a computer-based system that provides managers with the tools and information necessary to effectively organize, evaluate, and control their organization's operations. It is designed to support decision-making processes by collecting, processing, storing, and disseminating data in a timely and accurate manner.

There are several definitions of management information systems provided by authoritative authors in the field. Here are some notable definitions:

According to(Kenneth et al., 2016) define management information systems as "a system that collects, processes, stores, analyzes, and disseminates information for a specific purpose" .

According to (O'Brien. J.A & Marakas.G.M, 2018)management information systems are "computer-based systems that provide managers with the tools to organize, evaluate, and efficiently manage departments within an organization".

(M, 2019)defines management information systems as "a business function that moves information about people, products, and processes across the company to facilitate decision making and problem-solving".

(Raymond & Jr, 2014)describes management information systems as "an integrated set of components for collecting, storing, processing, and communicating information within an organization".

(James . D.McKeen & Heather. A. Smith, 2015)define management information systems as "the development and use of information systems that help businesses achieve their goals and objectives" (McKeen & Smith, 2015).

2.3 Components of a Management Information System

Hardware is a term that refers to physical components of a computer system, in the form of computer hardware Input and output devices constitute the hardware components of MIS, (Daniel, 2004).

Software is a general term used to describe a collection of computer programs, procedures and

documentation that performs some tasks on a computer system. The term includes application Software such as word processors and system software such as operating systems. The programs and applications convert data into machine-readable language, (Daniel, 2004).

Procedures are sets of rules, protocols or guidelines, which an organization establishes for the use of a computer-based information system(Daniel, 2004).The computer experts, managers, users, analysts, programmers, database managers, and many other computer professionals who utilize the computer-based information systems(Phil 2002).Data are raw facts in isolation. Data describes the fundamental components and events of abusiness or an organization. It acts as a raw material for the information systems.

2.4 Advantages of a Management Information System

MIS improves the quality of planning by providing relevant information for sound decision – making. Due to increase in the size and complexity of organizations, managers have lost personal contact with the scene of operations.MIS change the larger amount of data into summarized form and there by avoids the confusion which may arise when managers are flooded with detailed facts. Decentralization of authority is possibly when there is a system for monitoring operations at lower levels. MIS is successfully used for measuring performance and making necessary change in the organizational plans and procedures.MIS facilitates integration of specialized activities by keeping each department aware of the problem and requirements of other departments. It connects all decision centers in theorganization.MIS serves as a link between managerial planning and control. It improves the ability of management to evaluate and improve performance. The used computers have increased the data processing and storage capabilities and reduced the cost(Emmanuel Ahishakiyea et al., 2017).

2.5 Limitations of Management information Systems

Unemployment - While information technology may have streamlined the business process it has also created job redundancies, downsizing and outsourcing. This means that a lot of lower andmiddle level jobs have been done away with causing more people to become unemployed.

Privacy - Though information technology may have made communication quicker, easier and more convenient, it has also bought along privacy issues. From cell phone signal interceptions to email hacking, people are now worried about their once private information becoming public knowledge.

Lack of job security- Industry experts believe that the internet has made job security a big issue

as since technology keeps on changing with each day. This means that one has to be in a constant learning mode, if he or she wishes for their job to be secure.

Dominant culture- While information technology may have made the world a global village, it has also contributed to one culture dominating another weaker tone. For example, it is now argued

that USA influences how most young teenagers all over the world now act, dress and behave. Languages too have become overshadowed, with English becoming the primary mode of communication for business and everything else("Disadvantages Of Manual Records Management,").

2.6 Web Based Databases

A web-based database is a server which provides remote users with a secure means of accessing data dynamically using the web browser to input information search or view a report. It acts as the heart of any dynamic website operations because it contains the information that will be displayed on a browser.

2.6.1Advantages of Web Based Databases

Information stored on a web-based application can be accessed globally. This makes the sitelucrative in respect to the number of people who visit it.

A web enabled database server can be used to form a virtual community, where participants in remote locations can exchange ideas in electronic formats.

Provided there is consistent flow of power, the site will always be available day and night as Opposed to an office which closes during night time.

Web based instructional environments have the ability to conduct both qualitative and quantitativeData analysis. A typical web-based instruction database carries both numeric and textual data. Various scholars have pursued this study, what should be noted is that it is of paramountimportance in this day and age to provide the KISOKO community with enhanced services andgreater access to information, ensuring improved compliance with the slated millennium goalsthrough the replacement of the existing file records management system.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This Chapter will give a brief description of the methodology that was used to develop the system. The main methodology involved feasibility study, data collection, system analysis and design, developing and implementing prisons record management information system. The data considered necessary to build the system was collected and analyzed. The methodology was very important to ensure that the new system would benefitthe institution. The method chosen for data collection of this project was qualitative which is mostly used and it was the most efficient approach for collecting complete information from the small population and horse mouth of the administrator. Qualitative methods are for conducting researches on an open-ended exploration of people's actions, words, thoughts and intentions. These methods include observation of focus groups and interviews.

3.2 Approaches for the Development of PRMIS

The system development life cycle (SDLC) waterfall model was considered. In this model, the system follows a series of events from the requirement definition, system and software design, implementation and unit testing, integration and system testing and operational maintenance. There was use of different aspects from other models like prototyping which help in coming up with system definition and analysis, data flow diagrams (DFD) and entity relationship diagrams (ERD). The ERD was used to show the relationship between entities while the Data Flow Diagrams was used to show the flow of data in the system.

3.2.1 Area of Study

This study was conducted in Kisoko prison, inTororo-Uganda. This prison was chosen due to the existing problems identified by the system, above all it was near and data could be collected easily. The study covered the department that directly deals with prisoners and these included;

Convicts/remands:(Names, age, gender, marital status, village, next of kin, religion, education, district, telephone number, disease, offence, days of serving/reporting to court);

Visitors ;(names, age, gender, village, parents, telephone, name of prisoner visited).

3.2.2 Population and Sampling

Population refers to the entire group that was used to draw conclusions about and the entire group of people, events or subjects of interests that the researcher wished to investigate whereas sampling referred to the process of selecting a sufficient number of elements (sample) from the population. The purpose of the study determines the number of participants to involve in the study. The participants were segregated by many factors such as employment title, age, gender and other dimension that would benefit the study like course of study. In this research, twenty participants were involved in the study. The officer in charge (01) was involved and the other participants came from two focus groups and these are the inmates and (01) receptionist (officer in charge records). A total size of both fifteen (15) male and five (05) femaleparticipants were involved in the study as shown in the table 3.3.1 below for gender balance. The method of sampling was purposive that was; selection of key informants, (people with deep knowledge under investigation) for example the officer in charge who was the overall head of institution, and receptionist who was in charge records. Simple random sampling was adopted in selection of other participants in the focus groups in System.

3.3.1 TABLE 1 SAMPLE SIZE OF PARTICIPANTS

Focus groups	**Officerin charge(o/c)**	**Receptionist(records officer)**	**inmate(s)**	**Total**
Number of participants	01	01	20	22
Male	01	01	15	17
Female	_	_	05	05
Day	**Day 1**	**Day 2**	**Day 3**	

Table 1: Sample size of participants

3.2.3 Data Collection Techniques

This explains the different methods that were used by the researcher. A number of steps, procedures and tools were employed as shown below;

3.3 Interview

This was the most commonly used technique and normally most useful fact-finding technique that were used by the researcher to collect information from the participants face to face. There were several objectives of using interview such as finding out facts, generating user interest and feelings of involvement, identifying the requirements and gathering ideas and options.

3.4 Observation

This technique was used to gather accurate information about how the system would operate particularly about processes and levels. This technique enabled the researcher to systematically watch and record the behavior and characteristics of operations and processes in the system. The method gave more detailed and context related information, permitted the collection of information, permitted tests of reliability of the responses to the few operations of a system as they actually occur, and adapted to events as they occur.

3.5 Data Analysis and Presentation

According to (Saunders.M et al., 2019)elucidated the process of analyzing the collected data as a translation of the gathered data by different methodologies through research and referred gathered data to the literature review to construct the proper results for the research and fulfill the purpose. In this report, the information gathered from interviewees was analyzed by consensus and presented descriptively in verbatim.

The qualitative data collected by interview, observation, document review and focus groups analyzed according to the qualitative analysis method. Qualitative analysis is the use of no quantifiable methods to evaluate investment or business opportunities and make decisions. In qualitative analysis, the data collected was structured in a proper sequence, basing on the method of collection.(Chalhoub- et al., 2008; Chalhoub- Deville, 2008)**,** argued that qualitative approaches are employed to achieve deeper insights into issues related to designing, administering and interpreting language assessment. Categorization for the common data was

approached to demonstrate the data in a suitable way for interpretation. Along with the coding process proceeded and the data based on determined themes that clarify the valuable findings of the operated discussions described.

3.5.1 System Analysis

This involved how the functions of the prison record management information system were realized. This was achieved through the use of system design tools such as Data Flow Diagrams (DFDs), Context diagrams, Entity Relationship Diagrams (ERDs) that was used in the development of the system and its databases.

The architectural and module design was integrated to make up the system using (UML) Unified modeling Language which is an object-oriented language. UML clarifies and specifies the working of the system with the help of the UML standards. The requirement specifications from the requirements analysis were studied to prepare the system design which helped in specifying the hardware and software requirements which defined the overall system architecture. “System designs are important because they provide roadmaps for how to rigorously conduct studies to best meet certain objectives” (Clerk & Creswell, 2008)

3.5.2 Context Diagram

Relationships were established between the data items to show how the different entities were related with the system. The context diagram therefore showed the interaction of the system with its environment.

3.5.3 Data Flow Diagram

A Data Flow Diagram (DFD) was graphical representation of the flow of data through an information system. It was used for the visualization of data processing. System designers started by drawing a context diagram to show the interaction between the system and outside entities. The Data Flow Diagram shows how the data moves within the system.

3.5.4 Use-Case Diagram

A use case diagram is a representation of a user’s interaction with the system that showed the relationship between users and different cases in which the user involved. A use case diagram was used to identify the type of users of the system and the different use cases.

3.5.5 System implementation software and tools

The records management information system is a web-based system, and the backend software was installed in the web server and user computer or mobile phone to start operating. Text editor, JavaScript, HTML, PHP, Wamp server was used to enable the whole system to fully function and its implementation.

Text editors have got the development languages such as Hyper Text Markup Language (HTML) for creating dynamic and interactive Webpages, PHP for connecting the system interfaces to the databases, JavaScript for validating the system web pages and CSS files for modifying the appearance of the font and web pages. Also, Adobe photo shop CS3 provided the environment for creating banners and customized images for the system. On the other hand, wamp server has the MYSQL components that enabled us to create the system databases and tables that provided the platform from which the system information was stored. The wamp server used a relational database management system (RDMS) whose primary Query language shall be MYSQL. MYSQL supports different data types including primary types such as integer, float, decimal, char (including character strings), varchar (variable length character strings), Binary (for unstructured blobs of data), text (for textual data) among others.

3.5.6 Testing and Validation

All components of the system were tested to ensure proper functionality. They were integrated to form a fully functional system.

System testing involved testing software or hardware connected on a computer, integrated system to evaluate the system's compliance with its specified requirements. This testing required no knowledge of the inner design of the code or logic. System testing was performed on the entire system in context of the functional requirements and system requirements. System testing was carried out to ensure that the client cannot submit empty fields especially those that are mandatory. This was done by leaving some fields empty to see whether the system shall send an alert message.

Validation was done to ensure that data fed into the system satisfies the pre-determined formats and complied with stated length and character requirements including other defined input criteria. For example, a field that requires a date should not allow letters. For accurate validation,

sample data was fed into the system to find out if the system shall be able to respond correctly to the test data fed into the application that is if it shall be correct or incorrect data. Different stakeholders were left to interact with the system to find out its validity.

3.6 Ethical Considerations

The ethical issues considered during data collection and analysis included

Respect for intellectual property: During the course of this research project, the researcher strived never to copy or plagiarize other people's work but instead considered text citation and referencing in a bid to acknowledge the source of the information, that is, statistics, tables, expressions and phrases. Integrity: The researcher endeavored to be sincere and consistent in all the actions during the research process and kept the promises and agreements with all the stakeholders of the Student Records Management System. Honesty: The data results, methods, procedures and publication status were reported honestly by the researcher. The researcher did not falsify or fabricate data and neither deceived the public nor colleagues on the data collected and the reasons for collecting data. Confidentiality: The researcher protected any piece of sensitive information that was provided by respondents and as well followed the guidelines that govern protection of confidential communications. Objectivity: The researcher endeavored to avoid systematic bias in all aspects such as natural bias in reporting data, avoided defective measuring devices, ensured proper sampling and carefully observed the respondents considering the indeterminacy principle.

CHAPTER 4 DATA ANALYSIS, PRESENTATION, INTERPRETATION AND IMPLEMENTATION

4.1 Introduction.

This chapter presents the results from system analysis as well as the strengths and weakness of the current system. This chapter as well covers the system study, benefit and weakness of the current system, system requirements (user requirements, functional requirements, and non-functional requirements) and the design of the system (system architecture, context diagram, data flow diagram, entity relationship diagram and the flow chart diagram).

4.2 System study and Analysis.

The study was carried out in Kisoko prisons. The main purpose of the study was to find out the challenges faced by customers at the agricultural produce store. It involved studying the existing system to identify its strengths and weaknesses. The information acquired from the study was done by employing a number of data collection methods including questionnaires and an interview guide where the questionnaires were analyzed to give the basis to design a new system.

4.3 Data presentation and analysis

The purpose of this involved analyzing and inspecting data collected with the goal of highlighting the information, drawing conclusion and supporting decision making.

To analyze the data collected, the student records management system was applied to statistically arrange the data, where the frequencies i.e., the number of respondents were applied to determine opinion of the interviewees and check the validity of the observations.

4.3.1 Findings from Interview

A total of 22 respondents were interviewed and the responses are presented below;

(a) Position of participants at Kisoko prisons

The opinions of the respondents were solicited based on the question; what is the current position of responsibility at KISOKO prisons?

The respondents gave their responses as indicated in the table below.

Position	Frequency	Percentages
OC station	1	4.55
officers	1	4.55
inmates	20	90.91

Table 2 Position of participants at Kisoko prisons

(b) Frequency of accessing inmate's records.

The opinions of the respondents were solicited based on the question; how often do you access student records in your current role? Many of the respondents said that they access the system manually for example the administrators visit old box files from the shelves and find out the information intended to have for a particular prisoner who has a concern with knowing his/her details/records at the prison.

As well as staff accesses the system either by using the notice board or visiting old box files containing inmate's information and gets the updates however much tiresome it is for them.

Lastly, prisoners access their records through visiting notice boards and hence resorting to wait for the pinned information on the notice board.

(c) Satisfaction with the current system

The opinions of the respondents were solicited based on the question; how satisfied are you with the current system for managing prisons records? All the respondents were not satisfied with the use of the current system due to its tiresomeness for example the OC complained of the bulkiness of the old box files and mismatching information due to typing errors that give different information while searching for the records of a particular prisoner

(d) Specific features or functionality that you would like to see in a new system.

The opinions of the respondents were solicited based on the question; are there any specific features or functionality that you would like to see in a new prison records management information system?

All the respondents gave out their views about the specific features or functionalities to be included in the new system, that is;

Administrators want to have a system that update, manipulate and print the prisoner's information.

Staff wanted to have the system that can be easily accessed and report about the prisoner to be one of the features included so that prisoners report can be got with ease.

Prisoners wanted to have a feature of recording their visitors in the prison and so as to keep track of their visitors at any time of their convenience.

(e) Challenges addressed in percentages.

The opinions of the respondents were solicited based on the question; are there any challenges or difficulties that you currently face when managing prison records?

All the respondents pointed out their challenges and most of them were similar as they are indicated in the table below;

Challenges	Frequency	Percentage
Data loss	9	40.91
Difficult to update	10	45.45
Efficiency	3	13.64

Table 3: Challenges addressed in percentages

This table above indicated the challenges or difficulties faced in the current way of managing inmates' records.

4.3.2 Findings from Observation

According to my areas of interest, there were various questions that I considered under the observation method and they were answered as follows;

Data security and privacy.

Observations were made according to the question, how important is data security and privacy in a prison records management system?

According to my observation skills due to several times of visiting the OCs office, I was able to observe that the office shelves where full of old files which OC can't afford revising in case there is a need of a certain prisoner who has an issue with his/her records and it had taken time.

Sharing of inmate's records.

Observations were made according to the question; how do you currently share inmate's records with other staff members or administrators at the prison?

According to my observation skills, I was able to realize that prisoner's information was being shared using printed papers that is pinned on various notice boards.

Data loss.

Observations were made according to the question, have you ever experienced any data loss or corruption with the current prison records management system?

Yes. That is the box files are exposed to calamities like fire outbreaks, being soaked by rain water and contamination by rodents that eat files and documents.

Comments/feedback.

Observations were made according to the question, are there any other comments or feedback that you would like to provide about the current prison records management information system or potential improvements?

True, according to my observation skills, the comments were that the current system was tiresome and consumed a lot of space, needed a lot of manpower which wasn't good for the users and that's why I observed and realized that there was a need of having an electronic prison records management information system to simplify the work.

Accessibility.

Observations were made according to the question, how easy is it for prisoners to access and view their own records on the current system?

According to my observation skills, it was easier for prisoners to access the notice board and have a look at their records by using the current system.

Integration and management.

Observations were made according to the question; how does the current system handle the integration and management of prison records across different systems and platforms within Kisoko prisons?

While using my observation skills, I was able to see random checks that were done while searching for the details of a particular prisoner and this seemed so hectic and tiresome since the files were many in the shelves thus complicated to share inmate's records across different systems and platforms.

4.4 Current System

The current system is very unreliable as access to previous records is uncertain. It isdifficult to trace the past records as there is no centralized storage of records.Visitors are kept for long hours as the officers look for the person they have come to see

in the cells. Normally this is done block by block, cell by cell.Untimely report production is another problem associated with the current system.The current system is inaccurate as it allows for redundancy.There is wastage of resources since there is too much paper work to be done.Accessibility of records was limited to only one officer as a file cannot be shared by two

Officers hence forcing them to have one office.

4.4.1 . System Analysis

The process of system analysis involves a comprehensive study of the existing system, its associated problems, requirements, and the evaluation of potential solutions. This process is particularly relevant in the context of Kisoko Prisons, which currently relies on a manual record system.

Data in this system is stored using traditional and inefficient methods, such as paper files. This approach presents several challenges, especially when it comes to accessing inmate information. Prison officers are required to sift through numerous files to locate specific information, a process that is not only time-consuming but also inefficient.

Furthermore, this inefficiency extends beyond the prison officers to affect visitors as well. The current system often results in long queues of visitors waiting at the gate to see inmates, further highlighting the need for a more efficient system.

In conclusion, system analysis provides a critical evaluation of the current system at Kisoko Prisons, highlighting its inefficiencies and the urgent need for alternative solutions. This analysis serves as a stepping stone towards the development of a more efficient and effective system that can save time and resources for both prison officers and visitors.

4.4.2 User Requirements

The user requirements for a prison management system can be categorized into three main areas: data entry, data updating, and report generation.

For data entry, the system needs to capture a comprehensive set of prisoner details. These include the inmate's identity number, first name, other names, gender, date of entry, case number, charge, conviction status, unit, recidivism, block, crime type, cell number, disease, file number, age variance, home address, education level, and age.

The system should also provide robust search capabilities. Users should be able to perform searches based on various criteria such as the crime committed, prisoner details like name, age variance, disease suffering from, gender (male or female), crime number, education level, and date of birth.

Tracking the status of various elements is another crucial requirement. The system should allow users to track the status of prisoner details, the charge (crime) committed, and the detailed reports accumulated for decision-making.

Finally, the system should be capable of generating detailed reports. These reports, made by the authorized data entrants, should provide comprehensive insights into the prisoner details and the crimes committed. These reports will serve as a valuable resource for management in their decision-making process.

4.4.3 Functional Requirements

The system was required to perform automation of the process of prisoners' details, department transactions and reports made through quick retrieval of required reports basing onthe set criteria. It also overcame the anomalies of the manual system.

4.4.4 Non-Functional Requirements

The newly implemented system in Kisoko community is a testament to the advancements in technology and its potential to revolutionize operations in various departments. This system is characterized by four key features that ensure its efficiency and reliability.

Firstly, the system incorporates a robust security mechanism that effectively bars unauthorized users from gaining access. This is achieved through the use of unique usernames and passwords, which are required for authentication before access is granted. This feature not only safeguards the system against potential breaches but also ensures the integrity and confidentiality of the data stored within.

Secondly, the system is equipped with a recovery control mechanism. This feature is particularly crucial in instances of hardware or software failure, as it allows for the restoration of databases to their previous or original consistent state. The implementation of this design utilizes MySQL, chosen for its support of quick backup and restoration.

Thirdly, the system includes a user-accessible catalogue. This catalogue provides a comprehensive description of the data contained within the database, enhancing the user's ability to navigate and utilize the system effectively.

Lastly, the system boasts a concurrency control mechanism. This feature enables shared access to the database, linking users from different departments within the Kisoko community. The concurrency control system not only supports a higher number of users but also ensures the efficient flow of the substantial traffic generated.

In conclusion, the new system is a significant upgrade that promises to enhance operations within the Kisoko community. Its robust security system, recovery control mechanism, user-accessible catalogue, and concurrency control system all work together to create a reliable, efficient, and user-friendly platform.

4.5 System Requirements

The following where required to run the system: -

4.5.1 Software Requirements:

The system under discussion is fundamentally built on the principles of a Relational Database Management System (RDBMS). This choice of database management system offers numerous advantages over other types of database systems, making it an optimal choice for this particular system.

One of the key components of the system is the MySQL application. This application plays a crucial role in supporting the front end of the system. It works in conjunction with the database, forming a robust and efficient system. The integration of PHP and HTML programming further enhances the functionality and user interface of the system, providing a seamless experience for the users.

4.5.2 Hardware Requirements:

The implementation of a new computer system requires careful planning and consideration. The system in question consists of a Pentium 4 computer with a minimum of 128Mb of RAM, although 256Mb is recommended for optimal performance. This computer operates at a speed of 133MHZ and requires a system unit with at least 20GB of free hard disk space and a CD ROM drive.

In addition to the primary computer, a server computer is also necessary. This server should have 1GB of RAM, but 2 GB is recommended for best performance. The system unit for the server should have a hard disk drive with at least 250 GB of space. The server is powered by an Ultra320 Intel Pentium Xeon 2200 MHZ FC-PGA Processor and also requires a CD ROM drive.

Before the system can be used, it is essential to develop the capacity of the staff. This involves training the users to adapt to the new system and understand its advantages and disadvantages. The users must also be trained on what they are required to do at each stage of processing information.

The physical setup of the system also requires attention. The system needs a computer table and comfortable chairs for the users. A backup server is necessary to ensure the system's reliability. The environment should be dust-free and the rooms should be burglar-proofed for safety. The rooms should also have power outlet sockets.

Finally, a computer network needs to be set up in the place where the system will be used. This network will allow the computers to communicate with each other and share resources, enhancing the overall efficiency and effectiveness of the system.

4.7.0 System Development

The researcher made a number of visits to acquaint himself with required data and variables for system development. The details of the variables were received and the writing of the codes started for the web development. A database was developed to contain the information required for the required reports to be extracted.

4.6 System Design

The researcher embarked on a mission to streamline the existing system, with the primary objective being the normalization of data. This process involved transforming the data from a logical state to a physical one before it could be entered into the system tables.

The first step in this journey was the conceptual database design. This phase was characterized by the creation of an Entity Relational Diagram and the establishment of Entity Relations. These tools served as a blueprint for the database, outlining the relationships between different entities and providing a visual representation of the data structure.

Following the conceptual design was the logical design phase. During this stage, the researcher defined entities, attributes, and data lengths. The primary goal here was to eliminate redundancies and duplication within the system, thereby enhancing its efficiency and reliability.

The culmination of this process was the physical database design. Leveraging the power of MySQL and PHP scripting, the researcher was able to design a system that not only met the requirements but also provided a user-friendly graphical interface. This interface served as the gateway for users to interact with the system, marking the successful transition from a conceptual idea to a tangible, usable product.

4.6.1 System Architecture

Figure 2 shows a System Architecture of PRMIS that gives a high-level view of the new system with the main components of the system and the

services they provide and how they communicate. The system is implemented using a three-tier architecture that comprises of user interface, process management and PRMIS as illustrated below.

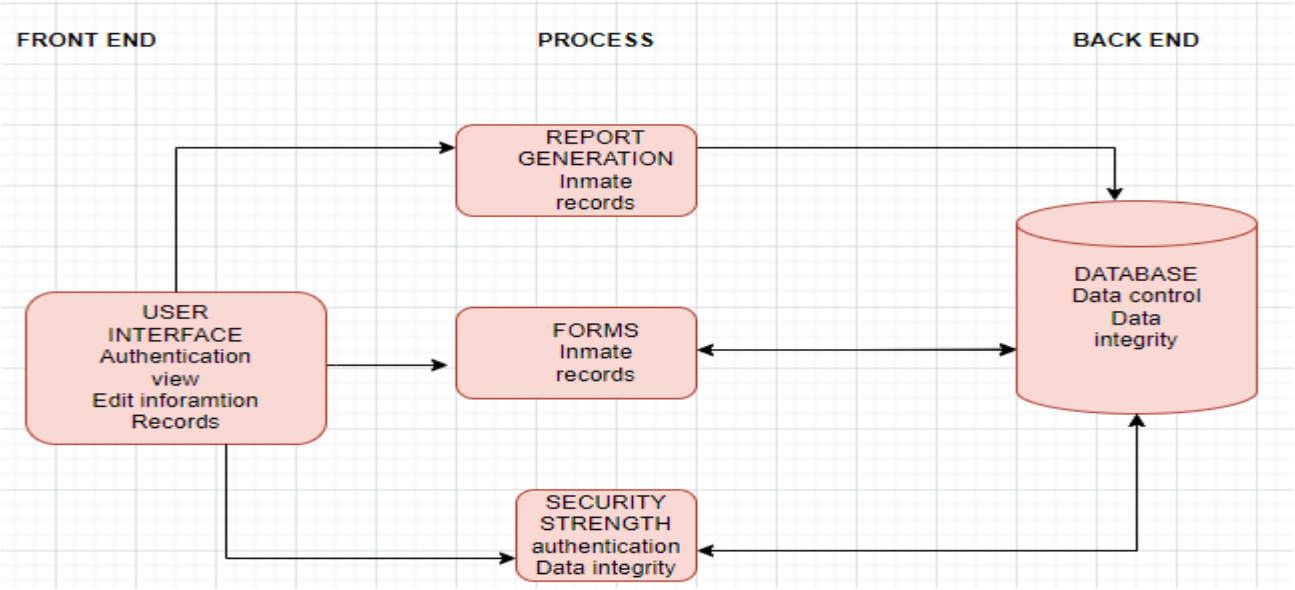


Figure 2: System Architecture of PRMIS.

4.6.2 Context Diagram

Figure 3 shows Context Diagram for the proposed PRMIS which is the high-level diagram that shows the relationships between a system and its external entities. It is used to provide a clear understanding of the system and its relationship to other systems or external entities. It is often used in systems engineering, software development, and business process modeling to show the boundaries of a system and how it interacts with other systems or actors. The diagram usually includes a box or rectangle representing the system of interest and lines connecting it to other

boxes or rectangles representing the external entities with which it interacts. The purpose of a system context diagram is to give a clear understanding of the system's inputs, outputs, and interactions with other systems.

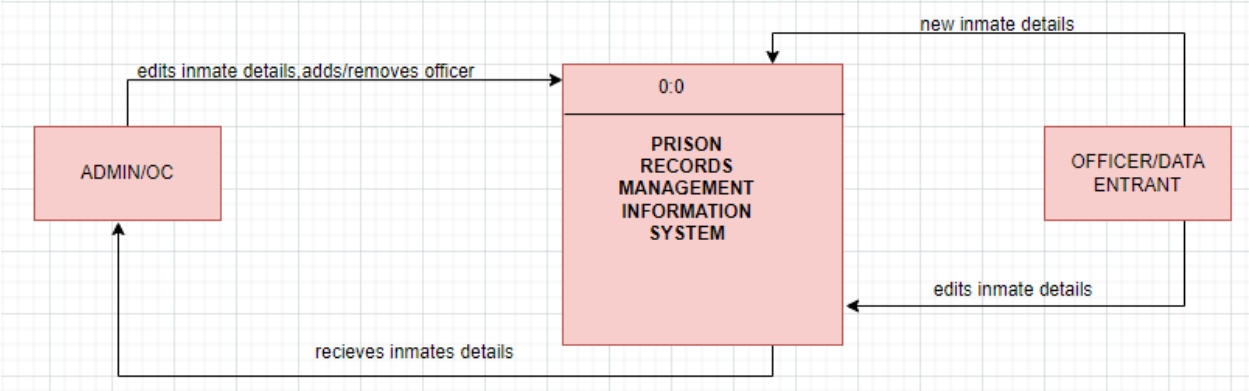


Figure 3: Context Diagram for the proposed PRMIS

4.6.3 Data Flow Diagram

Figure 4 Showing Data flow diagram of PRMISfor Data flow diagram is a visual representation of the flow of data through a system. It is used to represent the flow of information in a system, the processes that transform the data, and the entities that store or receive the data. DFDs are used to model the logic of a system, independent of the specific technology or implementation used to build it. The diagram typically consists of series of rectangles, circles, and arrows, with each element representing a different aspect of the system. The circles represent data stores, and the arrows represent the flow of data between the different elements. DFDs can be used to model systems at different levels of abstraction, from high –level overviews to detailed diagrams of specific components.

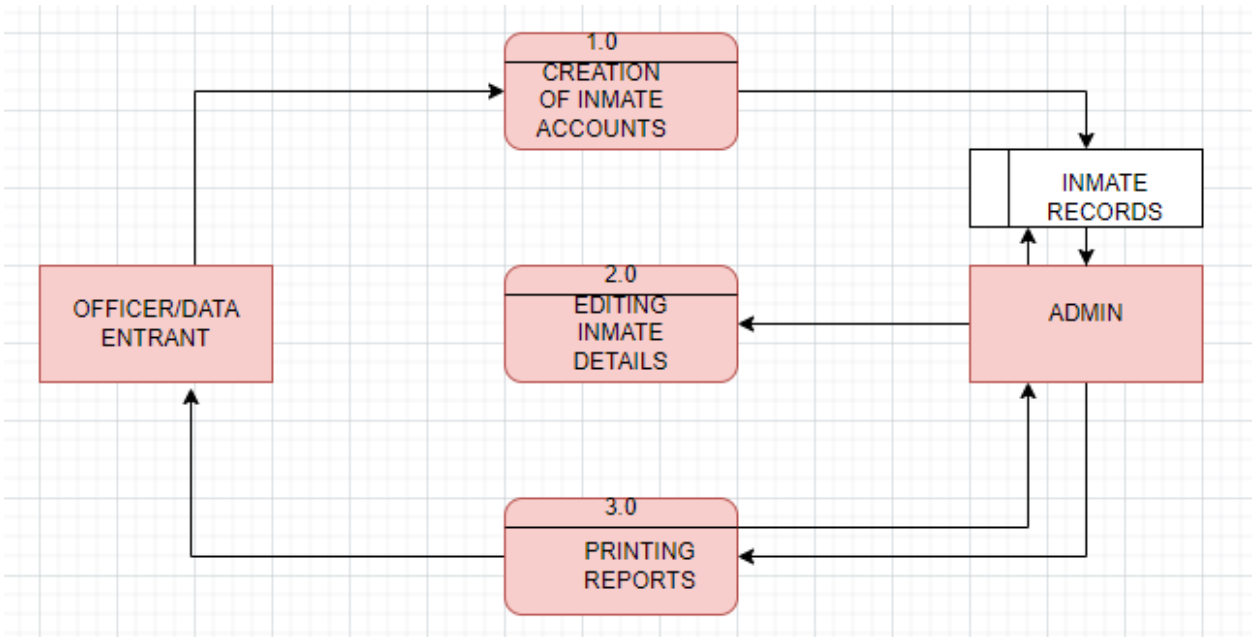


Figure 4: Showing Data flow diagram of PRMIS

4.6.4 Entity Relationship Diagrams

Figure 5 showing Entity Relationship Diagram of PRMIS which is the Entity Relationship diagrams is a specialized graphics that illustrate the interrelationship between entities in a database. Here diagrams always use symbols to represent different types of information. Here the entities are admin/OC, officer/reception/data entrant and the system.

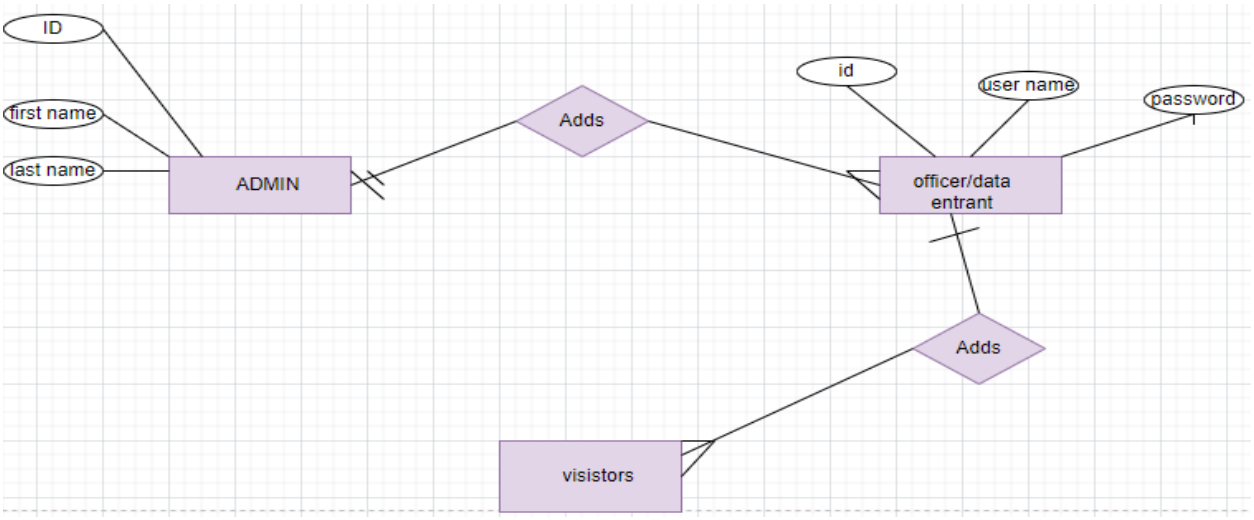


Figure 5: Entity Relationship Diagram of PRMIS

4.6.5 Use Case Diagram

Figure 6 showing ause case diagram (OC and DATA ENTRANT) for PRMIS that represents the activities of the users with special functionalities of the system. Use case diagram model is what the system is expected to do and to view externally the use of the system from the user's perspective rather than internally.

This includes the use case diagram for the Administrator (OC) and DATA ENTRANT with their different activities performed.

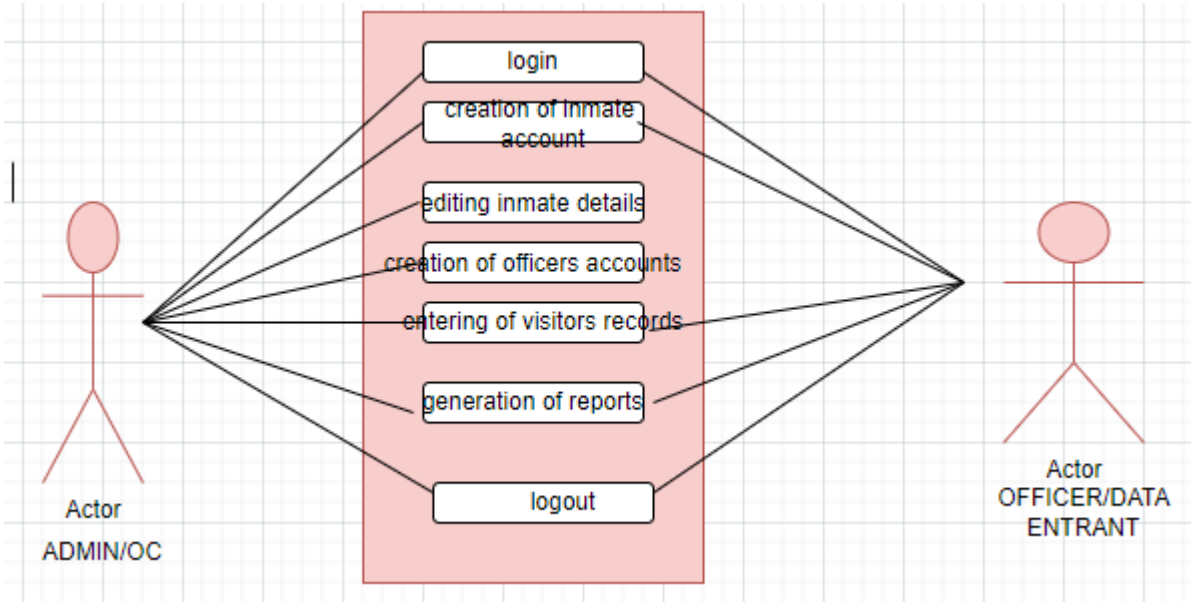


Figure 6: use case diagram (OC and DATA ENTRANT) for PRMIS

4.6.6 Use Case Diagram

Figure 7 is a use case diagram which identifies what the officer/data entrant does in the system as illustrated below;

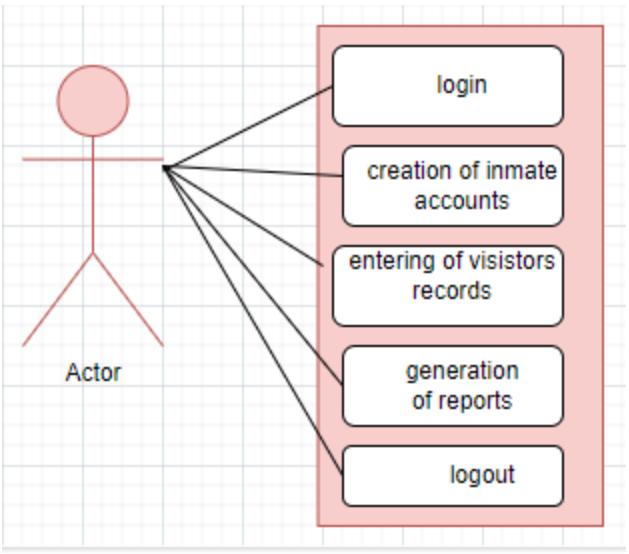


Figure 7: use case diagram (data entrant) for PRMIS

CHAPTER 5 : IMPLEMENTATION

5.1 Introduction

This area focused on fulfilling the use of the requirements i.e., functional and non-functional requirement into a working / running system. It further presented implementation of the design presented in Chapter 4.

5.2 How to Access the System

- Login module: Login module will help in authentication of user. Users who have valid

Login id and password can be allowed the access into the system.

- Search module: This model allows one to search for a particular inmate using search criteria such as name of inmate and registration number.

5.3 System Implementation

This describes the tools used to implement the graphical user interface and the database. Microsoft access was used to create and connect different tables, queries, forms and reports in the database.

5.4 Presentation of results

The presentation of the results of PRMIS is analyzed in terms of the interfaces of the system and output from the backend of the system. This includes activities of the users. The following are the results after the implementation of the PRMIS.

5.3.1 Login Form for Users

Only authorized user with the right user's name and password has right to access the system or information he or she intends to view. When wrong user name and password is used, the system rejects access to the services.

5.5 Maintenance

The system will be maintained periodically through effective monitory and evaluation. This will go a long way to help identify and debug emergency production problems and address them accordingly.

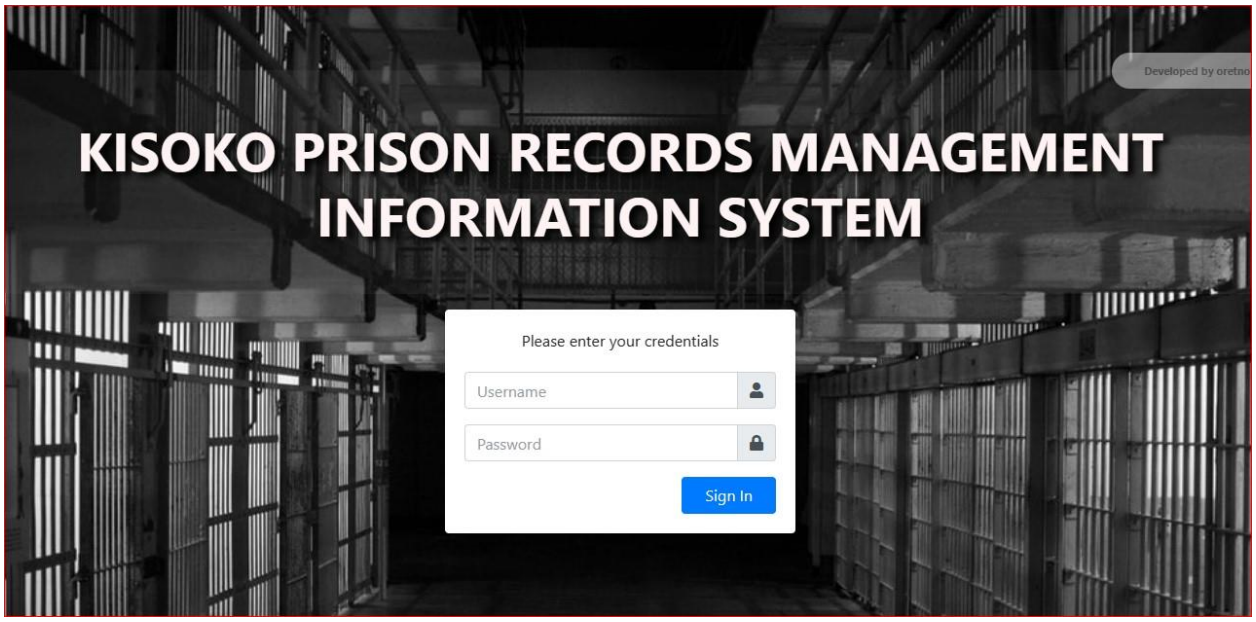
A considerable amount of time would be spent to effect changes in data, files, reports, hardware and software.

5.6 System Interfaces

All system interfaces in this chapter were created in Microsoft Access and Graffiti creator.

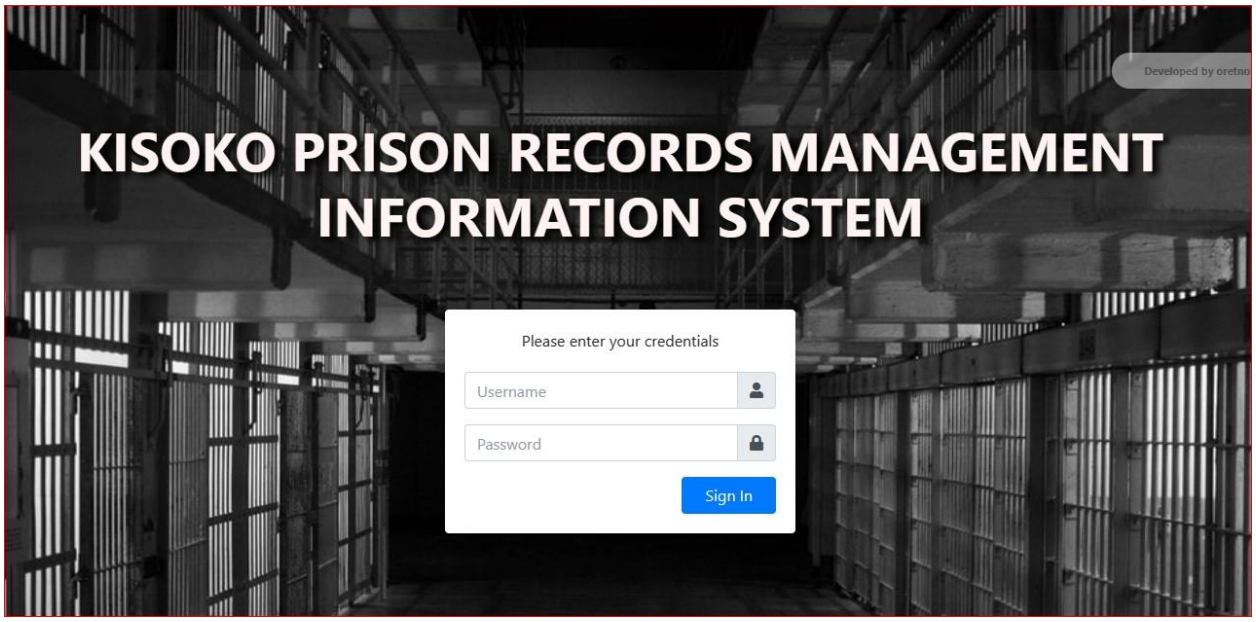
5.6.1 Welcome Memo Form

Initializes the system functionality before user access to other forms



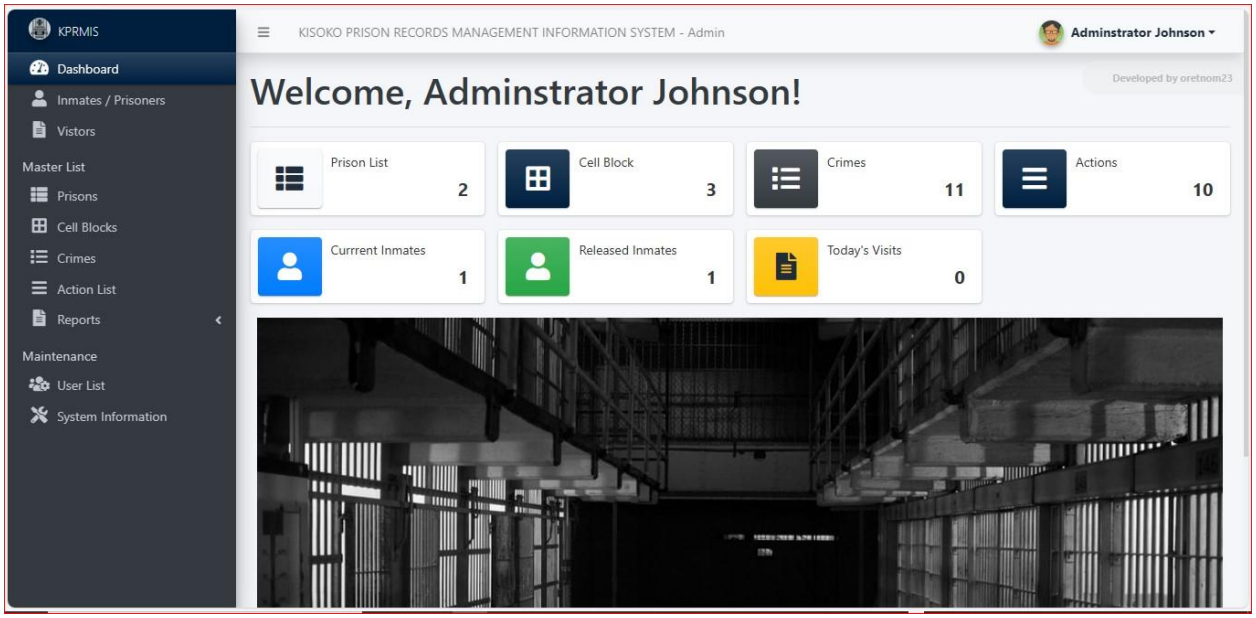
5.6.2 Login Forms

Only authorized user with the right user's name and password has right to access the services to particular department he or she intends to view. When wrong user name and password is used, the system rejects access to the services.



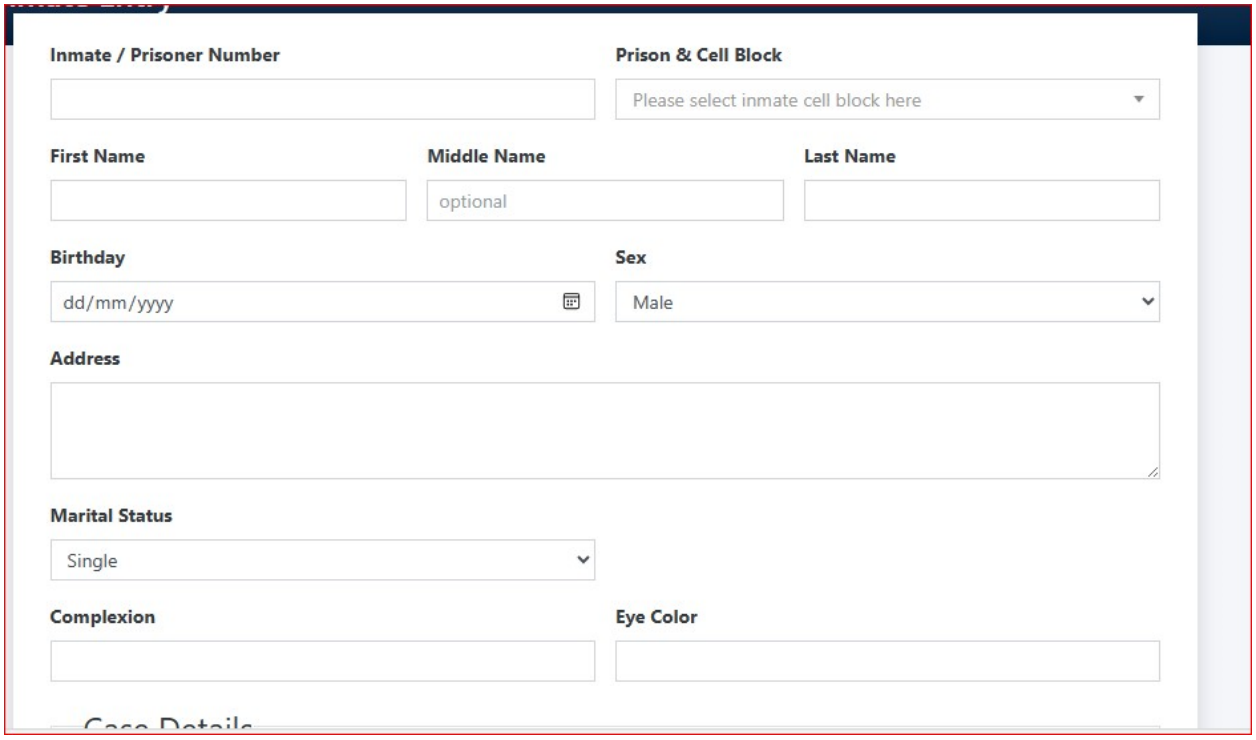
5.6.3 System administration access form

The system administrator can add, edit system users by changing the user ID and Passwords, and has access to view the services offered by the different departments in the institution.



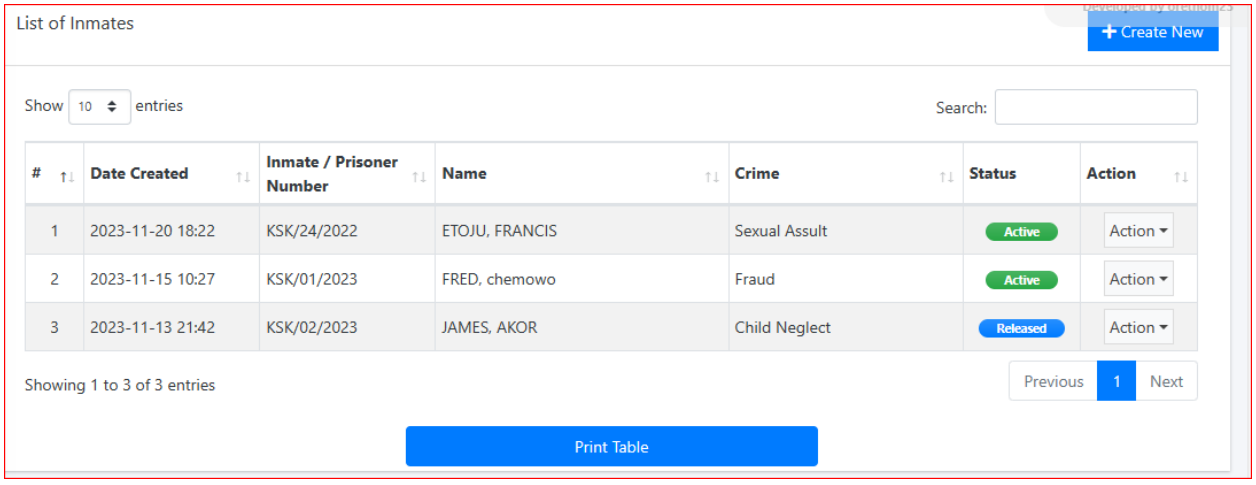
5.6.4 Inmate's details registration form

The authentic, user will have access to add or edit each inmate's records, and entering/capturing new inmate's details.



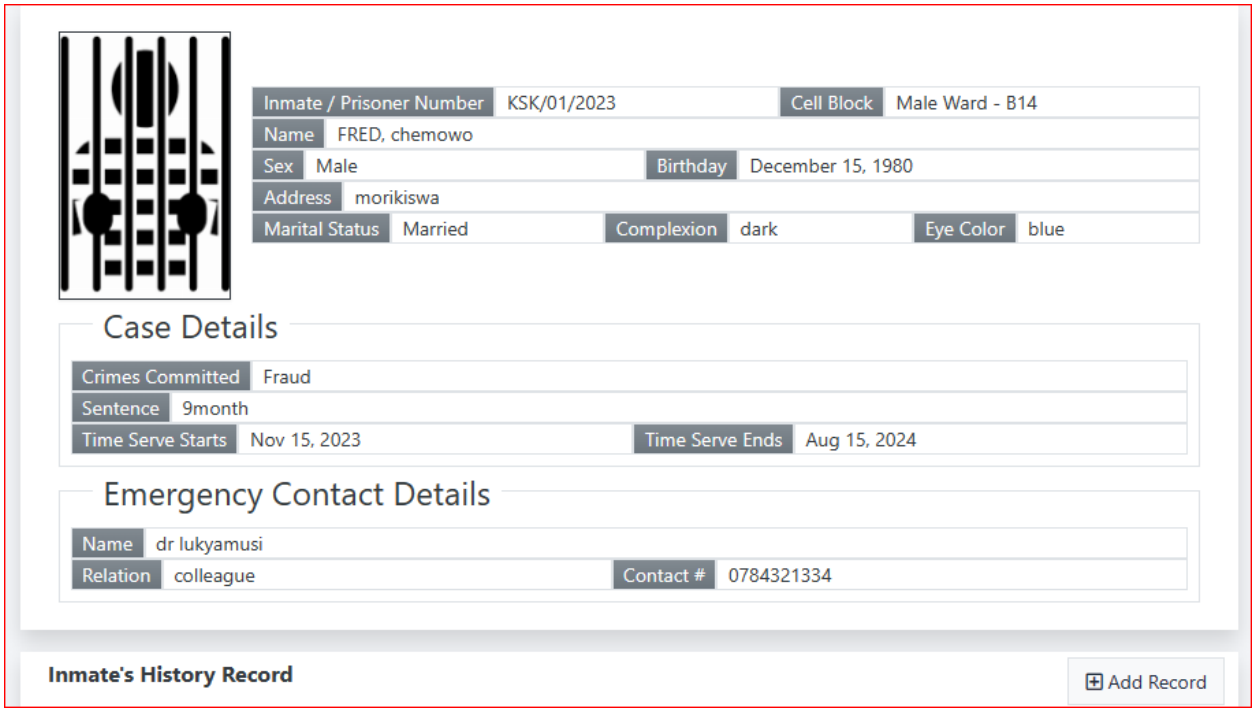
5.6.5 Prisoners List Form

The inmate's list form enables the managers to view list of inmates in the prison, and navigating the inmates record entry list forms.

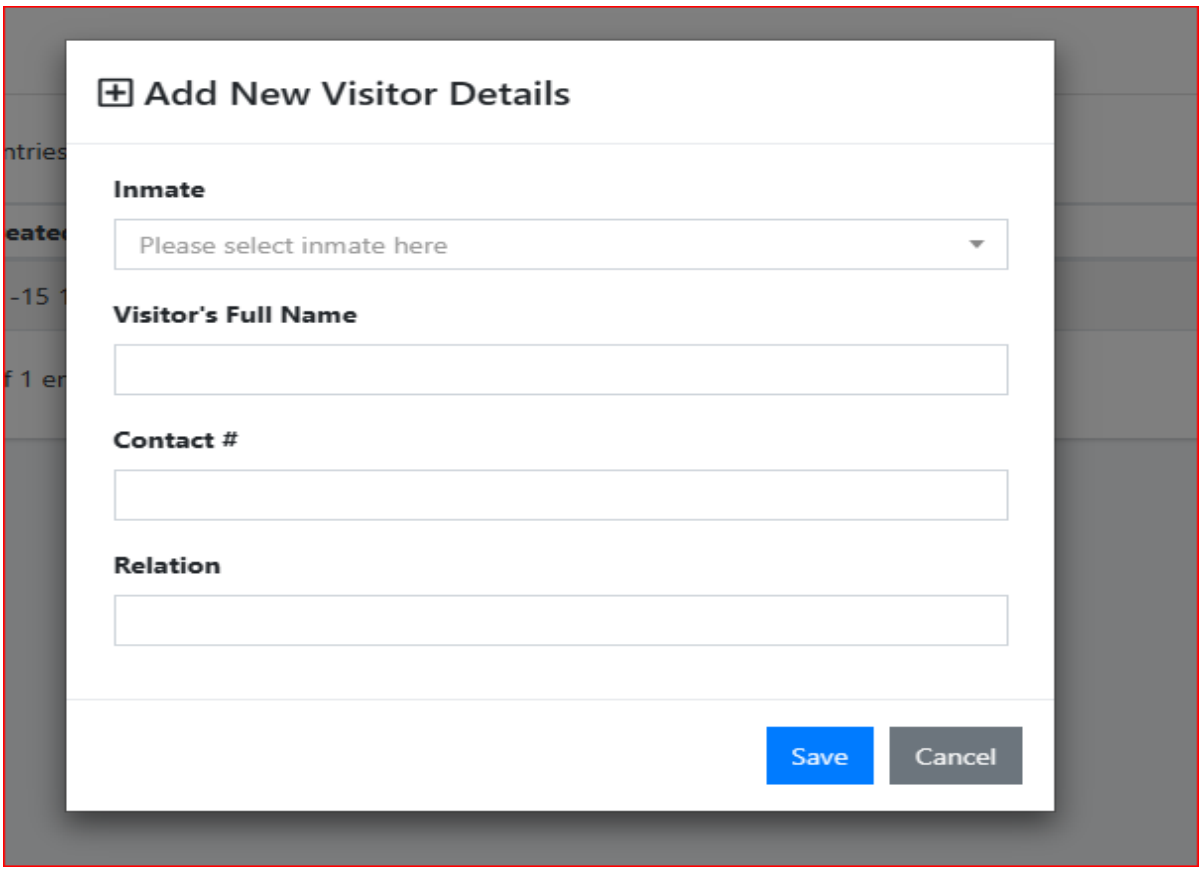


5.6.6 Inmate's records

The inmate's records are generated by the system for each inmate whose details have been entered by the data entrant into the system. Below is a print view sample of the records.



5.6.7 Visitors' registration form.



CHAPTER 6 FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.1 Findings

The researcher was able to study the requirements of a Prison records Management Information System for Kisoko Prison and found out that it was possible for the institution toimplement the system. It was also possible to set up a prototype to test the implementation of acomputer-based information system that added prisoner's details and output various reports about the prisoners, depending on the user requirements with the informationsystem.

6.2 Limitations

There were many limitations that seemed to hinder the system's functioning and the whole generic process of system development. These limitations are as follows:

Resource constraints. While conducting research, it required substantial resource which included funding, time and power which was a challenge to secure.

Lack of standardized data collection and storage. This was one of the primary challenges I faced while conducting the research. Absence of unified data structure resulted in inefficiencies, inconsistencies and discrepancies in the information being stored and accessed.

Privacy and security concerns were also a major limitation in the research, storing sensitive information about inmates in a centralized PRMIS raised a lot of questions about the protection of personal data and the potential for unauthorized access.

Resistance to change and training needs, many staff members were reluctant to adopt new technologies and processes and inadequate training hindered their ability to use the PRMIS effectively

The equipments in the place where limited, outdated and with very low memory. JLOS has promised to purchase complete computer systems with accessories that are up to date to alleviate and mitigate this problem.

The department is not networked which makes the distributed computing impossible for the integrated transaction processing for prisons with the existing architecture.

But there is a proposal to network the department in order to solve this problem.

6.3 Recommendations

The following recommendations were arrived at as a study of the results.

1. The project is implemented as a pilot project to access its impact on the current problem which will lead to further improvement for the right system.
2. There should be more controls over data entry errors to be enforced in the system through automation which means that data entry is only by the rightful user and denying other illegitimate people from accessing the data.
3. The personnel should be changed regularly to minimize social engineering attacks, hacking and cracking as a security measure to control the system.
4. The system is web based and has to be networked in order to be accessible across all the offices, in Kisoko Prison.
4. More users like middle level and secretaries who are in line with the system should also be added to the system database for easy and effective information usage.
5. Users ought to be trained about the system and the privileges given for each user for data access and the general operation of the system for easy maneuverability.
6. Have a VPN to allow for a remote and secure connection between the clients and the server which will host the system.
7. Install a backend (database) for storage on a 'server' and install a front end for the client (user) for the Graphical User Interface on the workstation.

6.4 Conclusions

The Prisons system was successfully studied. The weaknesses for the studied system were identified and areas of improvements recommended.

A prototype was developed as a demonstration on how to implement the system.

Recommendations for future work have been derived at.

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Appendix I: Interview Guide

Introduction

Dear Sir/ Madam,

My name is KIPYEKO JOHNSON, a student at Busitema University carrying out research on Prison records management Information System and my case study is KISOKO PRISONS in Tororo district. I kindly beseech you to report effectively and appropriately to the questions provided to enable me gather credible data for the above topic of my research.

Your responses will be used for academic purposes only and will be treated confidentially.

Interview with the OC Prisons

1. How many functional computers do you have?
2. How many people are computer literate?
3. How many departments are in operation?
4. How many sections are in operation?
5. How is data collected that make up the required reports?
6. How are reports produced?
7. How are reports accessed and retrieved?

Interview with receptionist/ Data Entrant

1. Which department do you belong to?
2. What are your qualifications?
3. How do you access data for reports production?
4. What method do you use to get your reports?
5. How often do you produce reports?
6. Is the information about prisoners' data readily available?
7. Are you able to meet deadlines?
8. Do you feel comfortable with the system used?
9. What aspects of the system do you think needs automation?

APPENDIX II:

Introduction

Dear Sir/ Madam,

My name is KIPYEKO JOHNSON, a student at Busitema University carrying out research on Prison records management information system and my case study is Kisoko prisons in Kisoko sub county, Tororo district.

I kindly beseech you to report effectively and appropriately to the questions provided to enable me gather credible data for the above topic of my research.

Your responses will be used for academic purposes only and will be treated confidentially.

Questionnaire for data clerks

Tick appropriate answer

1. Sex

Female ☐

Male ☐

2. Which department do you work?

……

3. Which sections are you placed?

……

4. Rate the efficiency of the current record keeping system?

Very good ☐

Good ☐

Poor ☐

5. How do you produce reports?

……

……

6. Is the process of accessing data easy?

Yes ☐

No ☐

7. If no, give a reason?

……

……

8. Do you think using a computer-based information system would solve the problem?

Yes……☐…… No.....☐.....

9. Give a reason for your answer?

……

……

10. Would you welcome the introduction of an automated record management system?

Yes ……☐……. No…….☐…….

11. Give a reason?

……

……....

……....

APPENDIX

Appendix 1: Requirement's collection interview guide

TOPIC: PRISONS RECORDS MANAGEMENT INFORMATION SYSTEM

Dear Sir/ Madam,

My name is KIPYEKO JOHNSON, a student at Busitema University carrying out research on Prison records management information system and my case study is Kisoko prisons in Kisoko sub county, Tororo district.

I kindly beseech you to report effectively and appropriately to the questions provided to enable me gather credible data for the above topic of my research.

Your responses will be used for academic purposes only and will be treated confidentially.

Use the spaces provided to answer the questions given:

1. What is your current position of responsibility at KISOKO PRISONS?

…….

2. How often do you access inmate'srecords in your current role?

…….

3. How satisfied are you with the current system for managing prison records?

…….

4. Are there any specific features or functionality that you would like to see in a new prison records management information system?

……

5. Are there any challenges or difficulties that you currently face when managing prison records?

……..

THANK YOU

APPENDIX 2: OBSERVATION GUIDE QUESTIONS

TOPIC: PRISON RECORDS MANAGEMENT INFORMATION SYSTEM

Dear Sir/ Madam,

My name isKIPYEKO JOHNSON, a student at Busitema University carrying out research on Prison records management information system and my case study is Kisoko prisons in Kisokosub county,Tororo district.

I kindly beseech you to report effectively and appropriately to the questions provided to enable me gather credible data for the above topic of my research.

Your responses will be used for academic purposes only and will be treated confidentially.

Use the spaces provided to answer the questions given:

1. How important is data security and privacy in a prison records management information system?

……..

2. How do you currently share prisoner's records with other staff members or administrators at the prison? …….

3. Have you ever experienced any data loss or corruption with the current prison records management system? …….

4. Are there any other comments or feedback that you would like to provide about the current prison records management information system or potential improvements? …….

5. How easy is it for prisoners to access and view their own records on the current system? ……..

6. How does the current system handle the integration and management of prisons records across different systems and platforms within Kisoko prisons? …….

APPENDICES

ACTIVITY SCHEDULE

ACTIVITY	**DURATION**
Feasibility analysis	*1 week*
Proposal writing	*3 weeks*
System design	*3 weeks*
System implementation	*2 weeks*
Testing and validation	*2 weeks*
Report writing	*1 weeks*
TOTAL DURATION	***12 weeks (3 months)***

PROPOSED BUDGET

ITEM	**COST (UGX)**
Data collection	
Transport	*10,000 /=*
stationary	*5,000 /=*
Data and airtime	*5,000 /=*
Food	*10,000 /=*
System design	
Software tools	*100,000 /=*
Airtime and data	*20,000 /=*
Stationary	*20,000 /=*
Food	*50,000*
Implementation	
Software	*40,000 /=*
Hardware	*50,000 /=*
Airtime and data	*15,000 /=*
Transport	*25,000 /=*
Miscellaneous	*50,000 /=*
Grand total	***400,000 /=***