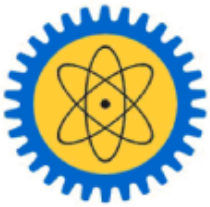

BUSITEMA UNIVERSITY
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ONLINE VOTING MANAGEMENT SYSTEM

APPLICATION CASE STUDY: BUSITEMA UNIVERSITY NAGONGERA CAMPUS

BY

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A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF COMPUTER STUDIES FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE IN BUSITEMA UNIVERSITY

SUPERVISOR

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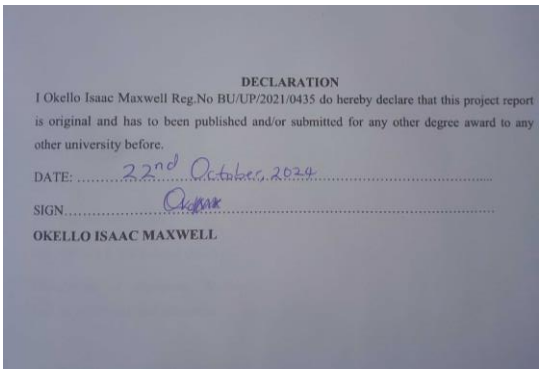
FACULTY OF SCIENCE AND EDUCATION

BUSITEMA UNIVERSITY

APRIL, 2024

DECLARATION

I Okello Isaac Maxwell Reg.No BU/UP/2021/0435 do hereby declare that this project report is original and has to been published and/or submitted for any other degree award to any other university before.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SIGN
OKELLO ISAAC MAXWELL

DATE: ……

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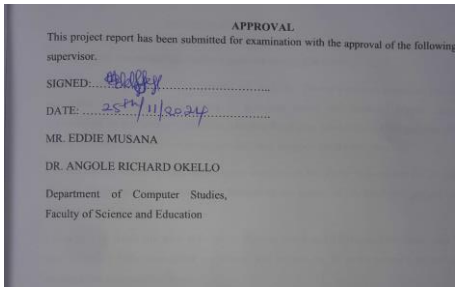
APPROVAL

This project report has been submitted for examination with the approval of the following supervisor.



APPROVAL

This project report has been submitted for examination with the approval of the following supervisor.

SIGNED:.....

DATE: 25th/11/2024

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DR. ANGOLE RICHARD OKELLO

Department of Computer Studies,
Faculty of Science and Education

DR. ANGOLE RICHARD OKELLO

Department of Computer Studies,
Faculty of Science and Education

DEDICATION

Firstly, I thank God who has successfully guided me to complete my project without health issues and has been my guide in writing this report.

I dedicate my report to my dear parents, Mr. and Mrs. Onono who have supported me in my education, who have never failed to give me moral and financial support. Sincere appreciation to my loving mom Miss Alaroker Rose who has taught me the purpose of life. Thank you so much for all your support and May the good Lord bless you.

I would like to extend special thanks to my supervisor Dr. Angole Richard Okello who has guided me throughout the course of my final year project and that has turned out to be a success.

I also like to thank my dear colleagues, Akuma Jamal and Muvuma Emmanuel who have been of much help throughout my course and helped me in cases where I needed more explanations and clarifications.

ACKNOWLEDGEMENT

First and foremost, I would like to thank the Almighty God who has walked with me and guided me throughput my studies despite all the challenges I have faced. I have taken efforts in this project; however, it would have not been possible without the kind support and help from many people. I would like to extend my sincere thanks to all of them.

With utmost gratitude, I would like to thank my supervisor Dr. Angole Richard Okello for guiding me through my final year project from the start up to the end of writing my project report. No matter all the challenges I faced, he was of great support and help in completing the project.

Furthermore, I would like to thank the students of Busitema University who have helped me in gathering information that I needed for my research which was used in making and completing my final year project.

Lastly, I would like to thank my fellow students whom I have studied with till the end for they have been of great help in testing my final year project and giving feedback about it.

Table of Contents

ABSTRACT

The voting management system was designed to allow the students to vote different departments of the faculty for example sports secretary, Resident Campus Commissioner, male student representative, female student representative in order to ensure that students have leaders who they desire in their respective positions. It consisted of two components that is the students and the administrators.

The students' section within the system enabled the students to log into the application view the students' dashboard and be able to select different departments of the faculty in order to vote for a respective leader of choice in a specific position.

The administrator's section within the system enabled the administrator to log into the application view the admin dashboard and be able to add new student in the database so as the student to access the system, edit the student information by either deleting the existing information or even updating it, add respective candidates for a post, add a post that is part of the electoral process.

The methodologies used was Rapid Application Development (RAD) which was easy and helped a lot in delivering a working system in a very short period of time. The Model View Presenter (MVP) architecture was also used in designing the application in order to handle requests and provide data to the user. I used visual studio code as the IDE and code and layout editor to develop the system plus using PHP programming language as a technology to develop the system. The operating system that was used was windows 10.

CHAPTER ONE
INTRODUCTION

1.1Background of the Study

Most universities and colleges used to conduct student voting traditionally using paper-based surveys where the data was collected and then summarized manually. (Layne, 1999). This caused so many challenges like taking up a lot of time while carrying out the voting and feedback process, misplacement or omission of data during the analyzation process.

Today, information has become rapidly accessible because of technological advancements. It is inevitable for the educatory institutions, where the basis of information is formed, to pioneer at the point of presenting information (Chrisman, 2002). Computers and electronic communication stand out as important components in terms of making information available (Geymen, 2008). Computer environment is employed so as to ensure faster flow of information in the rapidly developing world (Durkaya, 2003).Voting management systems are part of this trend.

An online voting system is an automated voting system which allows voters to directly vote for their preferred candidates for various positions over using a web browser. Nowadays the life style of the people is different. People feel uncomfortable and don't want to waste time by going to crowded venues for voting purposes. So, an online voting system is a boon as it saves a lot of time. Online voting is a process where by voters directly vote for their preferred candidates from the comfort of their homes over a web browser. Interested can visit websites for voting from the comfort of their house and shop as by sitting in front of the computer among a wide range of varieties. Online voting is usually available 24hours a day and many voters have internet-access both at work and at home. So, it is very convenient for them to vote online. One of the most enticing factors about online voting, particularly on holiday season is, it alleviates the need to wait in long lines or search from a polling station for a reason to cast a vote. The positions and candidates can easily be viewed online.

In the existing systems, the newly updated candidates can't be interoperate with the existing systems since these systems do not provide the necessary means such as Application Programming Interfaces APIs (Kruize et al.). The creation of APIs developed by independent service providers which end users can choose to use by giving them access, in a secure way, to their data could alleviate the aforementioned problems.

Manual faculty evaluation and feedback system which are paper-based are associated with a lot of problems such as misplacing or omission of the data collected from the students, a long period of time required to analyze the collected and group it.

1.2Problem Statement

The online voting management system plays a crucial role in improving voting quality, enhancing the freeness and fairness of elections thus faculty development (Uttl, 2017).

At Busitema University-Nagongera Campus and other education institutions, the prevalent reliance on a paper-based faculty voting system poses significant challenges whereby the inefficiencies inherent in manual processes, including cumbersome data retrieval, storage, maintenance, contribute to an overall time-consuming administrative burden. Moreover, the extended time required for data analysis further hinders the institution's ability to derive timely insights from student feedback. This old-fashioned system not only compromises the efficiency of the administrative tasks but also delays the institution's speed and ease in responding to electoral needs.

Therefore, there was need to develop and implement an online voting management system which would digitalize the evaluation and feedback process, as well also ensure the swift data management and analysis to foster a more responsive and efficient electoral environment and as well eliminate the usage of paper work.

1.3 Purpose/Objectives of the Study

The main goal of the study was to design and develop an online voting management system that would automate the process of students providing feedback on various aspects of leadership and the faculty's overall performance to identify areas for improvement and to ensure that the institution meets its electoral objectives.

Specific Objectives

i. To develop an easy to use web based interface where voters can search for candidates, view a complete description of the candidates post and vote for the candidates.

ii. To design the online voting management system.
iii. To implement the online voting management system.
iv. To test the online voting management system.

1.4 Significance of the Study

On successful development and further implementation of the online voting management system, the study would lead to the following significances;

i. To eliminate the usage of paperwork and be able to speed up the voting and feedback process.
ii. To allow students and administrators to access the voting process from anywhere with an internet connection and participate at their own convenience making the process more efficient and inclusive.
iii. To maintain the anonymity of the students during the voting process, encouraging more honest and candid feedback.

1.5 Scope of the Study

The online voting management system was designed for Busitema University-Nagongera Campus which is located in Nagongera Township in Tororo district about 17 kilometres from Tororo town along Tororo-Busolwe road.

The system provided a security module with two levels of access including students and administrators. It enabled the administrators to register students and also edit student information and also add various posts for the electoral process. It also enabled students to evaluate and provide feedback as regards votes depending on which candidate they chose.

CHAPTER TWO
LITERATURE REVIEW

2.1 INFORMATION SYSTEM

Information System is the software and hardware systems that support data-intensive applications and this system is composed of people and computers that process or interpret information. Any Information system aims to support operations, management and Decision making(Longdom n.d). Information systems allow users to collect, store, organize and distribute data in companies. Many businesses use their information systems to manage resources and improve efficiency.

An information system is composed of the following parts; people who interact with the system, hardware which are the physical devices such as computers, servers, routers, and storage devices, software which are programs and applications that process and manage data, data which are raw facts and figures that are processed and turned into useful information and procedures which are rules, guidelines, and protocols for operating and maintaining the system. Information systems are of different types namely transaction processing systems, management information systems, decision support systems, and executive information systems among others.

2.2 MANAGEMENT INFORMATION SYSTEM (MIS)

Management information systems (MIS) provide information in the form of reports and displays to managers and many business professionals. For example, sales managers may use their networked computers and Web browsers to receive instantaneous displays about the sales results of their products and access their corporate intranet for daily sales analysis reports that evaluate sales made by each salesperson(O'Brien). MIS is a system that provides the information necessary to manage an organization effectively. MIS should have a clearly defined framework of guidelines, policies or practices, standards and procedures for the organization. Management Information System is basically concerned with processing data into information which is then communicated to the various Departments in an organization for appropriate decision-making. MIS provides information to the decision makers in the form of reports, are usually generated through accumulation of transaction processing data.

Examples of MIS include the Bank Information System, Railways Information System, and Educational Information System among others.

2.3 CURRENT ONLINE VOTING INFORMATION SYSTEM

Benefits of online voting include advancing the quality of results and honesty, as well as improving the functionality and delivery of free and fair elections. The primary goal of this system is to assess and enhance the overall quality of votes provided by the industry and providing them for the voter. It involves collecting feedback on various aspects of voter personal information and to ensure the industry meets its objectives.

Despite a broad acceptance that effective supply tools should be developed for and with industry, to date, online systems have been largely insufficient**(Arreola 2000).** In Uganda today, some industries use the manual voting system where as other industries lack one whereby most of the voting system make voters to come and make votes by themselves**.**

The current online voting information system is more manual-based in votes where it is used and in industries where it is not applied.

2.4 The three main objectives of online voting are:

i. Describe the characteristics of voting that provide the context for the examination of the OVS.
ii. Describe the characteristics and examine the major milestones in the evolution of OVS.
iii. Identify factors associated with the level of composure of OVS.

An innovation is a product or a methodology that an individual perceives to be new if it has been available for some considerable length of time (Scheuing, 1989). Within the context of an online voting system, both manual record-keeping and computer technology are interpreted as innovative behavior.

Information and decision-making are inseparable (Reinharth, 1984). A system for providing information is vital to a vote decision-making process (Rosenweig, 1981).

Information and decision-making are inseparable. A system for providing information is vital to a vote decision-making process. Online decision-makers use information from a wide range of sources, but one of the most valuable sources of specialized information about the farm operation is provided by an online record system. An online record system can include

financial and production record types (Sonka, 1983). It may be as simple as a basic cash book or so large and complex that requires the processing capabilities of a computer to maintain it efficiently. Information provided by an online record system can be passed to individuals or organizations outside the business, such as accountants to prepare tax returns and bankers to support loan applications and within the business to support the business decision-making process (Scudamore, 1985)

It is impossible to overstate how much mobile technology has changed business management. The widespread use of tablets and smartphones in recent years has completely changed how businessmen approach their profession. For people who work in the business industry, mobile technology has revolutionized everything from record-keeping to communication to decision-making.

2.5 Challenges experienced with the manual data capturing process in online business management.

There are several difficulties in manually collecting data. Among them are:

2.6 Loss caused by inadequate record keeping.

Keeping correct and up-to-date records is difficult for businessmen who utilize manual record-keeping because it is difficult to retrieve or recreate lost books, which might result in lost data that prevents one from knowing exactly how their business is performing. Since there is typically no backup for the books they keep, the data cannot be retrieved. In contrast, if their data was stored in digital systems, which would include a backup and so prevent data loss, then no data could have been lost. The business will also suffer losses because they won't know what precisely needs to be improved in terms of the various business activities, and there won't be any documentation to demonstrate how much sales and purchases of products are made daily. In addition, businessmen find it more difficult to obtain loans in the absence of definitive and trustworthy data. (Limo, 2017).

2.7 Bulky records.

Firms who maintain manual records typically struggle to produce accurate monthly reports that would aid in their planning and productivity for the following month. Additionally, it will display to them how their monthly spending is being spent. How they may examine it to make better use of their spending when the next month comes along. (Kyotalimye, 2019)

2.8 Importance of Online Voting Management System.

Recent developments related to globalization and the technological revolution, mainly in the fields of information and communication have resulted in increased online management and development in modern online voting significantly affecting the behaviour of production units operating in the primary production sector. Business is one of the most important parts of agriculture and the economy. The degree of difficulty of the decisions that managers or workers are called upon to make becomes increasingly complex, requiring their support from specialized tools. Particular emphasis should be placed on the promotion of information, but also on the development of systems that will support decision-making and management processes in the farming sector.

The advancement of digital technology and especially ICT creates many challenges for smart, sustainable, and without exclusions growth and therefore contributes to a crucial initiative to strengthen business in the agricultural sector. Agricultural enterprises seem to have a lot to gain from using Internet technology (Koenen, 2011). ICT could help farmers' access market information, farm records and services, sales and purchases, and farm management information.

The complexity and the large amount of information used or needed to solve problems of rural economy of manual management practices coupled with the need for quick decision making have resulted in the interference of modern and often multifunctional computing units (portable computer devices) and individual devices which take place in different natural environments and can be used in the rural economy of manual management practices almost immediately after their introduction (Salampasis, 2006).

The capability of mobile technology to access and update records while on the go is one of the main advantages of online voting management. The days of maintaining records on paper, which were labour-intensive and prone to mistakes, are long gone.

Users can simply enter and retrieve data using mobile technology from any location, whether they're working in the field or at their desks. Voting, financial records, and input purchases are a few examples of this.

The way businessmen make decisions has also been altered by mobile technologies. Users who have access to real-time data and analysis are better equipped to make decisions regarding their business. To help them decide on prices and the best times to sell their goods, they can also make use of technologies for market analysis.

Apart from these pragmatic advantages, mobile technology has also profoundly affected farm management from a social standpoint. Social media has been adopted by many businesses as a means of exchanging ideas and resources with other members of the sector. This has made the agricultural industry feel more cohesive and supportive, which is beneficial for people who labour in remote locations.

CHAPTER THREE
METHODOLOGY

3.0Introduction

This chapter described and presented the system design, data collection techniques and sampling strategies that were used in the study.

3.1Area Of Study

The study was conducted at Busitema University-Nagongera Campus because of the ease in collection of data and due to the problem identified by the system. The study covered most of the departments of the faculty for example; academics, sports, power, water, security facilities among the others.

3.2Sampling

This study involved 20 respondents from whom the data was collected from namely, 19 students and 1 administrator of lecturer. Simple-random sampling was used since it involved randomly selecting the respondents without grouping them.

3.3Data Collection

3.3.1Sampling Methods

The study considered simple-random sampling as it involved randomly selecting the respondents without grouping or categorizing them according to a specific topic. Henceforth interviews and questionnaires were used for data collection.

3.3.2Questionnaires

These are a bunch of questions that aim to get answers from respondents. The questionnaire consisted of both open-ended and close-ended questionnaires so as the respondents to fully elaborate their thoughts and the results were finally complied from the collected questionnaires.

3.3.3. Interviews

This involves face-to-face interaction between the interviewer and the respondent. These were used to help explain more about the research subject and understand it better and also explore more of the opinions that were provided.

3.4 System Design

This describes how the functions of the system could be realized through the use of tools like context diagrams, data flow diagrams, and use-case diagrams among the others.

The system used a Model View Presenter Architecture in order to handle requests and present data to the user. The model stored data for the application, the view acted as the user interface and it was used by the user to input data into the application and the presenter sent the data from the view to the model and also sent data from the model to the view.

3.4.1Rapid Application Development (RAD)

RAD is a software development approach which does not follow a strict plan, focuses more on user feedback hence emphasizing rapid prototyping. The researcher opted for RAD because it was fast and less costly.

3.4.2Use-Case Diagram

This represents the activities of the users with the special functionalities of the system. The use-case diagram was used to identify the different users of the systems and the different use cases.

3.4.3Entity-Relationship Diagram

This is a graphical representation between entities and attributes within a proposed database of the system. The ERD was used to show the different entities in the system with their different attributes and how they are related.

3.4.4Context Diagram

This shows the basic interaction of the system with it environment. The context diagram showed the flow of data in the system.

3.5 System Implementation Tools

The tools employed in the implementation of the online management system were as follows;

i. Android operating system was used as the operating system to enable the user interact and use the application.
ii. Visual studio was used as the integrated development Environment (IDE) that was used to develop application and was as the code and layout editor to design and preview the user interface.
iii. PHP programming language was used as the technology for building the application to run on the client-side.
iv. Xammp control panel was used to host the online voting management system offline as a local host server

3.6 Testing And Validation

Unit testing and integration testing were performed on the online voting management system in order to reveal the possible errors.

Unit testing was focused on one module at a time where a module would be tested instantly to ensure its functionality before proceeding for another module.

Integration testing was on performed after all the different modules had been put together to make a complete system. It aimed at the fact that all the modules of the system worked hand-in-hand to present a complete working system.

CHAPTER FOUR

SYSTEM ANALYSIS AND DESIGN

4.0 Introduction

This chapter presents the results from the system analysis as well as the strengths and weaknesses of the current system. This chapter covers the system requirements (user requirements, functional and non-functional requirements) and the design of the system.

4.1 Current System Study

In the academics of Busitema University-Nagongera Campus, a comprehensive study unfolded, casting light upon the prevalent paper-based faculty evaluation system. This exploration aimed not only to understand the challenges entwined with the existing system but also to uncover its inherent strengths. The study embraced data collection techniques with interviews serving as the primary conduit for insights.

The canvas of the current system portrayed a traditional methodology where evaluation of votes was written onto paper, becoming vessels for student votes. These paper instruments were delivered to students disseminating their perspectives on the candidates in the electoral process as regards various positions and then are gathered for submission.

Behind the scenes, administrators assumed the role of custodians, ushering in the next act of this electoral session. The collected papers changed into a repository of valuable insights, awaiting the sharp gaze of administrators. With meticulous care, the administrators undertook the task of unravelling the narrative inscribed on these pages. Votes were counted, comments were examined and suggestions were noted, each element finding its place in a carefully maintained record for future reference.

The examination of the current system delved into the dynamics between paper, pen, students and administrators. The information harvested through interviews became the building blocks for a new system design where the echoes of student voices, once confined to the pages of the voting sheets, resonated in the corridors of academia serving as a call for progress. This study reflects not just a quest for technological innovation but a profound understanding of the symbiotic relationship between systems and the human experience within education. As the study unfolds, it is an evolution from ink and paper to the digital frontier.

The current system, a relic of tradition, faces scrutiny and introspection, paving the way for a future where the exchange of the ideas and feedback transcends the limitations of physical mediums. This study emerges as a catalyst for a change that champions the intersection of tradition and progress in the pursuit of vote excellence.

4.2 Strength of the Current System

In the voting of Busitema University-Nagongera Campus, an exploration into the prevailing paper-based faculty voting system unveils a multi-layered discussion. This tradition system boasts inherent strengths that have shaped its role in the educational institution. This system is not merely a method of record-keeping but a cultural cornerstone, providing a sense of familiarity and accessibility to students.

The first strength lies in the system's ability to bridge the digital divide. In a world increasingly reliant on technology, the paper-based system becomes a conduit for inclusivity. It caters for a wide spectrum of students, including those who may lack access to technology or those who are not comfortable navigating digital interfaces. By embracing a method that transcends the boundaries of technological proficiency, the current system ensures that every student's voice finds resonance in the voting process.

Furthermore, another facet of strength lies in the system's resilience against technical challenges. Unlike their digital counterparts, the paper records are immune to system failures, cyber threats and even technical glitches. This robustness not only ensures the security of the records but also safeguards the integrity of the voting process. Storing the tangible records in a private location enables to preserve the authenticity of student feedback.

The third strength unfolds in the tangible nature of the records themselves. In a world increasingly transitioning into the digital realm, the physicality of these records provides a tangible connection to the feedback process. Stored in files, these records become proof in the journey of the faculty progress, an archive that can be revisited and reviewed with ease. The tangible nature of these records adds a layer of permanence to the otherwise world of digital data.

Lastly, the current system ensures independence from technological dependencies. In an era where specific devices, internet connectivity and digital literacy are prerequisites for many systems, the paper-based approach stands as evidence to simplicity and accessibility. Feedback collection remains effective, irrespective of the availability of devices like mobile phones or laptops or the need for an internet connection.

In conclusion, the advantages of the paper-based approach are not the only ones recognized, but also its cultural significances within the academic institution where it emerges as a resilient guardian of inclusivity, security and tradition.

4.3 Weakness of the Current System

Under the faculty voting system at Busitema University-Nagongera Campus, the current system, while boasting some strengths, harbour a multitude of inherent weaknesses. The flaws in this paper-based approach become apparent, casting shadows on its efficiency and effectiveness.

One obvious weakness is the persistent issue of delays in the processing of voting papers. The complicated process of waiting for these papers to be submitted as a collective batch introduces a considerable lag. Members, taking their time to respond to the voting process, contribute to a delay in the overall collection process. This asynchronous submission method where everyone hands in their papers at their convenience, poses a significant hurdle to the timely progression of the voting workflow.

Administrative inefficiencies further compound the challenges of the current system. The inherent nature of a paper-based approach translates into extended timelines for administrators to obtain written feedback. The demanding task of organizing and analysing the multitude of written responses requires a substantial investment of time, creating administrative overhead. This cumbersome process not only delays the dissemination of feedback but also places a strain on the administrative resources dedicated to handling the huge paperwork.

The spatial challenge emerges as yet another weakness in the current system. The continuous influx of voting papers, coupled with the sheer volume of students, results in the consumption of a significant amount of physical space over time. The voting papers, preserved for future reference, necessitate expansive storage areas, further complicating the logistical aspect of the system.

Another most concerning weakness is the vulnerability to loss inherent in the paper-based approach. The voting or polling papers, crucial for future reference, become vulnerable during the various stage of analysis, collection and storage. Instances of papers getting lost pose a tangible risk, potentially eroding the integrity of the voting process and diminishing the value of historical feedback data.

In essence, the weaknesses of the current faculty voting system cast a cloud over its functionality. This therefore calls for an innovative, digitized solution in order to increase efficiency, accessibility and reliability within the educational evaluation process.

4.4 System Analysis

This section focuses on the user, functional and non-functional requirements that guide the design and implementation of the online voting management system.

4.4.1 Functional Requirements

The functional-requirements of the online voting management system emerge as crucial pillars defining user experience. These requirements define the services that the system aims to deliver, catering to the diverse needs of both the students and the administrators.

At the forefront of these functional requirements lies the students' interaction with the application. The student experience seamless journey starts where they log into the application with their voters ID and password. Once authenticated, students gain access to the platform that allows them to navigate various sections including power, sports, security and many more. Within each section, students are empowered to engage with the voting process by clicking on a preferred candidate. This user-centric design fosters an environment where students become active participants in shaping the voting landscape contributing their insights to the ongoing process of improvement.

On the administrative side, the functional requirements cater to the needs of those tasked with overseeing the system. Administrators, equipped with the authority granted by the application, possess a set of capabilities designed to streamline their responsibilities. They wield the power to add new student voters to the systems, and can edit candidate information, ensuring its accuracy and relevance in the system's database. The administrators can also add various posts and positions depending on the number of posts available. The feedback loop is completed with the ability of view feedback submitted by the students gaining valuable insights into the collective sentiment. Votes provided by the students are also at the fingertips of administrators, offering a comprehensive overview of the faculty's performance.

The work of the functionalities forms the backbone of the system, providing a harmonious collaboration between the students and the administrators. The user requirements reflect a commitment to accessibility, usability, transparency and

empowering students to actively contribute to the improvement of their electoral environment. Simultaneously, administrators are equipped with the tools necessary to efficiently manage and harness the wealth of feedback generated by the students.

4.4.2 Non-Functional Requirements

When designing the online voting management system, the focus extends beyond the specific functions the system performs, it encompasses a set of non-functional requirements that a play a crucial role in shaping the system's overall performance and user experience. These requirements include user-friendliness, performance and data integrity forming pillars upon which the application's effectiveness stands.

User-friendliness emerges as a cornerstone of the non-functional requirements. The application is built to be user-friendly, ensuring that every interaction with the system is intuitive and accessible. From the easily understood icons to the user-friendly language, the design is geared towards creating an interface that resonates with users, making their journey through the system seamless and comprehensible.

Performance is another non-functional requirement that steers the application's functionality. A requirement for the application's optimal performance is an active internet connection given that it relies on a cloud database for its operations. In the realm of connectivity, the system responds dynamically; with a fast connection, its performance surges, ensuring a swift and efficient user interaction. And on the contrary, with a slow connection, the system adapts, operating at a slow pace.

Lastly, there is data integrity which acts as a concern in any digital system, is part of the non-functional requirements. The use of this cloud based database acts as a solution ensuring that the user-generated data is secure and retained. The resilience of the system is underscored by the fact that data loss is only a potential risk if intentionally deleted by an administrator with database access, providing a layer of control while preserving the integrity of the accumulated feedback and evaluation data.

In conclusion, these non-functional requirements do not just reveal technical specifications but a commitment to user-centric design, performance, adaptability and data security. These requirements become an invisible thread weaving through the online voting management system ensuring its responsiveness, reliability and resilience in the dynamic nature of polling.

4.5 Hardware/Software Requirements

4.5.1 Hardware Requirements

In the evolving technological advancements, the hardware requirements for the online voting management system emerge as a crucial component shaping of this foundation attempt.

At the forefront stands the Uninterruptible Power Supply (UPS), which guards against the unpredictable whims of power fluctuations. In the dynamic realm, where continuity is paramount, the UPS acts as a sentinel, providing a seamless power backup. It ensures that the researcher still writes the codes and works with the system even in the face of unexpected power outages.

Secondly is the Random Access Memory (RAM), a reservoir for the system's immediate data needs. With a stipulated minimum of 8GB, the RAM becomes the pulse of the system facilitating swift and efficient data processing. This ample RAM capacity ensures that users experience, responsiveness and fluidity navigating the platform without any delays.

Lastly is a universal hard disk that takes center stage with a minimum requirement of 100GB. This spacious digital canvas becomes the repository for the system's data, accommodating the diverse array of evaluations and feedback and administrative records. The universality of this hard disk ensures adaptability, providing ample room for the system to grow, evolve and continuously accumulate data without the hindrance of storage limitations.

In conclusion, these hardware requirements become the silent architects that shape an infrastructure that not only sustains but propels the online voting management system into the digital frontier of academic innovation which also lays the groundwork for its future expansion and adaptability to its evolving needs.

4.5.2 Software Requirements

In the dynamic intersection of technology and academics, the software requirements for the prospective online voting management system emerge as keystones in the foundation of this innovative venture. These requirements, each with its unique role collectively shape the digital ecosystem that promises to revolutionize the landscape of the educational feedback and evaluation.

At the forefront stands the windows 10 and higher, which provides a stable and compatible operating environment for the system. Known for its robust features and widespread compatibility, it becomes a canvas on which the system code is written.

Secondly, visual studio code takes the center stage as the IDE of choice. This is where the application code and layouts are written. Visual studio code not only ensures compatibility with devices but also optimal performance and responsiveness. This choice aligns with the diverse technology landscape, recognizing the prevalence of powered devices in the hands of both students and administrators

In this digital age, where technology and education converge, these software requirements become the digital infrastructure shaping a future where the faculty evaluation and feedback are not just processes but transformative experiences. The choice of these software elements is a strategic decision aimed at creating a system that not only meets but exceeds the expectations of a diverse and dynamic voting community.

4.6: System Design

The requirements determined were used to design the system. The design development methods in the study are rapid application development (RAD). Design stages include; system architecture, context diagram, data flow diagram, system modelling using UML (use case) and entity relationship diagram (ERD)

4.6.1: Architecture

Web based system has the architecture that contains internet, web browser and database shown below. The information flows from the internet to the server by use of wireless and non-wireless. Web browser sends requests to the server and server provides feedback through the web browser. The server retrieves information from the database where its stored and provides to the server back when needed and client gets information from the server as illustrated below.

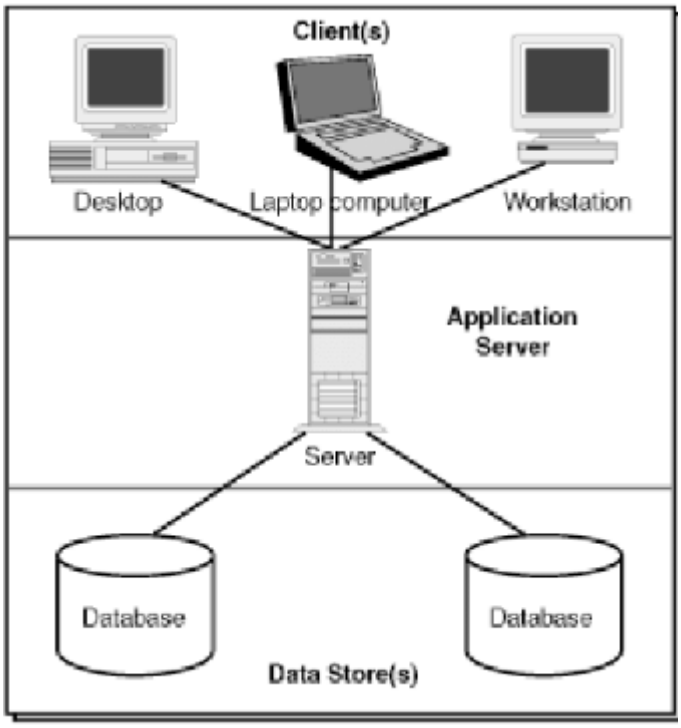


FIG2

4.6.2: Context flow diagram

Context flow diagram is a visual representation that illustrates the interactions between a system being developed and external entities such as users, other systems, or organizations. It makes it easy to understand and analyze the system.

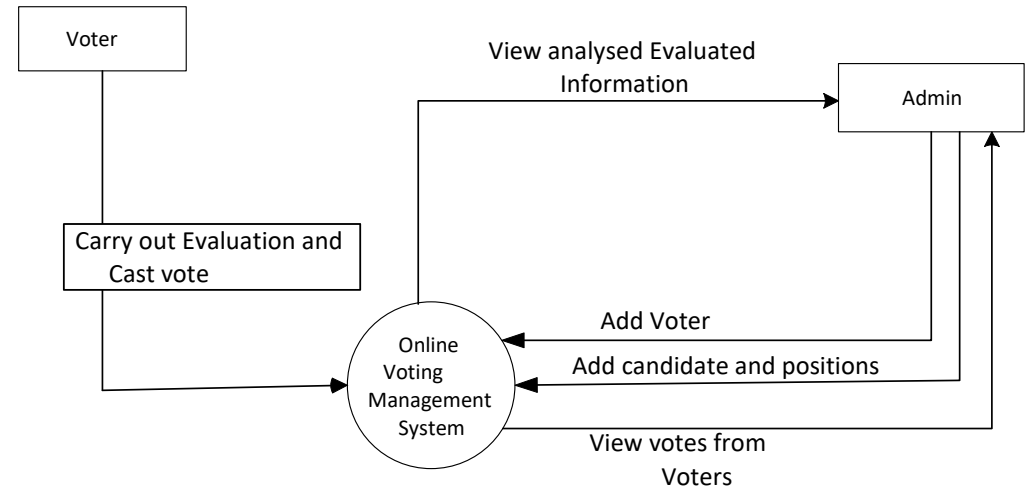


Figure 1 . Context Diagram of SBFFS

4.6.3Use-Case Diagram

The use case diagrams for each entity presented in the proposed system include the use case diagram for the student and administrator which showed the different activities performed by the users of the system.

USE CASES | Online voting management system

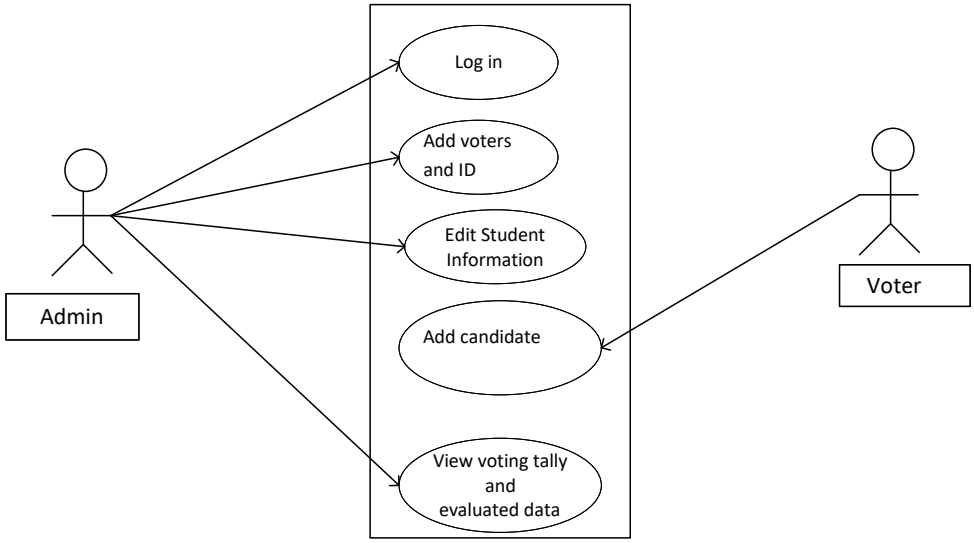


Figure 2 . Use -Case diagram of SBFFS

4.6.4Entity-Relationship Diagram

This describes things of interest and is composed of entities and the relationships that exist between the entities.

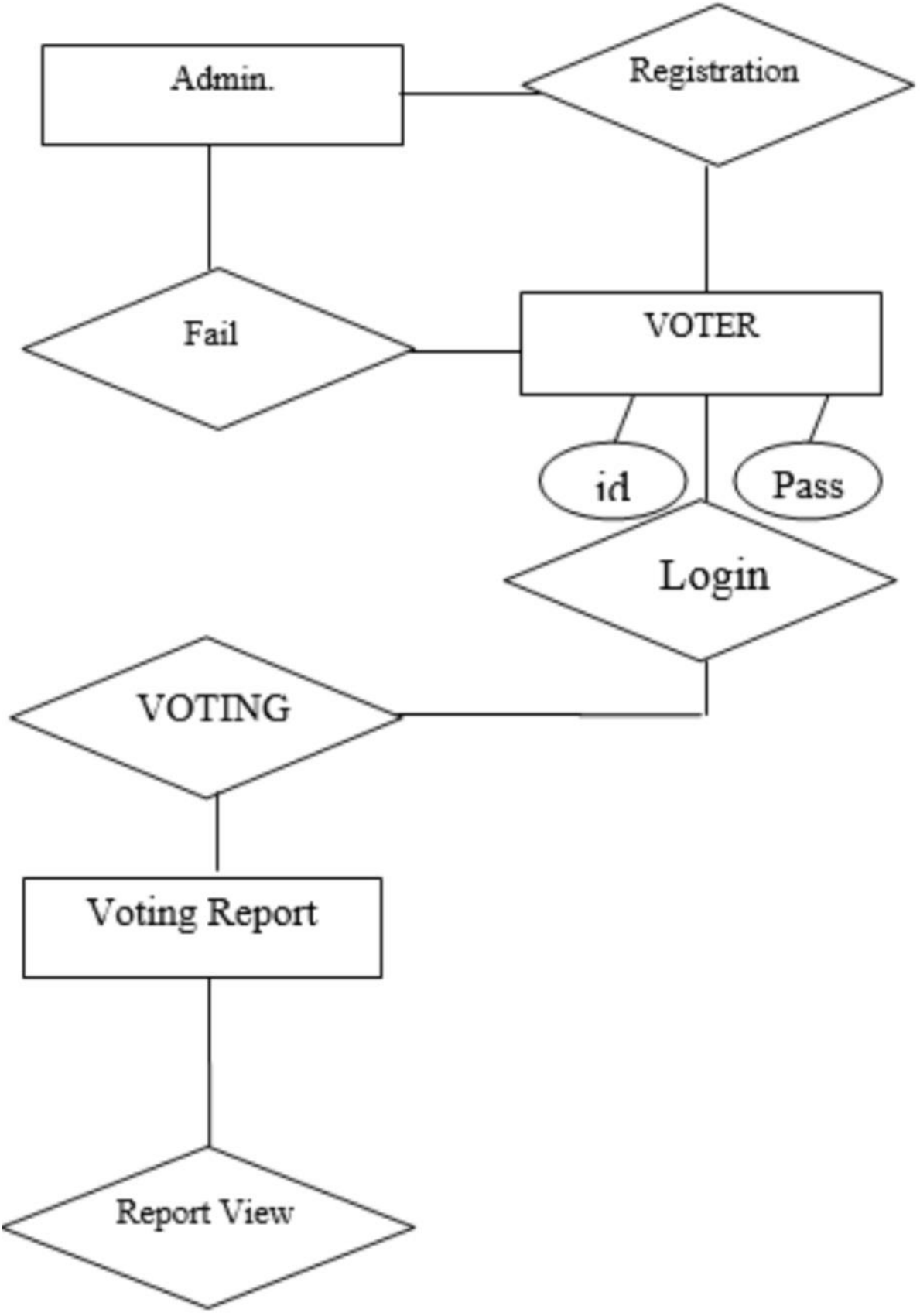


Figure 3. ERD OF SBFFS

CHAPTER FIVE

IMPLEMENTATION AND TESTING

5.0 introduction

This chapter was about the presentation and analysis of the data related to the current online voting management system. Online voting management system focused on the security risks faced by the current voting management system, lack of co-ordination and unawareness of the votes and other areas of improvement.

5.1 system implementation

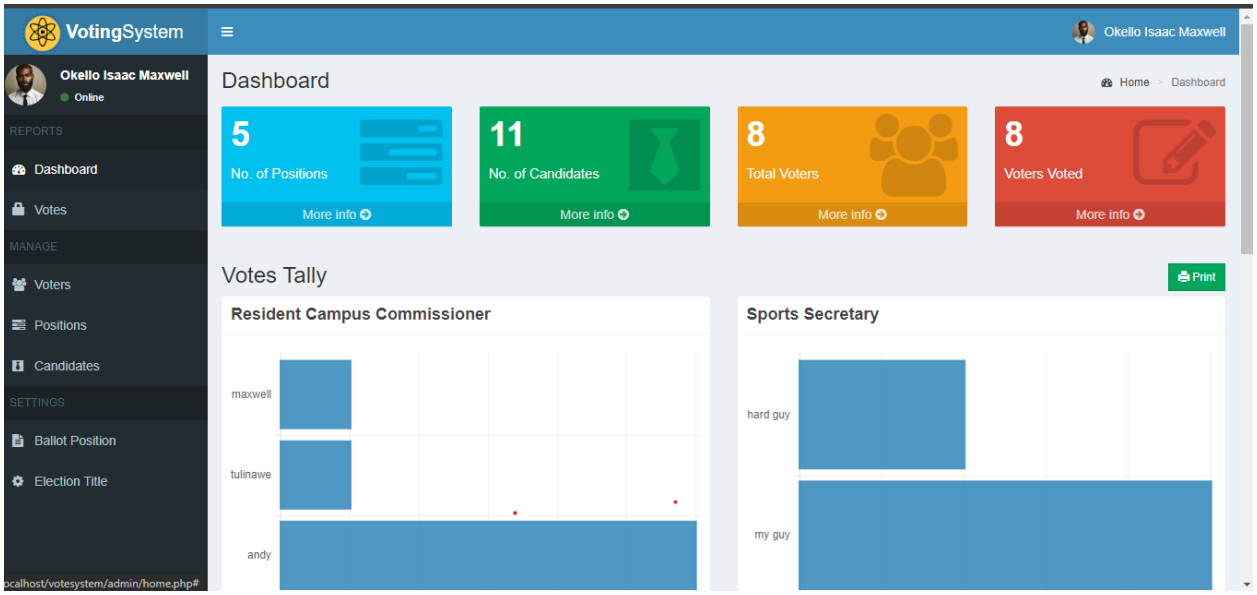
The system was created using windows environment, Microsoft visual studio code was used to create the user interfaces (front end) and MySQL was used to create a database for storing data after which a logical connection was built.

5.2 login page

This is the first form that comes first when the program is launched. It's meant for security and authentication purposes. When loading the system, one should go to the web browser and type http://localhost/vote to open the login page as illustrated below

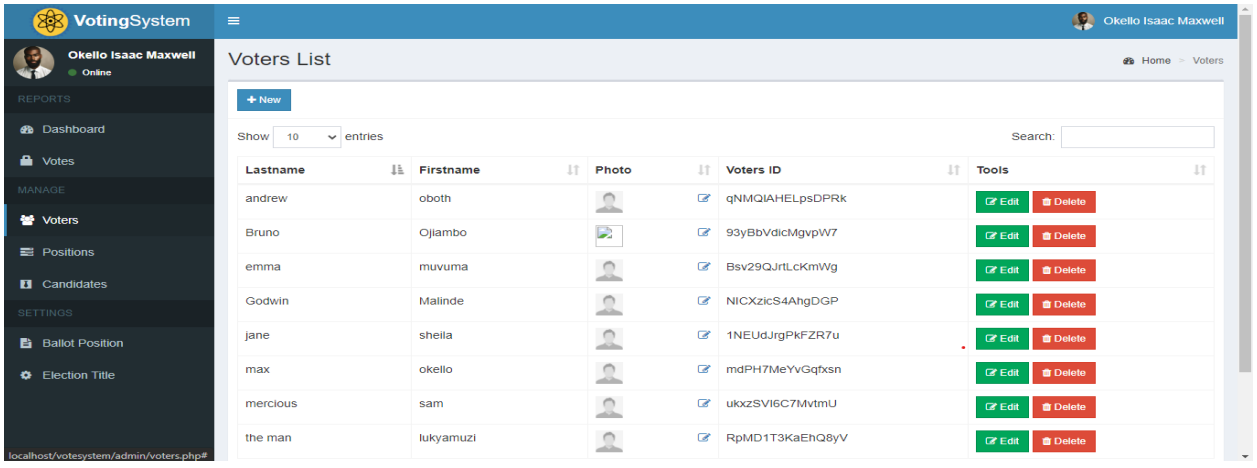
5.3: Dashboard

Dashboard of waste management system appear as follows the admin who views information like candidates, posts and voters.



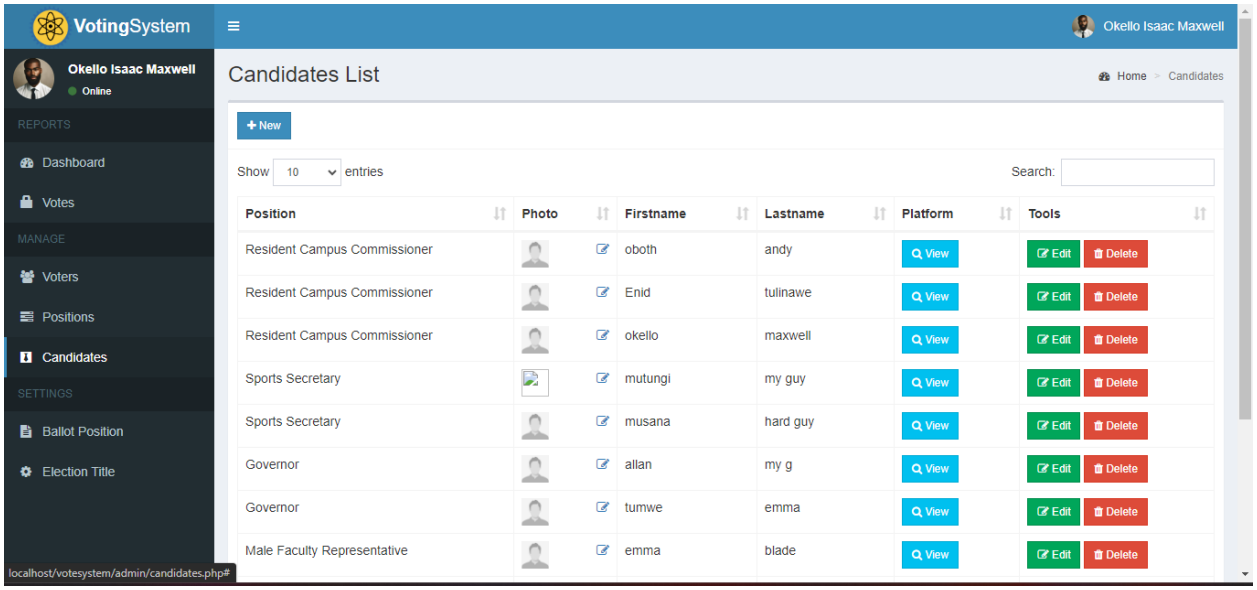
5.4 ADDING AND MANAGING VOTERS

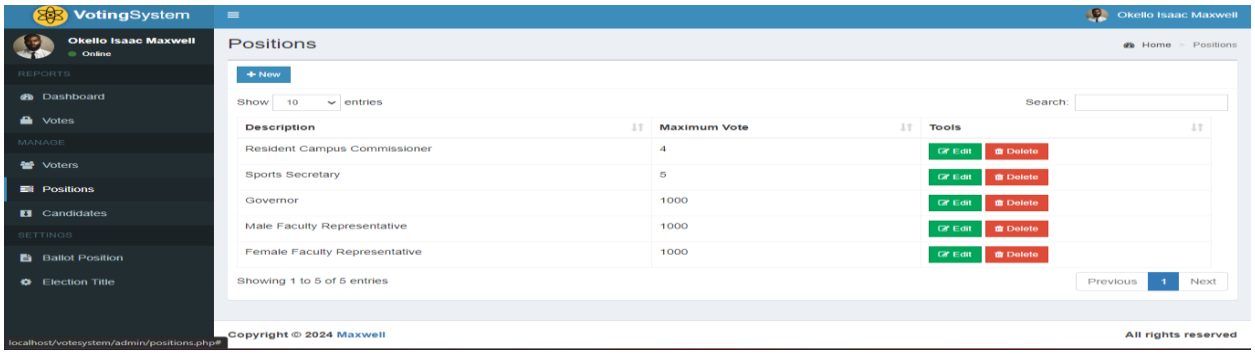
The admin is able to add voters and capture their details managing their accounts, setting and encrypt their passwords as illustrated below.



5.5 ADDING CANDIDATES AND POSITIONS

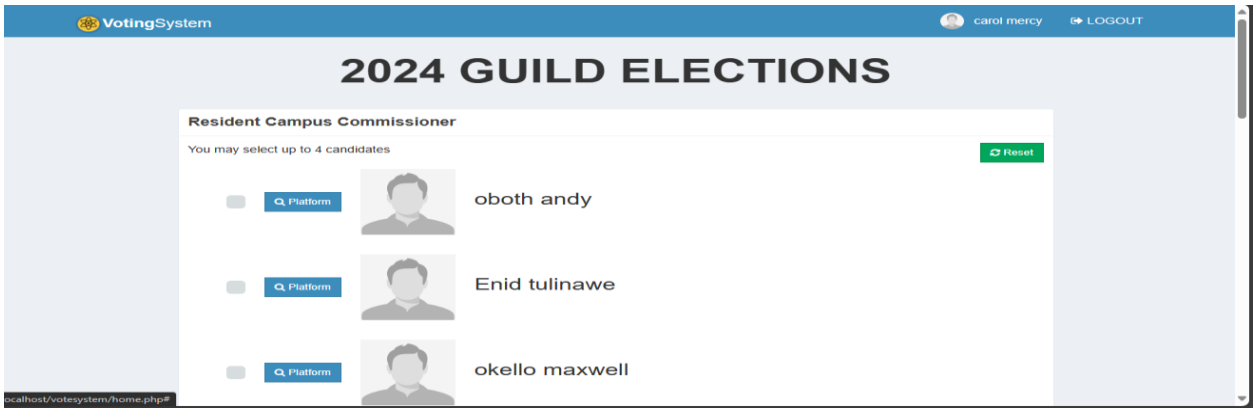
This is where admin adds candidates and also the different positions





5.6: Voters dashboard

This is where voters cast their votes for the candidate of their choice



CHAPTER SIX

DISCUSSION, CONCLUSION, RECOMMENDATION AND FUTURE WORK

6.1 Introduction

This chapter presents the discussion, recommendation and conclusion with the research objectives of the study

6.2 Discussion of the results

The discussion of the findings was presented with the research objectives of the study

Objective (1) to review the literature and determine the requirements for developing an online voting management system

The requirement determination, data collection was got through library research and field study, carry on interviews and data got from previous work enabled me to align my project work. Library research generates more information and requirements that were being used in the system design of the DFD database design and few others that led to the fulfilment of functional and non-functional requirements, field work research enabled me to get to know how the manual system works.

Objective (2) To design web-based voting management system

The system was designed depending on the requirements by RAD from the SSADM software which included the following procedures to be followed architecture, context diagram, entity relationship diagram and database design which enabled the flow of data and evaluation of the waste management system.

Objective (3) To implement web-based voting management system

The implementation of the system was carried out using the following implementation tools such as visual studio code editor, google chrome, MySQL, HTML, Xampp server for local host and laptop with windows 10 pro to succeed the implementation of the system

Objective (4) To test and validate web-based voting management system

The system was tested during and after its implementation. Each component of the system was tested.

Unit testing was used to test individual parts of the code every part of the interface was tested to detect if the system functions well. It involved identification of errors in specific units of the code making error detection easy

Integration testing was done after whole parts of the system had been put together to make the system complete.

6.3 conclusion

The study of existing system was done and the new system designed. The need for computerized waste management system was highly emphasized as computer could store, update and retrieve information. Computers could always process data and produce accurate reliable correct data the use of computers in waste operations solved problems encountered in the manual system.Waste management system should be used by Ecopick Company and other waste companies since it eases work and communication between the company management and clients and the increase in processing speed, improved storage facilities and easy retrieval.

6.4 Recommendations

Online voting management system requires skilled personnel to use therefore users should be trained on how to use the computerized system to create awareness of its existence and importance, sending and receiving of notifications and expansion of the company to carry out free and fair voting. This will improve the functionality of the system.

6.5 Limitations

The researcher encountered number of constraints which hindered the success of the study like;

6.5.1 Financial constraints

There was a problem of financial support since the study was self-sponsored. This made some activities to delay in the study, hard work and commitment end up successfully completed.

6.5.2 Time constraint

The time that was allocated for the study was not enough because of course works, tests, exams and research.

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