**DEVELOPMENT OF A CLEARANCE SYSTEM FOR GRADUATING STUDENT**

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**1.1 BACKGROUND OF THE STUDY**

Before receiving other important documents like certificates and comparable other sensitive things, students in an academic setting are required to show certain critical documents as proof during their clearance (Nneji & Monday, 2018). This means that in order to gain access, a person must pass through a few departments, each of which is often responsible for carrying out a certain task (Fatima, 2021). This is the situation with students who are in their last year of study and whose results must be cleaned before they can be properly awarded their diploma.

Since it is customary for final students to walk from one office to another while waiting to be cleared (Usman et al., 2017), and because this practice is usually well documented on paper for record-keeping purposes, even more every clearing activity is completed manually. However, the majority of organizations understood that the data recorded during student clearance is vulnerable to harm and may even be lost or stolen. In response, several schools began automating the procedure. Due to this, computers are now being used to keep track of the student’s records. It is noteworthy that tertiary institutions have developed an interest in the numerous online educational possibilities due to recent technological advancements (Fatima, 2021).

E-learning is one of the benefits of this significant technological effect on education. E-learning as a concept and as a technology presents a variety of opportunities. Online learning is now more effective and convenient because it has made learning possible from an infinite range and without having to take place in a set structure (class). It has also made people of all ages familiar with and dependent on the internet for information (Nneji & Monday, 2018). By creating online learning platforms, this movement of computerizing education also raises the possibility that an e-clearance system is also necessary (Tunde & Victor, 2021). Since the abilities required to access and understand material online are becoming more widespread and since wireless computing is flexible, it follows that any location can serve as a classroom (Fatima, 2021).

Since the advancement of technology has not only successfully established the possibility of clearance online but has also brought with it the traditional undergraduate and general study program, it is now known that well-organized and competitive integrated online learning resources, as well as those with degree options, have a well-structured online clearance system (Tommy, 2019).

**1.2 STATEMENT OF THE PROBLEM**

Handling student clearance information and the clearance procedure is done manually. This processing technique takes a long time and is frequently inconvenient. This can be attributed to a variety of issues, including the processing of the clearance form taking longer than anticipated and the absence of key employees who are critical to the clearance's development. The procedure of signing and submitting the essential documents to show that one is a genuine student of the school can be highly hard because there is no predetermined or structured manner of doing so. Students are trapped with the tedious and time-consuming procedure of walking in circles from office to office seeking for staff members who can sign, stamp, or validate some payment or another. As a result, it is critical to seek a simpler, more effective method of making clearing less difficult and unpleasant. In this regard, the project research provides a solution to the previously described issues by developing an online clearance system for graduating students.

**1.3 AIM AND OBJECTIVES**

The project is aimed at designing a clearance system for graduating student Kaduna polytechnic

**OBJECTIVES**

The objectives of this research work are as follows:

1. Student data set will be generated upon registration on the website.
2. In the front-end development modern technologies such as HTML, CSS, and JavaScript will be employed to create an interactive UI and UX as well as Django which is a Python web framework will be employed in developing the back-end
3. In storing and retrieval of the collected dataset; MySQL which is an open-source relational database, will be used as the database technology.
4. Vital testing will be carried out in ensuring the efficacy of the research work
5. To implement a system free from bias and interest, reducing difficulties for students during the process.

**2.1 LITERATURE REVIEW**

Article Title: Design and Implementation an Open-Source Web Based Clearance System for

Iraqi Educational Institutions

Authors: Ramadhan, R. N., Manguri, K. H., & Manguri, B. H. (2020)

**Summary of the work**

The project addresses the manual and time-consuming clearance process in universities, particularly in the Iraqi educational system, by proposing an open-source digital clearance system. This system aims to streamline the process, reduce effort, minimize costs, and enhance data security. It includes main tasks such as student registration, unit administrator clearance confirmation, exam committee clearance verification, and system administration for overall management. Additionally, the system administrator can manage unit administrators and students within the system, making it a comprehensive solution to the clearance procedure.

**Methodology**

The methodology for this research paper involves the use of web development technologies. It includes both front-end and back-end development. Front-end technologies like HTML, CSS, Bootstrap, and JavaScript were used for the user interface. For the back-end, Ajax, PHP scripts, and MySQL were employed for database management. Local development tools such as Visual Studio Code and XAMPP server were also used to streamline the development process.

**Recommendation**

In light of time constraints and limitations, certain aspects have been deferred to future endeavors. It is recommended that the open-source nature of the system be leveraged for further improvement by the broader developer community. While the system is initially designed for university students, there is potential to adapt and implement the source code to cater to other institutions and organizations. Given the prevalence of mobile internet access, efforts should be made to enhance mobile responsiveness. Additionally, consideration should be given to developing mobile applications for both Android and iOS platforms to expand the system's accessibility and usability.

**Research Gap**

The research in this study addresses the manual clearance process in universities, proposing an open-source system to streamline and modernize the procedure. However, there is a research gap in terms of system scalability, adaptability to different institutions, and potential enhancements using emerging technologies like blockchain and machine learning. Future work could explore customizing the system for diverse organizations and integrating advanced features to improve security and automation.

Article Title: An Improved e-Clearance Management System for Graduating Students in a

University Environment

Authors: Nneji, G.U., Deng, J., Shakher, S.S., Monday, H.N., Agomuo, D., & Dike, I.D. (2018)

**Summary of the work**

This paper addresses the manual clearance process in universities and proposes an improved system to overcome its weaknesses. The system utilizes a combination of web development technologies. The proposed system streamlines the clearance process, reduces processing time, minimizes document loss and forgery, and eliminates the need for physical presence by digitizing paperwork. It also introduces payment options for added convenience. The results demonstrate a significant reduction in electronic clearance processing time, leading to the creation of an efficient and reliable system for graduating students.

**Methodology**

The project methodology follows SSADM. The system was tested using XAMPP server, which is open-source and works on major OS. It uses MYSQL for the database and PHP for scripting. HTML is used for web page creation, CSS for styling, and JavaScript for interactivity. PHP handles server-side scripting, and MySQL stores and manages data using SQL.

**Recommendation**

The paper's scope is broad, and the researchers recommend future research to expand this work. The electronic clearance system proposed here could be adapted for use in various sectors and industries beyond academia. Many organizations require clearance processes, and the efficiency and security demonstrated in this paper could benefit them. Therefore, I strongly endorse further development of this work to address clearance needs in different sectors and potentially transform clearance processes on a larger scale.

**Research Gap**

The research paper presents an improved electronic clearance management system for graduating students, aiming to streamline the clearance process and enhance efficiency. However, it does not explicitly identify any gaps in prior research related to electronic clearance systems. Further research is recommended to explore specific shortcomings or challenges in existing systems and to propose potential enhancements for the future.

Article Title: Development of Online Clearance System for an Educational Institution

Authors: Jonathan, O., Misra, S., Makinde, F., Damaševičius, R., Maskeliūnas, R., & León, M. (2019)

**Summary of the work**

This study addresses the challenges associated with the manual clearance process for graduating students in educational institutions. It highlights the time-consuming and cumbersome nature of the manual procedure, along with its susceptibility to fraud. Existing automated systems are also criticized for lacking user-friendliness and efficient prioritization of processes. In response, the study proposes a web-based system to streamline the clearance process. This new system aims to reduce time and effort for students, minimize institutional paper usage, and provide students with the convenience of initiating and monitoring their clearance status from anywhere.

**Methodology**

The methodology for system implementation involved the utilization of key web development technologies, including HTML (Hypertext Markup Language), PHP (Hypertext Preprocessor), and JQuery to create a web-based application. MySQL server was employed for database management. The process encompassed various stages, including user and student management, with specific interfaces designed for admin privileges. Admins had the ability to upload student data using Excel files (.csv format), which would then be seamlessly integrated into the database, ensuring accurate and efficient data management.

**Recommendation**

The application underwent rigorous testing during its development, with issues identified during unit and integration testing resolved. It is strongly recommended that other educational institutions adopt this technology to benefit from the time, cost, and effort savings it offers. Furthermore, future improvements to the system could involve developing a mobile application with enhanced functionalities, prioritizing convenience, usability, and performance.

**Research Gap**

The research gap identified in this study pertains to the need for substantial improvements in the clearance processes within educational institutions. Future work should aim to design and implement more effective, efficient, and user-centric systems that not only reduce operational costs but also enhance the overall experience for students and educational institutions.

Article Title: Digitalising the Clearance Processes of Higher Education Institutions through the Design and Implementation of an Online Clearance System

Authors: Daniel Danso Essel, Mr. Henry Techie-Menson, Dr. Stephen Opoku Oppong, Mr. Augustine Alakuu. (2023)

**Summary of the work**

This study addresses the challenges faced by both students and clearing officers in Higher Education Institutions (HEIs) due to the existing manual clearance procedures. The research presents the development of an online student clearance system. The outcome is a highly efficient web-based application that replaces laborious paper-based processes with a responsive interface, role-based access, and enhanced security measures. Overall, this research successfully introduces an effective online clearance system for HEIs, promising to streamline administrative processes and serve as a crucial decision support system.

**Methodology**

The research methodology follows the Software Development Life Cycle (SDLC), a systematic approach guiding software development from inception to deployment and beyond. Agile methodology was selected for its flexibility in adapting to changing requirements and fostering collaboration among development teams. This approach differs from traditional methods that require upfront project specifications, deadlines, and cost estimates. Agile allows for continuous testing, ensuring high-quality product delivery, and the ability to address issues promptly. The tools used for creating the online clearance system include MSSQL for the backend database, ASP.NET MVC5 with C# for server-side programming, JavaScript (QUERY) for effects, and HTML and CSS for complementary languages.

**Recommendation**

The recommendation is that the UEW Students Online Clearance System should be made available to other higher education institutions to streamline clearance procedures, reduce operational expenses, and minimize downtime. Future improvements should focus on making the system more accessible by developing mobile applications and/or USSD codes for all users. This expansion will not only benefit the University of Education, Winneba but also provide a convenient and efficient clearance process for other institutions.

**Research Gap**

The research gap underscores the urgent need for the adoption of modern technology and programming languages to develop efficient and user-friendly online clearance systems. By leveraging the potential of newer programming languages and technologies, institutions can streamline their clearance processes, reduce operational costs, and enhance the overall user experience.

Article Title: Design and Implementation of Online Clearance System: A Case Study of Imo State University

Authors: Ben, U.C., Henry, U.C., & Iriaoghuan, A.I. (2019).

**Summary of the work**

This research project focuses on the development of an efficient online clearance system for educational institutions, particularly for post-graduation clearance processes. The primary aim is to create a reliable and stress-free method for students to complete their clearance requirements. The system is designed to simplify the clearance procedures, provide clear instructions, and eliminate delays in the process. The project utilized data from the university, various academic materials, and journals, and employed programming languages to implement the computer-based system. In summary, the project successfully achieved its objectives and is recommended for adoption by tertiary institutions to enhance their clearance processes.

**Methodology**

The methodology employed for achieving an effective online clearance system involved the utilization of the Structured System Analysis and Design Methodology (SSADM). SSADM was chosen as the internally accepted software engineering model known for its result-oriented approach to analysis and design. In this project, the implementation of the computer-based system was executed using a combination of PHP, JAVASCRIPT, CSS, APACHE, and MYSQL for the database. These technologies were carefully selected and integrated to develop a robust and functional online clearance system.

**Recommendation**

The research work has focused on online clearance processes, but to achieve a more comprehensive and effective information management system in universities, it is highly recommended to develop a complete portal. By expanding the system to cover these aspects, universities can streamline their administrative processes and enhance overall information management.

**Research Gap**

The research has primarily focused on developing an online clearance system, which is valuable for universities. However, there's a research gap concerning the broader scope of information management technology within educational institutions. This gap includes the need for a comprehensive portal system that covers admissions, academic records, and centralized databases. Extending research efforts to address these aspects would lead to a more holistic information management solution for universities.

**3.1 PROPOSAL METHODOLOGY**

A comprehensive inquiry such as this is used in the research technique to unearth new facts or information about the current system. The research method used in this study combines direct observation from the department and the Internet.

**3.1.1 DIRECT OBSERVATION**

This method was utilized to collect information/data for this study by assessing how the manual system was carried out; the method provides varying degrees of control over the context in which they are employed, and rigorous assessment highlighted the evident shortcomings in the current system.

**3.1.2 INTERNET**

The internet will be used as a data-collecting strategy, sourcing information on areas that appear difficult or perplexing in order to achieve a functional conclusion.

**3.2 CHOICE OF PROGRAMMING LANGUAGE**

This research work will be a web-based application and will be implemented on a relational database system (SQLite). HTML (hypertext markup language), CSS (cascading style sheet), and JavaScript will be employed in the frontend while Django(python) will be employed for the backend programming. The above are the modern languages used in implementing this system.

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