ONLINE CLEARANCE SYSTEM

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ABSTRACT

Each year, many institutions churn out number of graduating student that must be cleared by different unit through a process called clearance. The traditional method of clearance involves student to physically visits clearance offices; student affairs, bursary, library, sports and registry department to get endorsed for clearance. The traditional method of clearance is time consuming, requires graduating student to physically visit various offices and some key staff may not be available at the time of visit and there is possibility of duplication or loss of data. Thus, the developed online clearance system overcomes the drawback to the traditional method of clearance. The online clearance system was developed using Windows 7 Operation System (OS) as development environment, MySQL for database design, Hypertext Pre-Processor (PHP) for the overall programming and Hypertext Mark-up Language (HTML) couple with Cascading Style Sheet (CSS) for the Graphical User Interface (GUI). A total of 150 student and 50 staff were used to evaluate the developed system for usability, convenience of service delivery and accessibility with 88.1%,89.8% and 95.3% cumulatively affirming that the system is usable, convenient in terms of service delivery and accessible in delivery effective and efficient clearance in a timely manner.

Keywords: Clearance, Graduating Student, Institution, Final Year

INTRODUCTION

Every year, each tertiary institution produces number of graduates; each graduating student must be cleared by various departments before he/she can graduate through a process called clearance. Clearance is a status given to graduating student in an institution. A final year student whom satisfied academic requirements in an institution must undergo a clearance process using certain procedure before being disengaged. According to study by (Oliha, 2020), clearance is a certificate giving permission to disengage from an institution. Final year students who have satisfied the academic requirements to graduate must undergo a clearance process before they disengage from the University. According to Enikuomehin, Olaniyi, and Olusegun, (2018), some institutions data are of diverse in nature and are captured and stored. One of the major challenges of these data storage mechanism is aggregating them for appropriate usage. The case of Nigeria higher institutions is not an exception where student's information is captured and stored at locations like the bursary, admission and departmental offices among others for diverse purposes. Graduating students are expected to visit each of these units and get cleared one after the other before final certification. The process of clearing involves the student's academic department, faculty, bursary, students affairs, library, hostel, sport department, health centre and registry (exams and records).Clearance is usually carried out at the end of academic session and requires the student to physically visits various departments and faculty; hostel, bursary, library, students affairs, health centre (university clinic), sport and registry department. Clearance is very vital in any academic institutions as student is not only issue his/her certificate after being cleared by the university but also to determine if the student is eligible to graduate, not owing any due and not in possession of any property of the institution at the time of graduation. It is therefore necessary for any graduating student of an institution to follow certain criteria in an orderly manner before exiting the system, this is being done through the clearance process. The traditional clearance process involves the student to physically move from one department to other to get their clearance documents

endorsed. The traditional clearance method in an institution involves step by step procedures; individual signing of clearance form by the student and to be cleared by the dean students affairs, head of sports, chief Liberian, bursary and registry departments. The step by step process begins by picking clearance form by the student from office of the dean student affairs, complete the form and proceed to the bursary department. The bursary department check all the financial records of the student based on dormitory and tuition fee, if there is any outstanding debt, the student must clay all the debt before proceeding to the next stage. The next stage involves the student going to the library to submit hard copy of final year project (thesis), a check is also carried out to know if the student is in possession of any pending book to submit and pay for the overdue charges fix by the school library. At the department and faculty level, a check is carried out to see if all laboratory and departmental materials in his/her possession has been submitted, same applies to student hostel and sport complex. The final stage involves the student going back to the dean student affairs office and the registry department to submit I.D card and certificate collection. The traditional clearance method is time consuming as such it takes a lot of time to clear a student in addition to that some key staff may be unavailable to sign the clearance form which will lead to student to continuously visiting the same office to sign the clearance form. There is also possibility of loss documents due to fire or rainfall hence the need for automated method that will overcome aforementioned challenges. This study will address the drawback of the traditional method by developing online clearance system.

The online clearance system is an effective and efficient internet-based information management system utilize by graduating students of higher institution to do their clearance online or electronically and affirm that they are not in possession of any due or property of the institution at the time of graduation. Online clearing system helps the students and the staff members in their clearance process of pending dues or belongings after finishing their graduation or after the employee's job termination, (Alroobaea, 2018).The change in

online institution learning landscape now includes general studies programs and online clearance system.

Review of Related Work

Several studies have been carried out on online clearance system for tertiary institution. Fakoya et. al., (2021) developed a web based SMS notification clearance system using Extreme Programming (XP) methodology. The system allows graduating student to login using their credentials at their own convenient time, in a timely manner to carry out their clearance process automatically. Agbo and Makinde, (2015) developed a web based driven student clearance system using MySQL and PHP for the purpose of eradicating the problem of the traditional method of clearance such as time wastage. Though the system is automated but it could not automatically notify them when they have been cleared. Usman et al., (2015) developed online clearance system that can be utilize by graduating student without visiting the various departments involved in clearance in the clearance process. According to the study by Cadiz III, Bondoc and Estroga, (2017), finding a better way to facilitate the signing of student clearance in a private school is by developing an e-clearance system that automates and centralizes the clearance system. The system was designed to facilitate the fast processing of student clearance, to allow users to access the system online, and to save cost which the paper based clearance entails. The system has three actors (students, administrator, and office heads), uses PHP programming language and MYSQL for database. According to Ben, Henry and Iriaoghuan, (2015), online clearance system is a project work that will help build an effective information management for schools. It is aimed at developing a system for making clearance after graduation. The designed software will serve as a more reliable and effective means of undertaking students' clearance, remove all forms of delay and stress as well as enable you understand the procedures involved as well as how student do clearance online. The system is implemented using PHP, JAVASCRIPT, CSS, APACHE and MYSQL for the database. IFeanyi, (2013) develop online clearance system using PHP, CSS, APACHE and MYSQL for the database. The designed system serve as a more reliable and effective means of undertaking students' clearance, remove all forms of delay and stress as well as enable you understand the procedures on how to do your clearance online. Ardo, (2021), developed internet-based clearance system to facilitate the queuing system in the clearance process of university. The online clearance system can provide an efficient handling of information that is very easy for the university to use since it is internet-based and can be viewed from anywhere and at any time. Usman, Olusanya, & Adedeji, (2016) developed a computer software system that replaces the manual method of clearance for graduating students and that also help students to carry out their clearance without coming to the various offices for clearance. The implementation of the computer-based system was carried out using PHP language, Html, CSS and the database for the software is MySQL. The designed software serves as a more reliable and effective means of undertaking students' clearance, remove all forms of delay and stress. Derick, (2020), developed online clearance system for Uganda Christian University to replace the existing manual method of clearance. In the research made by Kayaga et al., (2021), a digital clearance system for Makerere University was developed, the major objectives were; to examine how final year students clearance is achieved by identifying challenges in the existing graduating clearing system, identifying the requirements for designing a digital clearance system for graduating students and designing a digital clearance system for graduating student of Makerere university. The designed was both qualitative and quantitative in nature, data were collected through the use of questionnaire and interview guides for students and staffs respectively. Observation guide were used to analyze the situations within the clearing offices to observe issues like user and staff behaviour at the clearance desk.

METHODOLOGY

This section gives an in-depth description of the architectural design and development of the online clearance system. Figure 1 shows flowchart depicting the flow of process in the existing system. The system is completely paper based and requires graduating student to physically visit various departments to get cleared. The student involved start checking his/her graduation status to know if there is any pending course for extension, in a situation where the status of the student is pending for certain course, the student will not be allowed to proceed for graduation but if the student fulfils all requirement for graduation, then the student proceed with clearance by obtaining the clearance form at the student affairs office. The next stage involves the student to physically visit the bursary department to check and get cleared based on dormitory and tuition fees. If the student is indebted, he/she must clear all outstanding bills before proceeding to the next stage. The next stage is the library where the student visits with a copy of final year project (thesis) for submission. A check is also carried out to ensure if the student is in possession of any books. The student proceeds to the next stage which is the department and faculty for a final check if in possession of material belonging to the departmental laboratory or faculty. The student also visit the sport complex to get clear before proceeding to the registry department for final clearance which mandate the student to submit his/her ID card and also for collection of certificate.
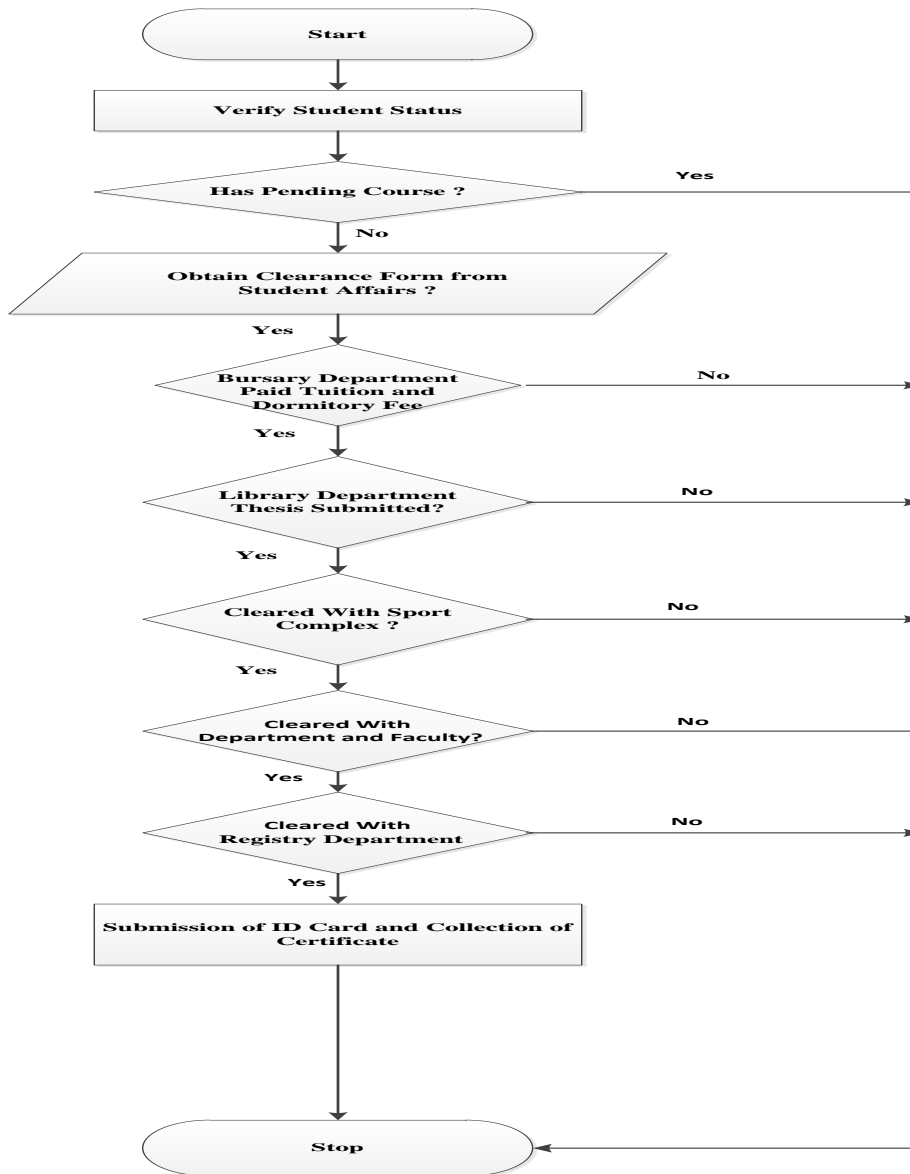
Figure 1: Flowchart of Traditional Clearance Method

Proposed System
The proposed online clearance system is designed to solve the drawback associated with the traditional method (the existing system) of clearance. The proposed system is depicted in Figure 2,
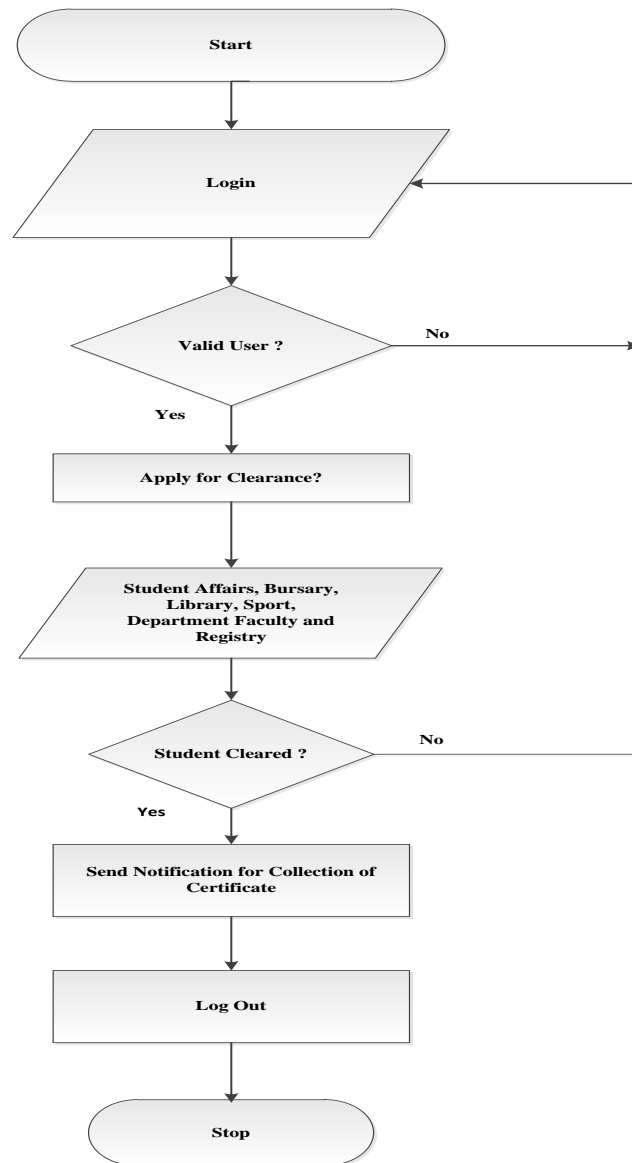
Figure 2: Flowchart of Proposed System

Figure 2 and 3 shows the flowchart and activity diagram of the proposed system respectively. The graduating student start the process by login into the system using their login credentials, the system validates if the user login is valid before proceeding to apply for clearance via the system else the system prompt the user to enter valid user name and password. The graduating student may need to extend the application to all departments involved. The student get notification via email notifying successful completion of the clearance application and another notification after 48 hours to come over for collection of certificate. The student log out and the session end.
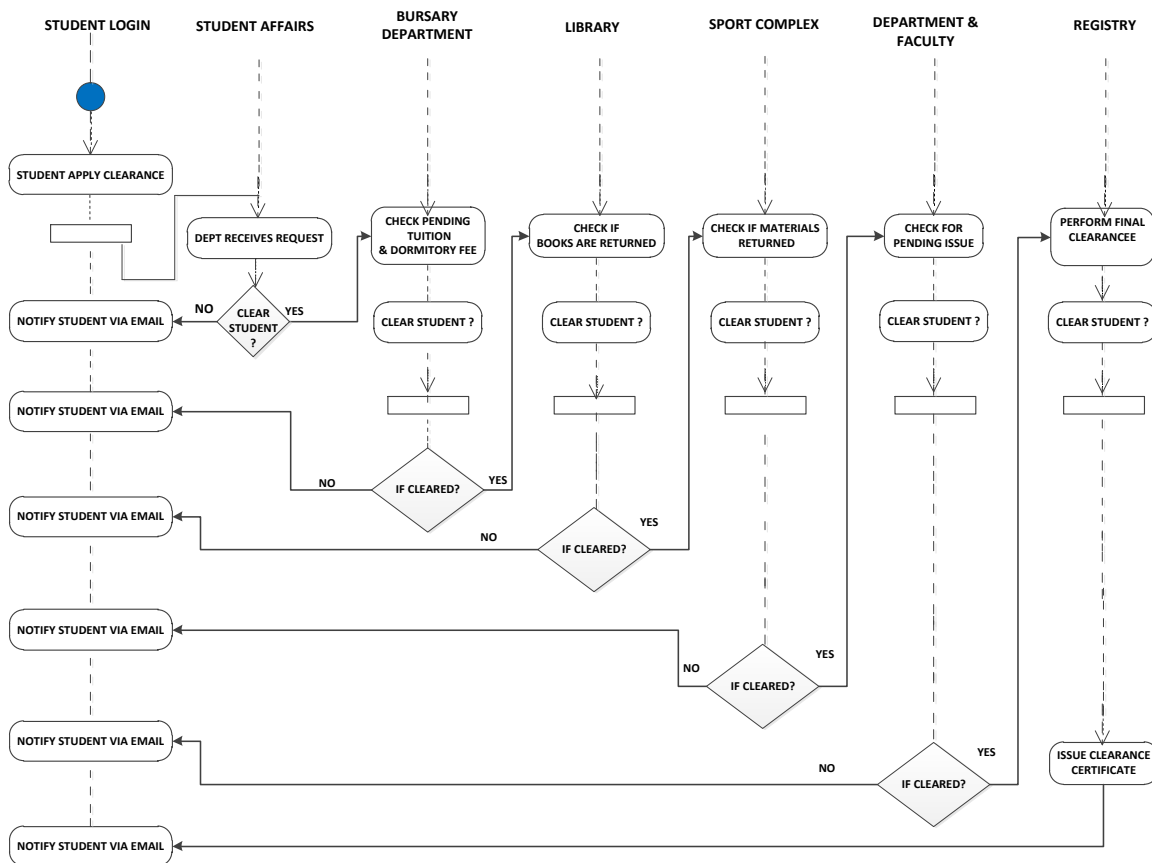
Figure 3: Activity Diagram of the Proposed System

The activity diagram of the online clearance system is shown in Figure 3. The flow of activity begins from the student module which initiates the application for the clearance. The admin officer at the student affairs unit received a notification via the clearance portal and verifies if the student is among the list of cleared student sent from the department and faculty. The admin officer thereby forward the details of the student to the bursary department for further line of action but if the student name does not appear in the list of graduating student, the student will be notify via email to contact the department as his/her name does not appear in the list sent from the department. The bursary department receives the details of the student to be cleared, check if there is any pending issues or unpaid tuition or dormitory fee, clear if the student is not indebted else inform the student of pending tuition/dormitory bills to pay and attached evident of payment. All cleared student from bursary department are sent to library module check if the student has submitted a copy of his/her thesis or not and if the student is in possession of any library books. If the student is still in possession of any book,the student receives an email notifying him/her of any pending book not submitted to the library else the library unit clear the student and forward the details to sport unit where a check is carried out to verify if the student is in possession of any item belonging to the sport unit. The sport unit clear the student after due verification and forward the student details to department and faculty of the respected student for second stage clearance. The department and faculty perform second check to verify if the student is not in possession of laboratory equipment and forward the details of the student to registry department. All successfully student cleared by the registry receives an email notifying them to come for collection of certificate. All aforementioned activities flows begins from the student module and goes to the student affairs division; to the bursary department, to the library department, to the sport unit, to the respected student department and faculty, to the student affairs and finally to the registry as shown in Figure 3.

The entity relationship diagram for the enhanced online clearance system is shown in Figure 4. The entity relationship describes set of objects sharing same relationship, operations, semantic and attributes. The entity relationship for the enhanced clearance system has five entities; CLEARANCE_INFO, REGISTRATION_INFO, SCHOOL_OFFICES, DEPT_INFO and ADMIN.
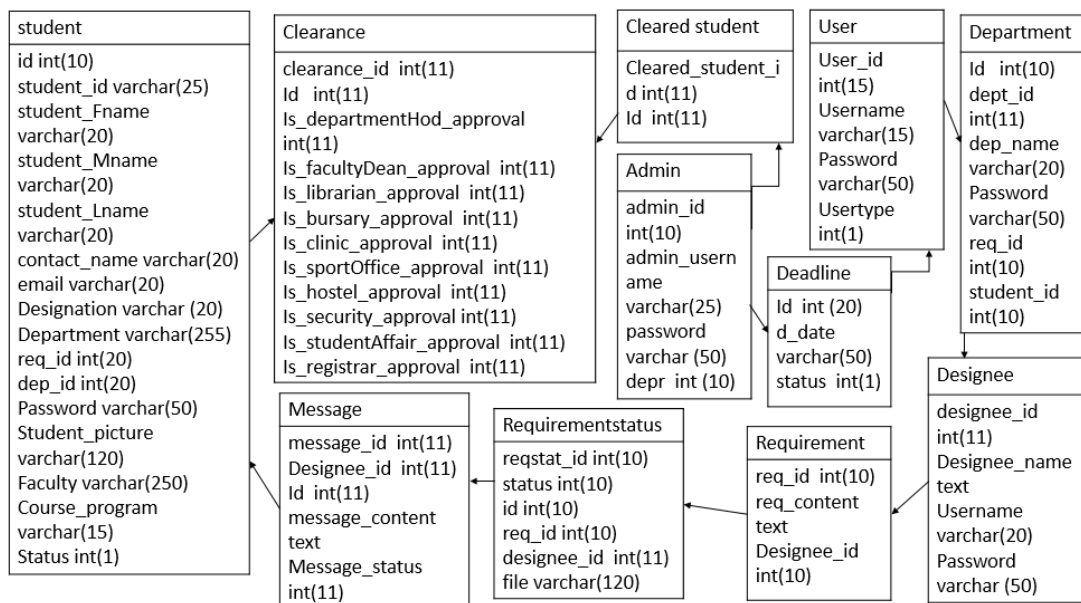
Figure 4: Entity Relation Diagram

The system is implemented using Windows 7 Operating System (OS) as development environment, MySQL for the database design, Hypertext Pre-processor (PHP) for the overall programming and Hypertext Mark-up Language (HTML) couple with Cascading Style Sheet (CSS) for the Graphical User Interface (GUI).

RESULTS AND DISCUSSION
Figure 5 shows the landing page of the developed system after successfully login in by graduating student. The Head of Department (HOD) approved, cleared the student and assigned to the student affairs division for next stage of clearance as shown in Figure 5 and 6. The students receives notification mail for each stage of the clearance
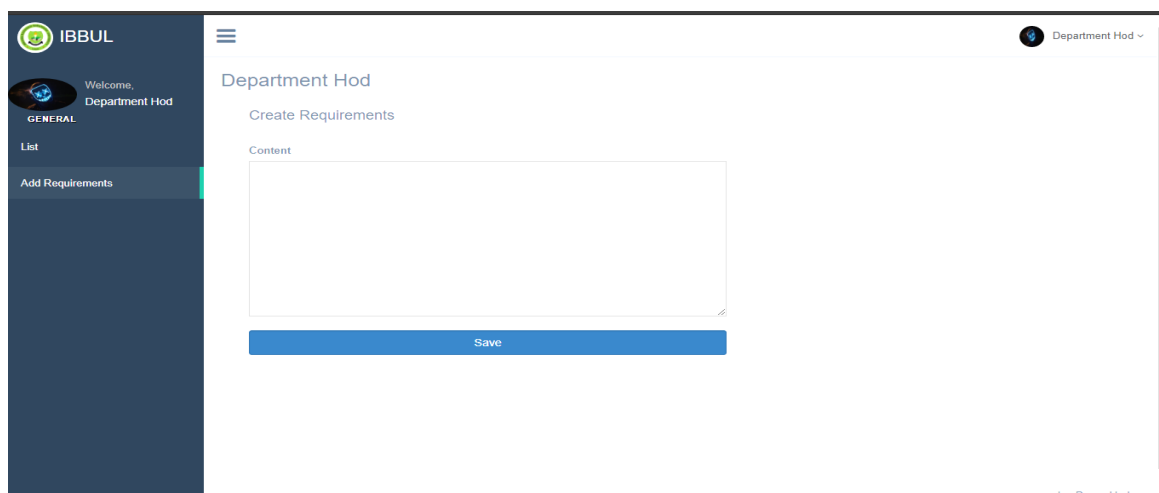

Figure 5: Landing Page for Clearance Application

All admin officers in various departments in charge of clearance receive notification email. Figure 6 and 7 shows the status and summary of student approved for next stage of clearance.
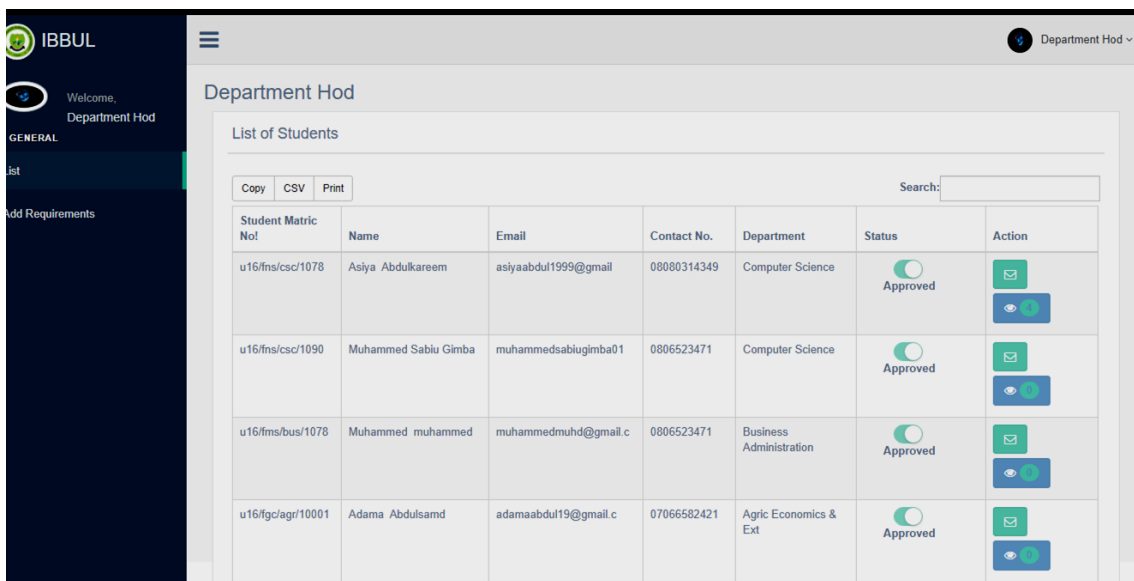
Figure 6: Approval Page

The admin can view list of student that have being cleared, master list, list from each department and their faculties.
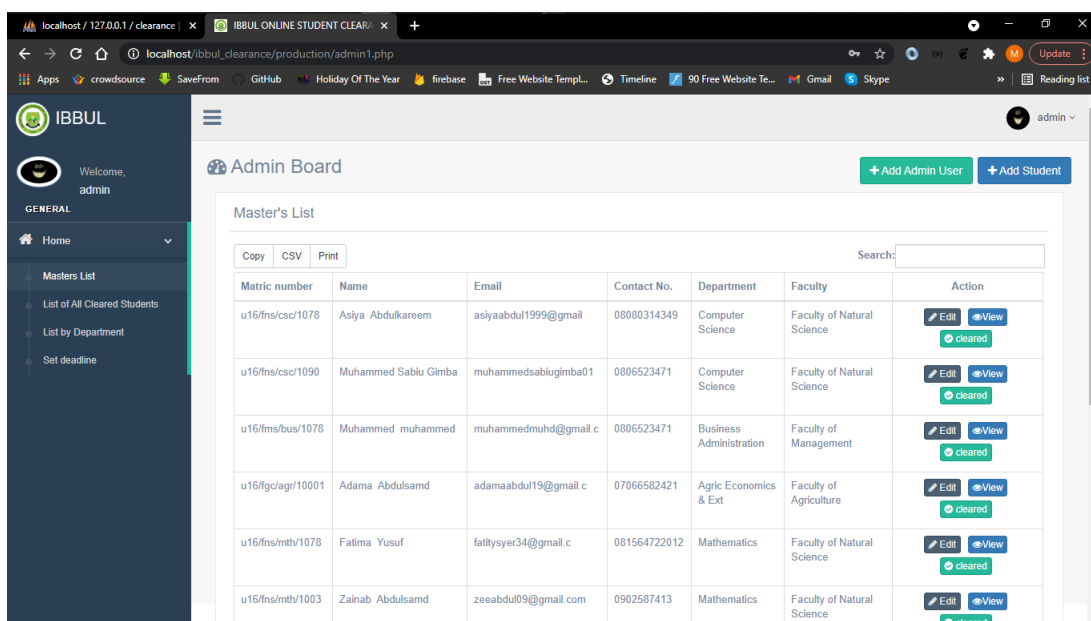

Figure 7: List of student that applied for clearance

Figure 8 shows the clearance notification e-certificates that the student receives via email after being cleared by all units and department.
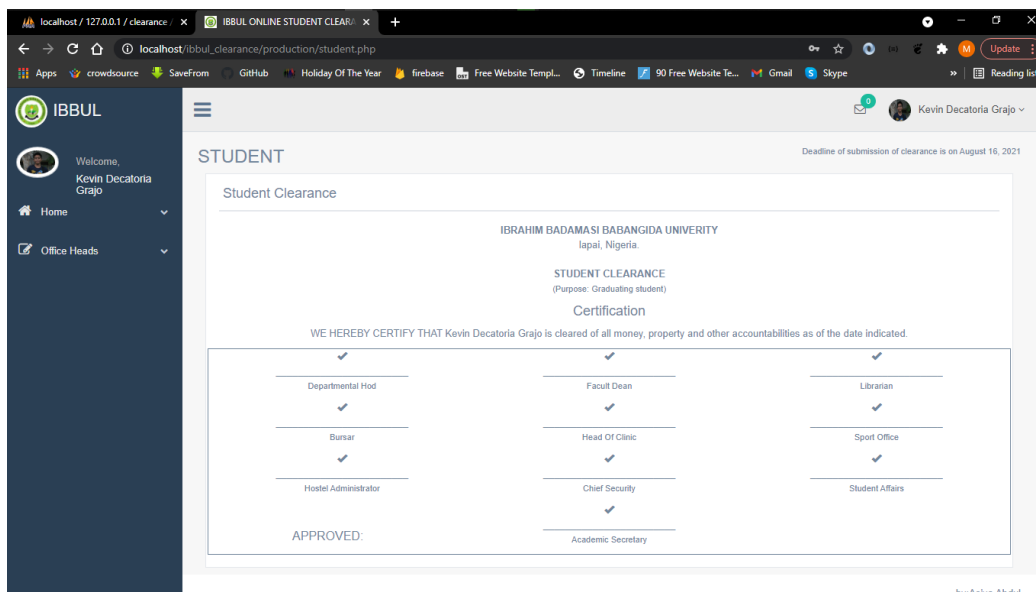
Figure 8: Clearance notification e-certificate

Performance Evaluation of the Developed System
The performance of the developed online clearance system was evaluated for usability, accessibility and convenience for effective and efficient clearance of graduating student through the perception assessment of these factors by the respondent after using the traditional method of clearance and the developed system. The respondents and, study area comprises of staff and graduating student of Ibrahim Badamasi Babangida (IBB) university, Lapai, Niger State. A total of 200 respondents comprise of 150 students and 50 staff were used to test and evaluate the developed system and their response were collected in form of questionnaire. A total of 195 questionnaire were collected out of the 200-questionnaire distributed for assessment by the respondents for usability, conveniences and accessibility to influence the assertion that the developed system has the capability to deliver efficient and effective clearance services in a timely manner. 88.1% of respondents cumulatively agreed that the online clearance system is usable in delivering effective and efficient services as shown in usability row in Table 1 and 95.3% cumulatively agreed that developed system is easy to access in timely manner and less stressful compared to the traditional clearance method as shown in row of conveniences of service delivery in Table 1.

Table 1: Users Perception on Enhance Online Clearance System

Parameters/ Perception	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly %	Cumulative Agreement %
Accessibility	1.2	1.5	2	36.6	58.7	95.3
Usability	2	7	2.9	36	52.1	88.1
Conveniences of Service Delivery	3.7	4.5	2	29	60.8	89.8

Furthermore, 89.8% cumulatively that the developed system offers convenient service to both the graduating student and staff as shown in Table 1.
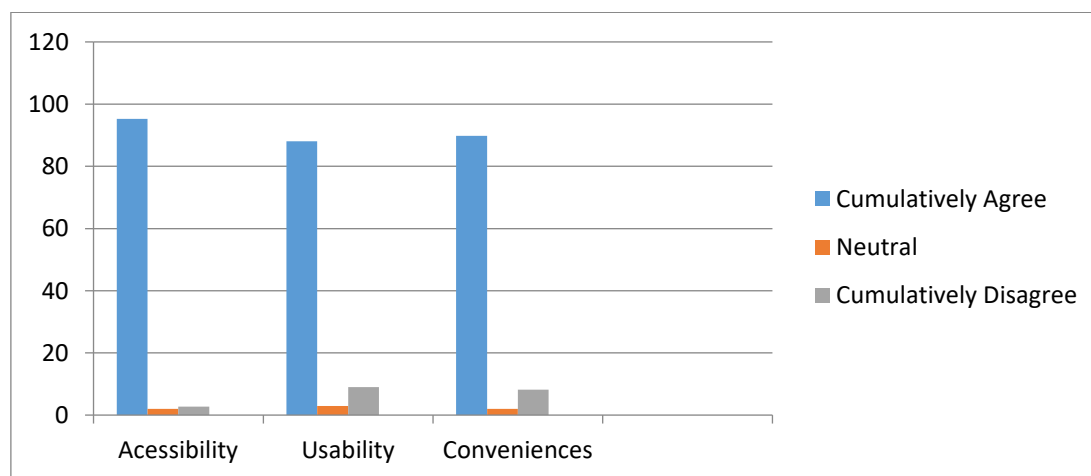

Figure 8: Users Perception on Enhance Online Clearance System

CONCLUSION

The online clearance system was developed with user friendly interface which enable the graduating student to apply for clearance without physically visiting various offices. The clearance system serves as improvement and highlight the need of its usage over the traditional method which is time consuming and very stressful. The use of the online clearance system will enable clearance to be carried out in timely manner, totally eliminate or reduce use of paper work and reduce loss of vital documents.

Recommendation for future research is premised along integrating Simple Messaging Service (SMS) and Unstructured Supplementary Service Data (USSD) to the developed online clearance system to enable student apply clearance using non internet phone to eliminate or reduce cost of subscribing to internet data bundle.

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