DESIGN AND IMPLEMENTATION OF ONLINE CLEARANCE SYSTEM: A CASE STUDY OF FOUNTAIN UNIVERSITY OSOGBO

BY

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CERTIFICATION

This is to certify that this project work was carried out by **POPOOLA, Lateefat Timileyin**, with matriculation number **FUO/17/0303** in the Department of Mathematical and Computer Sciences, College of Natural and Applied Sciences, Fountain University, Osogbo, Osun State.

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DEDICATION

I dedicate this project to Almighty Allah.

ACKNOWLEDGEMENT

My immense gratitude goes to Almighty Allah, for his mercies, favour and provision, who is the source and the giver of life, wisdom, understanding and knowledge, through whom this project was carried out and who has seen me through my stay in Fountain University Osogbo.

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In addition, many thanks to my Parent for all their love and support both financially and morally through my time in this University. I would also like to thank my course mates for their encouragement.

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ABSTRACT

Online Clearance System (OCS) is a research work that helps in building an effective information management system for an Institution. It is aimed at developing a system for processing students' final year clearance after the completion of the academic programme. The designed software serves as a reliable and an effective means of undertaking students' clearance, remove all forms of delay and stress.

This study made use of data collected from the University personnel, journals from various authors and search engines. In this study, the implementation of the computer-based system was carried out using PHP, JAVASCRIPT, CSS, APACHE and MYSQL. This study met all the objectives specified. It is however, recommended for use by all tertiary Institutions.

CHAPTER ONE
INTRODUCTION

1.1 INTRODUCTION

Information and Communication Technology (ICT) is widely used for enabling societies to produce, access, adapt and, apply information in greater quantities and for more varied purposes. In recent years Information Technology (IT) has become very impressive in services, this is due to his extraordinary contribution in the field of management of the information. Improvement in Information and Communication Technology has made time and spaceless complex and could be seen that this modern age is the age of information boom in which an average individual wants to explore the information system. Thus, the capability for timely acquisition, utilization, communication, and retrieval of relevant and accurate information has become an important attribute for better teaching and learning processes.

The use of ICT in the educational arena is not limited to teaching and learning situations alone but also extends to administrative assignments. One of such administrative tasks is the development of a web-based clearance system called online clearance.

Nowadays, services are intended to be improved according to the use of ICT. Therefore, Clearance is by definition, a designation granted to persons who are allowed access to confidential information, usually members of the military, college graduates and government officials and their contractors. The term "clearance" is also sometimes used in private organizations that have a formal process to vet employees for access to sensitive information. A clearance by itself is normally not sufficient to gain access; the organization must determine that the cleared individual has a "need to know" the information. No one is supposed to be granted access to classified information solely because of rank or position,

but once clearance is obtained, access to certain information or gain of freedom could be granted.

Clearance system for graduating students in an institution is a vital incessant procedures and processes. Verification must be carried out to check if a student has fulfilled his or her financial obligations and can proceed to: collection and degree certificate and National Youth Service Corps (NYSC) Scheme. It is the University's tradition to carry out this exercise after the end of the student academic programme.

Fountain University Osogbo as a case study adopts a manual paper method of clearance which is time consuming and rigorous for Students moving from one office to another to sign the forms. The paper clearance form given to students must be signed by various office and units, thus, the need for a web-based clearance system for graduating students is inevitable to save time an a hitch free process.

1.2 STATEMENT OF PROBLEM

For a graduating student to carry out his/her clearance, he/she would need to get approvals from various units, vis-à-vis: Laboratory, Department, College, Registry, Bursary, etc.

However, this manual process is time consuming and rigorous, moving from one office to another to get verified. Therefore, the bottleneck of the manual system in use needs to be eradicated by an electronic system. It is in this view the researcher intends to develop an electronic clearance system to automates the processes.

1.3 AIM AND OBJECTIVES

The aim of this study is to design and implement an online clearance system for graduating students of the University.

The specific objectives are:

1. Review the existing literature and existing system in Fountain University Osogbo
2. Fact findings and data gathering through oral interview with concerned Units
3. Design a robust Database using MySQL, system architecture, dataflow and flowchart
4. Develop a web application from the designs above using PHP, HTML and CSS.

1.4 METHODOLOGY

The methodology to be used for this project is as follows;

1. Data gathering and collection was achieved by interviewing the Head of each concerned Units and identified the problem areas of the existing system which the system improves upon.
2. System design tools adopted is System Flow Chart, Data Flow Diagram (DFD), Entity- Relation Diagram and Context Diagram
3. System implementation was achieved by using XAMMP for local hosting, MYSQL for the database management system, PHP for server script language, CSS and HTML for front end design
4. Usability and performance testing was done after the system implementation.

1.5 SIGNIFICANCE OF THE STUDY

This project work will eradicate the manual processes which involves the students queuing at the door step of several offices and promotes real-time clearance exercise.

Also, it will allow the users (students) to check their clearance status and know if they have any financial outstanding.

Furthermore, this project work will help the University in reducing the cost of producing clearance forms and stationaries annually.

1.6 SCOPE OF THE STUDY

This project work take into consideration of clearance process at the department and units viz: Bursary, Registry, Library, Laboratory and ICT.

CHAPTER TWO
LITERATURE REVIEW

2.1 BACKGROUND REPORT

Improvement in Information and Communication Technology (ICT) has made time and space less complex and could be seen that this modern age is the age of information boom in which an average individual wants to explore the information system. Thus, the capability for timely acquisition, utilization, communication and retrieval of relevant and accurate information has become an important attribute for better teaching and learning processes (Adebayo, 2008). The use of ICT in educational arena is not limited to teaching and learning situations alone, but also extend to the administrative assignments. One of such administrative tasks is the development of a web-based clearance system called online clearance.

By definition, clearance is a status granted to individuals, typically members of military, university graduates and employees of governments and their contractors, allowing them access to classified information. The term "clearance" is also used in private organizations that have a formal method to vet employees for access to sensitive information. Clearance can refer to authorization or permission from an authority (Anigbogu, 2000; Chimezie, 2000; Wikipedia 2013). The act of clearing an individual involves granting individual a permission to have access to sensitive or secret documents or other information. The Oxford dictionary defines "online" as controlled by or connected to a computer and as an activity or service which is available or performed using the internet or other computer network (Dictionary of British and World English, 2015). As people of this generation become more dependent on the internet for information, the need for automated clearance becomes more apparent.

Online clearance is now used in various academic institutes both locally and internationally for various clearance, for instance, online hostel accommodation, UTME online clearance exercise, online admission exercise, online graduating clearance exercise, and National Youth Service Corp online mobilization registration exercise to mention but a few.

2.2 RELATED WORKS

Clearance is a certificate giving permission for something to be done. In higher institution of learning, final year students that have satisfied the academic requirements to graduate must undergo a clearance process before they disengage from the institution. The above fact prompted the research and the development of a web-based database-driven students' clearance system as follows:

2.2.1 DESIGN AND DEVELOPMENT OF ONLINE CLEARANCE SYSTEM FOR TERTIARY INSTITUTIONS: A CASE STUDY OF TAI SOLARIN UNIVERSITY OF EDUCATION, OGUN STATE, NIGERIA

Usman, Olusanya, Adedeji and Oluwaseun (2016) study was aimed at developing a computer software system that replaces the manual method of clearance for graduating students in TAI Solarin University of Education, Ogun State, Nigeria and that also help her students to carry out their clearance without coming to the various offices for clearance. The designed software served as a more reliable and effective means of undertaking students' clearance, remove all forms of delay and stress as well as enable student to understand the procedure involved, as well as how the students do their clearance online. This project work makes use of data collection from the university, materials and journals from various authors and the software was developed to effectively achieve the aim of the project. In this project,

the implementation of the computer-based system was achieved using PHP language, Html, CSS and the database for the software is MySQL.

2.2.2 DESIGN AND IMPLEMENTATION OF ONLINE CLEARANCE SYSTEM: A CASE STUDY OF IMO STATE UNIVERSITY

Ben, Henry and Iriaoghuan (2015) designed a software to serve as a more reliable and effective means of undertaking students of Imo State University clearance, remove all forms of delay and stress as well as enable you understand the procedures involved. This project work made use of data collected from the University, materials and journals from various authors and software was developed to effectively achieve the aims of this project. In this project, the implementation of the computer-based system was carried out using PHP, JAVASCRIPT, CSS, APACHE and MYSQL for the database. However, some of the objectives of this project were not actualized due to some limitations. So, these objectives could be improved upon.

2.2.3 DEVELOPMENT OF ONLINE CLEARANCE SYSTEM FOR AN EDUCATIONAL INSTITUTION

Jonathan, Misra, Makinde, Damasevicius, Maskeliunas and Leon (2019) study proposes a system that overcomes the issues with manual processing while improving on the identified automated ones. The study adopts a case study approach of a complete manual system for a leading institution of learning in Southwest Nigeria, with a view to evolving a working prototype. First a thorough understanding of the existing procedure was carried out. A new system that is web-based was built using Hypertext Markup Language (HTML) along with PHP for business logic layer, CSS for proper rendering of display pages of the front end and

MySQL for the data layer. The new system reduced the amount of time and efforts wasted on students' clearance as well as reduce cost incurred on paper by the institution.

2.2.4 ONLINE CLEARANCE SYSTEM FOR MAKERERE UNIVERSITY

Mawanda, Kalinachi, Nansubuga, and Sunda (2019) developed a reliable, effective, efficient and transparent Online Clearance System to eliminate the challenges stated above. This system enables final year students monitor the progress / status of their clearance forms online as long as the technologies they are using can access the internet. A review and study of research works from external sources like articles, journals, internet that were related to the project was carried out to point out different views in relation to an Online Clearance System (OCS). For the success of the project, questionnaires, observation and interviews were the techniques used to gather the requirements for developing the Online Clearance System. The requirements were analysed and the system designed using the context diagram, dataflow diagram, ERD, for process modelling and data modelling respectively. A full description of the analysis was given and the design of an Online Clearance System under which there were functional and non-functional requirements of the system as well as the design parameters. An overview of the implementation, testing and validation of an OCS using JAVASCRIPT were carried out.

2.3 ROLE OF INFORMATION TECHNOLOGY IN THE ACADEMIC SYSTEM

The introduction of computer into information technology has massively improved the information need of organization; the success of this machine is dependent on the knowledge base. Therefore, one can be prompted to ask aloud "what is a computer" Funk (1980) defined a computer as an electronic device that can perform automatically at a high speed of a

sequence of logical operations according to instructions giving to it inform of pre-arranged program.

Anigbogu (2000) define a computer as an electronic device capable of accepting data and instruction; process the data base on the instruction to generate result or output in such a manner that is yet to be equalled by any other known machine to mankind.

Chimezie (1990) define computer by saying that computers are looked upon as obedient servants who are ever ready to free man from tedious procedures and produce result as compared with human computing time. Obilikwu (1995) define a computer as a machine that is capable of accepting input data, store and process the data base on the instructions giving by the computer users and in this way produce expected result, generally called output.

World net describes an information system (I.S) as systems consisting of all communication channels used within an organization and include software and hardware. It may also be defined as a system that collect and process data (information) and provide it to manager of all levels that use it for decision making, planning, program implementation and control. The aim of information system to admission, registration, result processing and clearance in universities using computer software based online clearance system is to improve the quality and accuracy of information provided to all involved as well as assisting universities in compiling and reporting information, making work lesser for the management.

Information technology has been an integral part of academic system since almost four decades. According to Hewlet (1993) the world is entering an era in which technology will literally transform every aspect of business, every aspect of life and every aspect of society.

Since the arrival of internet technology, school system has taken a new shape style with a blend of convenience and satisfaction. Taylor (1980) says that computer base education includes both computer-assisted instruction programs that interact with students in a dialogue and a broader array of educational computer applications such as simulations or instructions in computer programming. Learning from a student bedroom, office or anywhere in the world has made its way into university system with the advent of internet technology. Information technology has always helped the university system to educate student in better way. To explain few examples. Student online clearance is a method where the student obtains his/her clearance letter without carrying files around. This is safe, fast and has no hazels. Filling out the documents and comparing options and writing for approval is a time-consuming process. Through the internet, this process is made much easier and sometimes the approval is made within minutes. This explains an efficient way of obtaining clearance and saves time and money for students.

2.4 DATA AND INFORMATION

The concept of data and information are very important in understanding issues that go with development and implementation of a computer software based online clearance system. The term “data” and “information” are used interchangeably every day conversation as meaning the same thing. Too many managers and information specialist. However, these terms have distinct meaning. According to O’Leary (1996) data simply consist of raw unprocessed facts while information is a data that have been processed by the computer. Hordeski (1986) gives the following definition of data; A graphic or textual representation of facts concepts, numbers, letters, symbols or instructions suitable for communication, interpretation or

processing. Data is the basic element of information that is use to described objects, ideas, conditions or situations.

Lucy (1991) defines data and information as Data is fact events, transactions and so on, which have been recorded. They are the raw materials from which information is produced. Information is data that has been produced in such a way as to be useful to the recipient. Data are fact obtained by observation, counting, measuring, weighing etc, which are often records of day-to-day transactions of the organization. For example, the date, amount, and other details of an invoice or cheque, payroll details of payment, the number of a student living in a particular hostel and so on. Enwerem (1992) argue that concept of information in an organization sense is more complex and difficult than the frequent use of this common word would suggest. Oketunji (2002) emphasized that information is data that have been processed, transmitted by the recipient, interpreted and understood by the recipient. Here it should be noted that the user, not just the sender is involved in the transformation of data into information. There is a process of though and understanding involved and if follows that a given message can have different meaning to different people. Based on this, one can conclude that data which has been analysed, summarized or processed in some other fashion to produce a message or report which is conveniently deemed “management information” only becomes information if it is understood by the recipient. Therefore, it the user who determine whether a report contains information or just processed data.

2.4 TECHNOLOGY ENHANCE COMPUTER SOFTWARE BASED ONLINE CLEARANCE SYSTEM

According to Jeremy (2017), a comparison of traditional and hybrid online system in communication technology. Online system has become a central element of the discourse on higher education (cox 2005). There seems to be an overall derive towards online system given the mountain need for flexibility in scheduling and the daily emergency of communication technology and capabilities (Hill stock 2005). Online system is presented as a means of conveying instruction to an extensive learning community any place at any time Cox (2005). Indicate that adequate designate online learning as the driving force and model for transformation in teaching, learning and formal schooling online course has the potential to provide learner individualized attention by the instructor, otherwise impossible in a large classroom environment (environmental education and training partnership 2006). With the continued development of online system applications, many colleges and universities has begun to offer online courses as an alternative to traditional face-to-face instructions. 67% of colleges and universities agreed that online education is the most logical long-term strategies for their institutions (Hill stock 2005). However, there are considerable hesitation rising predominantly related quality and student respectively to online system, (Yong and Conellus 2004). Just as their advantages there are also disadvantages to the online system instruction delivery method. There is evidence through previous research that student fill isolated or disconnected when not engaged in traditional face-to-face instruction (Guhu 2001, Graham 2001), while other report indicate large success (Hoff man 2002, Kaczynski and Kelly 2004: Mayer 2002). There remains a lack of clarity whether online courses are as affective as traditional courses (Peirier and Feldman 2004).

While there has been vast amount of research conducted on the advantages and the disadvantages of online system institution, little is known on how assessment is used in online classroom to monitor performance and progress (Liang and Jeremy v Ernest is an assistant professor in the department of mathematics science and technology education at North Carolina State University Ralugh.

Journal of technology education volume 19 No.2 spring 2008 (Creasy 2004). Hew, Liu, Martinez. Bonk, and Lee (2004) describe the evaluation of current online education system at three levels; the macro level, the meso level and micro level. The macro level is an online evaluation that access an entire online program, the meso level evaluation access individual online courses, and the micro level access the learning of the online student. Online clearance system present educational experience very different from standard face-to-face environment (Hew, Liu, Martinez, Bonk and Lee, 2004). When conducting a micro level courses evaluation, interest commonly lies in learner perception of the course experience pertaining to the level of comfort, ability to communicate with class mate and the instructor, as well as comparison to traditional face-to-face lecture. Many times, the only means of evaluating learner perception is in the form of a questionnaire or survey. Although perception of online system can be extremely useful information, it is usually not sufficient to conclude the evaluation without expanding to learners understanding.

2.5 COMPUTER-BASED ONLINE INFORMATION SYSTEM

An information specialist Lucey (1991) define computer-based management information system as: the combination of human and computer-based resource that result in the collection, storage, retrieval, communication and use of data for the purpose of efficient management of operations and for business planning.

Computer based information system is a feature of all large organization nowadays. The literature identifies four kinds of computer-based information: Transaction processing system (TPS), management information system (MIS), decision support system (DSS) and executive support system (ESS). Some system record routine activities: Employees hired, material purchased or produced and the like. Such recorded events are called transactions. Other system uses this recorded event to help managerial planning and control. The systems form a pyramid each primarily supporting one another level of management.

- Transaction processing system (TPS): these systems record day-to-day transactions such as customer order, bills, inventory levels and production output. The TPS helps supervisors by generating data base that act as foundation for other information system.
- Management information system (MIS). These summarize the detailed data of the transaction processing system standard report for middle level managers. Such report might include production schedules and budget summarizes.
- Decision support system (DSS); The DSS provide the flexible tools for analyses. The DSS help middle level managers and other in the organization analyse a wide range of problem, such as effect of event and trend outside the organization. Like the MIS, the DSS draws on the detailed data of transaction processing system.
- Executive support system (ESS): The ESS is easy-to-use systems that present information in a very highly summarized form. It helps top level management to oversee the company operation and develop strategic plans. The ESS combines internal data from TPS and MIS with external data.

2.6 DATA BASES

In the early days of computerization, it was normal to maintain specific files for individual application. Data where processes centrally in batches and there was little or no online interrogation of data. This approach is wholly inefficient for most of today's data processing systems. Supporting this Vossen (1991) enumerated the problems that result from organizing the data using the file system.

- There exists a high redundancy between files which result from the fact that the information is replicated in different places, and that these replications are not controlled by a central monitor
- Inconsistencies might result from the possibilities that a program makes changes on the files it uses without these changes being made (at the same time) by all other programs that uses the files.
- There exist in flexibility against changes in the application**:** if new actions or event arise in the cause of time, these can be realized at a substantial expense of time.
- The work of many programmers involved is characterize by low productivity, seems program maintenance is expensive: if the structure of an existing file has to be modified during it life time, then all application program has to be modified correspondently
- Finally, there is the problem of adopting and maintaining standard (with respect to coding data format etc), which is important for exchanging data or for migration to new operating system released, or even to a new computer system.

To overcome these problems, data bases where developed. It is now common for large organization to organize their operational data using the data base technology.

The subject of data is adequately covered in many works in data base technology. Clifton (1983) briefly defines data base as a collection of data supporting the operation of an organization. Quoting CIMA, Lucey (1991) provide a more detailed definition. A data base is a file of data structured in such a way that it may serve a number of applications without it structure being dictated by any one of those application, the concept being that programs are written round the data base rather than files being structure to meet the need of particular programs.

Russel M. (1987) dealt extensively on the need for the use of computer on such data base system like computerized clearance system. In the world of Dimorji (2003).

"At the centre of any information system is a data base, which is any collection of related information grouped together as a simple item. The term can also apply to the ways in which information is catalogued, analysed, stored and used manually".

Rossell (2005) was also of the view that without computer, effective handling of candidate record cannot be achieved effectively in a data base, all the data is defined together rather than each file being define separately. In fact, all the literature consulted seem to support the fact that a data base is a collection of structured data with the structure of data being independent of any particular application. Specify the need for data base, O'leary (1996) listed the following advantages:

- Sharing: in an organization, information from one department can be readily shared with others.
- Security: users are giving password or access only to the kind information they need to know. Thus, the payroll department may have access to employees pay rate but they would not.

- Fewer files: with several departments having access to one file, there are fewer files therefore, excess storage or what is called redundancy is reduced.
- Data Integrity: older filing system many times did not have integrity i.e. a change made in the file in one department might not be made in the file in another department. As one might expect, these can cause serious problems and conflict when data is used for important decision affecting but department. To advantages enumerated above, Vossen (1991) at abbs:
- Standard/access protocols can be enforced.
- Currency of data can be maintained.
- Data/program independent can be maintained.
- Conflicting requirement can be balanced among users.

In these days of integrated networks, the database appeared as the most logical method for organizing the operational data of large organizations. One may as well say that these advantages give the database the attraction over the traditional file processing method.

2.7 COMMUNICATION TECHNOLOGY USED IN ONLINE CLEARANCE SYSTEM

Several communicational tools are at the disposal of students and staffs to support their activities during the clearance. The partner universities offer two virtual communication tools with different capabilities (Marratech and Central). It is also available online and the communication management systems (OCMS) and in dependent discussion forum.

2.7.1 MARRATECH

Marratech is a virtual online tool that allows holding meeting and video conferencing on the web, face-to-face, whenever you want to talk, see each other and share application and document without being in the same room, the same building, or even the same country. This platform is used in several systems like in the energy online master program for online lectures, project meetings and project presentation.

2.7.2 CENTRAL

Central enables group to work faster and more effectively by automating critical clearance system and training initiatives online through virtual classroom, online meeting and web conferences. Central has a broad array of features that make live, group-oriented system effective on the web. Interactive white board, yes/no feedback, had-raising, multi-point conferencing, advanced application shearing and text and fool-duplex chart examples, in the energy online master program for online lectures, project meetings and project presentation. Communication management tools are available at each university and also in an online clearance system homepage.

CHAPTER THREE
SYSTEM ANALYSIS AND DESIGN

3.1 INTRODUCTION

System analysis is the dissection of a system into its component pieces to study how those component pieces interact and work. It is also the term used to describe the process of collecting and analyzing facts in respect of the existing operation; procedure and system in order to obtain a full appreciation of the prevailing situation so that the performance of the operation of the organization can be improved upon.

3.2 METHOD OF DATA COLLECTION

During the research work, data needed for the project was gathered from various sources. In gathering and collecting necessary data and information needed for system analysis, two major factfinding techniques were used in this work and they are:

3.2.1 PRIMARY SOURCE

This refers to the sources of collecting original data in which the researcher made use of empirical

approach such as personal interview of the personnel of the concerned units for the clearance system viz: Bursary, Registry, Library, Laboratory and ICT.

3.2.2 SECONDARY SOURCE

The secondary data were obtained by the researcher from Journals, Library source and Internet downloads. The data collected from this means have been covered in literature review in the chapter two of this study.

3.2.3 ORAL INTERVIEW

This was done between the researcher and the management staff of Fountain University Osogbo. Also, various departmental heads were interviewed. Reliable facts were got based on the questions posed to the staff by the researcher. Clearance process were studied and a lot of information concerning the system in question was obtained. The clearance forms were gathered and information relating to clearance fee and other requirements were also obtained.

3.2.4 EVALUATION OF FORMS

Some forms that are necessary and available were assed. These include clearance form, fee receipts, etc. These forms help in the design of the new system.

3.3 OBJECTIVES OF THE EXISTING SYSTEM

The objective of the existing system is to enable student pay all their fees before leaving the school. Some levies are charged for processing student's files and others for departmental dues or otherwise. The clearance system is designed to help the Clearance officer incharge at each unit to verify outstanding dues of each student and on the other hand, generate a clearance status and

Certificate for the students.

3.4 ORGANIZATIONAL STRUCTURE

3.4.1 INPUT ANALYSIS

The input to the system is the payment forms for paying dues or levies. These forms are filled by

students and submitted to the various offices for issuing of receipts.

3.4.2 PROCESS ANALYSIS

The payments made by the students are collected and analysed to certify that the student have completed all the necessary fees due. Hence a certificate issued to show that the student has completed all the fees.

3.4.3 OUTPUT ANALYSIS

The output from the system is the certificate of clearance issued to the student stating that the student has fulfilled all financial obligation and is now free to pass out from the school.

3.5 SYSTEM DESIGNS

3.5.1 FLOWCHART DIAGRAM

Figure 1 depicts the flowchart of the Online Clearance System.

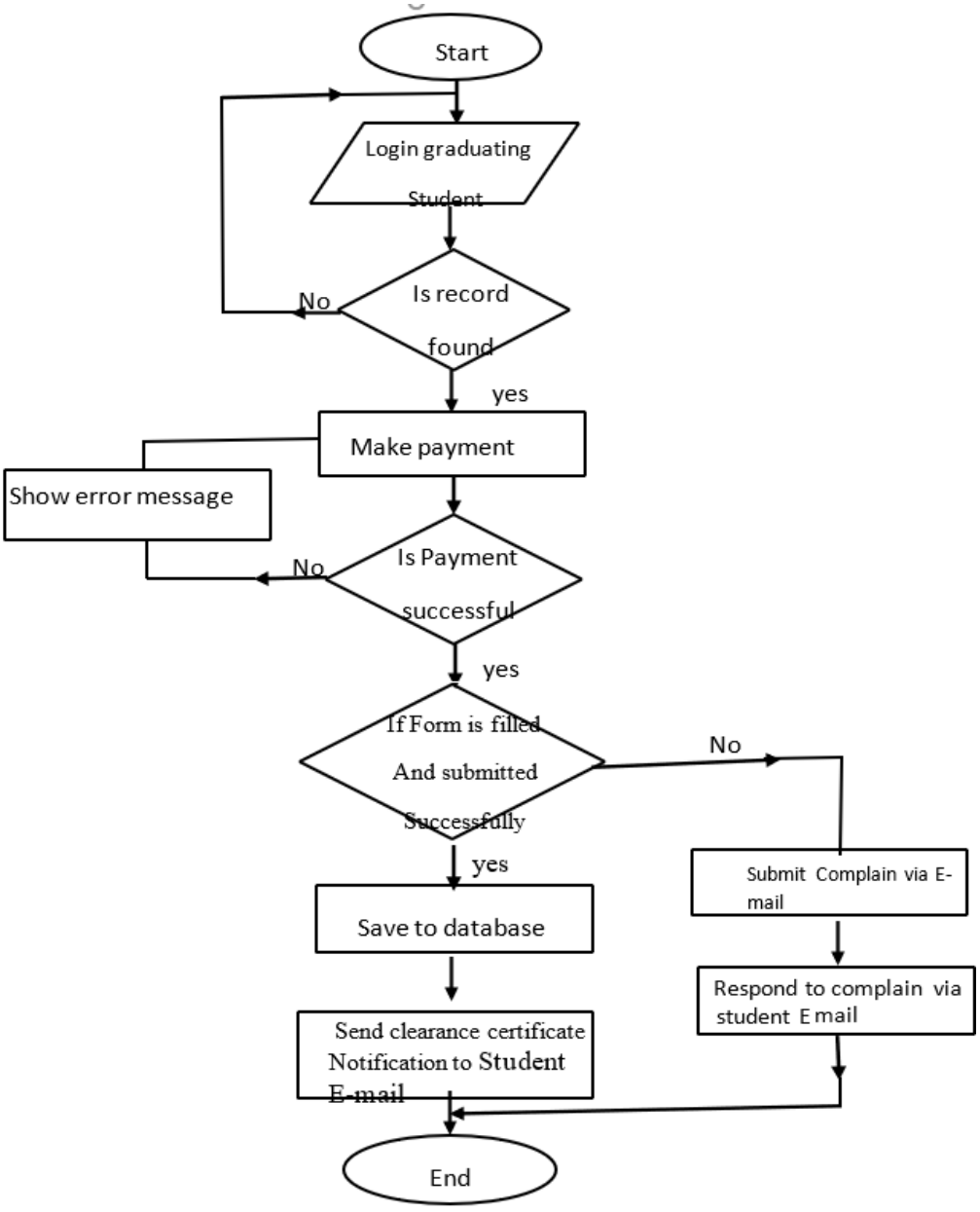

Figure 1: Online Clearance System Flowchart

3.5.2 USE-CASE DIAGRAM

Below is the Use Case diagram which depicts the interactions between the users and the software system. It shows the functions of the system in chronological order and identifies the specific users that interact with them.

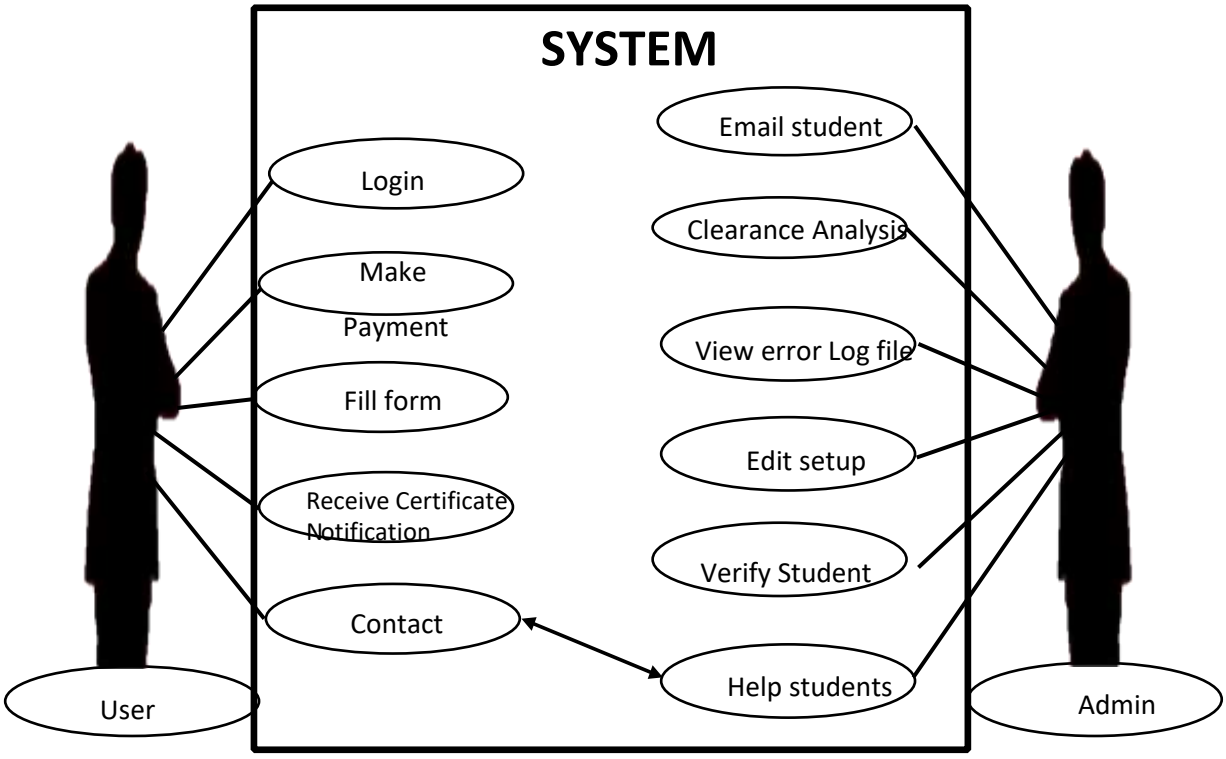

Figure 2: Use-Case Diagram Showing the Interactive Between the System, User and Admin

3.5.3 ACTIVITY DIAGRAMS

Below is an activity diagram that shows the sequential flow of activities within the system which also specifies the users who carry out such activities.

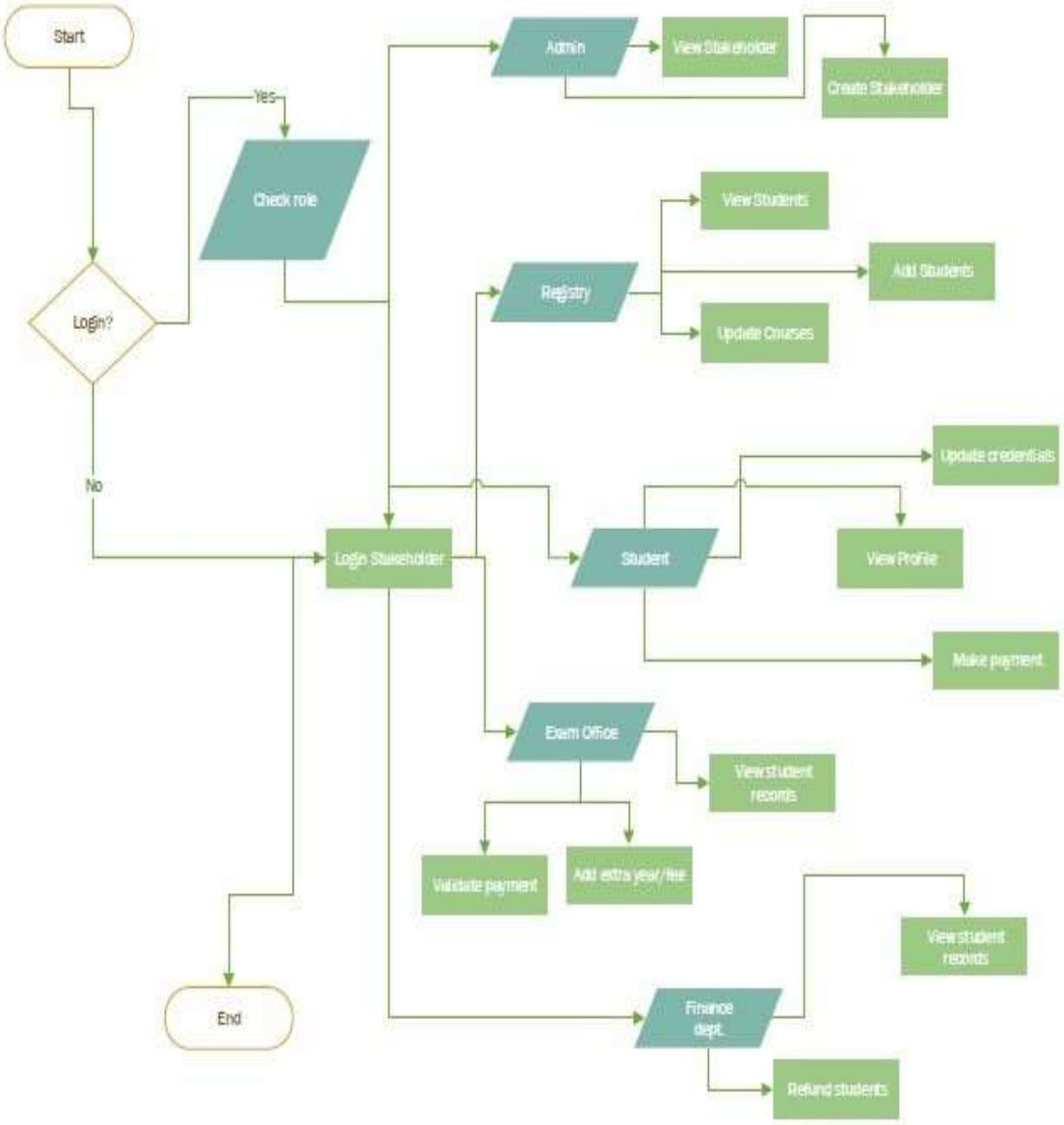

Figure 3: Online Clearance System Activity Diagram

3.5.4 ENTITY-RELATIONSHIP DIAGRAM (ERD)

This section shows the entities and attributes of tables in the database. This shows the relationship between tables or tables.

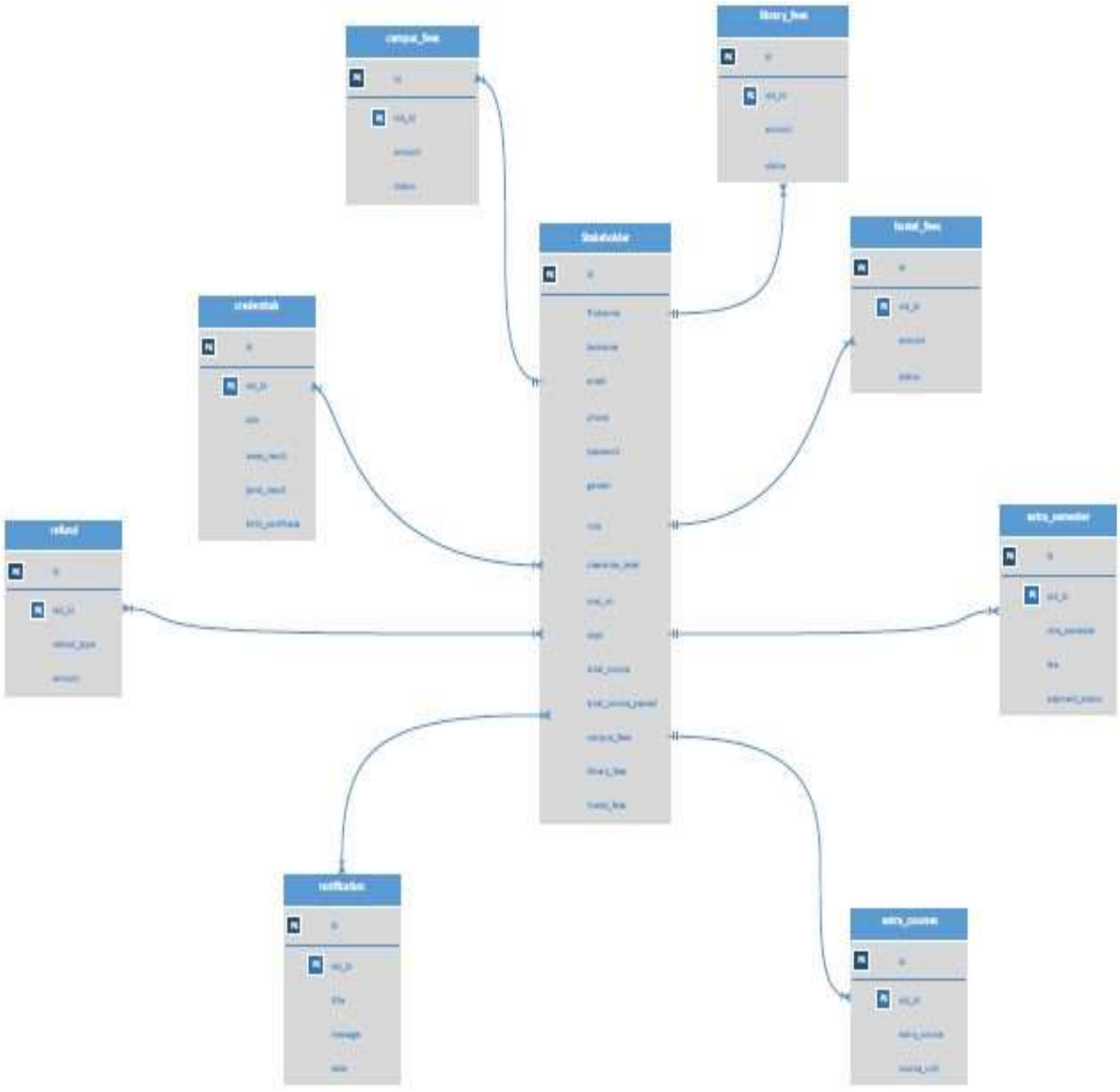

Figure 4: Entity Relationship Diagram

CHAPTER FOUR
SYSTEM IMPLEMENTATION

4.1 INTRODUCTION

Implementation is the realization of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, or policy. The suggestion and opinion poll system has the ability to accept suggestion and opinion from users. The system is a web-based which makes it accessible via a web browser such as the Mozilla Firefox.

To witness the functionalities of this system, the user will have to login to the environment that corresponds to his/her status through a client system.

The testing mechanism employed for the system is in three parts, the first is the unit testing which checks if individual components of the system are working well. This mainly ensures that each web page serves its designed functionality. The module is a combination of several web pages that serve similar functionalities. This testing checks both the user and the administrator functionalities of each module.

The final testing is the user testing. This would be done to see if the system is usable in its intended environment, as well as the general acceptance from the system.

Also, during the deployment process real user data would be fed into the system and monitored to see if the system conforms the objectives set out in the initial specification.

4.2 SYSTEM MAIN FEATURES

In this section, the main features and functionalities of the system will be discussed as well as an in-depth explanation of how they are implemented.

4.2.1 ROLE-BASED AUTHORIZATION AND AUTHENTICATION

The Clearance Management System has more than one stakeholder that serve different purposes in the system. Therefore, it is necessary to reflect the stakeholder different roles within the system. The general user (student) can access the system and upload their credentials and view their data. Admin can add staff, delete staff, assign and reassign roles to staff. Staff can update student records and view students assigned to him/her.

```php
<?php
if (isset($_POST['login'])) {

  $email = $_POST['email'];
  $password = $_POST['password'];

  if (empty($email) OR empty($password)) {
    print "<p class='alert alert-danger text-center'>Fields cannot be empty</p>";
  }
  else{

    $select_all_stakeholders = mysqli_query($con,"SELECT * FROM stakeholders where email = '$email'
      AND password = '$password' ");

    $count_stakeholders = mysqli_num_rows($select_all_stakeholders);

    if ($count_stakeholders == 0) {
      print "<p class='alert alert-danger text-center'>Invalid Email Or Password</p>";
    }else{
      $select_query_for_admin = mysqli_query($con,"SELECT * FROM stakeholders where email = '$email'
        AND password = '$password' AND role = 'admin' ");
      $count_admin = mysqli_num_rows($select_query_for_admin);

      if ($count_admin > 0) {
          $row = mysqli_fetch_assoc($select_query_for_admin);
          $session_email = $row['email'];

          $_SESSION['email'] = $session_email;

          print"<script>window.open('index.php?dashboard','_SELF')</script>";
      }else{

          $select_query_for_registry = mysqli_query($con,"SELECT * FROM stakeholders where email = '$email'
            AND password = '$password' AND role = 'registry' ");
        $count_registry = mysqli_num_rows($select_query_for_registry);
        if ($count_registry > 0) {
            $row = mysqli_fetch_assoc($select_query_for_registry);
            $session_email = $row['email'];

            $session_email = $_SESSION['email'] = $session_email;

            print"<script>window.open('index.php?view_students','_SELF')</script>";
        }else{
```

Figure 5: User Authentication PHP Script

4.2.2 ADDING STAKEHOLDERS

During the implementation, a decision was made as who will add the stakeholders into the system. A decision was made that only the admin can add units, sstaff and students.

```php
<?php

if (isset($_POST['add_stakeholders'])) {

    $first_name  = $_POST['first_name'];
    $last_name = $_POST['last_name'];
    $email = $_POST['email'];
    $password = $_POST['password'];
    $gender = $_POST['gender'];
    $role = $_POST['role'];
    $phone = $_POST['phone'];

    if (empty($first_name)  OR empty($last_name) OR empty($email) OR empty($password) OR empty($gender) OR empty($phone) ) {
      echo "<p class='alert alert-danger'>Fields Cannot be empty</p>";
    }else{

      $query = "INSERT INTO stakeholders (firstname,lastname,email,password,gender,role,phone)
      VALUES ('$first_name','$last_name','$email','$password','$gender','$role','$phone') ";

      $add_stakeholders_to_database = mysqli_query($con,$query);

      if ($add_stakeholders_to_database == true) {
        echo '<p class="alert alert-success">Data Submitted Successfully</p>';
      }else{
        echo mysqli_error($con);
      }

    }
}

 ?>
```

Figure 6: Users' Module Script

4.3 TESTING

Testing is one of the most important aspects of developing a good software. It helps to validate and verify whether all of functional requirements are met or not. Testing is important for making sure that the software quality is assured. This was carried out by running test data through the system to ensure that it works the way it's supposed to. It was also used to sniff out any vulnerabilities in the system. All vulnerabilities are then isolated and reviewed from the rest of the system. This section will discuss all testing procedures carried out for the components of the system and a resulting test report will be included.

4.3.1 TEST PLANS (FOR UNIT TESTING, INTEGRATION TESTING, AND SYSTEM TESTING)

This is the master test plan for the Online Clearance System. This will help to verify and validate the system requirements that were discussed in the chapter three of this study.

4.3.2 FEATURES TO BE TESTED

The following aspects of the system were focused on during the testing stage:

- Log-in page
- Dashboard
- Log-out button
- Database update
- Viewing of stake-holders page
- profile page
- payment page
- password update

4.3.3 DELIVERABLES

The deliverables for this test plan are as follows:

- Test cases
- Test report
- Traceability matrix
- Test results
- Error report

4.3.4 TEST SUITE (FOR UNIT TESTING, INTEGRATION TESTING, AND SYSTEM TESTING)

Table 1: Test Suite Performed for user login

Test suite ID	R-116
Test case ID	TC-001
Test case summary	Ensuring that admins can login
Related requirements	R-116
Prerequisite	- The system must be up running - Admins must be registered
Test procedure	- Open website in browser - Navigate to login page Login
Test data	- Email - Password
Expected result	User should be able to login successfully
Actual result	The user logged in successfully
Status	Test case passes
Remarks	The test was carried out successfully
Created by	_____
Date created	_____
Executed by	_____
Date of execution	_____
Test environment	Hardware: HP Pavilion. Software: google chromebrowser

4.4 USER INTERFACE DESIGN

4.4.1 LOGIN PAGE

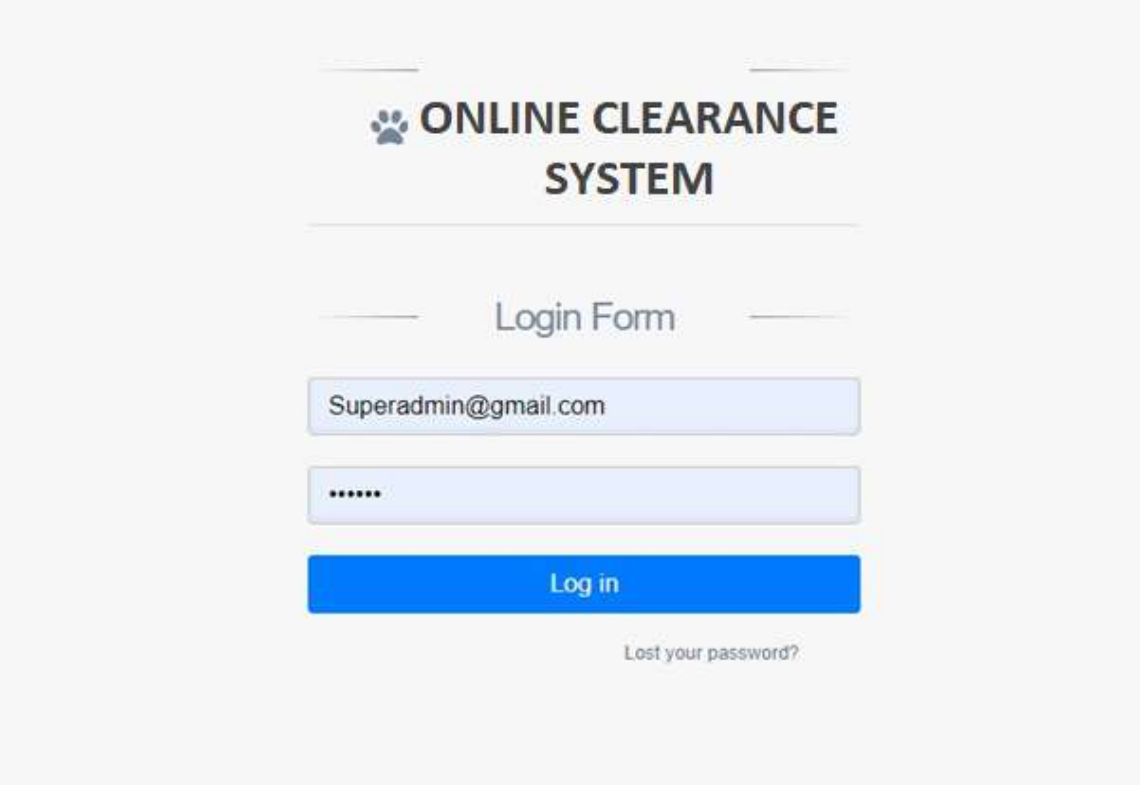

Figure 7: User login page

4.4.2 ADMIN DASHBOARD

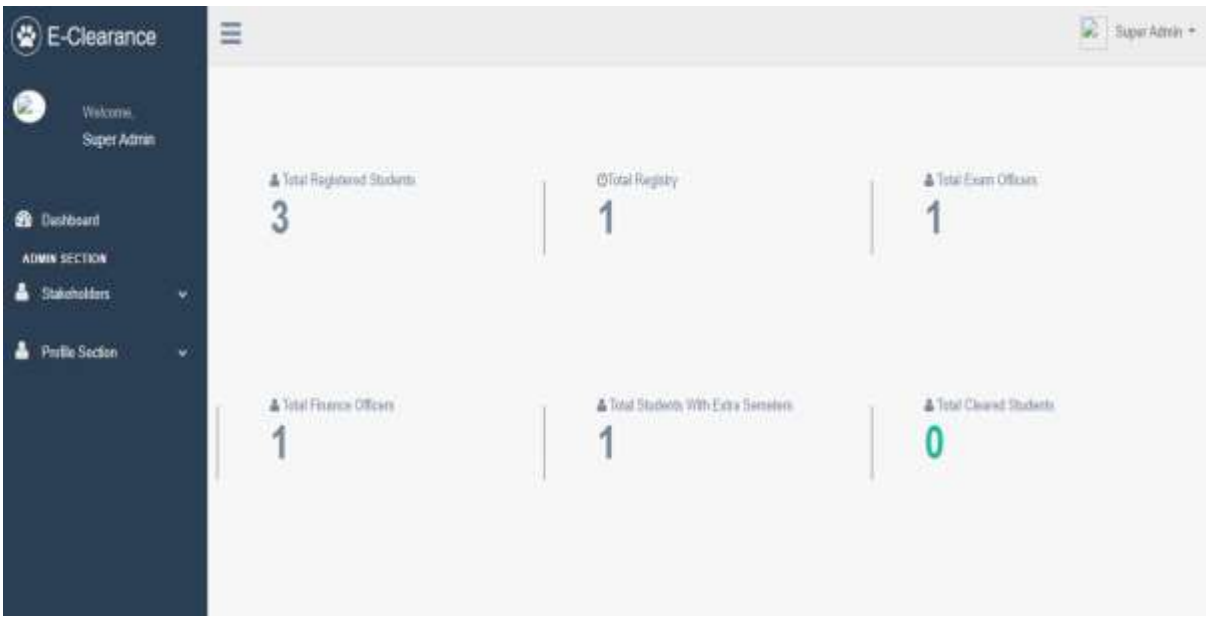

Figure 8: Admin dashboard

4.4.3 ADDING CLEARANCE STAKEHOLDER

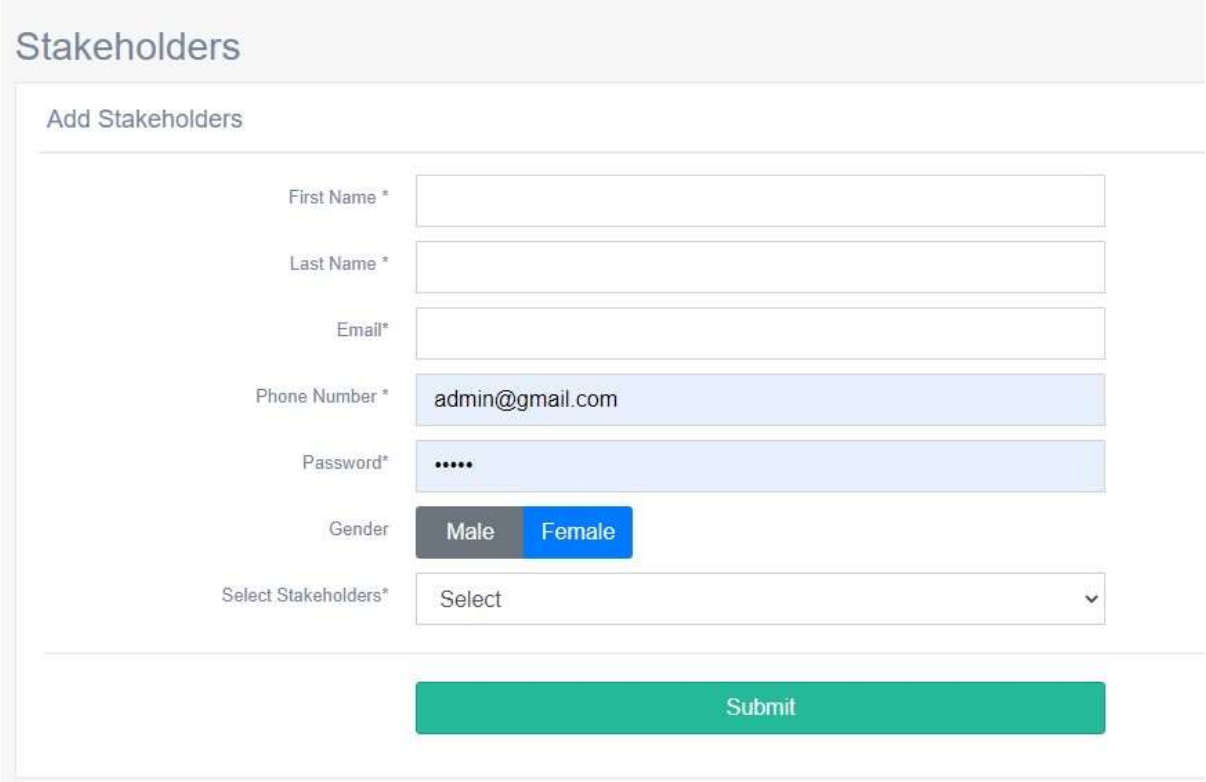

Figure 9: Adding Stakeholders

4.4.4 ADDING NEW STUDENTS

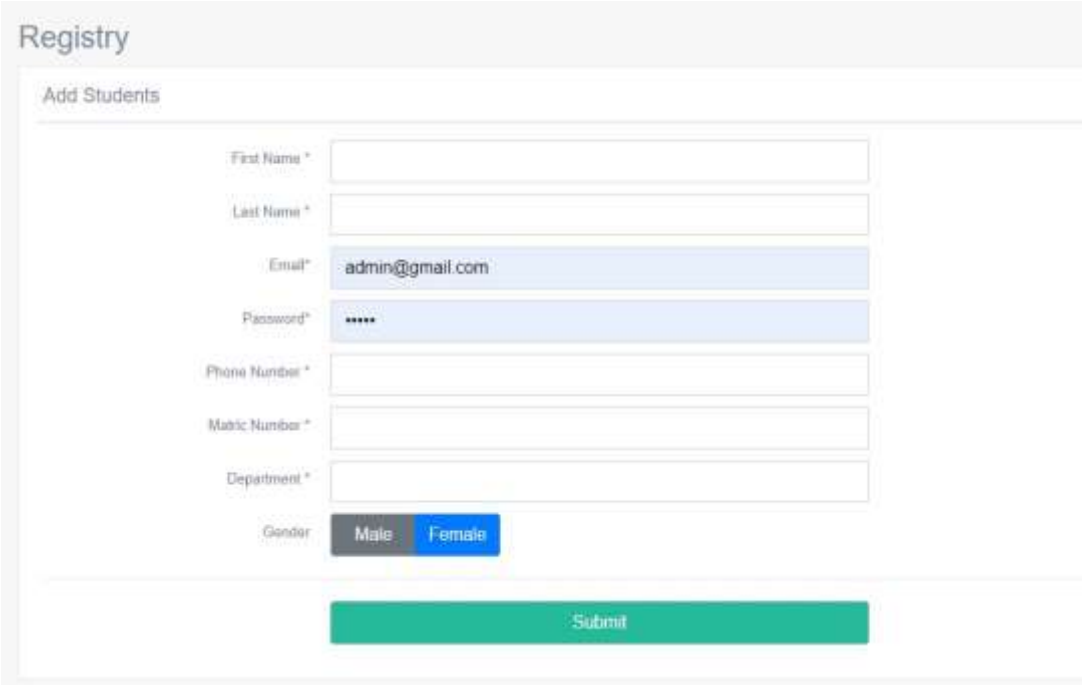

Figure 10: Registry View students registered

4.4.5 UPDATE STUDENTS

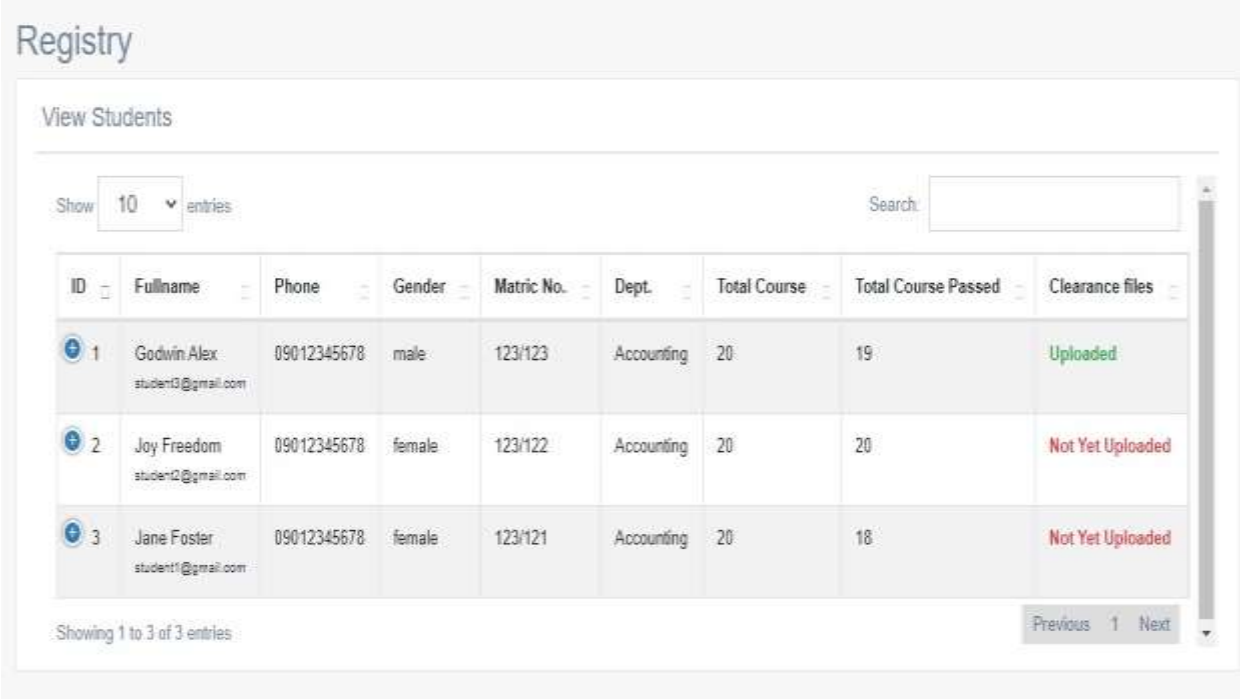

Figure 11: Registry Update Students Results

4.4.6 EXAM OFFICER VIEW STUDENT RECORD

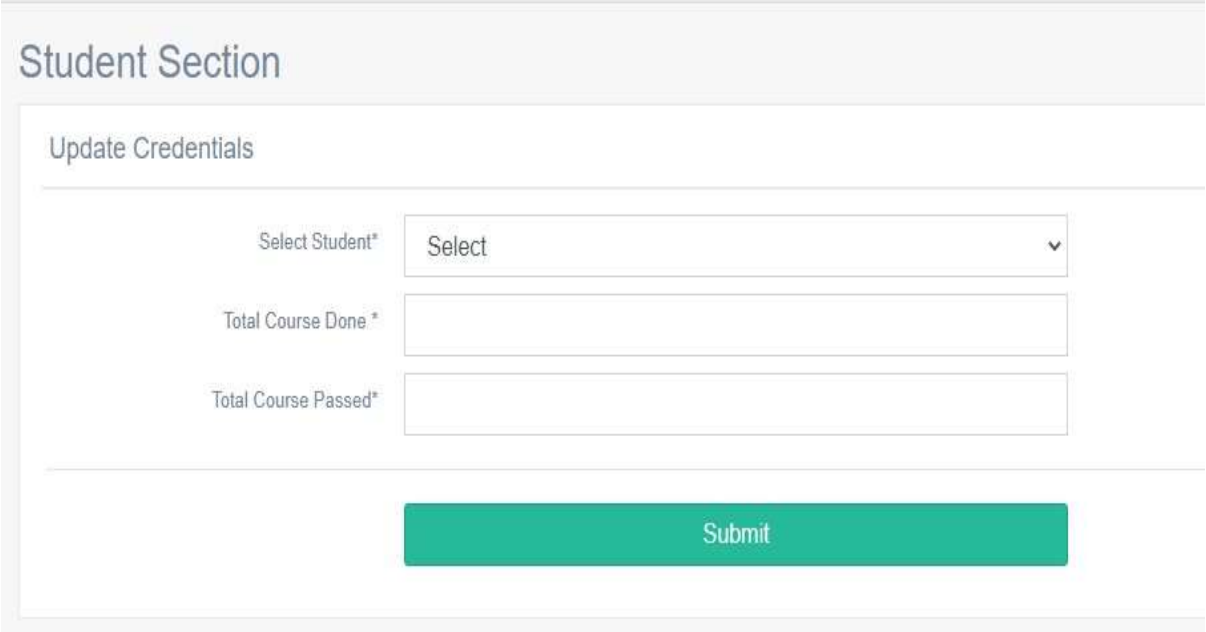

Figure 12: Exam Officer View Student Record

4.4.7 EXAM OFFICER MODULE

Figure 13: Exam Officer page

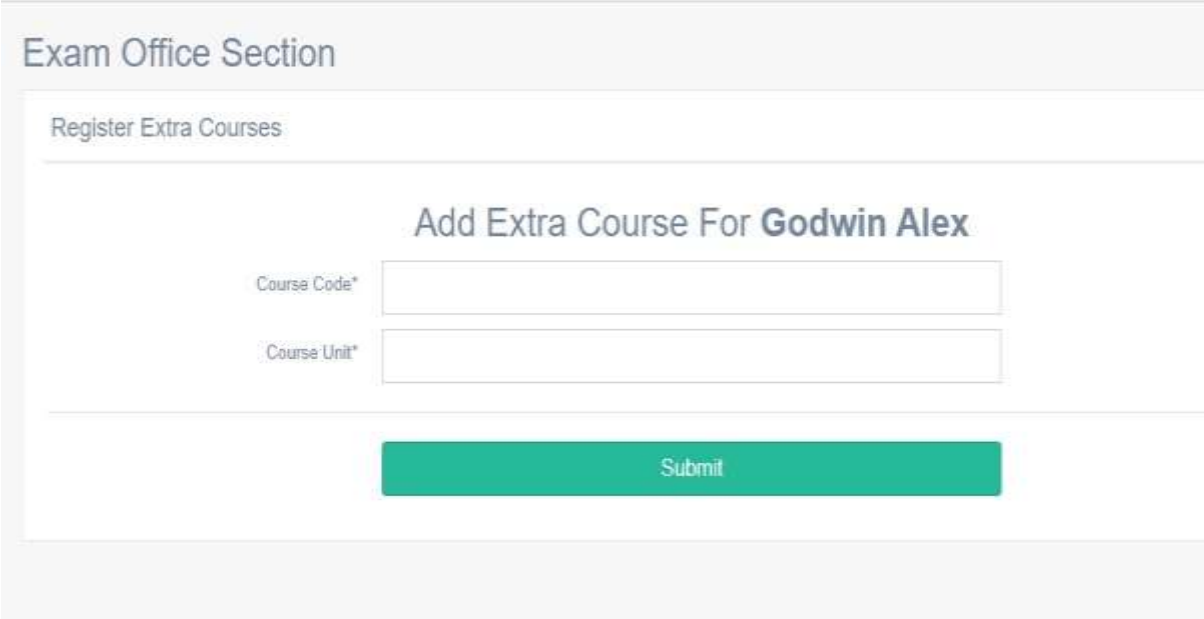

Figure 14: Adding extra courses for students

4.4.8 BURSARY UNIT MODULE

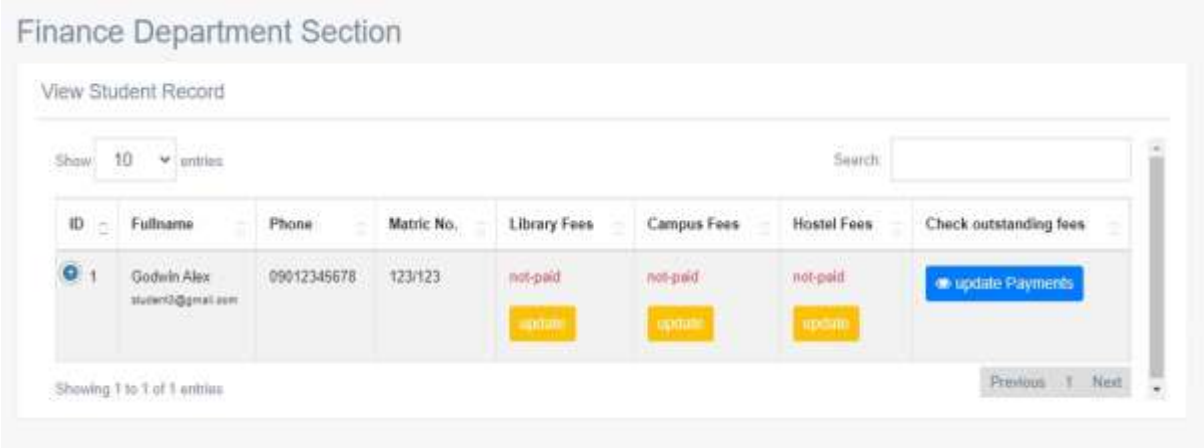

Figure 15: Bursary Unit update payment Status

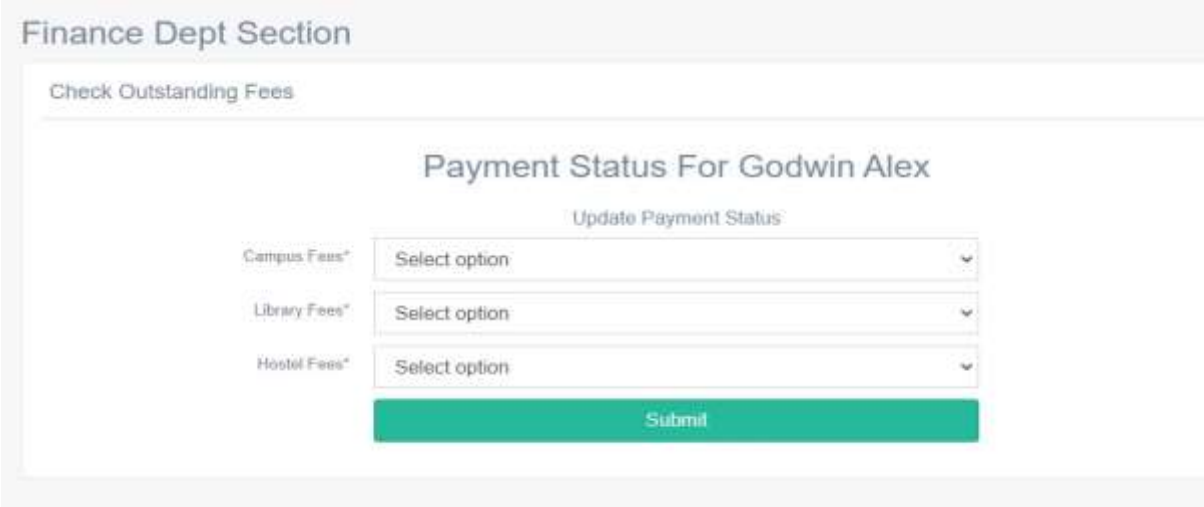

Figure 16: Bursary Unit adding outstanding fees

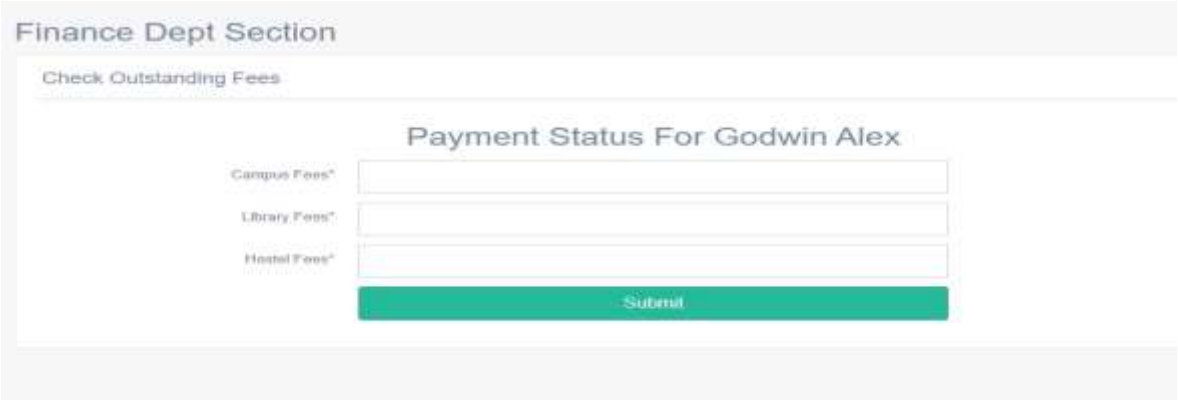

Figure 17: Bursary Unit Checking student outstanding fees

4.4.9 STUDENT DASHBOARD

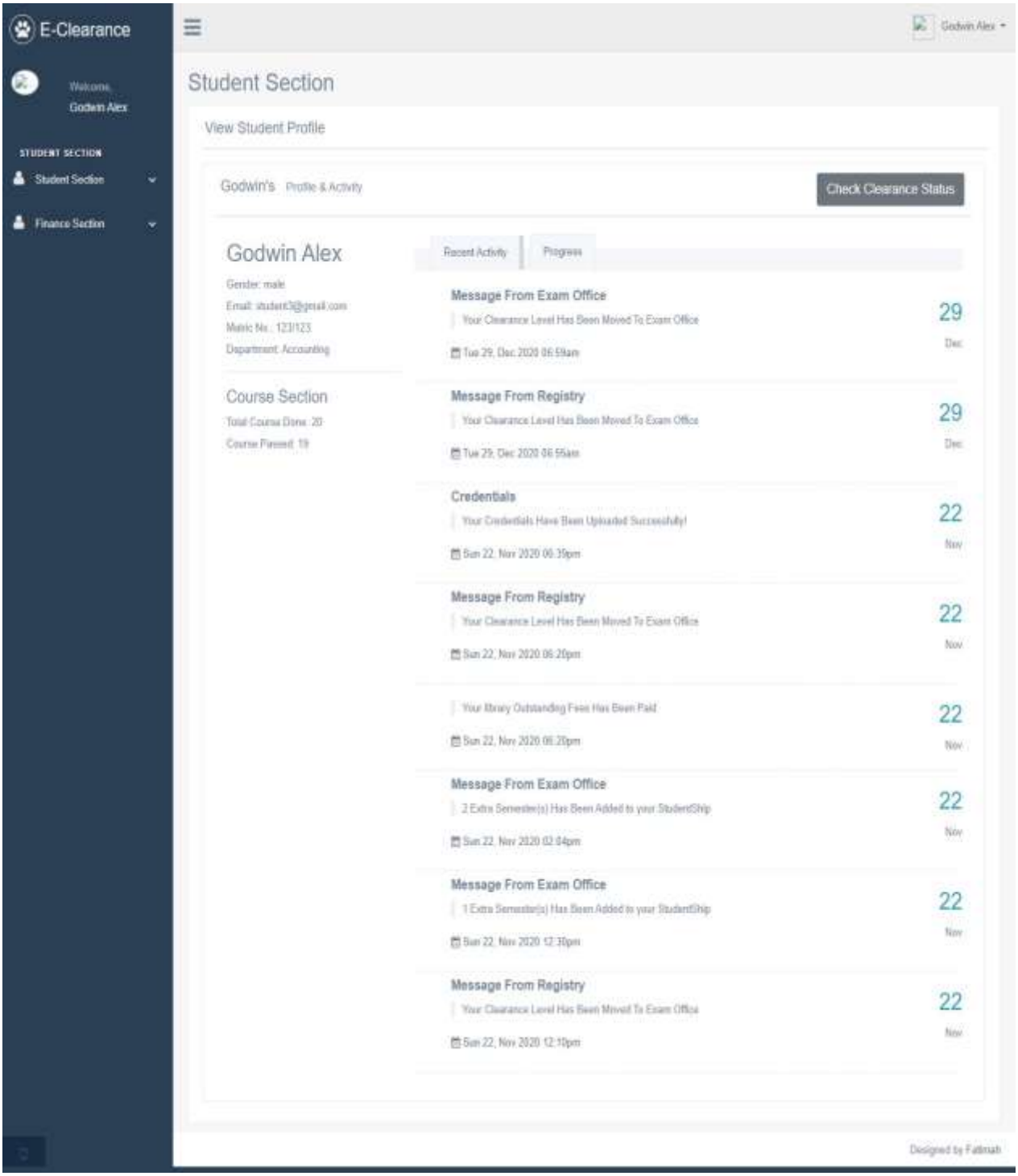

Figure 18: Student clearance dashboard

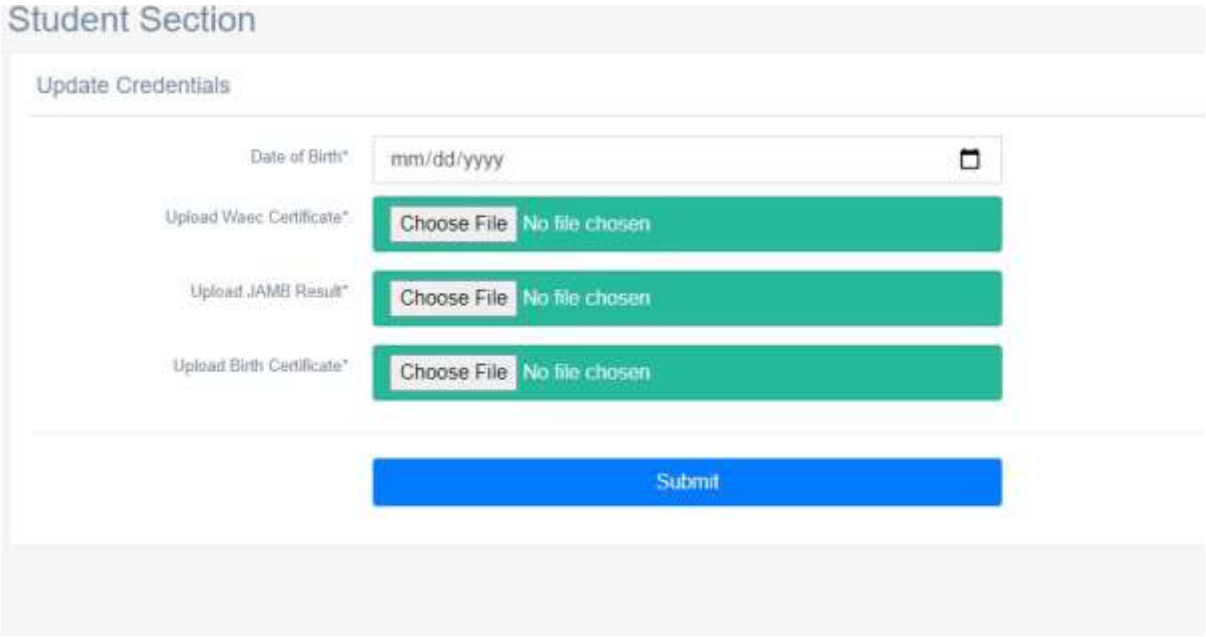

Figure 19: Student update credentials

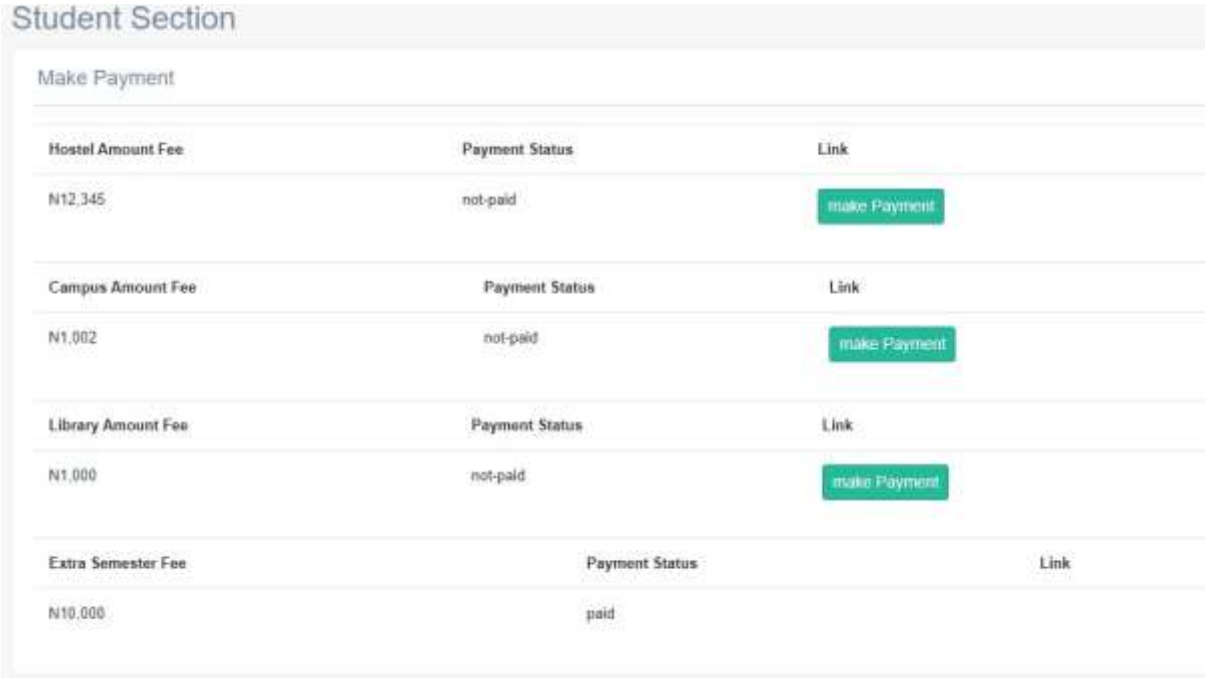

Figure 20: Student payment section

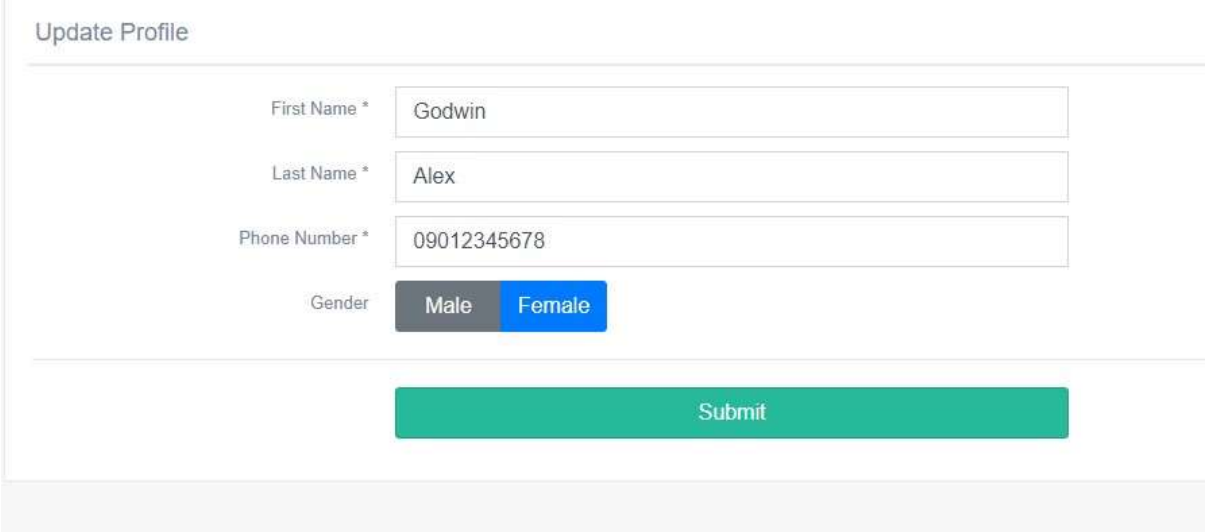

Figure 21: Update Profile

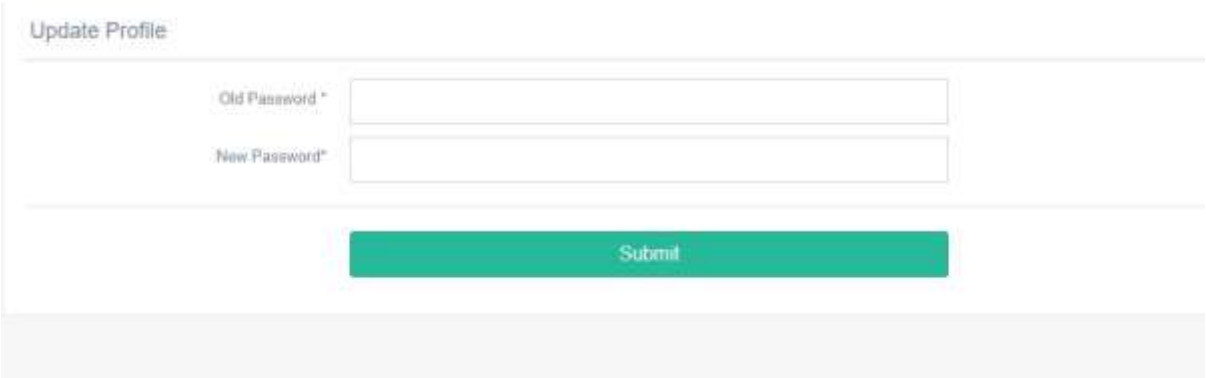

Figure 22: Update Password

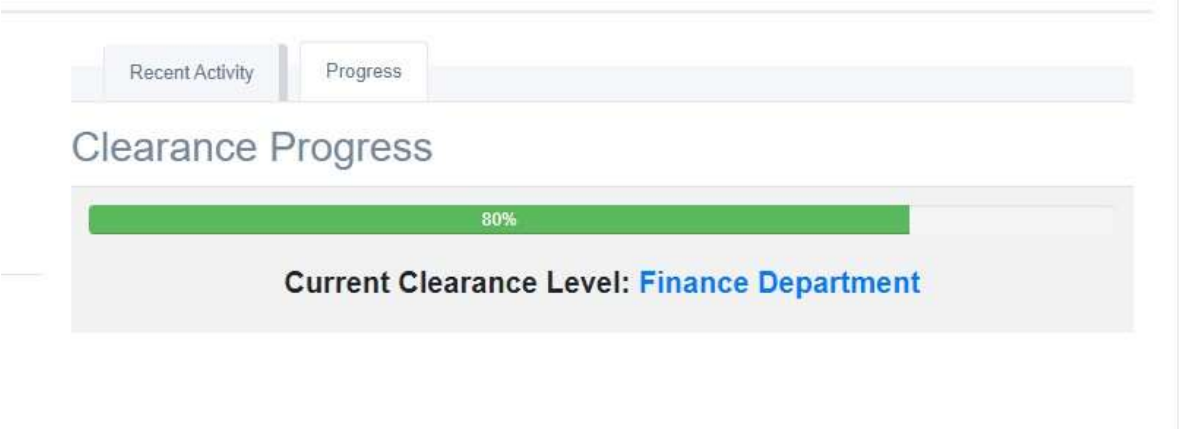

Figure 23: Student clearance in progress

Figure 24: Student clearance status

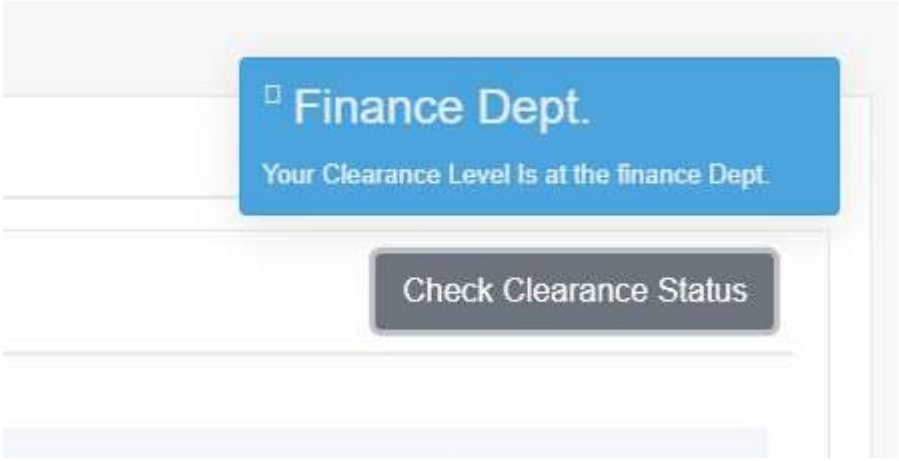

Figure 25: Student clearance status

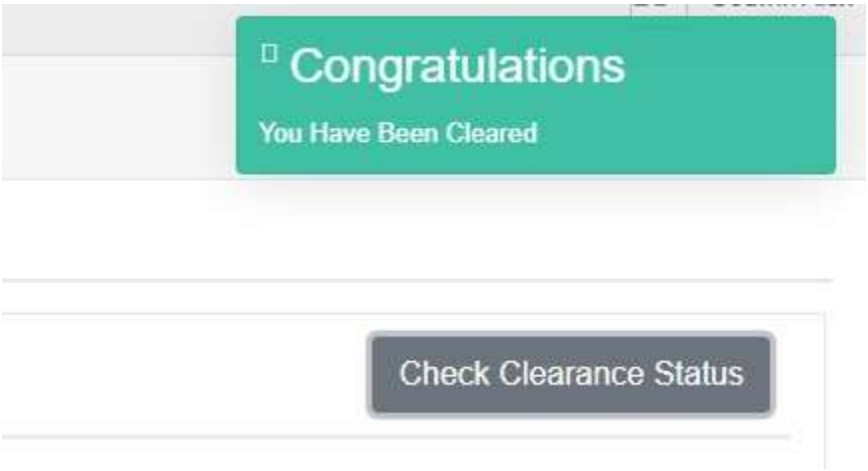

Figure 26: Student clearance congratulatory message

CHAPTER FIVE
SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 SUMMARY

In this project work, the researcher assessed the exiting method of students' final year clearance in Fountain University, Osogbo, reviewed other related clearance systems available online.

The main challenges we are dealing with in this study was stated which includes: the inconvenient manual clearance method for final year students which consumes more energy, time and money to complete the exercise on campus. Other challenges and benefit of an online clearance systems was also considered.

This Project work was implemented using HTML, PHP, Java Script and MySQL. Development of this work has contributed immensely to the communication between the students and the University Management.

5.2 RECOMMENDATION FOR FURTHER STUDY

The following areas can be explored and improved:

- Addition of email notification for users to inform them of their clearance status
- Addition of payment gateway

5.3 CONTRIBUTION TO KNOWLEDGE

This research study has contributed immensely to knowledge through the development of an efficient and cost-effective web-based clearance system for tertiary institutions which has a potential of alleviating the delay problem associated with manual clearance system. With this development, the problem of personal inclination was completely eliminated.

5.4 CONCLUSION

Research and development are continuous processes; this is same in computer and software of this new system provides room for further improvements.

As earlier mentioned, some of the objectives of this project were not actualized due to some limitations. So, these objectives could be improved upon. Nevertheless, the online clearance system developed will offer greater opportunities in school management. All transactions or payments with regards to student clearance can be carried out online.

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APPENDIX

LOGIN

```
<?php require("header.php");?>
<script type="text/javascript">
      function check(f)
      {
            if (f.uid.value == "")
            {
                  //alert("Please, enter user id");
                  document.getElementById("spuid").innerHTML =
"Please, Enter user id.";
                        f.uid.focus();
                  return false;
            }
            else if (f.pwd.value == "")
            {
//                  alert ("Please, enter password");
document.getElementById("a").innerHTML = "Please,Enter the
password";
                        f.pwd.focus();
                  return false;
            }
            else
                  return true;
      }
</script>
<form action="loginH.php" method="POST" onsubmit="return
check(this)">
<table>
<tr><td>user_id</td><td>:</td><td><input type="text"
name="uid"><span id = "spuid" style = "color
:red;"></span></td></tr>
<tr><td>password</td><td>:</td><td><input type="password"
name="pwd"><span id = "a" style = "color :red;"></span></td></tr>
<tr><td><input type="submit"
value="login"></td><td></td><td><input type="reset"
value="cancel"></td></tr>
</table>
<?php
                  if (isset ($_GET["act"]))
                        if ($_GET["act"] == "invalid")
                              echo "Invalid User Id / password";
      ?>
```

```
</form>
<?php require("footer.php");?>
```

REGISTRATION PAGE

```
<?php
      session_start();
      require("header.php");
      require("checkUser.php");
?>
<script type="text/javascript">
      document.getElementById("auhome").className="active";
</script>

<h4><a href="que.php">Ask Question</a>
     
<a href="ans.php">Reply </a></h4>
<?php

      $sql="select * from question,user where
question.user_id=user.user_id ORDER BY  datetime desc limit 0,5";

      $result=ExecuteQuery($sql);
            while($row = mysql_fetch_array($result))
      {
                              echo "<span class='box2'>";
                  echo "<span class='head'><a
href='questionview.php?qid=$row[question_id]'
>$row[heading]</a></span>";

                  echo "<table>";
                  echo "<tr><td valign='top' width='100px'>
                        <img src='$row[uimg]' alt='' class='uimg'/>
                        <br/>
                  $row[fullname]
                  <td valign='top'>
                  $row[question_detail]<br/><br/>
                  $row[datetime]<br/><br/>
                  </td></tr>";
                  echo "</table></span><div class='h10'></div>";
            }

?>

<?php require("footer.php");?>
```

CLEARANCE

```
<?php session_start();
      require("header.php");
      require("checkUser.php");
      $id=$_GET["id"];
?>
<a href="question.php?stid=<?php echo $id ?>">Ask Question<img
src="res/images/askq.jpg"  class='imagedel'/></a>
<hr />
<?php

      $str="SELECT * FROM question, user WHERE
question.user_id=user.user_id and subtopic_id=$id";
      $result=ExecuteQuery($str);

      $no_rows = mysql_num_rows($result);

      if ($no_rows > 0)
      {
            while($row = mysql_fetch_array($result))
            {
                  $rowsc=ExecuteQuery("SELECT count(*) as counter
from answer where question_id=$row[question_id]");
                  $rowc = mysql_fetch_array($rowsc);
                  $count = $rowc['counter'];
                  echo "<h4>";
                  echo "<span class='box2'>";
                  echo "<span class='head'><a
href='questionview.php?qid=$row[question_id]' >$row[heading]</a>
</span>";
                  echo "</span>";
                  echo "</h4>";
                  echo "$row[question_detail] <span
class='view2'>Views : $row[views], Replies :$count</span>";
                  echo "<br/><br/>";
                  echo "Asked by<br/>$row[fullname]";
                  echo "<br/><div class='line'></div>";
                  //echo  "<a
href='answer.php?qid=$row[question_id]' class='reply'>REPLY</a>";

            }


      }
```

```
      else
      {
            echo "Clearance incomplete";
      }
?>
<?php require("footer.php")?>

INDEX
<?php require("header.php");
?>
<script type="text/javascript">
      document.getElementById("auhome").className="active";
</script>
                <div class="art-contentLayout">
                    <div class="art-content">
                        <div class="art-Post">
                            <div class="art-Post-tl"></div>
                            <div class="art-Post-tr"></div>
                            <div class="art-Post-bl"></div>
                            <div class="art-Post-br"></div>
                            <div class="art-Post-tc"></div>
                            <div class="art-Post-bc"></div>
                            <div class="art-Post-cl"></div>
                            <div class="art-Post-cr"></div>
                            <div class="art-Post-cc"></div>
                            <div class="art-Post-body">
                        <div class="art-Post-inner">
`                            <h2 class="art-PostHeaderIcon-
wrapper">
                                <img src="res/images/welcome.jpg"
width="9" height="9" alt="PostHeaderIcon" />
                                <span class="art-
PostHeader">Welcome</span>
                            </h2>
                            <div class="art-PostContent">

<b>ONLINE CLEARANCE SYSTEM</b>

                                <p>
                                 <span class="art-button-wrapper">
                                      <span class="l"> </span>
                                      <span class="r"> </span>
                                      <a class="art-button"
href="javascript:void(0)">
```

```
Read more...</a>
                                    </span>
                                   </p>

                            </div>
                            <div class="cleared"></div>
                        </div>

                            </div>
                        </div>
                        <div class="art-Post">
                            <div class="art-Post-tl"></div>
                            <div class="art-Post-tr"></div>
                            <div class="art-Post-bl"></div>
                            <div class="art-Post-br"></div>
                            <div class="art-Post-tc"></div>
                            <div class="art-Post-bc"></div>
                            <div class="art-Post-cl"></div>
                            <div class="art-Post-cr"></div>
                            <div class="art-Post-cc"></div>
                            <div class="art-Post-body">
                        <div class="art-Post-inner">
                            <h2 class="art-PostHeaderIcon-
wrapper">
                                <img src="res/images/welcome.jpg"
width="9" height="9" alt="PostHeaderIcon" />
                                <span class="art-PostHeader">Who
uses our site?</span>
                            </h2>
                            <div class="art-PostContent">


                            </div>
                            <div class="cleared"></div>
                        </div>

                            </div>
                        </div>
                    </div>
                     <div class="art-sidebar1">
                        <div class="art-Block">
                            <div class="art-Block-body">
                                <div class="art-BlockHeader">
                                    <div class="l"></div>
                                    <div class="r"></div>
```

```
                                    <div class="art-header-tag-
icon">
                                       <div
class="t">Newsletter</div>
                                    </div>
                                </div><div class="art-
BlockContent">
                                    <div class="art-BlockContent-
tl"></div>
                                    <div class="art-BlockContent-
tr"></div>
                                    <div class="art-BlockContent-
bl"></div>
                                    <div class="art-BlockContent-
br"></div>
                                    <div class="art-BlockContent-
tc"></div>
                                    <div class="art-BlockContent-
bc"></div>
                                    <div class="art-BlockContent-
cl"></div>
                                    <div class="art-BlockContent-
cr"></div>
                                    <div class="art-BlockContent-
cc"></div>
                                    <div class="art-BlockContent-
body">
                                        <div><form action=""
method="get" id="newsletterform" action="javascript:void(0)">
                                        <input type="text"
value="" name="email" id="s" style="width: 95%;" />
                                        <span class="art-button-
wrapper">
                                            <span class="l">
</span>
                                            <span class="r">
</span>
                                            <input class="art-
button" type="submit" name="search" value="Subscribe"/>
                                        </span>
                                        </form></div>
                                    </div>
                                </div>
                            </div>
                        </div>
                        <div class="art-Block">
```

```
                                <div class="art-Block-body">
                                    <div class="art-BlockHeader">
                                        <div class="l"></div>
                                        <div class="r"></div>
                                        <div class="art-header-tag-
icon">
                                            <div class="t">Log
In</div>
                                        </div>
                                    </div><div class="art-
BlockContent">
                                        <div class="art-BlockContent-
tl"></div>
                                        <div class="art-BlockContent-
tr"></div>
                                        <div class="art-BlockContent-
bl"></div>
                                        <div class="art-BlockContent-
br"></div>
                                        <div class="art-BlockContent-
tc"></div>
                                        <div class="art-BlockContent-
bc"></div>
                                        <div class="art-BlockContent-
cl"></div>
                                        <div class="art-BlockContent-
cr"></div>
                                        <div class="art-BlockContent-
cc"></div>
                                        <div class="art-BlockContent-
body">
                                            <div>
             <script type="text/javascript">
            function check(f)
      {
            if(f.uid.value=="")
      {
      document.getElementById("spuid").innerHTML="Please,Enter the
user id ";
      //alert("Please,Enter Your User Id")
      f.uid.focus()
      return false;
      }
      else if(f.pwd.value=="")
      {
```

```
      document.getElementById("a").innerHTML="Please,Enter the
password";

      //alert("Please,Enter Your Password")

      f.pwd.focus()

      return false;
                      }

      else

      return true;
                                                             }


                                                        </script>
                                        <form action="loginH.php"
method="POST" onsubmit="return check(this)">
<table>
<tr><td>User Id:</td></tr><tr><td><input type="text"
name="uid"><span id='spuid' style="color: red;"></span></td></tr>
<tr><td>Password:</td></tr><tr><td><input type="password"
name="pwd"><span id='spuid' style="color: red;"></span></td></tr>
<tr><td><input type="submit" value="login"><input type="reset"
value="cancel"></td></tr>
<tr><td><a href="register.php"><input type="button" value="Sign
Up"></a></td></tr>
</table>

<?php
                if (isset ($_GET["act"]))
                      if ($_GET["act"] == "invalid")
                            echo "Invalid User Id / password";

?>

</form>

                                        </div>
                                    </div>
                                </div>
                            </div>
                        </div>
                    </div>
                    <div class="art-sidebar2">
```

```
                        <div class="art-Block" >
                            <div class="art-Block-body">
                                <div class="art-BlockHeader">
                                    <div class="l"></div>
                                    <div class="r"></div>
                                    <div class="art-header-tag-
icon">
                                        <div
class="t">Highlights</div>
                                    </div>
                                </div><div class="art-
BlockContent">
                                    <div class="art-BlockContent-
tl"></div>
                                    <div class="art-BlockContent-
tr"></div>
                                    <div class="art-BlockContent-
bl"></div>
                                    <div class="art-BlockContent-
br"></div>
                                    <div class="art-BlockContent-
tc"></div>
                                    <div class="art-BlockContent-
bc"></div>
                                    <div class="art-BlockContent-
cl"></div>
                                    <div class="art-BlockContent-
cr"></div>
                                    <div class="art-BlockContent-
cc"></div>
                                    <div class="art-BlockContent-
body">
                                      <marquee direction="up"
onmouseover="stop()" onmouseout="start()" scrollamount="1"
scrolldelay="1" style="height:400px;">  <div>

<p><b></b><br/>
                                                          Nothing
here yet    .........

                                                           <br/>
                                                           <a
href="javascript:void(0)"></a></p>


<p><b></b><br/>
```

```
                                                                    <br/>
                                                                     <a
href="javascript:void(0)">Read more...</a></p>
                                                                     </div>
           </marquee>
                                        </div>
                                    </div>
                                </div>
                            </div>
                        </div>
                        <div class="cleared"></div><div class="art-
Footer">

                            <?php require("footer.php")?>



<?php session_start();
require("header.php");
require("checkUser.php")?>

<script type="text/javascript">
      function check(f)
      {
            if(f.ata.value=="")
            {
                  document.getElementById("spuid").innerHTML =
"Please, Enter department.";
                  //alert("Please,Enter The matric no")
                  f.ata.focus();
                  return false;
                  }
                  else
                  return true;
            }
</script>

<?php
$sql="SELECT heading from clearance where clearance_id=$_GET[id]";
$rows=ExecuteQuery($sql);
$row=mysql_fetch_array($rows);
?>
```

```
<form action="answerH.php" method="POST" onsubmit="return
check(this)">
<input type="hidden" value="<?php echo $_GET["id"] ?>" name="qid"
/>
<table>
<tr><td><b>RE : <?php echo $row["heading"] ?></b></td></tr>
<tr><td>Answer:</td></tr><br/>
<tr><td><textarea rows="4" cols="38" name="ata"></textarea><span
id='spuid' style="color: red;"></span></td></tr><br/>
<tr><td><input type="submit" value="Go"></td></tr>
</table>
</form>

<?php require("footer.php")?>
```

HEADER

```
<?php require_once("utility.php");
ob_start();
?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html" charset="utf-
8" />
<title>Online Clearance System</title>

<script type="text/javascript" src="script.js"></script>

    <link rel="stylesheet" href="res/style.css" type="text/css"
media="screen" />
</head>

<body>

<div id="art-page-background-simple-gradient">
    </div>
    <div id="art-page-background-glare">
        <div id="art-page-background-glare-image"></div>
    </div>
    <div id="art-main">
        <div class="art-Sheet">
            <div class="art-Sheet-tl"></div>
            <div class="art-Sheet-tr"></div>
            <div class="art-Sheet-bl"></div>
            <div class="art-Sheet-br"></div>
```

```
            <div class="art-Sheet-tc"></div>
            <div class="art-Sheet-bc"></div>
            <div class="art-Sheet-cl"></div>
            <div class="art-Sheet-cr"></div>
            <div class="art-Sheet-cc"></div>
            <div class="art-Sheet-body">
                <div class="art-Header">
                    <div class="art-Header-jpeg"></div>
                    <div class="art-Logo">
                        <h1 id="name-text" class="art-Logo-
name"><a href="#"><Online Clearance System </strong></a></h1>
                        <div id="slogan-text" class="art-Logo-
text">Your Voices Should Be Heard</div>
                    </div>
                </div>
                <div class="art-nav">
                 <div class="l"></div>
                 <div class="r"></div>
                 <ul class="art-menu">
                      <li><a href="uhome.php" id="auhome"><span
class="l"></span><span class="r"></span><span
class="t">Home</span></a></li>
                      <li><a href="aboutus.php"
id="aaboutus"><span class="l"></span><span class="r"></span><span
class="t">About</span></a>

                      </li>

                      <li><a href="messages.php"
id="amessage"><span class="l"></span><span class="r"></span><span
class="t">Suggestion</span></a></li>

                      <li><a href="forum.php" id="aforum"><span
class="l" ></span><span class="r"></span><span
class="t">Opinion</span></a>

                      <li><a href="contact.php"
id="acontact"><span class="l"></span><span class="r"></span><span
class="t">Contact</span></a></li>

</ul>
                 </div>
                <div class="art-contentLayout">
                    <div class="art-content">
                    </div>
                 </div>
```