



DEPLOYMENT OF STUDENT WEB BASED GSP E-EXAMS PORTAL: A CASE STUDY OF A.D RUFAl COLLEGE OF EDUCATION, LEGAL AND GENERAL STUDIES, MISAU BAUCHI STATE.

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Abstract

The main objective of this work was to develop an online web based student portal that would make it possible for the student of A.D Rufai College of Education, Legal and General Studies, Misau who are taking general courses (also known as the GSP's or GST's) from different departments across the College as per to cover the credit unit required before a student is entitled for graduation, The system will provide a chance for these student to make enrollment on these courses and take their examinations online. The result of the examination is displayed to the user upon completion of the exam and the record will be directly saved in the system database for future reference. System administrator will have access to add questions per subject and set the marking scheme therefore by including a time limit to an exams and give marks for every correct answer on his/her dashboard where such exams can be set up as only objective questions (known as OBJ's). An administrative integration will be made, such that student activities could be monitored.

Keywords: *WEB, PHP, MySQL, GST, GSP, student, lectures, grading, e-exams.*

Introduction

General Studies Programs (GSP) are very common in Nigerian tertiary institutions. This program was established with the aim of getting students installed with general knowledge of subjects outside their field of study and area of specialization that are considered essential to the betterment of the student. The Nigerian University Commission (NUC) termed it General Studies Program (GSP), and was made compulsory for all university students in

Nigeria. Some of the courses in GSP include: Use of English I; Use of English II; Use of Library Studies, Natural Science I; African Humanities; Philosophy and Logic; Social Science I; Social Science II; Nigerian Peoples and Cultures; Peace and Conflict Studies, Introduction to Entrepreneurship I; and Introduction to

Entrepreneurship II. These courses are systematically configured across the different levels of study in the tertiary institutions. However, certain categories of students are not required to take some of the GSP courses that are closely linked to their field of study because it is expected that such areas would be fully covered in the student's department. For instance, science students are not expected to take Natural Science, while social science students are not expected to take Social Science I and II.

Electronic examination has been highly interested and suitable in both educational and pedagogical aspects. Examination is one of the best methods of evaluating the knowledge and ability of an individual. To this end, various methods has been employed in examining the ability of an individual, starting from manual means of using paper and pencil to electronic, from oral to written, practical to theoretical and many others. Tertiary institutions in Nigeria barely give GSP courses too much concentration like core departmental courses and also the student do not show seriousness on that same regard. GSP is one of the most important course one need to undergo during his/her journey from admission to graduation. Therefore these courses need to be upgraded and secured from crippling. The world modern concept of writing exams has changed with the way technology development evolves and touches different areas of human life especially in the educational sector. In some of the tertiary institutions in Nigeria manual operations still take place having finding it difficult to manage either the course result or student enrolment in due time. This can also result to too much complain from student who sat for an exams but having absent when result were pasted. Tertiary institutions can be said to be specialized body where student and, his/her result are the number one focal point in which all the activities of the school revolve. Latest educational software's needs to be provided and also a team of staff and student need to be trained respectively in order to coordinate the common goal of restoring, improving and maintaining a good educational system for the student who went there to acquire knowledge. Nowadays where computer has touches our way of

life, it is evident that majority of the Nigerian tertiary institutions do not adapt the recent technology, especially in most of these schools daily operation are done manually, recently there is a rapid increase on the number of student enrolling in our schools but still some of these schools practice the use of manual method of managing data for the student, taking exams, marking and compilation of result etc.

Related Study

There is a quite a rapid advancement in this field of research focusing more on the betterment of ways to made e-exams and e-learning systems in Nigerian tertiary institutions. Some of these researches focused on various sections of the system and these includes:

Nicholas A. Omoregbe et al (2015). The authors works extensively on the development of an online examination system with multi-specialty that deals with student examination. They developed a system that keeps track of the examination activities of the student which will allow the student to login, select a course, take the exams and view result after. Were as for the Lecturers they will login, add questions in configuration to its courses. Lastly with admin as the manager of the activities. The implemented system was modeled using Unified Modeling Language (UML) diagrams such as Use Case diagram, Sequence diagram and Activity diagrams. The system was developed using ASP.Net and Hypertext Markup Language (HTML), ASP.Net and C-sharp as front end, Internet Information Services (IIS) as middle ware and Microsoft SQL Server as database.

Olawale A. and Shafi'i M. A. designed a new e-exam system that provides solution to some of the anomalies faced as a result of having a manual method of writing examinations. Six Universities that are already conducting e-Examination were selected across the country for this research work. Twenty (20) students that participated in the e-exams and five (5) members of staff were selected for interview and questionnaire. Their new e-examination system uses data encryption in order to protect the questions sent to the e-Examination center through the internet or intranet and a biometric fingerprint authentication to screen the stakeholders.

Fagbola Temitayo M. et al (2013) stated that even though, a variety of e-assessment approaches and systems have been developed in recent times, yet lack of flexible timing functionality to automatically log-off candidates upon expiration of allotted time, result integrity comprise, standalone deployment, lack of flexibility, robustness and scalability as well as human error are major limitations of the existing platforms. According to their findings, a web-based online examination system was developed to address these aforementioned drawbacks. The system was designed to facilitate the examination processes and manage challenges surrounding the conduct of examination, auto-submission, auto-marking and examination result report generation.

Ayo et al (2007) proposed a model for e-Examination in Nigeria where all applicants are subjected to online entrance examination as a way of curbing the irregularities as proposed by the Joint Admissions Matriculation Board (JAMB), the body saddled with the responsibility of conducting entrance examinations into all the Nigerian universities. This model was designed and tested in Covenant University, one of the private universities in Nigeria. Their findings revealed that the system has the potentials to eliminate some of the problems that are associated with the traditional methods of examination such as impersonation and other forms of examination malpractices. Based on the development of e-learning in the only Open University in Nigeria. Another paper seeks to solve a part of that problem by designing and developing a web application where tests in multiple choice formats will be taken online and graded immediately (Akinsanmi et al, 2010). The web application relies solely on Microsoft developed technologies. It runs on the Microsoft.net framework, uses the ASP.NET web server, C# as the intermediate language, ADO.NET to interact with the relational database and Microsoft SQL server as the relational database.

Zhenming et al, 2003). They developed a novel online examination system based on a Browser/Server framework which carries out the examination and auto-grading for objective questions and operating questions, such as programming, operating Microsoft Windows, editing Microsoft Word , Excel and PowerPoint, etc. It has been successfully applied to the distance evaluation of basic operating skills of computer science, such as the course of computer skills in Universities and the nationwide examination for the high school graduates in Zhejiang Province, China. Another paper (He, 2006) presents a

web-based educational assessment system by applying Bloom's taxonomy to evaluate student learning outcomes and teacher instructional practices in real time. The system performance is rather encouraging with experimentation in science and mathematics courses of two local high schools.

Rashad et al, 2010. Proposed a web based online examination system. The system carries out the examination and auto-grading for students exams. The system facilitates conducting exams, collection of answers, auto marking the submissions and production of reports for the test. It supports many kinds of questions. It was used via Internet and is therefore suitable for both local and remote examination. The system could help lecturers, instructors, teachers and others who are willing to create new exams or edit existing ones as well as students participating in the exams.

The system was built using. Various open source technologies AJAX, PHP, HTML and MYSQL database are used in this system. An auto-grading module was generalized to enable different exam and question types. The system was tested in the Mansoura university quality assurance center. The test proved the validity of using this kind of web based systems for evaluates students in the institutions with high rate of students.

Methodology

This part explains in details the various operations performed by the system and the relationship within and outside of the system. That is, system analysis. During analysis, data are collected from the files, decision points and transactions handled by the existing system using fact finding techniques (interview and on-site observation). The goal of any system development is to develop and implement a system that is reliable and works effectively. This can be achieved through good and accurate design. Object oriented analysis and design methodology will be used in order to achieve a better design.

Method of data collection

During this paperwork, data collection was carried out in many places within the College community. In gathering and collecting necessary data and information needed for this system analysis, two major fact-finding techniques were used and they are: (a) Primary source (b) Secondary source.

- **Primary Source:** Primary source refers to the sources of collecting original data in which the researchers made use of empirical approach such as personal interview.
- **Secondary Source:** The secondary data were obtained by the researcher from magazines, Journal, Newspapers, Library source.

The fact finding techniques used in order to study the existing system was interview.

Interview: Using this method, various departments or units of the School were consulted and questions were asked about how they carry out these GSP courses enrollment, exams and the problems encountered. Interview was used as a fact finding technique for this project. Interview was chosen because it enables us to gather information about the system in details. It also allows us to clear and cross check doubts. This method also helps us gap the areas of misunderstandings and help to discuss in details about the future problems that may creep into the manual system.

The information collected is quite accurate and reliable.

Technical tools

Technical tools used in the interacting with or in the collecting of data carrying this research successfully are open and papers to record the interview between the interviewer and the stakeholders from the department of GSP in which the most important things needed is their idea on how they want the system to be developed to function.

The system will be designed using HTML, JavaScript, CSS, MySQL, XAMPP Server, PHP for effective use.

- *Sublime Text.* Sublime Text is a free source code editor that supports several programming languages. It will be used as a text editor to write the application code, for both PHP and SQL.
- *MySQL.* MySQL is an open source Relational Database Management System. MySQL is very fast reliable and flexible Database Management System. It provides a very high performance and it is multi-threaded and multi user Relational Database management system.it allow user to select any information many tables.

- *JavaScript*. JavaScript, often abbreviated as JS, is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled and multi-paradigm. It has dynamic typing, prototype-based object-orientation and first-class functions.
- *CSS*. Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.
- *XAMPP Server*. XAMPP is a free and open source cross-platform web server solution stack package, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP and Perl programming languages. XAMPP is used as a development tool, to allow website designers and programmers to test their work on their own computers without any access to the Internet.
- *PHP*. PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. As my backward of my web it responsible generating any activities be young to end user only the developers.
- *HTML*. Hyper Text Markup Language (HTML) is a markup language for creating web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (<>) within the web page content.

Data analysis

To study any system, the analyst needs to collect facts and all relevant information about the system. The success of any project is depended upon the accuracy of available information. Facts about the system were collected using one fact finding techniques; interview. Accurate information is collected about the existing system with the help of these techniques.

FIRST INTERVIEW

The first interview was conducted with the HOD GSP at the College.

And the interviews took about 30 minutes. The interview is as follows.

1. How many Department register with the GSP department per semester?
Answer – All the College department register with us in this regard.
2. How do student register GSP courses?
Answer –Manually registration from the respective department they are carrying these courses from.
3. How do you know the total number of student who enrolled in your course?
Answer – The student use to register for this GSP courses by purchasing receipt from the respective department accountant, therefore after the registration process a list is produce by the department accountant giving details of the total number of student who registered for the course.
4. How do you conduct the GSP exams?
Answer – We tried as much as possible to set a standard questions for these courses but due to the fact that the student are so many and the resources are little we make it simple and precise objective question of 30 obj's per course. And these exams are done totally using paper and pen.
5. How do you mark these scripts?
Answer – We produced a marking scheme of all the objective questions first, then we mark the scripts.
6. How long does it take you as an examiner to present your exams result after marking?
Answer- Well let's say 14 days or more.

SECOND INTERVIEW

The third interview was conducted among 5 student across 5 Department at the School.

And the interviews took about 30 minutes. The interview is as follows.

1. How many GSP courses do you take this semester? **Answer** – GSP 104 and ICT 104
2. How do you register these GSP Courses?
Answer – By purchasing receipt from the respective department.
3. How do you take the exams?
Answer –Using paper and pen.

4. What is one challenge you can share with the Interviewer?

Answer 1 & 2 – Student usually complain that they register for a course and sat for the exams but when result came out they get an ABS.

Answer 3 & 4 – Short of question paper during exams, at times student waste time before these papers are delivered.

Answer 5 – In a situation where a student lost his/her registration receipt, retrieving it is difficult.

Analysis and Result

The existing system of student enrolment and writing these GSP exams in A.D Rufai College of Education, Legal and General Studies, Misau Bauchi State is completely manual, meaning that all the activities of these GSP courses are performed manually without the help of a computer system. The drawback of the existing system after conclusion of the interviews were; Due to the large number of student taking these GSP course as a core across all department, course registration becomes more difficult as one need to register with more than one department per semester, it is also difficult for lectures to know the total number of student who are enrolled in his/her course, also marking the student script in due time is tedious, therefore for student to know their result after writing the exams take so much time. Redundancy or loss of data may occur and this may lead to the inconsistency which makes the manual mode of writing GSP examination to be timeconsuming and not efficient.

□ Based on the first Interview we conducted with the GSP Head of Department

- We came up with a finding that all the department within the College community enrolls into one (1) or two (2) GSP courses per semester.
- Registration done by student are completely manual.
- We came up with conclusion that every student use to make enrollment manually through the department accountant office and on this process some student might be omitted or delayed registration, which gives a wrong number of enrollment to the course lectures. This also result to short of question paper produced during examination.
- We concluded that the exams are done manually.

- We came in to conclusion that the scripts are marked manually based on a produced marking scheme.
 - It was also concluded that marking of these scripts is time consuming and reliable for error.
- Based on the third interview we conducted with 5 students, We came up with conclusion that the student usually take 2 to 3 GSP courses per semester.
- And these student usually register for a course by purchasing a receipt from the department.
 - The mode of writing these exams are totally manual.
 - ABSENT on result list or skipping to input a student CA score by the lecturers are the two challenges acquired from two (2) students.
 - Short of questions papers delivered into the examination hall is another challenge discussed by two (2) student among the five interviewers.
 - Lastly we came into conclusion based on the challenges faced by these student that many student fall victims of losing their registration receipt which result to some staff sending them out of the examination hall claiming that they didn't register with the department.

System design

Systems design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. The case study for the project was A.D Rufai College of Education, Legal and General Studies, Misau Bauchi State and this system is just for the GSP Course enrolment and taking examination online. The implemented system is Xampp local host install on few laptops that will only give access to few sample students and the GSP Head of Department as the administrator.

- Based on the user requirements and the detailed analysis of a new system, the new system must be designed. The design phase of any system is very important, vital and crucial because the success of any system depends largely on its design specifications. In this phase, modules are being defined showing their relationships to one another in

a way known as a structural chart using structured tools. The reason for the design phase is to specify a particular software system that will meet the stated requirements gathered at the analysis phase.

- Structured design divides a program into smaller, independent modules and they are arranged orderly in a hierarchy that shows a model of the application area which is organized in a top-down manner. The concept of modification thus comes from structured design which is an attempt to reduce complexity and make a problem manageable by subdividing it into smaller segment.

Use Case diagram

A use case diagram is a representation of a user's interaction with the system and depicting the specifications of a use case. A use case diagram can portray the different types of users of a system and the various ways that they interact with the system. The use cases diagram for the administrator is presented in figure 1. It shows the activities that are required of the administrator which includes the managing of exams and that of student's account.

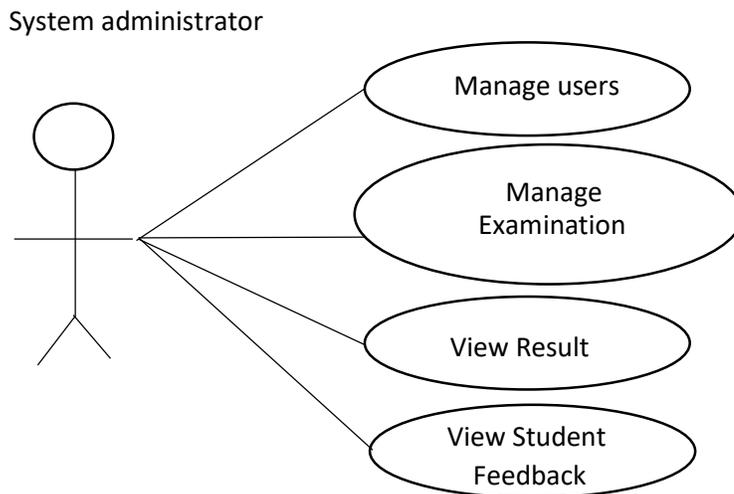


Figure 1. Use cases diagram for the system administrator

The use cases diagram for student shows that the student can access the system and take his/her examination. Figure 2 presents the use cases diagram for the student.

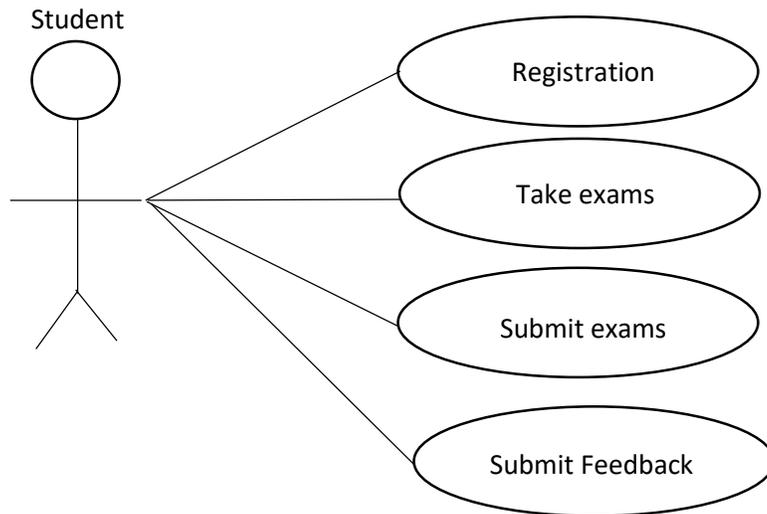


Figure 2 . Use case diagram for student



Figure 3. Starting Page

Figure 3 is the landing webpage of A.D.Rufa’I College of Education, Legal and General Studies Misau GSP e-exams portal, with an overview of Student registration form into the system database and links to the following buttons (i) student login, (ii) admin login, (iii) feedback and the developers pop-up.

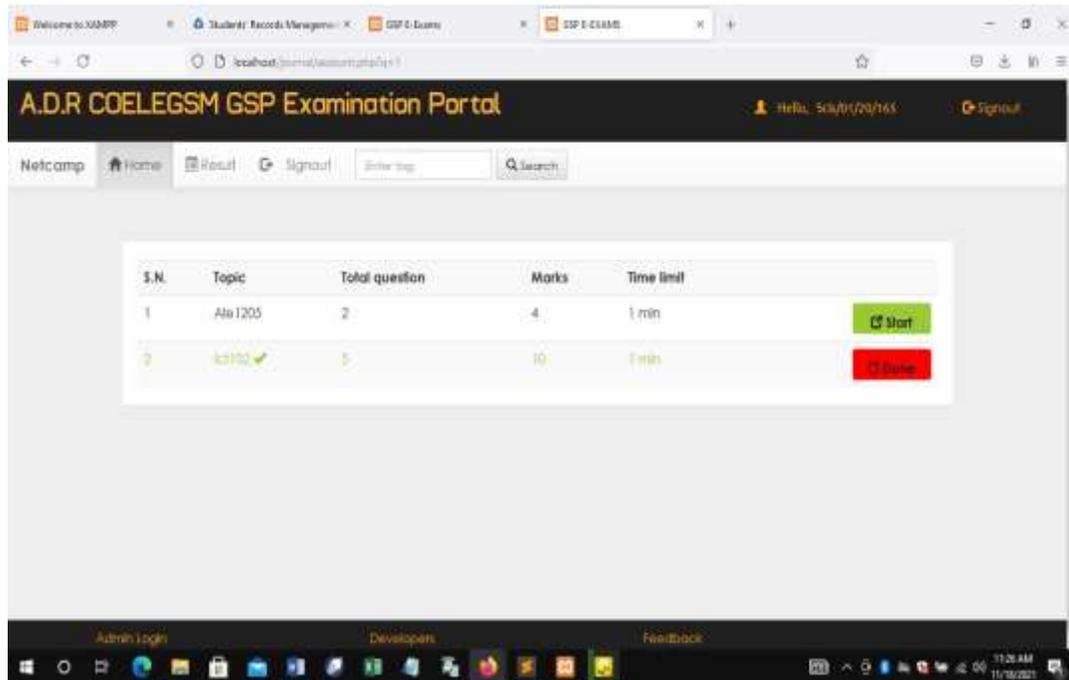


Figure 4. Student Home tab

Figure 4 displays the student account, starting with the Student Home Tab, which shows the List of Exams available for the student and history of exams taken by the student. A student can start exam by clicking the start exams button.

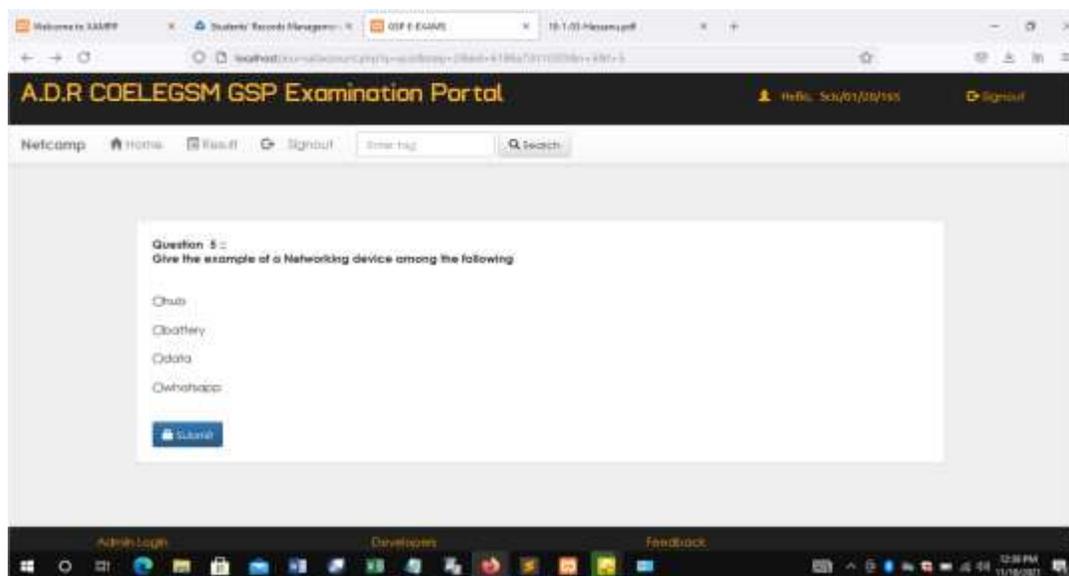


Figure 5. Questions page

Figure 5 shows the question page when student start writing an exams.

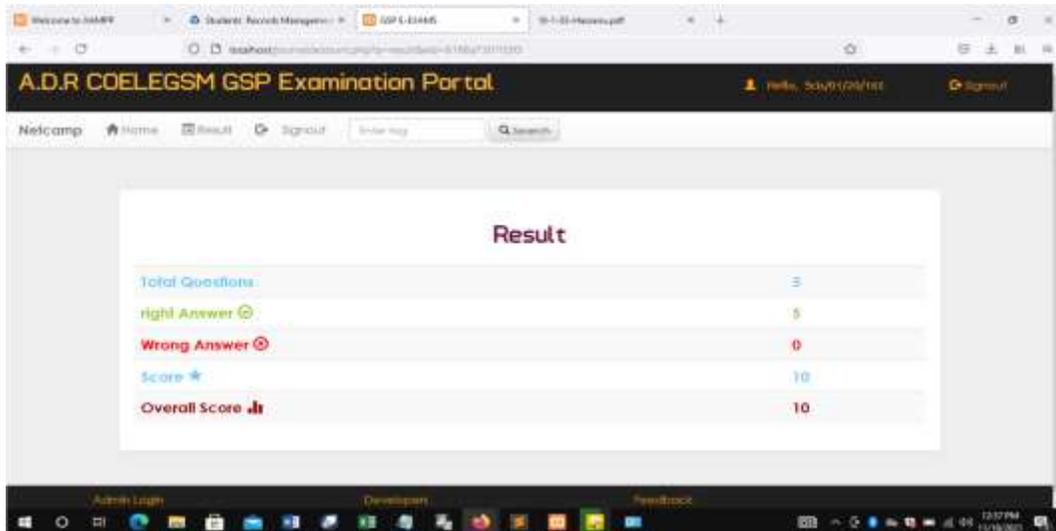


Figure 6. Result page.

Figure 6 shows the student result when a student finish taking an exams.

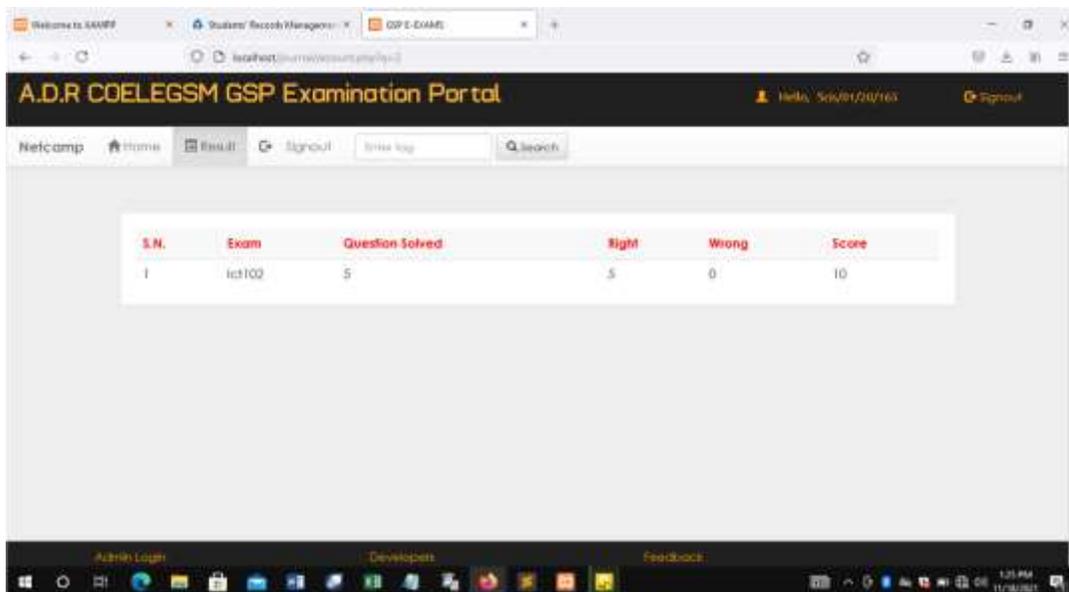


Figure 7. Result page

Figure 7 shows the result history page which allow a student to check his/her result after exams are done.

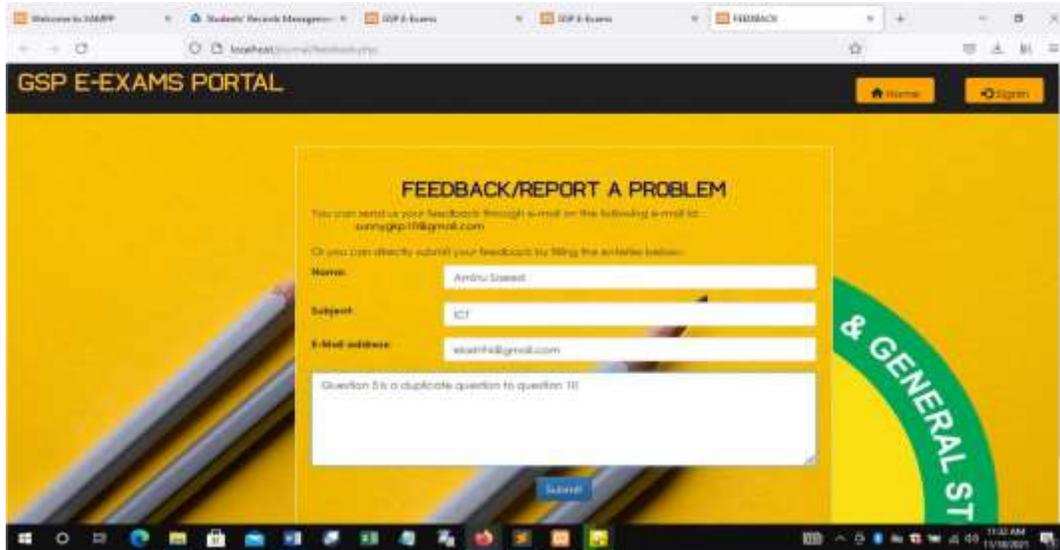


Figure 8. The feedback form.

Figure 8 Carries the feedback form, were student can forward complain in case of a problem that need to be forwarded to the admin.

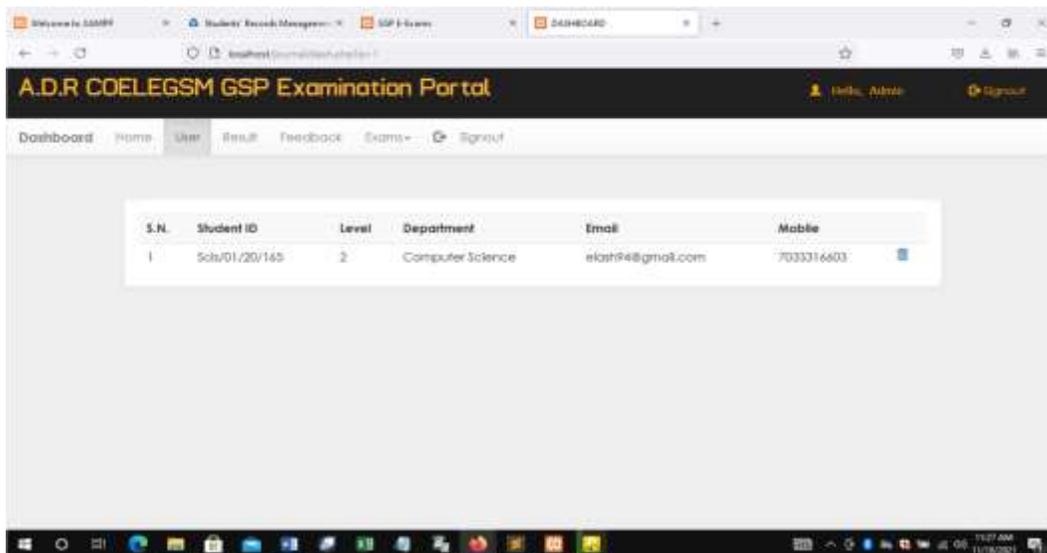


Figure 9. Student list.

Figure 9 shows the admin page were student list are automatically created upon registration by student, here admin can delete student account.

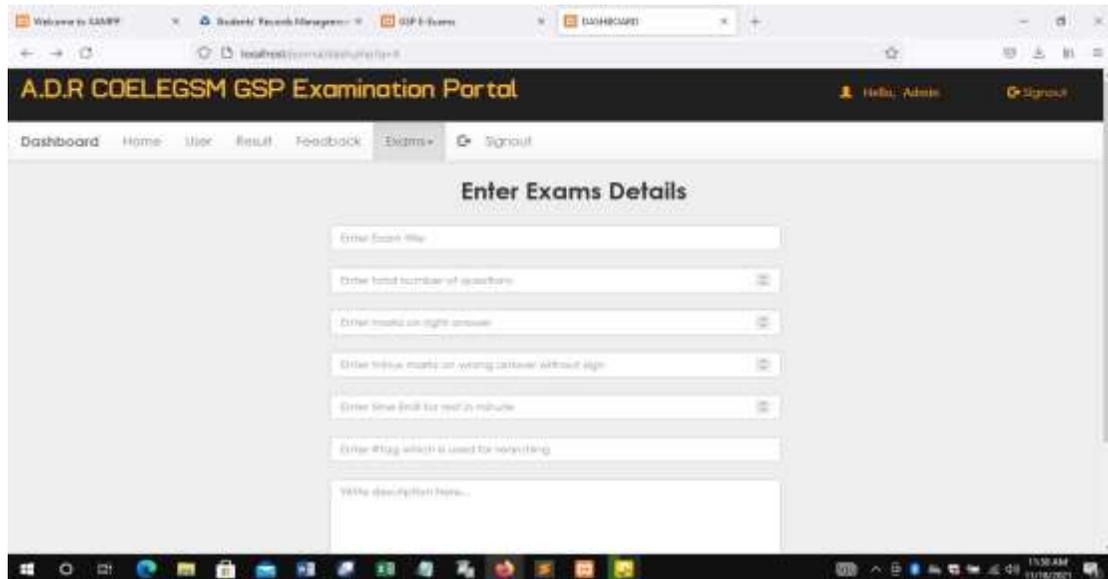


Figure 10. Add Exams page

Figure 10. shows how admin can add exams by inputting the exams title, marks and time limit for an exam.

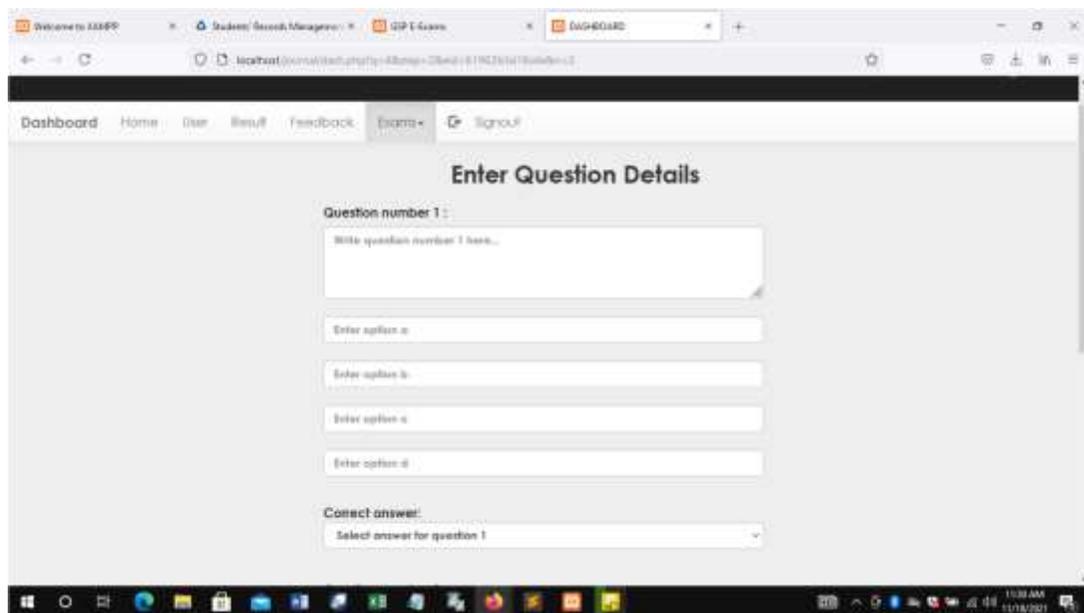


Figure 11. Add Exams.

Figure 11 provide the spaces to add exams questions together with their correct answers.

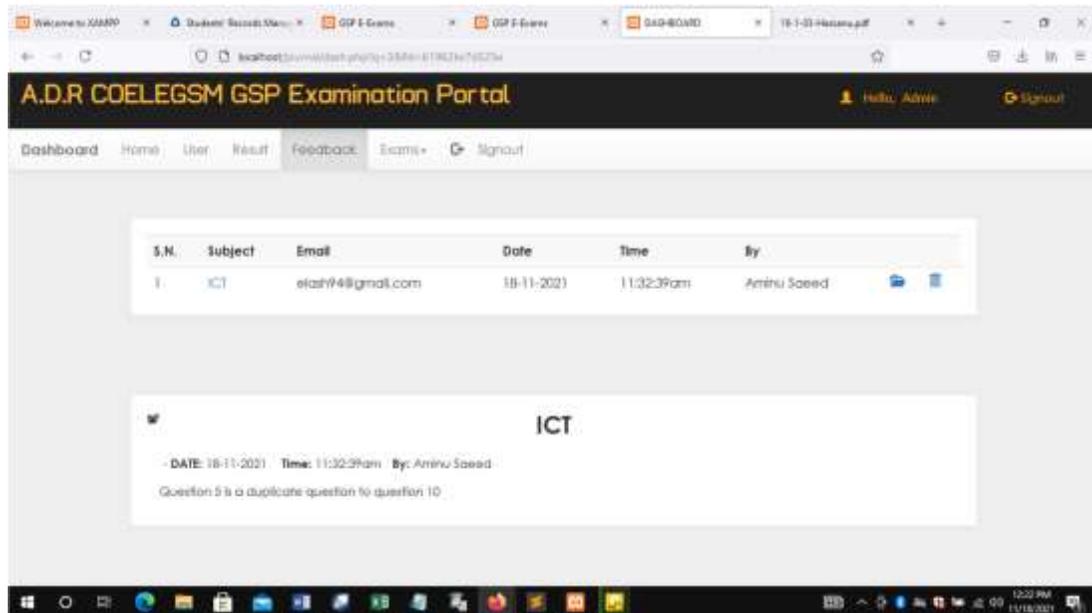


Figure 12. Feedback page

Figure 12 shows the complaint feedback list submitted by student, from the student dashboard.

System testing and evaluation

After a system is developed, there is a need to test and verify that the system has “no bug”, this refers to system testing. System Testing entails the process of running a program using a test data with the purpose of uncovering and correcting errors in the program.

System testing

For the purpose of this paper, unit testing and integrated testing technique are considered.

Unit Testing: During unit testing, individual system components or modules are tested to ensure that they work accurately. The system modules are: student module, lecturer module and administrator module. At this stage some errors were found and corrected.

Integrated Testing: Integrated testing was also conducted by bringing all the system components together and tested the system as a whole. Some errors were also found after the integration and they were all corrected.

Conclusion

In This Paper, The deployment of student web based GSP e-exams portal for A.D Rufai College of Education, Legal and General Studies, Misau Bauchi State was successfully developed and was given on trial to sample users using a local host. The system was able to solve a lot of the challenges being faced by the Lecturers and Student these challenges includes examination malpractices, low capacity examination venues, inadequate invigilators, inadequate examination materials, omission of student's results and human error(s) during the marking. The cost implication of conducting a mass-driven examination will become drastically and significantly reduced as there will be no need to print questions or answer booklets anymore.

Recommendation

However, upon successful deployment of the GSP e-exams portal for A.D Rufa'i College of Education, Legal and General Studies Misau, there is a room for any interested person to further build additional features or capabilities into the system. In view of this, it is recommended to incorporate theory-based questions, exporting the examination results as a sheets file (pdf), adding a privilege that will allow student to be able to take more than one GSP course exams at a period and in this same regard future work can also focus on deployment of a complete CBT exam portal which will accommodate all courses examinations.

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