DESIGN AND IMPLEMENTATION OF COMPUTER BASED TEST

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CERTIFICATION

This is to certify that this Project Report titled **"DESIGN AND IMPLEMENTATION OF COMPUTER BASED TEST"** was carried out by **WILLIAMS ADERONKE SEYI** with the Matriculation Number **CSC/11/O289** in partial fulfilment for the award of Bachelor of Science Degree in Computer Science, Federal University Oye Ekiti, Ekiti State, Nigeria.

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DATE

DEDICATION

This project is dedicated to the one whose greatness is immeasurable, the almighty God for his mercies and faithfulness that saw me through all the challenges during this project and for sparing my life throughout the years of rigorous training, childhood and studentship

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The task of writing a research project is not an easy one as such, I thank GOD ALMIGHTY for giving me the courage, strength, understanding and guidance that saw me through the rigors involved in writing this project. I would like to place on record all those who assisted me one way or the other in making my University education a huge success through the fulfilment of these project.

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ABSTRACT

Computer-based testing (CBT) has emerged as one of the recent "innovative" approaches to assessments most pursued by institutions, especially secondary and tertiary institutions. CBT is lauded as the answer to having cheaper and speedier test delivery for elementary, middle, secondary and even tertiary school testing assessments which is a programmed computer test.

Computer based test is a form of administering test in which the response are electronically assessed and recorded

The Major objective of the project was to design and develop a Computer Based Test that would computerized the existing records management in the department of Computer Science and give direct benefit to the department in terms of fast information retrieval, enhanced decision-making. The Computer Based Test was designed as a web based system and implemented using open source solutions that include MYSQL as the database, and PHP as the programming language.

An extensive evaluation of the project determined that the project achieved many of its predefined objectives however, the major limitation of the project was the scope covered. From a proper analysis and assessment of the designed system, it can be concluded that the system developed is an efficient, usable and reliable computer based test.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Over the past decade, access to and uses of computers in homes and schools have increased tremendously both in and out of the classroom. Students' educational use of computers has also increased, particularly for writing and research (Becker, 1999; Russell, O'Brien, Bebell, & O'Dwyer, 2002). Over this same time period, reliance on large-scale tests to compare the quality of education provided by nations has increased, many established certification and licensure programs are choosing to convert their exams from paper-and-pencil test programs to computer-based test (CBT) programs. Computer-based testing (CBT) has emerged as one of the recent "innovative" approaches to assessments most pursued by institutions, especially secondary and tertiary institutions.

CBT is lauded as the answer to having cheaper and speedier test delivery for elementary, middle, secondary and even tertiary school testing assessments which is a programmed computer test. It is also seen by some as an avenue toward greater accessibility for students with disabilities. Despite steady growth in the access to and use of computers for classroom learning and the rapid increase in the use of tests to make decisions about national educational programs, schools, and students; the use of computers for elementary, middle, secondary and even tertiary school testing programs was absent until the turn of the century.

It is widely believed that all tests will one day be delivered on a computer of some sort (Bennett, 1998, 2002). However, it is difficult to accurately predict when this day will come. It has seemingly been just around the corner, since the early 1990s, when a handful of early adopters, including the ASVAB (Sands, Waters, & McBride, 1997) and the GRE® (Mills, 1999), signed on to computer based testing (CBT). Today, dozens of admissions, placement,

certification, and licensure testing programs are administered on computer, with the numbers growing each and every year.

As elementary, secondary, and tertiary school-level testing programs begin administering tests on computers, several issues related to the validity of using test scores provided by computer-based tests to make decisions about student and school performance must be examined. As elementary and secondary school-level testing programs begin administering tests on computers, several issues related to the validity of using test scores provided by computer-based tests to make decisions about student and school performance must be examined.

1.2 RESEARCH PROBLEM

The role of effective Continuous Assessment (CA) in evaluating students' performance cannot be over emphasized in our academic institutions. Continuous Assessment (CA) is carried out on and on–going basis while students are actually working their ways through a course. It can take a wide range of forms, including periodic tasks, essays, and other types of assignment, on-going assessment of practical or laboratory work or situational assessment. In education, a key role of assessment is to provide feedback that is both formative, providing guidance for further learning and teaching, providing a picture of students current level in respect of large term goals. Therefore, a Web-Based Assessment (CBA) system is gaining more ground in the assessment of students' performance in higher institutions of learning worldwide.

1.3 JUSTIFICATIONS FOR THE STUDY

For well over a century, educational assessment has largely been conducted using a paper-and-pencil format. These approaches vary from asking individuals to solve a problem and choose a response from several possible alternatives, to asking examinees to perform a task or solve a problem while their responses are being scored. Recently, the rapid

improvement in the power and portability of microcomputers has instigated the development of a new generation of assessment instruments. Indeed, a number of novel computer-based cognitive assessment instruments have been developed, which collectively have the potential to revolutionize cognitive assessment. Computer-based testing has assumed a prominent role in the assessment of a number of cognitive disorders, such as mild cognitive impairment, Alzheimer's disease, and other dementias in older adults (Wild, Howieson, Webbe, Seelye, & Kaye, 2008), and in sports-related concussion (Johnson, Kegel, & Collins, 2011).

Computer-based testing has many advantages, both for the credentialing program and for the examinees. However, it also has certain disadvantages, including greater demands on program resources. Prior to making the decision to convert an exam program to computer-based testing, it may be useful to evaluate the potential match between characteristics of CBTs and the exam program. This evaluation might be conducted through a feasibility analysis. A smooth and successful transition to a CBT program will be further aided by a conversion plan that emphasizes thorough preparation and careful decisions.

1.4 AIM AND OBJECTIVES OF THE STUDY.

1.4.1 AIM

The aim of the study is to design and implement computer based test.

1.4.2 OBJECTIVES

In order to fulfil this, the following objectives are to be adopted. These are to

i. Examine innovative computer based enabled classroom-based learning environments and formative assessments.

ii. To study the existing work on CBT by reviewing recent literature.

iii. to use the knowledge gained from literature reviewed to design a CBT systems

iv. To implement the design model

1.5 SCOPE AND LIMITATION

In the professional sense, this project presented though not perfect, but can serve as a framework for a better Web-Based Continuous Assessment System to be developed. Also, the scope of this project has been restricted to this university, but can be deployed to other universities with little or no modification(s). Also, it is not suitable for all types of assessment (such as extended response questions). This limitation was basically due to the level of technology the designer is exposed to. However, a feasibility study was carried out, and analysis of the manual system to understand how it functions, and also see the faults in the existing system. Another limitation of this project is that students can only answer one question at a time, and a question cannot be re-answered. Also, only one test can be conducted per course in every semester.

1.6 DEFINITION OF TERMS

The most frequently used terminologies and acronyms in this project are:

i. A Web-Based Assessment (WBA) is a method of administering tests in which the responses are electronically recorded and assessed.

ii. Assessment is the process of measuring behaviors and using the results obtained in taking decisions about a discipline.

iii. Multiple Choice Questions (MCQ): This is a form of assessment for which respondents are asked to select one or more of the choices from a list.

iv. World Wide Web (WWW): This is a distributed information system that is based on hyperlinks (texts that serve as a link to other documents on the internet).

v. PHP stands for Hypertext Preprocessor. It is an open source server-side scripting language used in creating data-driven web applications.

vi. MySQL is an open source Relational Database Management System (RDBMS) used in designing and maintaining relational databases.

vii. Entity Relationship Diagram (ERD): This is a specialized graphic that illustrates the interrelationships between entities in a relational database.

viii. JavaScript is a client-side scripting language.

ix. Cascading Style Sheet (CSS) is also a client-side scripting language that is used to format web documents.

x. Apache: This is an open source web server.

xi. Web server: This is a program running on a server machine, which accepts requests from web browsers and sends back results in form of HTML (Hypertext Markup Language) documents to the requesting browser.

1.7 ORGANIZATION OF PROJECT WORK

This Project report is organized in five chapters. Chapter one is on the Introduction, Chapter two is on Literature Review. Chapter three is on Research Methodology and System Design, Chapter four Testing and Implementation. Chapter Five is on Summary, Recommendations and Conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVERVIEW OF CONTINUOUS ASSESSMENT

Ahmad (2002) stated that assessment is the process of measuring behaviors or attitudes and using the results obtained in taking relevant decision about a program. In other words, continuous assessment is carried out on and on-going basis while students are actually working their ways through a course or a major unit thereof. However, it can take a wide range of forms, including periodic tests, essays and other types of assignment. According to Ellington (1997), continuous assessment is based on a radically different basis, namely, that the best and fairest way to assess students' performance is to assess each stage of a course after it has been completed, or in some cases, while the work is actually carried out.

Thus, it is much more useful to the students, since it provides them with on-going feedback on their performance, helps them to become more self-control and encourage them to attempt to master materials as they actually work through a course or course unit rather than leaving the real learning process to the very end. Traditionally, Continuous Assessment (CA) is normally conducted across the university in most cases in form of paper-based tests. It is usually once per course of study, and sometimes complemented by assignment(s). This is what Ellington (1997) describes as unfair to the students, for it does not allow them to develop to their full potential, and may well disadvantage students who only put things together as they near the end of a program of institution. This was certainly the paradigm that dominated higher education assessment in the case of honors degrees.

However, it should be kept in mind that computer-based testing is not right for all exam programs, and converting to a CBT program will require substantial resources. For example,

considerable effort is usually needed to prepare the item bank, to ensure a successful conversion, any certification or licensure program that decides to convert to CBT is well advised to develop a conversion plan. This plan should include decisions for the CBT program about such matters as the optimal method for test delivery, the preferred approach to scheduling test administrations, the essential requirements for CBT sites and software, and the most effective methods for addressing test security. In the field of education, few comparative studies on test mode were carried out prior to 1986.

However, an early 1985 study by Lee and Hopkins found the mean paper-and-pencil test score to be significantly higher than the mean computer-based test score in arithmetic reasoning. Results of this study highlight scratch work space as a salient factor in arithmetic test performance. In addition, Lee and Hopkins,1985 concluded that the inability to review and revise work affected performance, and argued that only "software that allows the conveniences of paper-and-pencil tests, e.g., the ability to change answers and the ability to review past items, be used in future applications" . Collectively, early research on cross-modal validity of arithmetic reasoning tests provided mixed results: computers were found to enhance (Johnson & Mihal, 1973), as well as impede (Lee, Moreno, & Sympson, 1986) test performance.

2.2.1 PROBLEMS OF THE EXISTING CONTINUOUS ASSESSMENT SYSTEM

The following are some of the problems attributed to the existing system of paper-based continuous assessment in higher institutions.

i. Time wasting: Delay often occurs as a result of scoring tests and preparing hand written reports. Also, the problem of seeking for venue as a result of large number of students sitting for the test is another problem.
ii. Accuracy and risk involved: The traditional handling of test scripts may be prone to errors during marking or recording process.

iii. Speed: When it comes to marking the students' script, the lecturers/examiners spend a lot of time marking the scripts and recording the scores. Hence, this makes the marking boring and thereby causing unnecessary delay in the process.

2.2.2 BENEFITS OF CONTINOUS ASSESSMENT IN EDUCATION

The following are some of the benefits of Continuous assessment in education:

i. ContinuousAssessment (CA) is also a powerful diagnostic tool that enables students to understand the areas in which they are having difficulty and to concentrate their efforts in those areas.

ii. Continuous Assessment (CA) also allows lecturers to monitor the impact of their lessons on students' understanding.

iii. In Continuous Assessment (CA), lecturers assess the curriculum as implemented in the classroom. Thus, it allows lecturers to evaluate the effectiveness of their teaching strategies relative to the curriculum, and to change those strategies as dictated by the needs of their students

2.3 THE USE OF COMPUTERS IN ASSESSMENT

Increasing number of students in Higher Education and the corresponding increase in time spent by lecturers on assessment have encouraged interest into how technology can assist in this area. Ensuring that the assessment methods adopted reflect both the aim and objectives of the course and any technical developments which have taken place is becoming increasingly important, especially as quality assurance procedures require departments to justify the assessment procedures adopted (Nora Mogey and Helen Watt, 2000).

Technology can be used for assessment purpose at various levels ranging from the management of the assessment information to a fully automated assessment system. Using technology for the management of the assessment information enables information to be

presented in different ways to meet the needs of different audiences (such as lecturers, students, and external examiners). Information and Communication Technology (ICT) now offers ways of reducing the burden of assessment work and giving feedback without losing the development benefits for students being assessed (Thelwall, 1998). According to Valent et al (2002), a typical Web Based Continuous Assessment system comprises the following:

i. **A Test Management System (TMS):** This is a tool providing the lecturers with an easy way to use interfaces to create questions and assemble them into tests.

ii. **A Test Delivery System (TDS):** This is a tool for the delivery of tests to the students.

2.3.1 ELECTRONIC DELIVERY OF TESTS (OBJECTIVE TESTS)

There is growing interest and increasing practical experience in the use of computers to deliver objective tests. Objective testing is often taken to imply the use of Multiple Choice Questions (MCQs). However, objective tests can incorporate a wide range of question styles in addition to standard multiple choice questions; for examples, multiple response, word entry, number entry, gap fill and free-format where student entry is compared to a correct solution using a keyword search. Objective tests and MCQs in particular, are generally considered to be an efficient method of testing factual knowledge, enabling a wide syllabus to be examined in a relatively short time (Bull, 1999).

However, it is important for academic staffs to be aware of the limitations of objective tests (especially MCQs), particularly in their inability to indicate higher level and process skills. Objective tests can be used for both formative and summative assessments, and a variety of scoring systems can be applied, tailored to the importance of discouraging students from guessing answers. Several packages are available which are designed for the electronic delivery of objective tests, all of which support the delivery of a variety of question types. Entering questions is generally straightforward, requiring minimal experience with the package.

Although the design of questions for computer based delivery is no more difficult than for paper based objective tests, this remains non-trivial and the most time consuming part of the whole objective testing process. When the test has been completed, the students' responses are marked automatically, quickly and consistently.

Computerized delivery of objective tests offers interesting possibilities not available within paper based systems. These possibilities are:

i. The creation of a bank of questions invites the possibility of each student being presented with a paper made up of different questions, but of an equivalent standard.
ii. Instant computerized marking facilitates immediate feedback for the students.
iii. Students can be invited to sit for tests as frequently as they find useful.
iv. Computerized recording of results facilitates the analysis of groups' responses to questions (Nora Mogey and Helen Watt 2000).

2.3.2 ELECTRONIC GENERATION OF TESTS

In addition to using electronic package to create unique questions, it is possible to use computer to generate different test automatically.

Question banks: Electronic selection of questions from the question bank has already been mentioned as one possibility for the electronic generation of tests. The creation of a question bank is a demanding task for a single individual; however, where several members of staff collaborate to share questions, a bank of questions can be established quickly. From this, a large number of different tests can be generated.

Randomization of parameters: An alternative method of generating questions electronically is to use parameters. The format of the question will be identical to every occasion, but one or more variables in the questions are selected from the list of permitted values. These values may

be entered when the question is created, or they may be generated by the computer, either randomly or according to some formula.

Feedback from students indicates that the opportunity to work through questions is often considered to be very helpful in identifying areas of weak point in their knowledge, or in developing a confidence in their understanding of a subject. Computerized delivery of randomly generated problems, supported by automated marking and feedback to the students is a flexible and efficient method of providing formative assessment, particularly where factual knowledge is an important component of the course.

2.3.3 ELECTRONIC RECORDING AND ANALYSIS OF TEST RESULTS

Perhaps, the most immediately obvious and most easily accessible use of technology to assist the assessment process is in the recording, analysis, general storage and management of the test results. A wide range of spreadsheets, statistical packages and database packages are available (e.g. Excel, Lotus 1-2-3, Database, SPSS, Minitab, Access), into which it is easy to enter data manually if results are not already in electronic form, though enormous, care must be taken to avoid transcription errors when generating the data files. Most of these packages readily accept the transfer of electronically stored data from other applications, aiding data acquisition and increasing the potential data analysis that can be carried out. Results from several assessments, courses or modules can be collated quickly, easily and accurately for discussion at examination boards, and the volume of paper required for long term storage can be dramatically reduced. Further, any trends within the data can be fully explored, which in turn provides valuable feedback for the academic team (Nora Mogey and Helen Watt, 2000).

2.3.4 FINAL SCORES AND OTHER INFORMATION

It is sometimes useful to record data other than how many right answers students are able to achieve, particularly when the assessment is formative. The use of interim stage in a problem to provide feedback and guidance to students has already been mentioned, some computer-based assessment packages record all the interim responses from the students into a file, which is available to the tutor for diagnostic purposes, if required. Other packages require students to log on before using a package, so that frequency of usage of the package can be mentioned. Another practice is to record the length of the time for which students is logged onto the system. This can be helpful in identifying students who achieve high scores, but only when they have a lot of time to do so. As mentioned above, the other information relating to the path a student followed through a package are the frequency of the system usage and the time taken to complete sections.

2.3.5 ELECTRONIC SCORING TOOLS

If the integrity of data cannot be guaranteed, the use of electronic method to store and manipulate the data becomes useless. The manual entry of marks is particularly susceptible to errors, time consuming and costly to check thoroughly. The use of data capture devices, such as an Optical Mark Reader (OMR) connected to a computer, can greatly reduce the number of errors, particularly of number transposition on data entry, e.g. typing 14 instead of 41. Thus, a large number of information can be entered onto a computer without the need to use a keyboard, which in turn increases accuracy and saves time. Software packages are available which allow the design of WBA system with a built-in scoring ability. Since OMR deals with paper pencil tests, the scoring can be designed in a normal form or negative marking type (Stanley and Brandi, 2001; Mogey and Helen Watt, 1999).

2.3.6 SECURITY CONSIDERATIONS

One of the obstacles that prevent lecturers from utilizing technological solutions to administer students' assessment is the issue of security. When considering delivering assessment on computer, it is possible to password the file containing the test questions and test results, and also disallows access until after a particular date. Security is important in an electronic assessment because one has to take into account that people only use a system they trust it. However, two categories of security in electronic assessment were identified by Valent et al (2002). These categories are web security and electronic assessment security.

While discussing the security of internet test, Jack (2002) said that the level of security can range from highly secured and restrictive to unsecured and permissive. As might be expected, the higher the level of security, the higher the cost of implementing and maintaining web applications. The level of security implemented for a given test should be appropriately matched to the usage of the test. Secured test environment should use a three-tier server model. Within this model, the test system is made up of three independent servers: an internet server, a database server, and an application server.

2.3.7 DISADVANTAGES OF WEB-BASED CONTINUOUS ASSESSMENT SYSTEMS

Web-Based Assessment (WBA) systems have many disadvantages such as;

i. It is expensive to establish.
ii. It is not suitable for all types of assessment (such as extended response questions).
iii. High cost associated with the start-up and maintaining of technology and the database of questions.

The aforementioned disadvantages of Web-Based Assessment (WBA) systems are few of them.

2.4 SERVER-SIDE SCRIPTING LANGUAGES

Server-side scripting languages are programming languages used in creating dynamic web pages. Examples of server-side scripting languages are: PHP (Hypertext Preprocessor), coldfussion, perl, ASP (Active Server Pages), JSP, Python, and so on. The large majority of server-side scripts are related to either getting information from the users and saving it somewhere or retrieving information from somewhere and presenting it. This somewhere is usually an animal called a database (McGraw-Hill/Osborne, 2005)

2.4.1 PHP (Hypertext Preprocessor)

According to its official web site at http://www.php.net/, PHP is a widely used general-purpose scripting language that is especially suited for web development and can be embedded into HTML. The language is rapidly becoming the most popular choice for data-driven web applications because of its wide support for different database systems. Typically, PHP code is "embedded" inside a regular HTML document, and is recognized and executed by the web server when the document is requested through a browser. Because PHP code is executed on the server and not on the client, developers do not have to worry about browser-specific quirks that could cause the code to break (as commonly happens with JavaScript); PHP code works independently of the user's web browser.

2.5 CLIENT-SIDE SCRIPTING LANGUAGES

Client-side scripting languages are programming languages used in creating interactive web pages. They have been around for quite a while, and almost every web site uses some amount of the client-side scripting languages. Examples of client-side scripting languages are: JavaScript, Cascading Style Sheet (CSS) and so on.

2.6 MySQL

MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages. It uses a standard form of

the well-known SQL data language. MySQL is released under an open source license, and is available for free. It works on many operating systems, and with many languages. It works very quickly and works well even with large data sets. PHP ships with a number of functions designed to support MySQL databases. MySQL is actually a number of programs. It has a server component that is always running, as well as a number of utility programs. This is just a brief introduction of MySQL as a Relational Database Management System (RDBMS).

2.7 INTERNET AND GROWTH OF INTERNET TESTING

Internet is an interconnection of computer networks world-wide. It comprises many interconnected networks. Each network may link ten, hundreds or thousands of computers, enabling them to share information with one another and to share computer resources such as powerful super computers and database of information. In many paper-and-pencil testing and assessment programs, examinees typically receive their scores and interpretive reports a month or more after they take the test.

Their answer sheets must be mailed first to the test publisher, where they are scanned and scored, and perhaps interpreted. Using Web-Based Testing and Assessment systems, responses are recorded in computer files as examinees answer each item or question. Software that computes test scores and generates interpretive reports can be run as soon as the last item or question is answered, with examinees receiving feedback within a few seconds after completing the test (http://en.wikipedia/wiki/internet).

2.8 WORLD WIDE WEB (WWW) AND WEB APPLICATIONS

WWW is a distributed information system that is based on hyperlinks (texts that serve as a link to other documents on the internet). It also refers to a computer based network of information resources that combines text and multimedia. The information on the WWW can

be accessed and search through the internet (a global computer network). On the other hand, Web applications are applications whose functionality is processed on a web server, and is delivered to the end users over a network such as the Internet or an intranet. Web applications are popular due to the increasing number of clients. The ability to update and maintain web applications without distributing and installing software on potentially thousands of clients' computers is a key reason for their popularity.

Web applications are used to implement web mails, online retail sales, online course registration, online clearance system, online issue of exams cards and many other functions. Therefore, web applications dynamically generate a series of web documents in a standard format supported by common browsers such as HTML (HyperText Markup Language), XHTML (Extensible HyperText Markup Language), and XML (Extensible Markup Language).

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.1 SYSTEM ANALYSIS

System analysis is a problem-solving technique that decomposes a system into its components pieces for the purpose of studying how the components work and interact to accomplish their purpose. It is also a process of collecting and analyzing facts, regarding to the existing operational procedures and system in order to fully understand the prevailing situation (Bennett, 2002). In the analysis stage, a detailed study of the requirement for the Web-Based Continuous Assessment (WBCA) system was carried out in order to arrive at the proposed system to be built upon.

3.1.1 METHODOLOGY

The research on this project titled "Web-Based Continuous Assessment system" is based on the following:

i. Primary data-The primary source includes: interview with the lecturers and students, and their responses were analyzed and set focus for the implementation of this project.
ii. Surfing the internet to get materials on continuous assessment system, multiple choice questions, electronic assessments, Structure Query Language (SQL), MySQL, JavaScript, Cascading Style Sheet (CSS), and PHP.
iii. Review of the modes of the operation of conducting and processing of paper-based continuous assessment.
iv. The concepts and techniques of system analysis and design, and Relational Database Management System (RDBMS).

3.1.2 FACT FINDING TECHNIQUES

Interviewing of lecturers and students of the university and analysis of the current system documents are the approaches which generally generate the greatest volume and quality of data for the subsequent analysis and design. The general techniques to retrieve the information are:

i. **Interviewing:** This is the most common way of finding out information about the current system and its uses, and requirements. In this project, Lecturers and students from different departments were interviewed to get useful information concerning Continuous Assessment (CA).

ii. **Observation:** Observation provides first hand information about how activities are carried out and it can uncover much information on working practices.

iii. **Research and reading:** One of the major problems with reading as a fact finding technique tool is to know what to read and where to stop. Though, if relevant materials are gotten and read, it gives good picture of system requirement needed. Some of the materials used during this project includes: textbooks and past project works relevant to this project.

3.1.3 FEASIBILITY STUDY

In feasibility study, it is good to devised different solution strategies for a system and each solution strategy needs to be analyzed before arriving at the final model for the system. A system is said to be feasible if goals and requirements can be satisfied within the constraint of available resources on technology using a particular strategy. Hence, the three key things considered in feasibility study are: economic feasibility, technical feasibility, and operational feasibility. Therefore, the feasibility study conducted on this project work was found to be within the reach of FUOYE, in terms of resources and otherwise.

3.1.4 COST BENEFIT ANALYSIS

Once the solution along with the alternative is decided upon, the cost and benefit of each alternative directs the selection of the best system of the job. This work takes into consideration the cost of equipment, installation, development, personnel, and operating costs. Especially, the cost associated with the start-up and maintenance of technology and the database of test questions.

3.2 SYSTEM DESIGN

System design is a process or art of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. Based on the users' requirements and the detailed analysis of a new system, the new system must be designed. The design phase during software development is very crucial and vital. This is because the success of any system or software depends on its design. In this phase, the final specifications are used for translating the model into the design of the desired system. Also in this phase, modules are being defined showing their relationships to one another in a way known as a system structural chart. 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 and independent modules. They are arranged orderly in a hierarchy that shows a model of the application area which is organized in a top-down manner. Thus, the concept of modification comes from the structured design which is an attempt to reduce complexity and makes a problem manageably by sub-dividing into smaller segments.

ARCHITECTURE OF THE PROPOSED SYSTEM

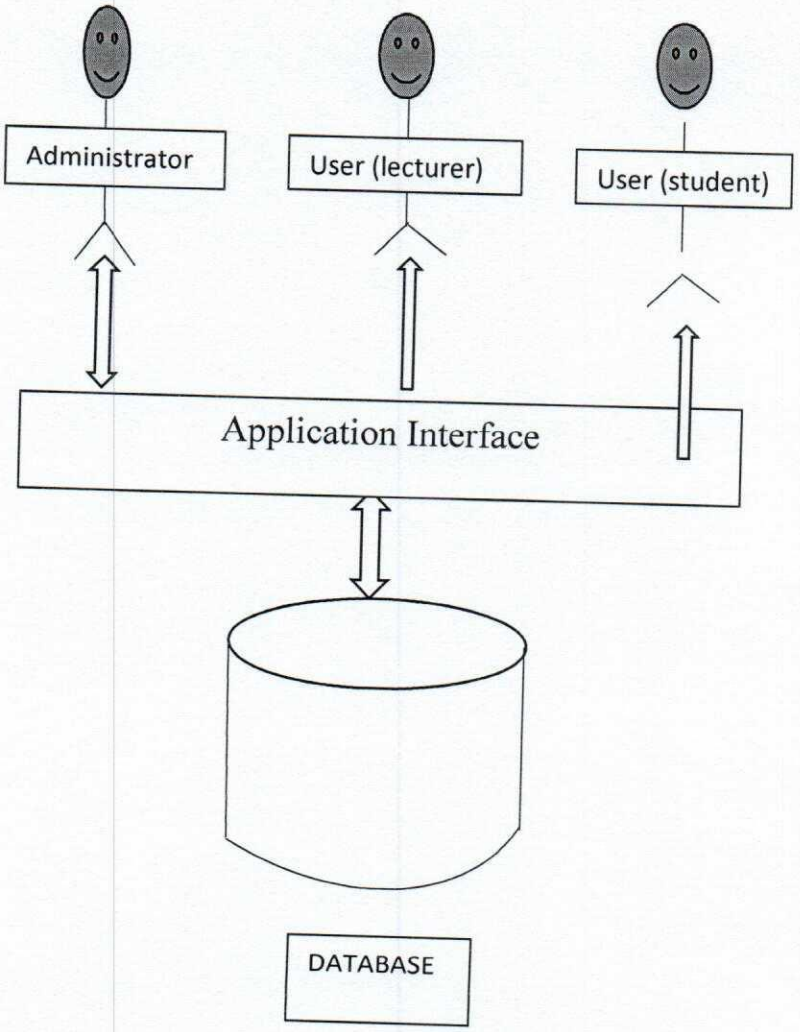


FIGURE 3.1 ARCHITECTURE OF THE PROPOSED SYSTEM

3.2.1 INPUT SPECIFICATION

This serves as an interface between the users and the system which allows the users to enter data. Data input is done generally through the standard keyboard or with the mouse in the case of combo boxes, list boxes and hypertext links. At this stage of the analysis, different windows are designed to guide data entry procedure. The input variables needed for this project are:

i. **For students:** registration number, course code, program of study, pin number, academic session, and so on.
ii. **For lecturers:** identity, password, course code, academic session, and so on.
iii. **For administrators:** user name, password, and so on.

The input design and their implementations are shown in chapter four.

3.2.2 OUTPUT SPECIFICATION

This serves as an interface between the users and the system that provides report to the users. The design specifications identify the output expected or required by the users or clients, which guide the designers as to what is to design. Therefore, for the purpose of this project, the output specification comprises the effectiveness of the Web-Based Continuous Assessment (WBCA) procedure in effectively getting the entire information requirement by the institution which was provided in the paper-based continuous assessment. Some of this information includes the students' registration number, course code, and questions for the continuous assessment itself.

While, the output design shows the database design as it will be viewed by the students (e.g. test results), lecturers (e.g. test results, and test questions), and Database Administrators (DBA), who are responsible for retrieving the information supplied by the students and

lecturers. The Administrators also convey the information to the appropriate places when required or necessary. The students have access to the application to register, view, and update profile, and to sit for the Continuous Assessment (CA) test, and check their test result a minute after the test. The output design and their implementations are shown in chapter four.

3.2.3 DATABASE DESIGN

One of the major considerations of this project is to determine a suitable file structure and organization. The database named *multiple_choice_questions* was designed using MySQL. For the purpose of this project, a relational database named *multiple_choice_questions* with nineteen (19) tables was created.

Table 3.1: Users

Field	Type	Null	Key	Extra
Username	Varchar(15)	No	Primary	-
Password	Varchar(15)	No		-
AddUsers	Varchar(2)	No		-
UpdateUsers	Varchar(2)	No		-
ViewResult	Varchar(2)	No		-
GeneratePin	Varchar(2)	No		-
RetrievePin	Varchar(2)	No		-
viewQuestions	Varchar(2)	No		-
allocateCourse	Varchar(2)	No		-

Table 3.2: courses

Field	Type	Null	Key	Extra
Course_code	Varchar(10)	No	Primary	-
Course_title	Varchar(100)	No		-
Credit_unit	Int(3) unsigned	No		-
Semester	Enum("first","second")	Yes		-
Prerequisite	Varchar(10)	No		-

Table 3.3: degree_program

Field	Type	Null	Key	Extra
Degree_id	Int (3)	No	Primary	-
Degree_name	Varchar(50)	No		-
Dept_id	Int (3)	No	Foreign	-

Table 3.4: department

Field	Type	Null	Key	Extra
Dept_id	Int (3)	No	Primary	-
Dept_name	Varchar(30)	No		-
faculty_id	Int (3)	No	Foreign	-

Table 3.5: faculty

Field	Type	Null	Key	Extra
faculty_id	Int (3)	No	Primary	-
faculty_name	Varchar(50)	No		-

Table 3.6: student

Field	Type	Null	Key	Extra
Regno	varcharr (14)	No	Primary	-
Surname	Varchar(50)	No		-
otherNames	varchar (60)	No		-
Level	Enum ('100','200','300','400')	Yes		-
Sex	Enum ('male', 'female')	Yes		-
Degree_id	Int (3)	No	Foreign	-
Address	Varchar(100)	No		-
Date_of_birth	Date	No		-
Lga_id	Int (3) unsigned	No	Foreign	-
Age	Int (3)	No		-

Hostel_name	Varchar(30)	No		-
Room_number	Int (3)	No		-
Phone_number	Bigint (11) unsigned	No		-
Email	Varchar (30)	No		-
Marital_status	Enum("single","married")	Yes		-

Table 3.7: lga

Field	Type	Null	Key	Extra
lga_id	Int(3) unsigned	No	Primary	-
lga_name	Varchar(30)	No		-
StateId	Int(3) unsigned	No	Foreign	-

Table 3.8: state

Field	Type	Null	Key	Extra
StateId	Int(3) unsigned	No	Primary	Auto_increment
SName	Varchar(30)	No		-
StateCode	Varchar (12)	No		-

Table 3.9: students_pin

Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
PinNumber	Bigint(9) unsigned	No		-

Table 3.10: pin

Field	Type	Null	Key	Extra
pinNumber	Bigint(9) unsigned	No	Primary	-
Status	Enum("used","unused")|	Yes		-

Table 3.11: image

Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
Image_id	Varchar(20)	No		-
Id	Int(3)	No	Primary	auto_increment

Table 3.12: lecturers_courses

Field	Type	Null	Key	Extra
Lecturer_id	Varchar(14)	No	Foreign	-
Course_code	Varchar(14)	No	Foreign	-
Session	Varchar(10)	No		-
Semester	Enum("first","second")	Yes		-

Table 3.13: lecturers_identity

Field	Type	Null	Key	Extra
Lecturer_id	Varchar(14)	No	Primary	-
Password	Bigint (15) unsigned	No		-
designation	Varchar(20)	No		-
Discipline	Varchar(20)	No		-
Status	Enum("regular","visiting")	Yes		-
Surname	Varchar(50)	No		-
otherNames	Varchar(70)	No		-
Sex	Enum("male","female")	No		-
Address	Varchar(100)	No		-

Date_of_birth	Date	No		-
Dept_id	Int (3)	No	Foreign	-

Table 3.14: questions

Field	Type	Null	Key	Extra
q_id	int (3)	No	Primary	auto_increment
Question	Varchar(500)	No		-
Session	Varchar(14)	No		-
Course_code	Varchar(14)	No	Foreign	-
Q_number	Int (3)	No		-
A_option	Varchar(200)	No		-
B_option	Varchar(200)	No		-
C_option	Varchar(200)	No		-
D_option	Varchar(200)	No		-
Answer	Enum('A','B','C','D')	No		-

Table 3.15: result

Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
course_code	Varchar(14)	No	Foreign	-
Session	Varchar(14)	No		-
Mark	Int(3) unsigned	No		-
No_of_qs_answered_correctly	Int(3) unsigned	No		-

Table 3.16: registered_courses

Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
RegStatus	Enum("carry over","fresh")	Yes		-
Course_code	Varchar(14)	No	Foreign	-
Course_classification	Enum ("elective","core","general studies")	Yes		-

Session	Varchar(14)	No		-
Semester	Enum("first","second")	Yes		-

Table 3.17: Test_time

Field	Type	Null	Key	Extra
coursecode	Varchar(10)	No	Foreign	-
Session	Varchar(10)	No		-
Time	Int(3)	No		-
mark_per_q	Int(3)	No		-

Table 3.18 Test_status

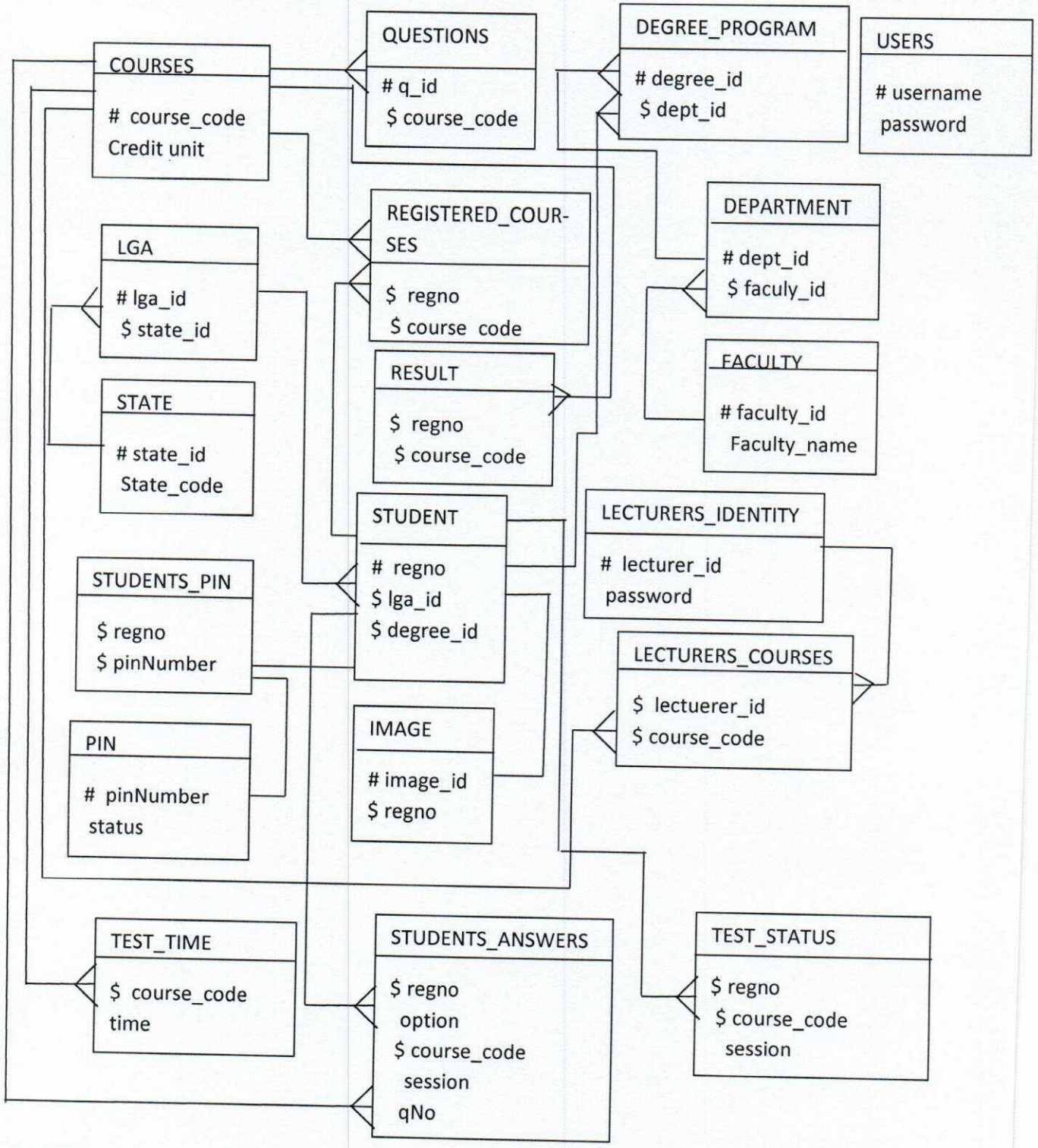
Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
coursecode	Varchar(14)	No		-
Session	Varchar(8)			-
Status	Int(1)	No		-

Table 3.19 Students_answers

Field	Type	Null	Key	Extra
Regno	Varchar(14)	No	Foreign	-
coursecode	Varchar(14)	No		-
Session	Varchar(8)	No		-
Option	Varchar(1)	No		-
QNo	Int(3)	No		-

3.2.4 ENTITY RELATIONSHIP DIAGRAM (ERD)

An Entity Relationship Diagram (ERD) is a specialized graphic that illustrates the interrelationships between entities in a relational database. Entity Relationship Diagram (ERD) uses symbols to represent three different types of information: rectangle represents an entity, diamond represents a relationship, and oval represents an attribute. In this project, the Entity Relationship Diagram (ERD) shows only the types of relationship between the entities in the relational database (either one-to-one, one-to-many or many-to-many relationship) The Entity Relationship Diagram for the relational database is shown below.



NOTE: #-primary key, ——— one-to-one relationship

$-Foreign key ———< one-to-many relationship

Figure 3.2-ENTITY RELATIONSHIP DIAGRAM (ERD)

3.2.5 CHOICE OF PROGRAMMING LANGUAGE

The software used in developing this application is WAMP (Windows Apache MySQL and PHP) server. Hypertext Preprocessor (PHP) is a server-side scripting language intended largely for the web development. PHP is one of the forerunners in the open source software movement. Apache and MySQl are the most widely used open source web server and Relational Database Management System (RDBMS) respectively. While, adobe Dreamweaver CS4 was also used for the design of the application interfaces. This is because of its flexibility and user friendliness.

3.2.6 USE CASE DIAGRAM

A use case diagram is one of the Unified Modeling Language (UML) set of diagrams. The actors are represented by stick figures and functions by ovals. Actors are only associated with functions they can perform. The use case diagram for the proposed system is shown in the figure below.

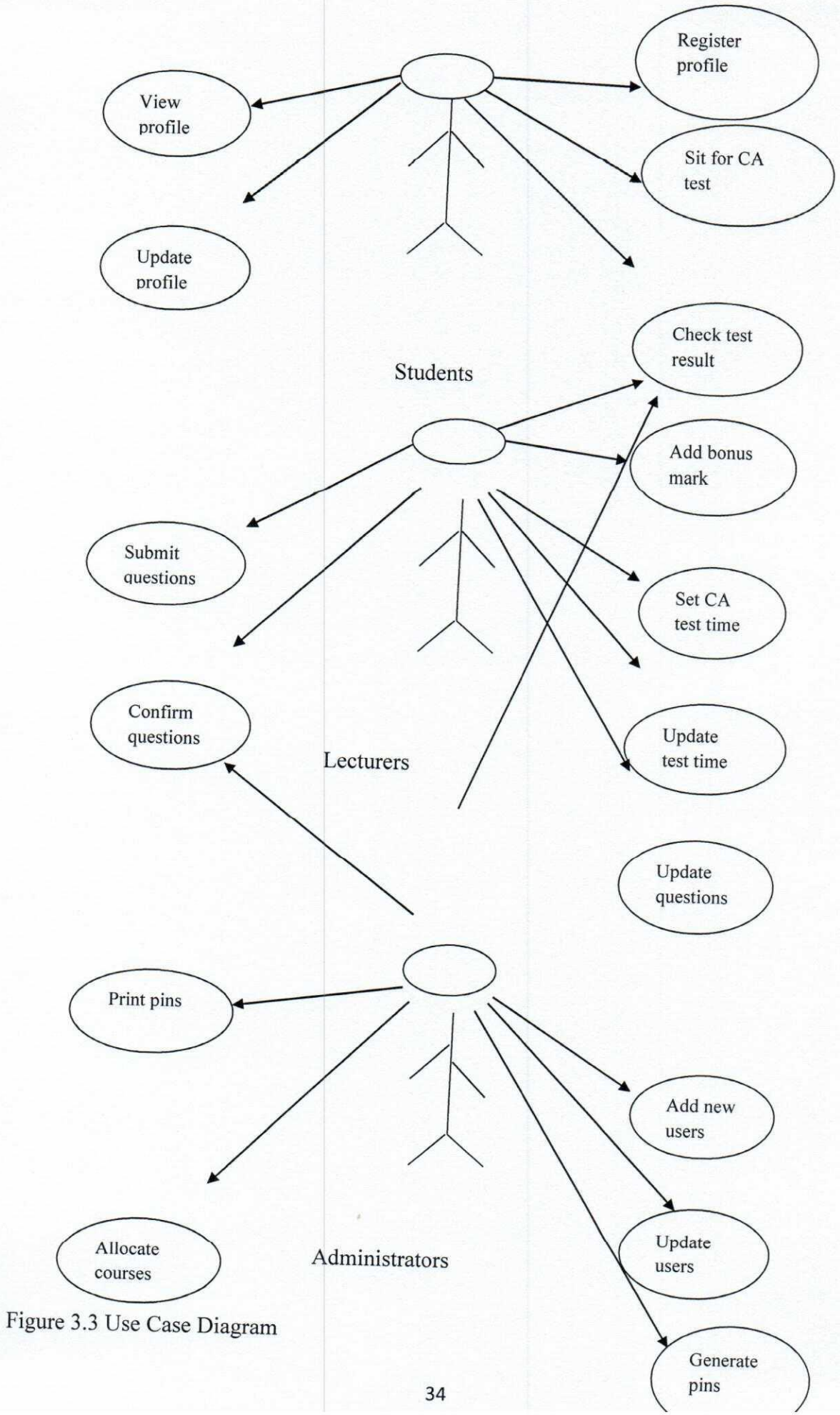


Figure 3.3 Use Case Diagram

CHAPTER FOUR

IMPLEMENTATION, TESTING, DOCUMENTATION AND MAINTENANCE

4.1 IMPLEMENTATION

Generally, the implementation of a system refers to the transformation of the system specification designed, from the originally obtained requirement into program codes. The system was implemented using PHP/MySQL technology and Adobe Dreamweaver CS4. Software implementation occurs when the new or proposed system might have been realized after which the new software is tested and found to be working without errors. It is the installation of the new software after all requirements are met based on users definition of quality. The new system must have additional functionality to replace the old system. Such functionality includes: reliability, performance and security of the software. After this, training the users on how to use the software begins.

As mentioned earlier, the application is designed to allow students to sit for test electronically and allows lecturers to submit questions for the test. Therefore, the application comprises different interfaces for the three categories of users (students, lecturers, and administrators). The interfaces among the others are forms, queries and reports

4.2 SYSTEM TESTING

System testing means executing software with some data to help ensure that the software works correctly. In other words, it is a verification technique carried out on a program in order to perform the expected operation correctly. For this research work, multiple choice questions from one of the lecturers in the university were used during the system testing. These provide successful execution.

4.2.1 RESULTS

The primary objective of this project is to save lecturers' time by leaving the application to write, mark, and give feedback on the test. It also examines how WBA can be used to improve the effectiveness and quality of assessment process. With this application, the objectives were attained.

4.2.2 DISCUSSION OF RESULTS

The results obtained from the developed system were compared with the results of the manual system and found to be correct and with even additional features that are not available in the manual system. The results therefore, are in conformity with most of the literatures reviewed. Thus, the Web-Based Continuous Assessment System has numerous advantages over manual systems.

THE HOME PAGE

This page provides the links for the students, lecturers, and the administrators to access different modules of the application, depending on their privileges defined by the application.

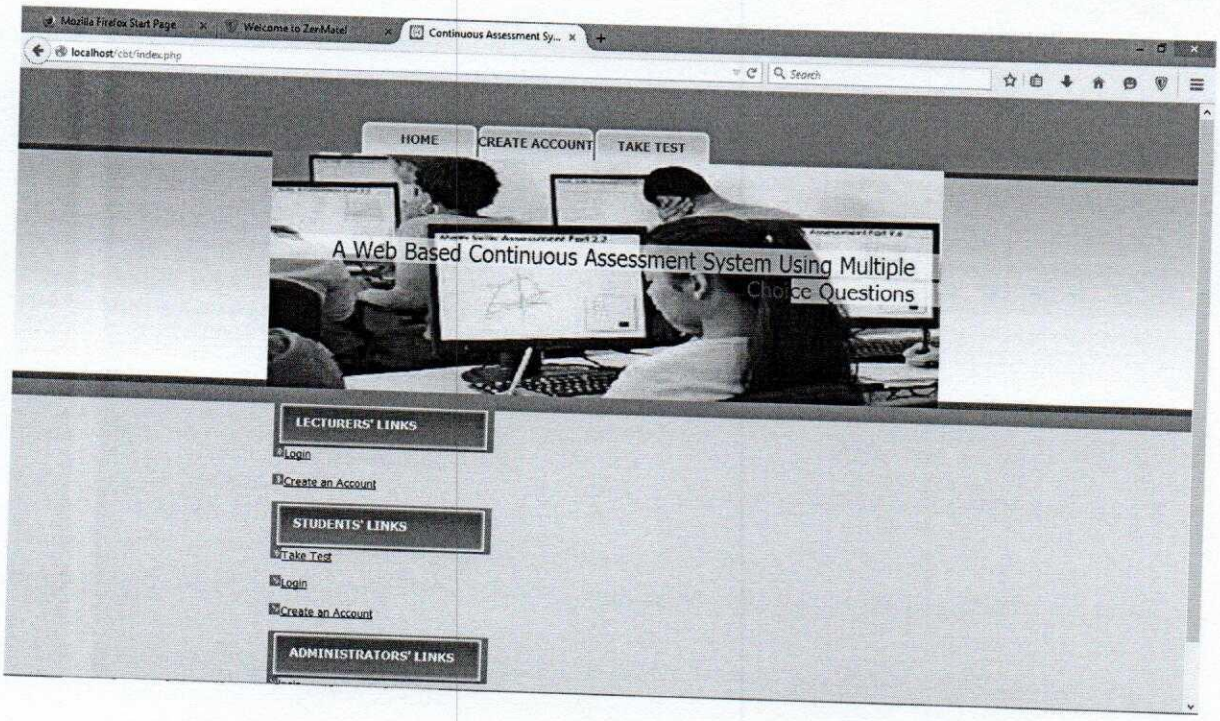


Figure 4.1: Home page

THE LECTURERS' LOGIN PAGE

To have access to the application beyond the home page, lecturers' authentication is necessary for security reasons and to deny unauthorized users from using the application. Hence, the login form requires a valid lecturer's ID and password to be able to access the lecturers' home page shown in figure 4.3 below.

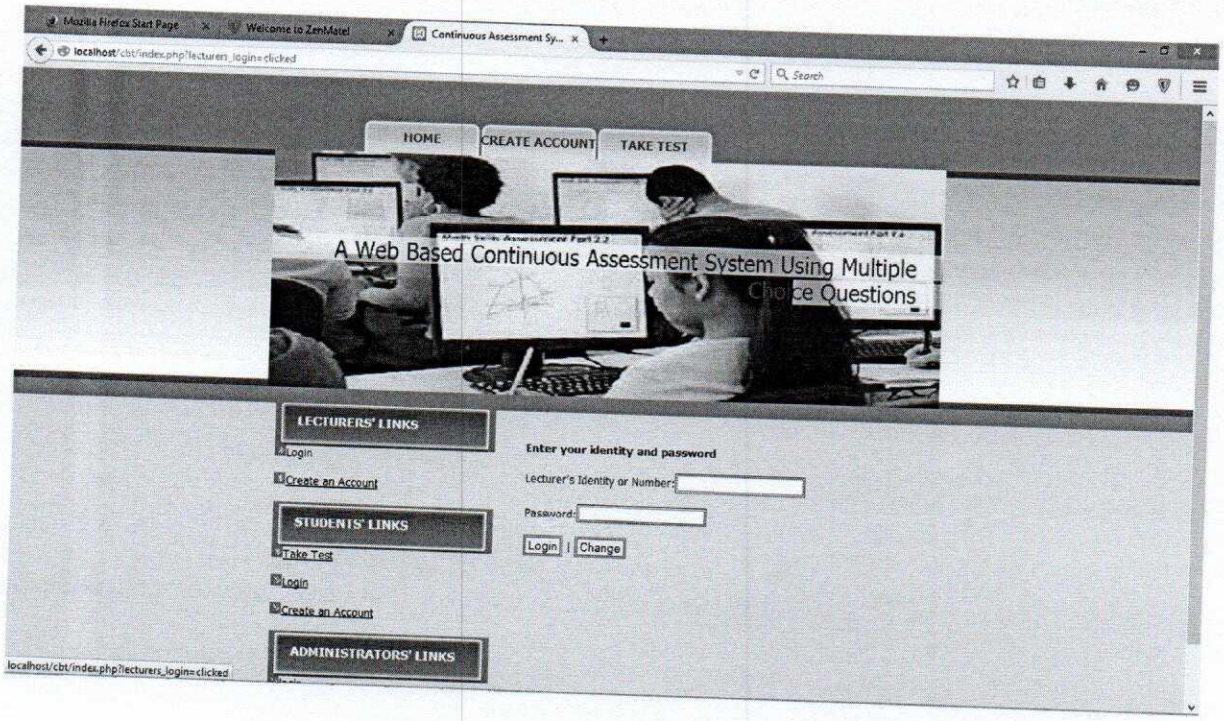


Figure 4.2-Lecturers login page

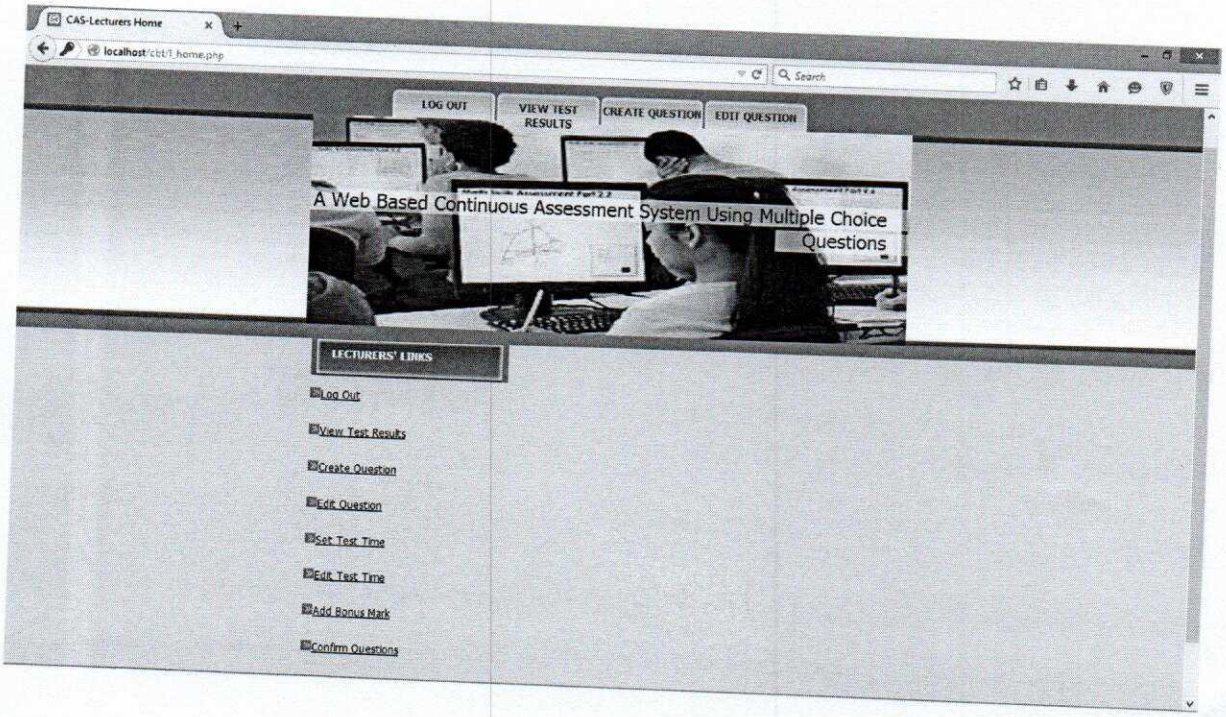


Figure 4.3: Lecturers home page

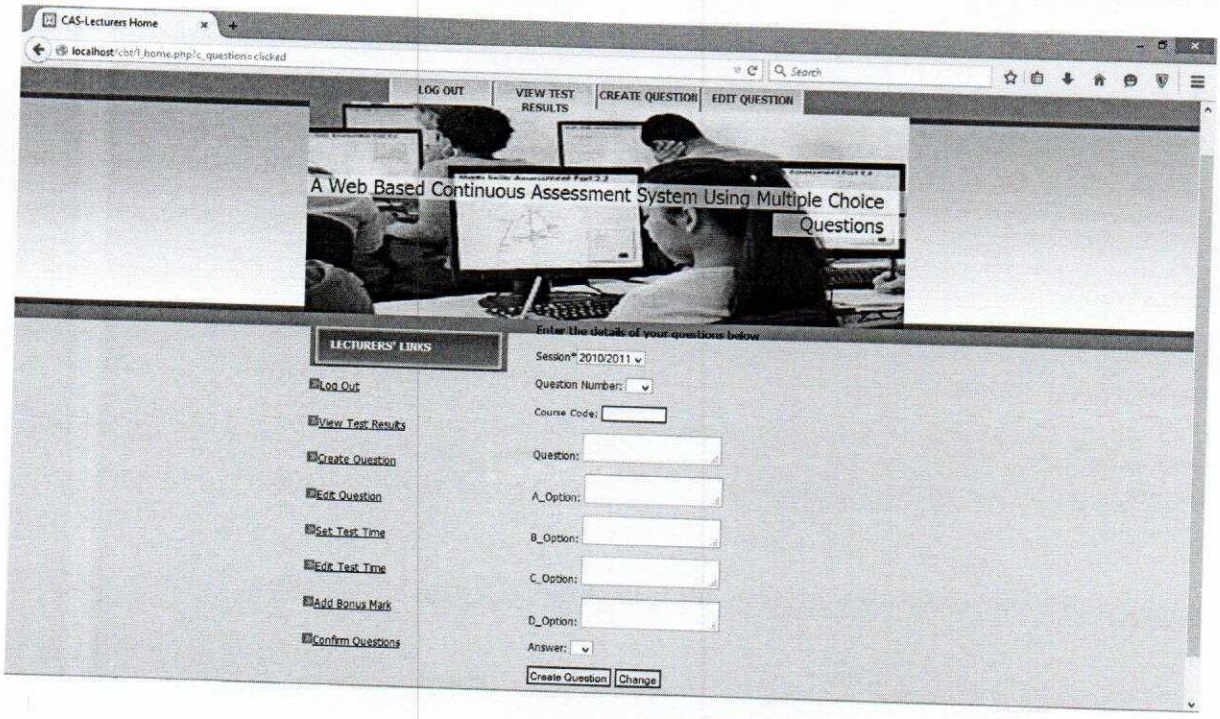


Figure 4.4: Insert test questions page

The figure shown above provides lecturers an easy way to use interface to submit test questions by providing the following details of each question: Question Number, Session, Course code, Question, A-option, B-option, C-option, D-option, and the correct answer (either A, B, C or D). After filling the form, the submit button needs to be clicked to finally submit the CA test questions.

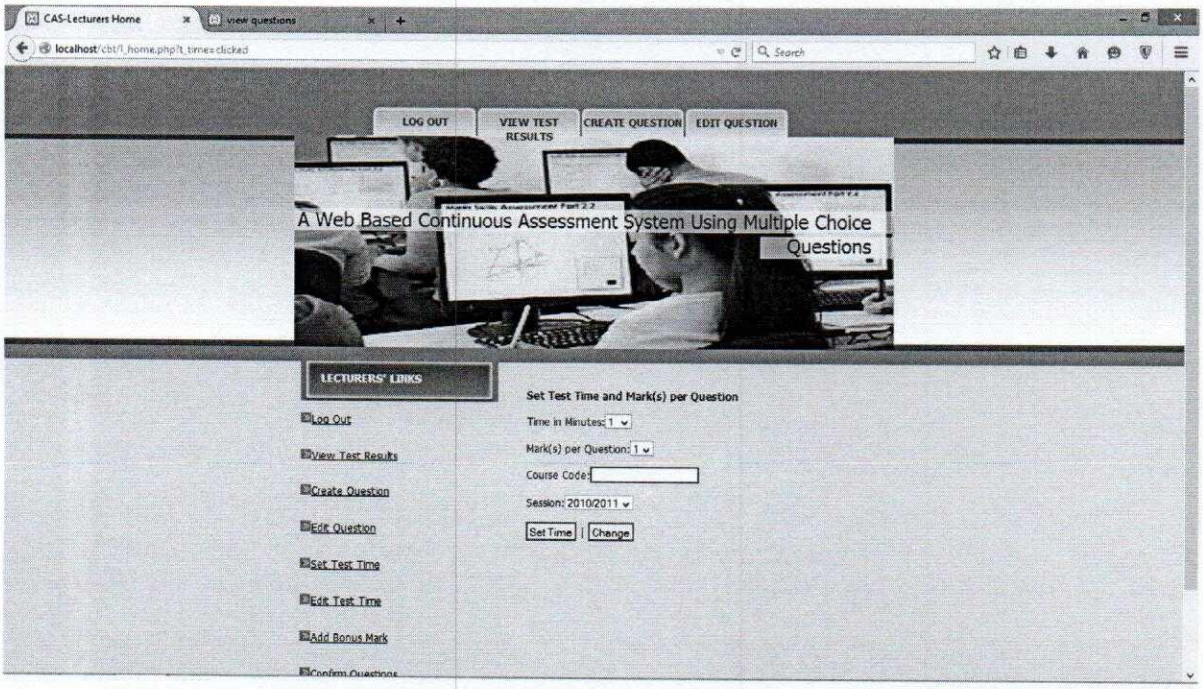


Figure 4.5: Set test time and mark (s) per each question page

Lecturers use the interface shown above to set time and mark (s) per each question for each course by providing the following details: Course code, Session, Mark (s) per each question, and the time in minutes. After providing the above details, the button named *set time* needs to be clicked to finally set the time and mark (s) per each question for the specified course and session.

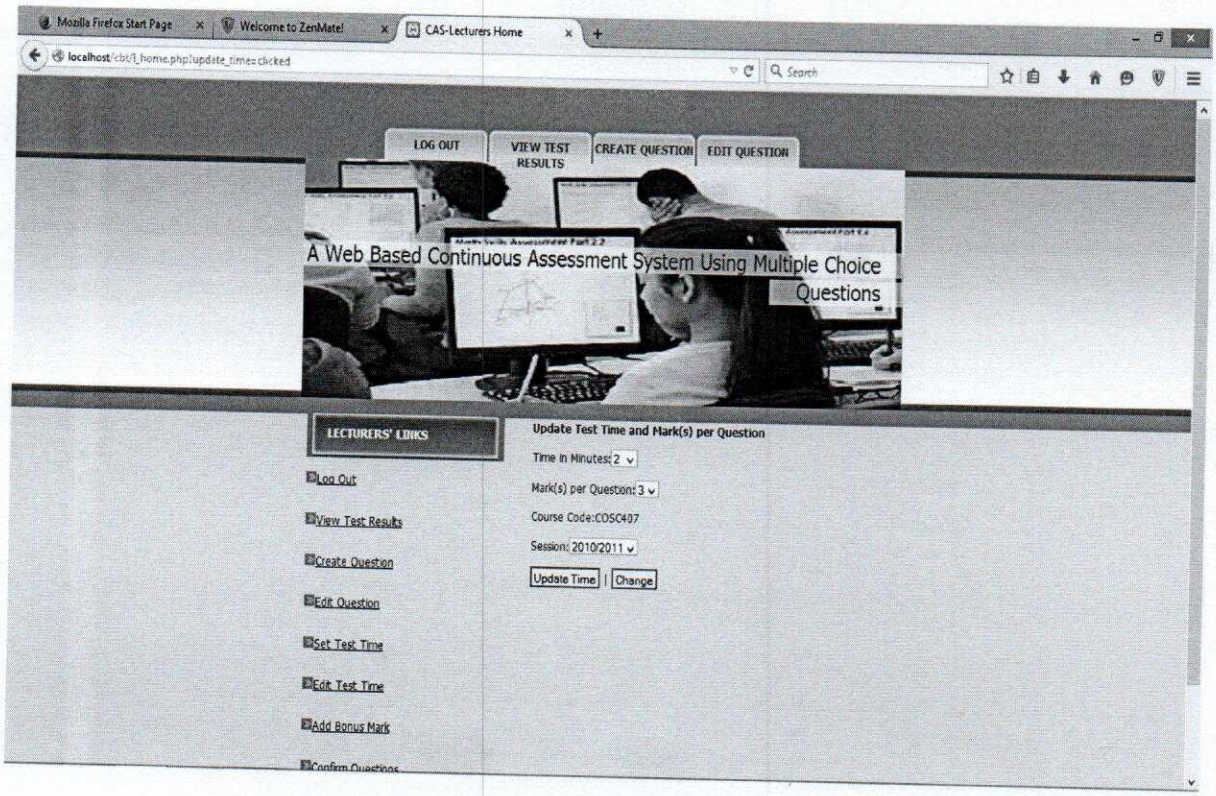


Figure 4.6: Update test time mark (s) per each question page

Lecturers use the interface shown above to update test time and mark (s) per each question for each course by providing the following details again: Session, Mark (s) per each question, and time in minutes. After providing the above details, the button named *update time* needs to be clicked to finally update the test time and mark (s) per question for the specified course and session.

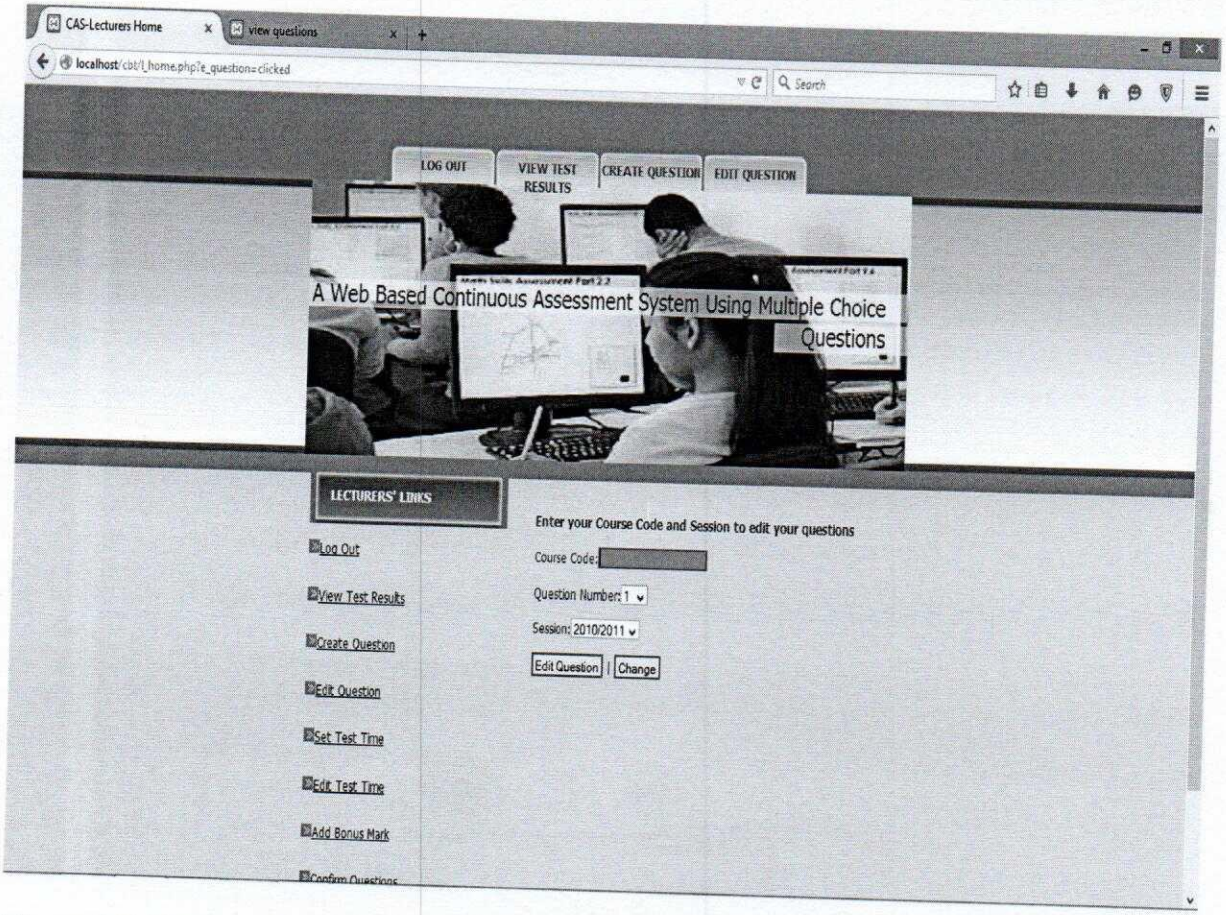


Figure 4.7: Retrieve test question to be updated page

The figure shown above allows lecturers to retrieve test questions to be updated by providing the following details: Question number, Session, and Course code. The button named *retrieve* needs to be clicked in order to retrieve the CA test question and other details.

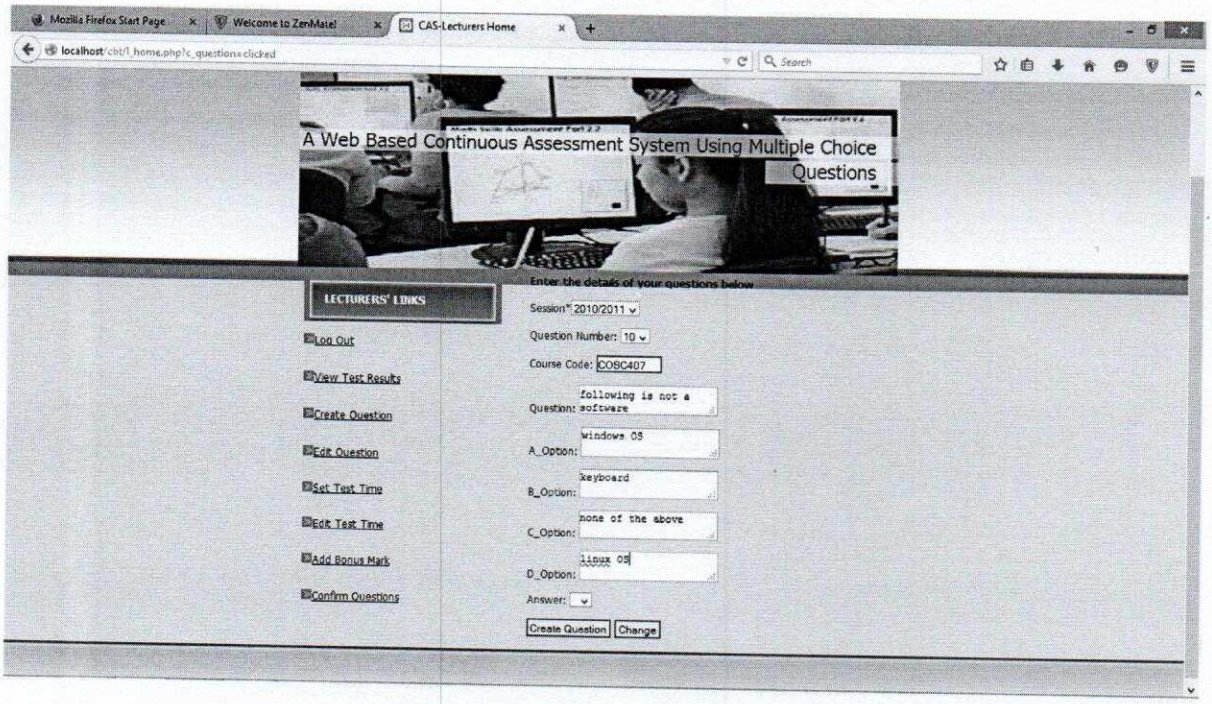


Figure 4.8: Update test question page

The figure shown above allows lecturers to update test questions by providing the following details as follow: Question number, Session, Course code, Question, A-option, B-option, C-option, D-option, and the correct answer (either A, B, C or D). The button named *update* needs to be clicked to finally update the test question and other details mentioned above.

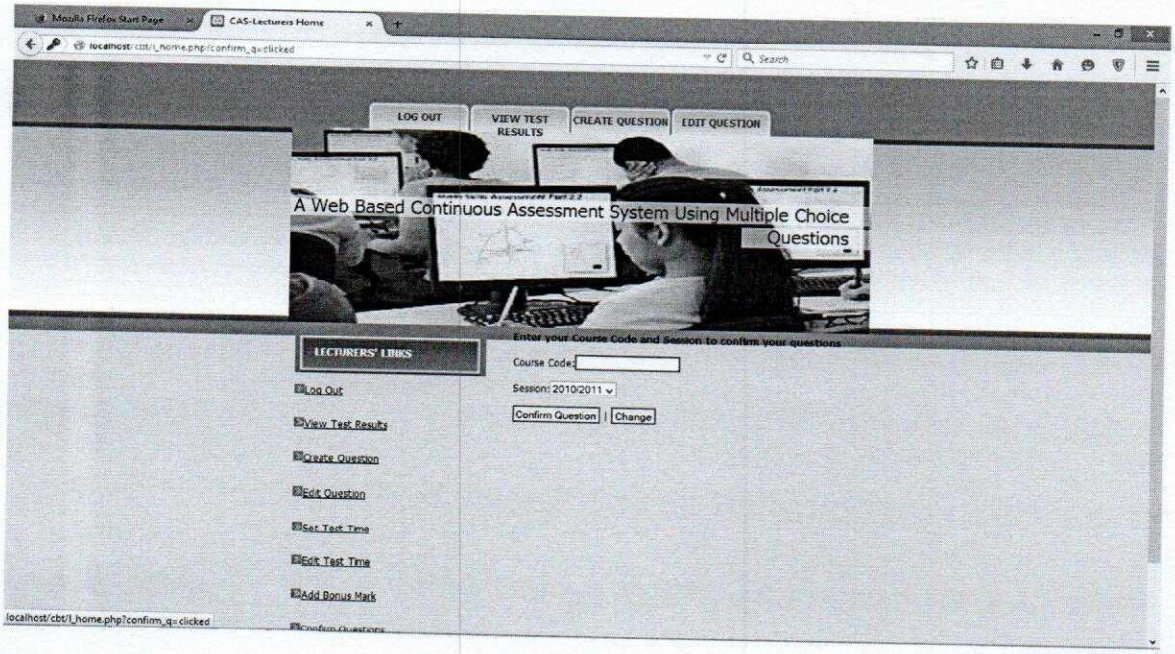


Figure 4.9: Confirm test questions page

Lecturers use the interface shown in the figure above to retrieve the test questions before the students sit for the test. Before the confirm button is clicked, valid course code and session are required. After the button is clicked, all the questions for the specified course and session are displayed on a different web page.

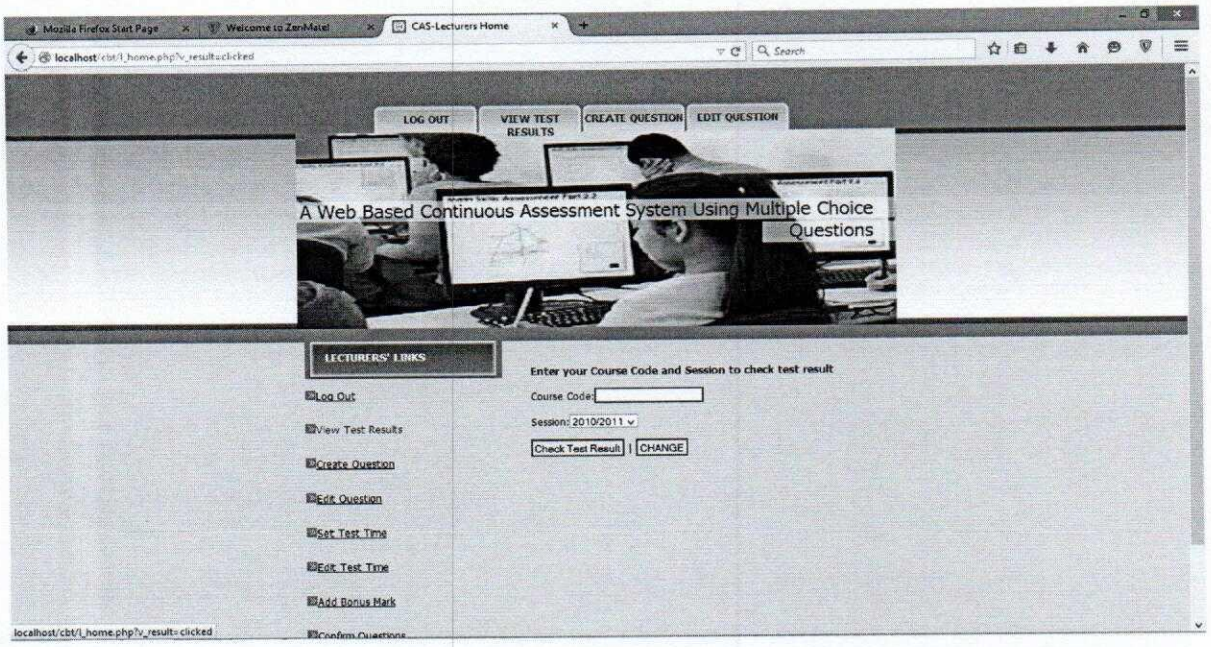


Figure 4.10: Check test result page

The figure shown above allows lecturers to check test results by providing valid course code and session. The check button needs to be clicked to view the test results.

THE TEST LOGIN PAGE

The students take test login page requires the students' registration number, password, session, and course code. When successfully logged in, the first question for the specified course and session is displayed first, before accessing the other questions. Accessing other questions is usually done by clicking on the button named *next question*. The figure below shows the web page that allows students to log on to the take test page.

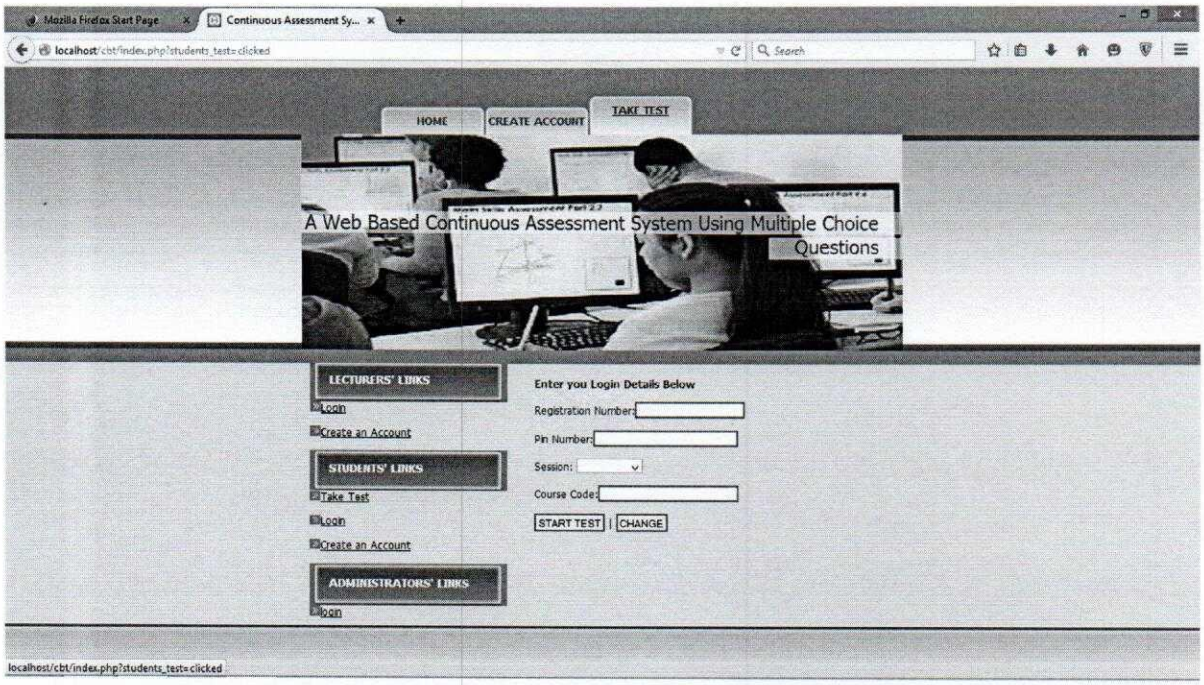


Figure 4.11: Take test login page

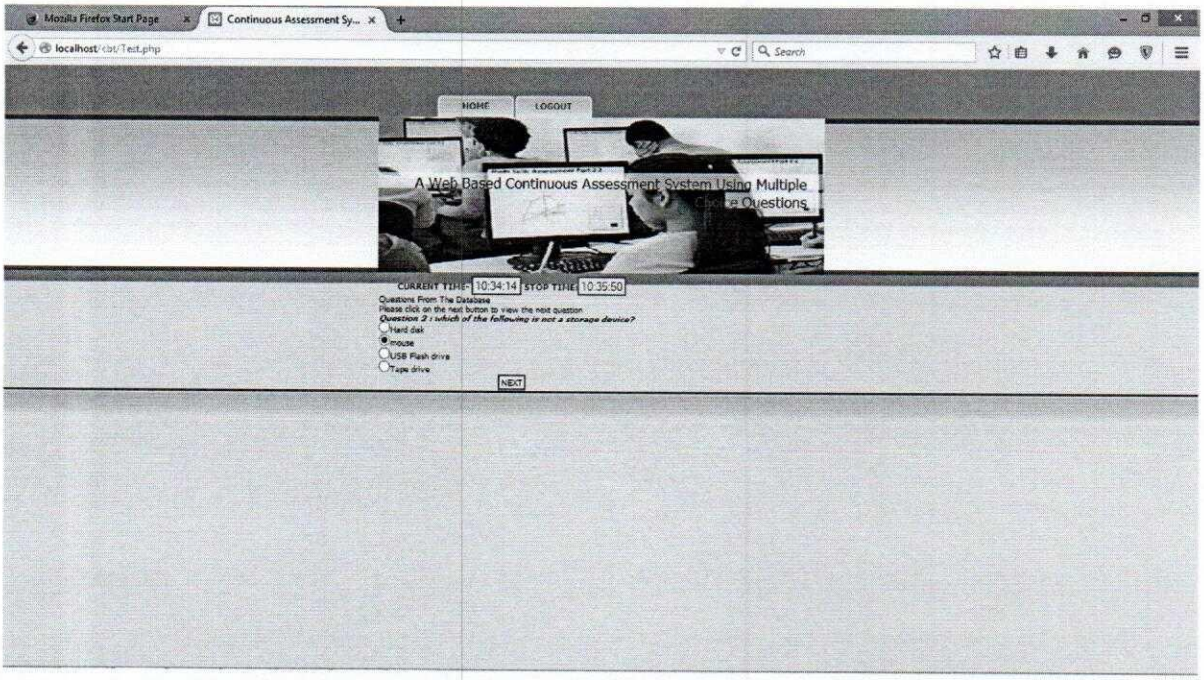


Figure 4.12: Take test page with a sample question and its options

The button named *next question* is clicked to view and answer the next question until the entire test questions for the specified course and session have been answered. As the students answer the questions, the application marks and scores the students based on the

specifications of the lecturers. Also, the application stores the students' scores, updates the test score if necessary, and provides instant feedback to the students a minute after the test. Figure 4.13 shown below shows a sample of the test feedback of a student after a successful completion of the test.

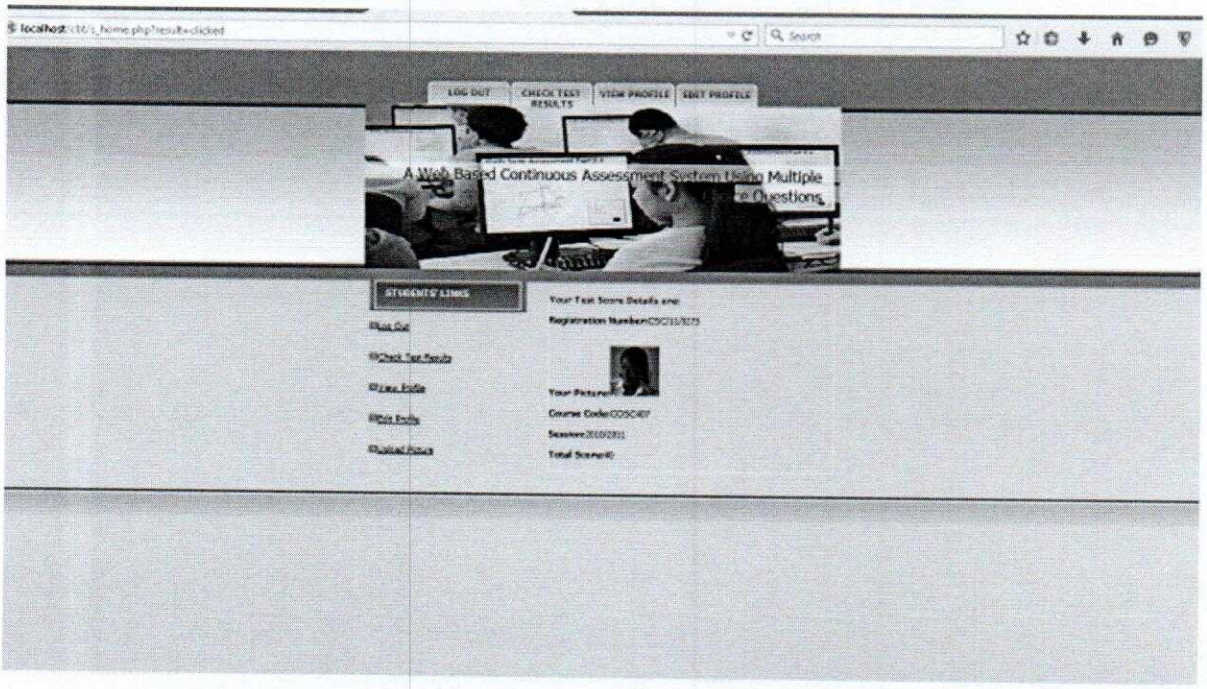


Figure 4.13: A sample test result page after a successful completion of the test.

OTHER USERS

The application is developed for three categories of users namely; Students, Lecturers, and Administrators. The roles of the first two have been mentioned earlier in the previous figures (from figure 4.10 to figure 4.13). However, the administrators can perform the following tasks:

i. Add new users
ii. Update existing users
iii. Generate pin numbers
iv. Retrieve pin numbers

v. Check test results

vi. Allocate courses to lecturers

vii. Retrieve test questions

THE ADMINISTRATORS' LOGIN PAGE

To have access to the application beyond the home page, administrators' authentication is necessary for security reasons and to deny unauthorized users from using the application. Hence, the login form requires valid username and password to be able to access the administrators' home page shown in figure 4.15.

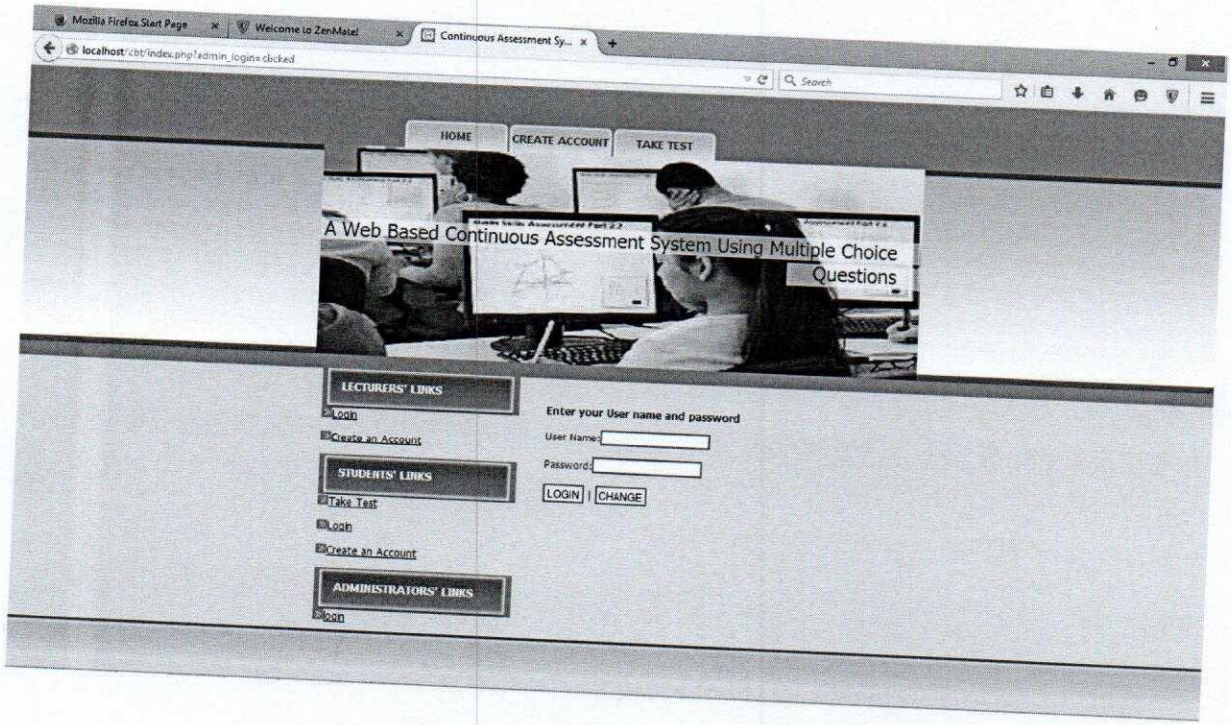


Figure 4.14: Admin login page

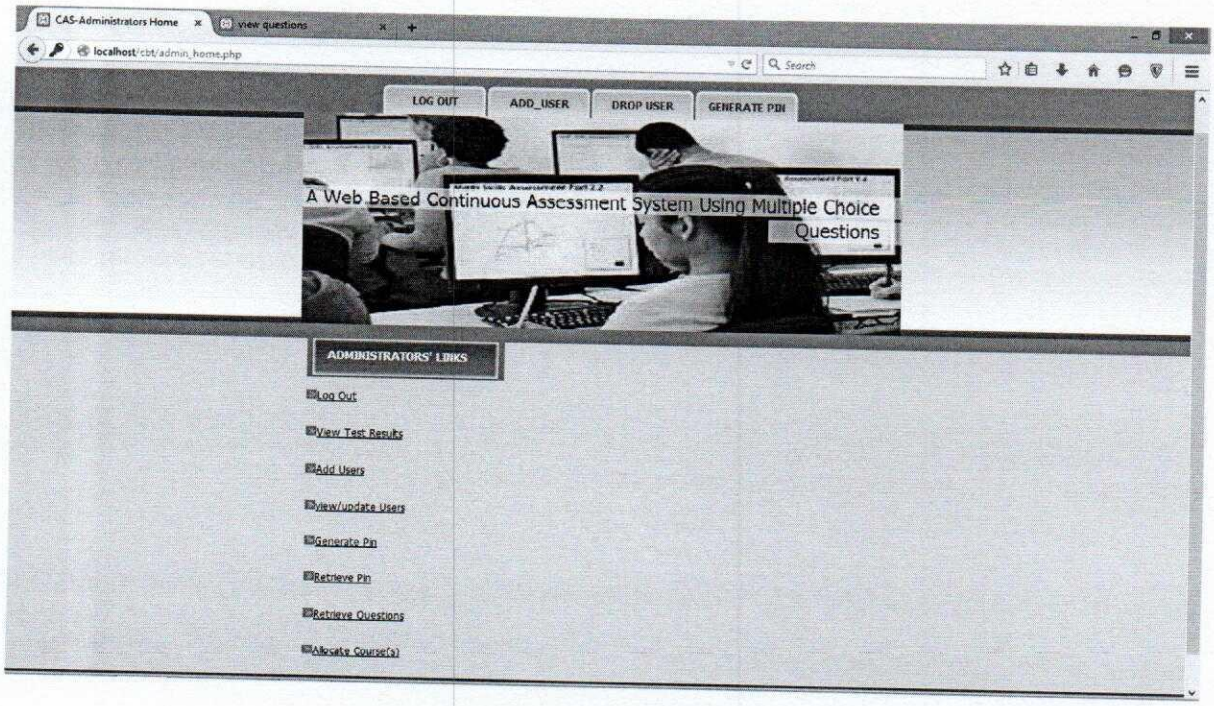


Figure 4.15: Admin home page

The figure shown above provides links to other accessible pages. These accessible pages allow administrators to add new admin page users, update existing admin page users, generate and retrieve pin numbers, check results, allocate courses to lecturers, and confirm test questions.

4.3 SYSTEM DOCUMENTATION

Documentation is important in that it provides information about the applications that is useful in the maintenance of the applications. Documentation is normally done either inside or outside the application source code. In this project, documentation is done inside the source code of the applications. This is usually done through the use of comments. Comments are sections of a program or an application that are ignored by a compiler or an interpreter, and are used to document the program or application. Documentation is also important when errors occur, and also when additional requirements need to be added to the existing system.

4.4 SOFTWARE MAINTENANCE

Software maintenance means updating and improving software to ensure continuous and useful state of the software. The maintenance phase in software development involves making changes to the new system so as to support its operational effectiveness. It also includes making changes to improve performance, correct errors, enhance security or address users' requirements. Generally, the maintenance of this application is a sole responsibility of the super administrators. In general, maintenance can be preventive or corrective maintenance.

CHAPTERFIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

In summary, the work of this project covers all the necessary procedures required in designing a WBA system, particularly an academic WBA system. The system aimed at delivering test to the students of the university. The methodology adopted includes consultation of lecturers, students and some knowledgeable people in the field. Other methods of information generation adopted includes surfing the internet, and review of relevant literatures (such as textbooks, journals etc.). The software was implemented using WAMP (Windows Apache MySQL and PHP) application package. WAMP was used to serve as the *localhost* for the application before finally launching it on the internet.

5.2 CONCLUSION

The overall balance of assessment in a course is so vital and important. Although computerized testing facilities can provide a rapid means of assessing and providing feedback to large number of students yet it is essential to consider their uses as part of the overall course strategy, especially as multiple choice/limited type questions are not suitable for every type of assessment (such a extended response questions), hence, paper-based test can complement the WBA. Electronic assessment tools are unlikely to reduce significantly the burden of assessment, but they can be used to promote deeper and more effective learning, by testing a range of skills, knowledge and understanding.

Using computers in assessment does not mean to have more multiple choices testing to the exclusion of other assessment techniques. A wide range of innovative assessment methods

lend themselves to computer web-based implementation. Therefore, research into automatic assessment should not be seen as an option but as a necessity.

5.3 RECOMMENDATIONS

It is very clear that the implementation of this Web-Based Continuous Assessment System (WBCA) is necessary, because without being done, the design will be useless. I recommend that further research should be made on this work so that necessary amendments and improvement can be made. Finally, I recommend that the registration system of the university should be computerized and incorporated into this project work in order to allow easy retrieval of courses registered by the students of the university.

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APPENDIX A: PROGRAM SOURCE CODE

```
<html><head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" /><title>Continuous Assessment System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="styles.css" rel="stylesheet" type="text/css" media="screen" />
<script src="instance.js" type="text/javascript" ></script>
<script Language="JavaScript">
function listlga()
{
        var xmlobject5=createInstance();
        var state=document.getElementById('state').value;
        xmlobject5.open("GET","listlga.php?state="+state,true);
    xmlobject5.send(null);
        xmlobject5.onreadystatechange=function()
        {
                if(xmlobject5.readyState==4 && xmlobject5.status==200)
                {

document.getElementById('select1').innerHTML=xmlobject5.responseText;
                }
        }
}
<!-- hide
var timeStr, dateStr;
function clock() {
now= new Date();
// time
hours= now.getHours();
```

```
minutes= now.getMinutes();
seconds= now.getSeconds();
timeStr= "" + hours;
timeStr+= ((minutes < 10) ? ":0" : ":") + minutes;
timeStr+= ((seconds < 10) ? ":0" : ":") + seconds;
document.clock.time.value = timeStr;
setTimeout("clock()",1000);
//Timer= setTimeout("alert('time is up')",5000);//displays an alert after 1 seconds
}
// -->
</script>
</head>

<body>
<div id="content">
<div id="back"><!-- header begins -->
<div id="header">
<div id="menu">
<ul>
<li><a href="index.php" title="">Home</a></li>
<li><a href="index.php?contact_us=clicked" title="">Contact Us</a></li>
<li><a href="index.php?students_new=clicked" title="">Create Account</a></li>
<li><a href="index.php?students_test=clicked" title="">Take Test</a></li>
</ul>
</div>
<div id="logo"><br><br><br><br>
<a href="#">A Web Based Continuous Assessment System Using Multiple Choice Questions</a>
</div>
</div>
```

```
<!-- header ends -->
<!-- content begins -->
<div id="main">
<div id="right">
<?php
if(isset($_GET['lecturers_login'])){?>
<?php
if(isset($_POST['l_login']))
 {
        session_start();// starts a session
    // variable declaration
        $l_id=$_POST['l_id'];
    $password=$_POST['password'];
    $_SESSION['password']=$password;
    if(empty($l_id) || empty($password))
     {
       echo "<b style='color:red'><i>either your ID or password is empty</i></b>";

     }
   else
    {
        require_once("ofiles/connection.php");
        $result_fromDb=mysql_query("select * from lecturers_identity where
lecturer_id='$l_id' and password='$password'") or die(mysql_query());
        $result1_fetch=mysql_fetch_array($result_fromDb);
        $l_id_from_db=$result1_fetch['lecturer_id'];
        if(empty($l_id_from_db))
          {
            echo "<b style='color:red'><i>either your ID($l_id) or password($password)
is incorrect</i></b>";
```

```
                }
                else
                {
                                                $_SESSION['llid']=3;
                                                $_SESSION['l_id']=$l_id;
                                                $_SESSION['password']=$password;
                 header("location:l_home.php");

                }
            }
  }
?>
   <form action="index.php?lecturers_login=clicked" method="post"><br><br><br>
   <p><b><strong>Enter your identity and password</strong></b><p><br>Lecturer's Identity or Number:<input name="l_id" type="text" size="20"><br><p><br>
        Password:<input type="password" size="20" name="password"><br><br>
        <input type="submit" name="l_login" value="Login" size="27"> | <input type="reset" name="change" value="Change" size="27">
  </form>
<?php
}
if(isset($_GET['students_login'])){?>
<?php
if(isset($_POST['s_login']))
 {
        session_start();// starts a session

      // variable declaration
      $regno=trim($_POST['regno']);
                $pn=trim($_POST['pinno']);
```

```
$_SESSION['regno']=$regno;
$_SESSION['pin']=$pn;
if(empty($regno) || empty($pn)){ // validate input
    echo "<b style='color:red'><i>Please  complete the form</i></b>";
 }
else
{
  //checks whether the last part of the registration number or pin number is not
numeric or not
  if(!is_numeric($pn))
   {
    echo "<b style='color:red'><i>pin number($pn) must be numeric</i></b>";
   }
  else
  {
   // checks whether the pin number has only nine digits
   if(strlen($pn)!=9)
    {
     echo "<b style='color:red'><i>your pin number($pn) must be nine
digits</i></b>";
    }
   else
   {
    require_once("ofiles/connection.php");
    // checks whether the registration number exists in the database
    $result_fromDb=mysql_query("select regno from student where
regno='$regno'") or die(mysql_query());
    $result_fetch=mysql_fetch_array($result_fromDb);
    $regnnumber=$result_fetch['regno'];
    if(empty($regnnumber))
     {
```

```
                echo "<b style='color:red'><i>This registration number($regno) does not exist</i></b>";
                }
               else
                {
                                        // checks whether the pin number exists
                $pin_query_p=mysql_query("select * from pin where pinnumber=$pn") or die(mysql_query());
                $pin_fetch_p=mysql_fetch_array($pin_query_p);
                $pin_extract=$pin_fetch_p['pinnumber'];
                $status_extract=$pin_fetch_p['status'];
                if(empty($pin_extract))
                  {
                    echo "<b style='color:red'><i>This pin number($pn) is invalid or does not exist</i></b>";
                  }
                else
                  {
                    // checks whether the pin number belongs to the specified registration number
                    $pin_query=mysql_query("select pinnumber from students_pin where regno='$regno'") or die(mysql_query());
                    $pin_fetch=mysql_fetch_array($pin_query);
                    $pinnumber=$pin_fetch['pinnumber'];
                                                //echo "input:$pn<br>db:$pinnumber";
                    if($pinnumber!=$pn)
                      {
                                                echo "<b style='color:red'><i>This pin number($pn) does not belong to $regno</i></b>";
                      }
                    else
                    {
```

```
$_SESSION['Students_login_id']=2;
                        header("location:s_home.php");
                    }
                    }
                }

            }
            }
        }
    }
?>
        <form action="index.php?students_login=clicked" method="post"><br><br><br>
    <p><b><strong>Enter your Registration Number and
password</strong></b><p><br>Registration Number:<input name="regno" type="text"
size="20"><br><p><br>
        Password/Pin Number:<input type="text" size="20" name="pinno"><br><br>
        <input type="submit" name="s_login" value="Login" size="27"> | <input
type="reset" name="change" value="Change" size="27">
  </form>
<?php
}
if(isset($_GET['lecturers_new'])){?>
<?php
if(isset($_POST['create']))
 { // captures all the students' profile
 $s_name=addslashes(trim($_POST['s_name']));
 $o_names=addslashes(trim($_POST['o_names']));
 $designation=$_POST['designation'];
 $sex=$_POST['sex'];
 $lid=$_POST['l_id'];
```

```
$status=$_POST['status'];
$discipline=$_POST['discipline'];
$address=addslashes(trim($_POST['address']));
$password=addslashes(trim($_POST['password']));
$r_password=$_POST['r_password'];
if(empty($s_name) || empty($lid) || empty($o_names) || empty($password) ||
empty($r_password))
{
echo "<b style='color:red'>Please complete the form</b>";
}
else
{

if($password!=$r_password)
{
echo "<b style='color:red'>Passwords do not match</b> ";
}
else
{
if(strlen($password)!=10 || strlen($r_password)!=10)
{
echo "<b style='color:red'>Passwords must be 10 digits</b> ";
}
else
{
include("ofiles/connection.php");
$result_fromDb=mysql_query("select lecturer_id from
lecturers_identity where lecturer_id='$lid'");
$result_fetch=mysql_fetch_array($result_fromDb);
$lid_from_db=$result_fetch['lecturer_id'];
```

```
                    if(!empty($lid_from_db))
                        {
                            echo "<b style='color:red'>Lecurere ID($lid) already
exists</b>";
                        }
                    else
                    {
                        $dept_query=mysql_query("select dept_id from department
where dept_name='$discipline'") or die(mysql_error());
                        $dept_fetch=mysql_fetch_array($dept_query);
                        $dept_id=$dept_fetch['dept_id'];
                    $insertRecord=mysql_query("insert into lecturers_identity
values('$lid','$password','$designation','$discipline','$status','$s_name',
'$o_names',$dept_id,'$sex','$address')") or die(mysql_error());
                        if($insertRecord)
                            {
                                echo "<b style='color:green'>$lid has been
registered successfully</b>";
                            }
                        else
                            {
                                echo "<b style='color:red'>please there is a
problem try again later</b>";
                            }
                    }
                }
            }
        }
    }
?>
    <form action="index.php?lecturers_new=clicked" method="post"><br>
```

```
<p><b><strong><u>Lecturers Registration Here</u></strong></b><p><br>

Lecturer's ID:<input type='text' NAME='l_id' value="<?php if(isset($_POST['l_id'])) {
echo $_POST['l_id'];} ?>"/><br><br>

Password:<input type='password' NAME='password'  maxlength="10" /><br><br>

Re-Type Password:<input type='password' NAME='r_password'
maxlength="10" /><br><br>

Surname:<input type='text' NAME='s_name' value="<?php
if(isset($_POST['s_name'])) { echo $_POST['s_name'];} ?>"/><br><br>

Other Names:<input type='text' NAME='o_names' value="<?php
if(isset($_POST['s_name'])) { echo $_POST['s_name'];} ?>"/><br><br>

Sex:<select name='sex'>

<option>male</option>

<option>female</option>

</select><br><br>

Designation:<select name='designation'>

<option>professor</option>

 <option>Associate professor</option>

  <option>senior lecturer</option>

<option>lecturer I</option>

<option>lecturer II</option>

<option>assitant lecturer</option>

<option>Graduate assistant</option>

</select><br><br>

Status:<select name='status'>

<option>regular</option>

<option>visiting</option>


</select><br><br>

Discipline:<select name='discipline'>

<option>mathematics</option>

<option>economics</option>
```

```
<option>physics</option>
<option>chemistry</option>
<option>computer science</option>
<option>statistics</option>
<option>accounting</option>
<option>history</option>
</select><br><br>
Address:<textarea name="address" rows="2" cols="30"><?php
if(isset($_POST['address'])) { echo $_POST['address'];} ?></textarea><br><br>
<input type='submit' value='Create Account' name='create' /> |
<input type='reset' name='reset' value='change' />
</form>
<?php }?>
</div>
<div id="left">
<?php include("links.php");?>
</div>
</div>
</div>
</div>
<div id="footer">

</div>
<!-- footer ends-->
</body></html>
```