NEAR EAST UNIVERSITY

GRADUATE SCHOOL EDUCATIONAL SCIENCES

COMPUTER EDUCATION AND INSTRUCTIOAN TECHNOLOGY

DEVELOPMENT AND EXAMINATION PROCESS OF ELECTRONIC EXAM PLATFORM

MASTER THISES

Master Student

REZGAR HASAN SAEED

Nicosia

August, 2019

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Thesis Advisor

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August, 2019

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This is to certify that we have read this thesis submitted by Rezgar Hasan Saeed titled "**Development and examination process of electronic exam platform**" and that in our opinion it is fully adequate, in scope and quality as a thesis for the degree of Master of Science

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DECLARATION

I hereby declare that, all the information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

REZGAR HASAN SAEED

…./…./2019

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To the Family ……

ABSTRACT

DEVELOPMENT AND EXAMINATION PROCESS OF ELECTRONIC EXAM PLATFORM

REZGAR HASAN SAEED

Master Program in Computer Education and Instructioan Technology

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The research aims to identify the trends of the research sample members of the students and the employees who took the electronic exams in universities about the relationship between the availability of the requirements and security of applying the electronic exams and the s success of the implementation process. In methodology section, Addie model used for develop electronic exam platform. In design process, this research aims to find out output of the design process. After develop the electronic exam platform then 10 academician included into this study for their views on this platform.

***Keywords*:** Computer-based examination, Electronic exam, Examination Security, E-Learning, Web-based.

ÖZET

ELEKTRONİK SINAV PLATFORMU GELİŞTİRME VE İNCELEME SÜRECİ

REZGAR HASAN SAEED

Bilgisayar Eğitimi ve Öğretim Teknolojisi Yüksek Lisans Programı
Danışman: Yrd. Doc. Dr. Emrah SOYKAN
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Bu araştırmada, egitimde degerlendirme surecine katki saglamak amacli bir uzaktan sinav sistemi gelistirilmesi amaclanmistir. Uzaktan yapilan sinavlardaki en buyuk rkdiklik olarak yapilan sinavin guvenligi onem tasimaktadir. Bu yuzden Elektronik sınavların uygulanmasının güvenliği ile uygulama sürecinin başarısı arasındaki ilişki hakkındaki eğilimlerini belirlemek onemlidir. Metodoloji bölümünde, Addie modeli elektronik sınav platformu geliştirmek için kullanıldı. Tasarım sürecinde, bu araştırma tasarım sürecinin çıktısını bulmayı amaçlamaktadır. Elektronik sınav platformunu geliştirdikten sonra 10 akademisyen bu platformdaki görüşleri için çalışmaya dahil edildi.

***Anahtar Kelimeler*:** Bilgisayar tabanlı sınav, Elektronik sınav, Sınav Güvenliği, E-Öğrenme, Web tabanlı.

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LIST OF ABBREVIATIONS

E-Exam	:Electronic Exam
OES	:Online Examination System
PC	:Computer
ID	:Identify Card
ASP	:Active Server Page
NET	:Network
SAP	:Systems Application Product
UGA	:University Grenoble Alpes
MOOC	:Massive Open Online Course
ETS	:Educational Testing Service
CIS	:Computer Information System
ECDL	:European Computer Driving License
CSC	:Card Security Code
TUFAS	:Turku University Finland Applied Sciences
AME	:Ace Medical Education
RWTH	:Rheinisch Westfälische Technische Hochschule
WETAS	:Warner Electric Test Assistant System
LMS	:Learning Management Systems
RLO	:Reusable Learning Objects
QEA	:Quantified Event Automata
IDEs	:Internet Demonstration Evaluation System
ECI	:Environmental Change Institute
EES	:Electronic Examination System

EA	:Electronic Art
TUAS	:Turku University Applied Sciences
IT	:Information Technology
SSS	:Senior Secondary School
SS2	:Secondary School Class 2
AP	:Arterial Pressure
IP	:Internet Protocol
LAN	:Local Area Network
HTTP	:Hyper Text Transfer Protocol
TV	:Television
TLD	:Top Level Domain
SDL	:Software Development Life
HTML	:Hypertext Markup Language
AJAX	:Asynchronous JavaScript and XML
XML	:Extensible Markup Language
CSS	:Cascading Style Sheets
ESLT	:Extensible Stylesheet Language Transformation

CHAPTER I

INTRODUCTION

From the advent of Electronics Exam Framework in 1990s electronic exam has continually been upgraded. It has been connected to a wide range of examination practice with the rapid advancement of software engineering and innovation and constant advancement of hypothesis exam Ming. At present, most expansive scale examinations (across the country confirmation exam and PC rank and government employee examinations) uses exam papers and standard answer sheets where the appropriate response sheets receive the method of electronic paper investigation. Concerns are rising on budgetary allocation to examinations because of the cost of paper exam and its administration. However, the electronic examination is becoming a feasible solution providing cost effectiveness productivity and impact (YU, 2016). History affirms that old China was the first nation on the planet that actualized an across-the-country institutionalized examination, which was known as the "imperial examination". The primary reason for this examination was to choose capable personalities for explicit legislative positions. The supreme examination was built up by the Sui Dynasty in 605 and was later canceled by the Qing Dynasty 1300 years after the fact at 1905. Britain received this examination framework in 1806 to choose explicit possibility for positions in Her Majesty's Civil Service. This examination framework was later connected to instruction (Ana & Bukie, 2013).

E-Exam management system is comprised of three members: understudies instructors and a chief. Director is a specialist that is in charge of the entire procedure, oversees questions, answers, grades. Supervisor is expected to be straightforward, so the plan depends on a Trusted Third Party. Supervisors verify understudies and instructors by their skill sets and consequently their true personality are uncovered. Property of obscurity is accomplished by applying the fair chief the point is to accomplish obscurity without depending on a legit supervisor (Huszti & PethO, 2010).

Electronic examination and training stage helps answer exactness lessens and improves activity trouble of replying. In the interim, cheating amid examination is successfully counteracted through arbitrary age of the request of various exam questions and replies. Double personality validation of understudy and ID card cards is accomplished through Electronic hardware which upgrades legitimacy of monetary

administration examination. Our future prospect is to additionally investigate budgetary administration instructing and examination. We intend to create educating and examination stage which can be utilized on versatile terminals. For example, tablet PCs and cell phones to break existing confinements; to accomplish incorporation of budgetary administration instructing and propel data innovation and to advance improvement of budgetary the board training effectively (YU, 2016).

Universities and other educational bodies like Stanford and Berkeley have set them up in Massive Open Online Course (MOOC). Understudies can be stamped on the web in spite of the fact that they are not yet allowed a legitimate certificate. Different foundations utilize e-exams to allow understudies with authentications which have an authoritatively-perceived validity. This occurs for example, with exam Ming associations like ETS2 the world chief in the matter of surveying content-learning and capacities in different subjects. Different models are CIS and Microsoft's vocation affirmation projects and ECDL the pioneer in surveying individuals' PC office aptitudes and in discharging "European Computer Driving Permit" (Kassem et al, 2015).

Electronic (E) examination framework is an original thought in the instructive space. E-examination frameworks are used to manage target evaluations from most recent times. Nearly, all the top colleges of world are utilizing general Reason/redid answers for oversee E-examination frameworks like SAP, Oracle and Blackboard. The improvement of an E-question bank framework to naturally produce the inquiry paper. An abstract of E-examination framework was proposed for the staff of the King Abdul-Aziz University Saudi and it will be resourceful for different colleges inside and outside of Kingdom of Saudi Arabia (Jameel, 2015).

Online examination framework is an electronic examination framework where examination is taken online through the web or intranet utilizing PC framework. It is a powerful answer for mass instruction assessment. We have built up an online examination framework dependent on a Browser/Server system utilizing Microsoft Visual Studio 2008 for the structure, C# 3.5 for coding and Microsoft SQL Server as database. ASP.NET is the favored web innovation. The framework does the examination and auto-evaluating for various decision addresses which is feed into the framework (Ana & Bukie, 2013).

Developing an electronic exam and instruction stage for the framework which addresses the issues of student's educators and chairmen has been accomplished by investigating the interest for electronic exam of budgetary administration. The plan of the electronic exam framework and the usage strategy for principle work modules altogether broke down the challenges in module advancement process lastly proposed the possibility of further extension and improvement. Electronic exam framework can dispassionately and decently mirror the genuine dimension of students, improve examination proficiency and advance fund instructing proficiency and impact well (YU, 2016).

In instruction the idea of E-Learning (Electronic Learning) has developed quickly from separation to figuring out how to use virtual homerooms towards the online courses and online examinations. Affiliations are attempting to move from a paper-based condition to a paperless domain. Individuals today through of all shapes and sizes exams with exam having turned out to be habitually confronted issue (Younis & Maysam, 2015).

Universities and other educational associations are embracing PC and Internet-based appraisal devices (thus called e-exams) to contact broad gatherings of people. The formal structure of the connected π-math, we characterize a few basic validation and protection properties and build up the main hypothetical system for the security investigation of e-exam conventions. As evidence of idea we break down two of such conventions with ProVerif. The main "secure electronic exam framework" proposed in the writing ends up having a few serious issues. The second convention, called Remark is demonstrated to fulfill all the security properties accepting access control on the release board (Dreier et al., 2014).

More colleges are moving toward electronic exams (in short e- exams). This movement opens exams to extra dangers which may originate from the utilization of the data and correspondence technology. We recognize and characterize a few security properties for e-exam frameworks. We delineate the legitimacy of our definitions by breaking down a genuine e-exam utilized at the drug store staff of University Grenoble Alpes (UGA) to survey understudies. We utilize these screens to check genuine exam executions directed by UGA. Our screens found deceitful understudies and disparities between the details of UGA exam and its execution (Kassem et al., 2017).

At an E-Examination in colleges in Turku Finland, quantitative information were gathered by overview from instructors in the contextual analysis. The learning the executives frameworks, Moodle, Optima and ViLLE, devoted e-examination frameworks Soft Tutor and Testis, were altogether contrasted to outline the highlights that are accessible so as to facilitate educators' work with examinations. The outcomes recognized different difficulties amid e-exam presentation in TUAS (Kuikkaa et al, 2014).

Inside Business Group Germany, Aachen and Institute for Medical Statistics, RWTH Aachen University upheld the improvement and the activity of the online exam systems. The accommodating dialogs with the 'Ace of Medical Education' (AME) group Germany are enormously refreshing, revealing the intrigue the creators report with no irreconcilable situations. The creators alone are in charge of the substance and composing of the paper (Baumann et al., 2009).

Online exam Examination and Assessment System (WETAS). WETAS is an online framework built for merging with existing Learning Management Systems (LMS); this framework gives an examination domain and assignments. It also supports database bolstered e-Learning exam reasonable for the pre-and post-trial of Reusable Learning Objects (RLO) just as the remote lab section exam. WETAS is actualized utilizing Java Applet and PHP contents for document handling (Younis & Maysam, 2015).

We propose a few screens communicated as Quantified Event Automata (QEA) to screen the fundamental properties of e-exams. At that point we execute the screens utilizing MarQ, an ongoing Java apparatus intended to help QEAs. After a while, we set the screens to logged information from genuine e-exams led by Universities Joseph Fourier at drug store personnel, as a piece of Perceives Class antes Nationals informatics a spearheading venture which means to understand all French prescription exams electronically (Kassem et al, 2015).

The respondents gave helpful criticism to future selection of e-exam at an Australian university. The key discoveries demonstrate that understudies and scholarly staff are hopeful about the future appropriation of e-exams if the e-exams framework is adequately improved. They are completely mindful of the advantages the innovation

could offer in supporting learning and instruction at large and see e-exams as a development for learning and instructing in advanced education (Wibowo et al, 2016).

The present investigation demonstrating better execution on Electronic Examinations in spite of more elevated amounts of announced nervousness may not be extensively sum up. The expert and graduate students included were chosen into their preparation programs dependent on earlier shows of scholarly brilliance. This choice procedure may have adequately distinguished students who react decidedly too scholastic pressure. Students in other scholarly settings may have a different encounter (Washburn et al, 2017).

Assessment of student execution which is done by occasionally exam Ming understudies is a key issue in the instructive area. At the point when understudies are assessed either through constant appraisal or examinations they should be evaluated to rate their exhibitions (Allen, 2004).

An examination is an exam to demonstrate the information and capacity of an understudy. An understudy who takes an Examination is a competitor. The individual who chooses how well the understudy has performed is the inspector. It is ordinarily known as exam, an exam to perceive how great someone is at something (Oduntan & Ojuawo, 2018).

Time allocations regularly require the utilization of increasingly productive exam apparatuses for example, electronic exams (e-exams) rather than conventional paper exams. Instructors may confront difficulties while presenting e-exams in an advanced education setting. This paper depicts what sorts of difficulties instructors may confront while presenting e-exams in view of encounters in Turku University Finland of Applied Sciences (TUfAS) where e-exams have been utilized since 2012 (Kuikkaa et al, 2014).

Online Examination is a fundamental fix in electronic and intuitive adapting. Nonetheless, in instructive condition the greater part of examinations are done in the established paper-based path because of the absence of resume-ability when control/arrange/physical PC's segment disappoints. Hence, embracing and building up an online examination framework goes as far as functioning exploration zone lately (Younis & Maysam, 2015).

Electronic Exams limited online improvement instruments can supplant customary IDEs without bargaining the learning accomplishment or the student fulfillment. Not just authoritative and mechanical challenges avoid a fast change to electronic exams; lawful requests are in reality a lot harder to address while the previous just require the decision of a reasonable innovation and an appropriate foundation (Richter & Boehringer, 2014).

We have distinguished the players and the stages that create a general e-exam process. Students and e-exam has no less than two sorts of members, who expect to sit for the exam and the analyst who denotes the appropriate response put together by competitors. This model can catch eye to eye examination. For example, periodical scholarly appraisal in which the inspector likewise deals with the exam methods. In different circumstances, for example qualifying examination or web based exam (Giustolisi et al, 2013).

Delicate Tutor was chosen to be the e-exam framework in the exam aquariums rather than Testis. The capacity to utilize any sort of connection for E-Exams with Soft Tutor, which was unrealistic in Testis. More than 1,700 E-Exams were run utilizing the Soft Tutor framework in 2013. Before the end of June 2014, 1,526 E-exams were taken utilizing Soft Tutor. All things considered the circumstance is improving. Which utilizes Testis in its exam aquarium had around 2,500 e-exams taken within 2014 (Kuikkaa et al, 2014).

That students have in a particular assortment of information. We are presently building up a hardware idea stock (ECI) exam for essential electronic circuits. We present a model that is specific to the ECI to show the general procedure that was utilized to choose the center ideas and afterward make and reexamine questions. We address the present and future condition of the ECI and welcome open exchange to improve the substance of the ECI (Simoni et al, 2004).

We depict the initial move towards electronic exams at the University of Stuttgart in Germany. The inspiration both driven by understudies and instructors we portray the mechanical reason for PC put together exams based with respect to a framework as of now effectively sent for homework assignments and depict its progress to an Electronic evaluation framework. We talk about not just the innovative necessities on programming, its design and our decisions for equipment yet in addition

give a short presentation into the authoritative and legitimate difficulties that we will encounter (Richter & Boehringer, 2014).

This includes the improvement of an Electronic Examination framework utilizing the Client Server approach on an intranet domain to provide food for inquiries exhibited in different decision various answers and numerous decision single answer. The execution of this methodology was performed by actualizing the created application on various local host working framework, for example Linux and Windows utilizing Xampp, Wamp and Lamp. A similar investigation of information on understudies score from the paper pencil exam and the electronic examination system (EES) exam was be performed utilizing the Pearson Coefficient Correlation. Results demonstrated that understudies' execution in the PC based exam is superior to anything the exhibitions in the paper pencil exam (Oduntan & Ojuawo, 2018).

It is expected that towards the start of the entire technique exam questions are at EA. This suspicion can be effectively changed by requesting that instructors send exam addresses together with their nom de plumes by Mix net's open key. This case EA does not know the questions, authenticity of them is guaranteed by Mix net's mark. On the chance that an understudy has inquiries regarding his exam in the wake of evaluating, he has a capacity to ask the teacher, who has revised his paper. We expect there is a sure time for submitting questions and replies henceforth there ought to be sufficient message for the Mix net (Huszti & PethO, 2010).

1.1 Problem

The application of the electronic exam system is a good indicator of the development of methods of evaluating the performance of students in educational institutions and universities the experience of electronic exams on a program (Model) a free program that allows various fields of e-learning including e-exams.

The research problem can be identified by the following questions:

1. Is the implementation of the system of electronic examinations achieve objectivity and fairness in the process of student assessment?
2. Are there problems and obstacles facing the process of implementation that needs to be studied and analyzed in order to diagnose them properly for recommendation and adoption by universities and other educational institutions?

3. Are the requirements for applying the electronic exam system in the colleges available to the study sample and what is the impact on the success of the implementation process?

1.2 Aim of the Study

The aim of the study is to develop safe electronic exam platform for measure the performance of the learner by distance. In this process we develop this web site according to web design principles. For data collection we develop an interview form for collect opinions of academician towards developed electronic exam platform. After this we will make interviews again with academicians who is specialist in this field.

1.3 The importance of this research

The importance of research stems from the following aspects:

1. **Academic importance**

   The research is the subject of controlling the methods of assessment of students or what is known as the system of assessment and examinations. This is one of the important topics that began to occupy a large part of the concerns of public and private universities due to the increase in the number of students admitted to universities. The increase led to difficulty in controlling the process of paper based examination which may not guarantee fairness and objectivity in student assessment.

2. **Practical importance**

   It deals with how universities can take the process of evaluating students and make them more objective. It will aid universities to avoid the costs of providing the requirements of paper examinations, printing devices and cloning questions. In addition, it will give the opportunity for teachers to conduct scientific exams through the website of courses based on specialized software in e-learning evaluation and exams such as blackboard and blackboard model. It is considered to be useful and practically scientific to students, teachers and universities. It is an easy and objective means of evaluation that ensures the students obtain their result immediately.

1.4 Assumptions

In order to implement the proposed system it is necessary to assume that we have an electronic university system with full e-learning possibilities. The academic staff and all participated students should have sufficient information in the field education.

1.5 Limitation

- Time Limits: The study was developed during the first and second semester of the academic year (2018 – 2019).
- Spatial boundaries: The study was implemented at the Faculty of Education, Near East University.
- Collected data from 10 academics.

1.6 Definition

An e-Exam is a time-framed, monitored, summative evaluation conducted using a computer per candidate running on a programmed operating system. E-examinations have merits over paper-based exams and can include new multi-media, simulation and software exam items which give higher validity in respect of professional work practice. E- Exam system for the faculty member the opportunity to take the exam on the course website, which makes it easier for the teacher to correct the exam and monitor the results where this process is done automatically. It is a continuous and systematic educational process aimed at evaluating student performance remotely using the internet, an easy way to evaluate the student electronically, where the teacher to prepare exams in an easy way to apply to students, and corrected electronically and immediately, which ensures the credibility and transparency in the correction. A set of diverse questions (multiple choice, right and wrong, connect, Definition, explain image, explain video, etc.) designed by a software measuring the level of individual performance in the various fields for which it was developed.

CHAPTER II

LITERATURE REVIEW

The electronic exam is an essential part of online education. It is as efficient fast and reduces a large number of material resources that are usually wasted. Online exam system is the development of a database on the Internet. This article examines the principle of the design system, which represents the basic functions of the system analyzes the questionnaire, algorithm creation and talks about system security. The system transfers the responses to the bit stream after encoding to ensure security and intrusion. It is a password-protected system for monitoring student activities with an existing camera. The web-based exam is developed to cope with basic computer skills. The system does not deal with personal exams and advanced computer courses. Therefore student's personal skills cannot be evaluated using a developed system or described by the impact of online self-assessment on students compared to objective assessments. According to the results the written skills of the students are not checked. A new approach was introduced in the self-assessment of the examination system. The web-based system uses keywords to match the answers. It works like objective questions. Descriptive / subjective questions dealing only with objective assessments. Description of the design and implementation of the smart internet browsing system. The main focus of the smart online exam system is to use a degree of difficulty when choosing questions from bank exams. Proposal for the development of the Smart Self-Assessment System.

The entire electronic exam includes preparation for the exam:

- Step 1: General Exam Planning
- Step 2: Record session data and exam
- Step 3: Playback time.
- Includes exam registration and admission
- Step 4: Students register for exams
- Step 5: Create a record to register the exam
- Step 6: Check the admission requirements for the exam.
- Step 7: The primary part of the essay chain process is the same assay.
- The exam results of the exam include:
- Step 8: Evaluate and record exam results

- Step 9: Store the data in the database.
- Advertising results mean
- Step 10: Provide additional information through exams for administrators
- Step 11: Create reports, lists, and certificates.
- Step 12: Coordinate the exam tasks between the exam office and faculty.
- Step 13: Maintain related software systems.

2.1 Characteristics of electronic exams

- Interactive.
- Multimedia and its diversity.
- Flexibility and time change.
- Increase in the sincerity and stability of the exam.
- Auto-correction.
- The possibility of training students on exam more than once.
- The speed of obtaining results.
- Using the Internet.
- File Storage.
- Saving time spent in obtaining feedback.
- Reduce the phenomenon of fraud significantly.
- Contains an advanced database for storing and storing questions.

2.2 Application Requirements for Electronic Exams

1. The system consists of three parts: Administrator, employees and students.
2. All configuration types are updated via the configuration wizard, such as the exam date, the time the questions are asked, answers provided and other criteria.
3. Employee candidate can take the exam, delete the profile and change.
4. The employee can download questions about wisdom.
5. Questions and answers are well established.
6. The inactive filter should close automatically from the system.
7. The results of the examination will be observed after the one day.
8. In the internal database for the exam question.
9. Accessing the application anywhere and anytime.
10. Exams and questions can be edited and deleted at any time.

2.3 E- Exams and Phases

First, for the online examination the executives the examination basically goes for money related administration forte. Prior to entering the examination interface exam will initially peruse the issues requiring consideration and the examination data. After the data is affirmed they will enter the formal examination interface.

Second, the examination paper board. The examination paper by the executives mostly includes programmed age and manual creation of examination paper, examination paper request, evaluation and examination paper yield.

Third, Score the board. The capacities contain examination paper investigation, score approval, score data the board and support factual investigation of score data and score data yield.

Fourth, Security by the executives. The executives accomplishes such capacities as client work approval and job approval in the electronic examination framework just as framework locking (YU, 2016).

The players have been distinguished and the stages that create a general e-exam process. Students and e-exam has no less than two sorts of members: the hopefuls who expect to sit for the exam and the analyst, who denotes the appropriate response put together by competitors. This model can model an eye to eye examination. For example, periodical scholarly appraisal in which the inspector likewise deals with the exam methods. In different circumstances for example qualifying examination or web based exam (Giustolisi et al, 2013).

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utilized to choose the center ideas and afterward make and reexamine questions. What's more we address the present and future condition of the ECI and welcome open exchange to improve the substance of the ECI (Simoni et al, 2004).

The initial move towards electronic exams at the University of Stuttgart in Germany. The inspiration both driven by understudies and instructors we portray the mechanical reason for PC put together exams based with respect to a framework as of now effectively sent for homework assignments and depict its progress to an Electronic evaluation framework. We talk about not just the innovative necessities on programming its design and our decisions for equipment yet in addition give a short presentation into the authoritative and legitimate difficulties that we will encounter (Richter & Boehringer, 2014).

In the structure of the Electronic Examination framework, techniques, for example collecting of delicate duplicate Examination inquiries from analysts authoring of the gathered inquiries to PC based Examination position. Making a database of understudy's records and examination questions uploading of Questions and setting up an examination, Students' login for examination and Downloading of examination scores were taken (Oduntan & Ojuawo, 2018).

Secrecy: Exam questions are kept discreet till the time the exam starts. During the exam process, neither the inquiries nor the created answers are uncovered. Towards the end of the exam, the evaluations ought to be distributed as it were that lone the comparing student should know his imprint.

Robustness: Exam questions cannot be modified and after compilation nobody is permitted to alter them

Correctness: Students are not permitted to take a similar exam more than once and after submission, exams can't be undone.

Receipt: After sending the arrangement understudies can ensure the effective sub-mission (Huszti & PethO, 2010).

Computer based evaluations can improve quality and economy of college exams. Utilizing the 'Online Examination System' (OES), the use of headsets decreases the unavoidably happening acoustical unsettling influences brought about by sound document replay. Issues of acoustic aggravations amid vocal accounts can be

overwhelmed by presenting synchronized small scale exams toward the start of the appraisals (Baumann et al., 2009).

Finnish university students graduate later than their counterparts in other countries. For several years, Finnish higher education policy regulated by Finland's Ministry of Education and Culture examines the role of electronic exams using the survey data of 247 university students at the University of Tampere. The questions of interest are (Why electronic exams? what is the purpose of them? What are students' experiences with electronic exams? Do electronic exams make studying more flexible?) The results of the study indicate that electronic exams have indeed helped students study more flexibly and provided them with greater decision-making power in planning their studies (Saarivirta & Karppinen, 2016)

We approve our structure by confirming two genuine e-exams go with this framework. Every one of the logs got from the e- exam coordinator are anodized by and by we were not approved to uncover them. We use MarQ13 (Monitoring at Runtime with QEA) to demonstrate the QEAs and play out the check. We give a depiction to this framework that we call UJF e-exam at that point we present the consequences of our examination. Exam Description Registration. The hopefuls need to enroll two weeks before the examination time. Every applicant gets a username/secret key to validate at the examination (Kassem et al, 2015).

Electronic exams at the University of Stuttgart. The objective both driven by students and instructors, is to offer evaluations that are nearer to genuine programming by permitting intuitive programming and investigating the unrealistic with pen and paper exams. This is in so far critical as aptitudes in PC variable based math frameworks as MATLAB or programming dialects like Java are a rudimentary element of any designing investigation these days (Giustolisi et al, 2013).

As indicated by Burstein Leacock and Swartz (2001) appraisal is an essential piece of the learning procedure. It empowers understudies to measure their advancement guides to pass judgment on the adequacy of educating and can likewise be utilized as an instructing apparatus to give people or gatherings criticism intended to empower them to improve their execution later on (Oduntan & Ojuawo, 2018).

ViLLE was made to be both a LMS and E-examination framework from the beginning initially for programming. E-examination is consequently one capacity

among others in the framework. E-exams through ViLLE are done in a study hall condition. TUAS utilizes Optima as a LMS and Soft Tutor for video-controlled e-exams. A few instructors use likewise Optima and ViLLE for e-exams in homerooms. ViLLE as LMS and Tenttis for video-controlled e-exams. ViLLE is utilized for e-exams in study halls (Kuikkaa et al, 2014).

Pharmacy exams at University Grenoble Alpes (UGA) have been sorted out electronically utilizing tablet PCs since 2014 as a component of the project (Épreuves Classantes Nationales informatisées) Other foundations for example ETS, CISCO, Microsoft have for quite a while, officially embraced their very own stages to run. By and large in qualified focuses e-exams required to get their program declarations (Kassem et al, 2017).

University 134 first year veterinary students and 11 PhD students were controlled an aggregate of 4 exams all through 1 semester (2 on paper and 2 electronically) utilizing a split-parts structure. The paper (P) and electronic (E) Exams contained 25 indistinguishable numerous decision questions. Students were arbitrarily doled out to two gatherings and were given exams in one of two arrangements. Members assented to and finished two unknown overviews visa their experience. Out of a most extreme crude score of 25 the mean score for electronic examinations (20.8; 95% certainty interim, 20.3– 21.2) was altogether (P 0.01) more prominent than that for paper examinations (20.3; 95% certainty interim, 20.0 – 20.7). Nonetheless 87% wanted to take their examination on paper instead of the electronic configuration (Washburn et al, 2017).

In Nigeria, understudies go through six years in Secondary School that is 3 years of JSS (Junior Secondary School) and 3 years of SSS (Senior Secondary School). By Senior Secondary School Class 2 (SS2), understudies are taking the O'Levels exam, which isn't compulsory yet most understudies take it to get ready for the Senior Secondary Certificate Examination. The Senior Secondary School finishes (Oduntan & Ojuawo, 2018).

The-craft of-the-practice for nine broadly useful online examination frameworks found in the writing just as some devoted modern frameworks dependent on seven chosen entwined highlights; specifically: secure login, resumption capacity, multi-educator, arbitrary inquiry choice, irregular inquiries circulation, arbitrary

decision dissemination and convey ability execution technique(Younis & Maysam, 2015).

The proposed frameworks will rearrange the evaluation procedure via programmed setting of exams. It will altogether diminish the unpredictable paper setting and evaluation forms by chopping down the time cost and sparing tremendous quantities of papers. Overview and contextual investigation will be utilized as research configuration to approve the E-examination framework. Multi-level applications engineering (customer, web and business) will be received according to the requirements of contextual analysis. An emotional E-examination framework will be created and tried to check its common sense for the understudies of King Abdulaziz University (Jameel, 2015).

E-exam run (or e-exam follow) as a limited grouping of occasions. Such occasion displaying of e-exam run is fitting for communicating and confirming e-exam properties utilizing both model-checking and observing. Utilizing a model checking approach (for example ProVerif) all the conceivable runs are investigated in a "white-box style" and the security of a convention demonstrate is approved or a defect is found. Utilizing an observing methodology, singular runs are dissected in a "discovery style" so as to check whether there are shortcomings in the convention usage or mischievous activities in the execution (Kassem et al, 2017).

It is generally recognized that appraisal through examination drives understudy learning and coordinates understudy's exertion. In this manner, it must be arranged as needs be and should be an essential piece well planned. Appraisal assignments impact the bearing and nature of understudy adapting. It is a pivotal piece of the learning procedure which help inspectors to pass judgment on the viability of educating and as an instrument to enable people to enhance their exhibitions later (Oduntan & Ojuawo, 2018).

Online Examination framework causes students to offer a snappy just as simple approach to accessible for the paper. It gives the outcomes rapidly after the examination with 100% exactness. Understudy can enter to take the exam with their username and secret key. The online examination contains numerous decision questions and suitable number of alternatives. There are no impediments on number

of alternatives and it tends to be randomized so the same arrangement of inquiry will not be assigned to all understudies. (Bobde et al., 2017).

The online examination framework is required to be fundamentally robust it should be designed to have multi-educator highlight. Along these lines every teacher has his/her own benefits and undertakings. The framework should comprise of a chairman, question manufacturer and exam developer. The director oversees and controls the framework and registers the educators. Question manufacturer, and exam developer are in charge of making the inquiries and exams separately (Younis & Maysam, 2015).

While electronic homework practices with ViPLab are as of now acknowledged by students and lecturers we were interested in how successful they have been. As of now, we can't give a response to electronic exams as they have not yet been executed. However a halfway answer can be given in how far ViPLab is a reasonable instrument for homework assignments (Giustolisi et al, 2013).

We characterize an occasion based on the model of e-exams and distinguish a few crucial exam properties dependent on occasions. We characterize these properties, and after that express them as ProVerif questions and Quantified Event Automata (QEA). We present Auditing QEAs, as expansion of QEAs which also report all elements that abused the property. Evaluating QEAs are given in the "Supplement A". We approve our properties by investigating genuine e-exams at UGA (Kassem et al, 2017).

The head module facilitator and understudy modules incorporate their piece of capacities to the Online Examination. The introduction of the Online Examination is finished by the ADMIN. The manager includes enrolled data of the clients to the Online Examination framework database and altered or erases it as required. The Coordinator embeds the inquiries to the inquiry paper of the Online Examination in subject format. The inquiry numbers are accordingly created. The total subject insightful consequences of understudies can be seen by the exam facilitator and head whenever after the finishing the exam. The understudy just need to login to go to the exam and on finishing and presenting the exam, the outcome is promptly provided (Bobde et al., 2017).

2.4 The products and process features:

This system should be designed as a required user. Therefore you need to find all the requirements:

Quick Schedule Program: The automated system helps create a programmed exam instead of using paper. Save time to write and check access signs. In addition the student can monitor the exam when he logs on to the system individually.

Results and Immediate Solutions: When the student finishes exam the system examines the answers and compares them with the correct answer. The system records the correct and incorrect answers and calculates the correct answer label. Then give a complete note. Send a report to the student to observe his exam errors.

Easy storage and retrieval: Instead save the information on pages or on separate pages. According to a report generated by the system, there is a database management to store and retrieve the information needed by the administrator faculty or student.

2.5 Website

Website is a collection of pages linked to one another on a server the pages can either be written or a photocopied material that is entered by an authorized user to access the site. Websites are accessed from any computer or smartphone connected to the internet via a web browser. Website is a set of related web pages, including multimedia content which is generally identified as a shared domain and published on at least on a web server. A Website can be accessed through a public IP network, such as the Internet or a private local area network (LAN). Websites can have many functions and can be used in a variety of ways; a website may be a personal website or business website for a business, government or non-profit organization website. Web sites typically target a specific topic or goal, from entertainment and social networking to news and education. All sites available to the public collectively form the World Wide Web, while private websites, such as the company's web site for their employees are usually part of the intranet. Web pages, the basic building blocks of websites are typically plain text documents with HTML formatting instructions. It can include elements from other websites with appropriate encoding anchors. Web pages can be accessed and transferred using Hypertext Transfer Protocol (HTTP), which can be used as an encryption option to ensure the security and privacy of the user. A user application often a web browser displays page content according to its HTML markup

instructions on a screen monitor. The hyperlink between web pages conveys to the reader the structure of the site and directs the navigation of the site, which often starts with the homepage that contains a directory of the site content. Some sites require a user or subscription to access the content. Subscription sites include many business sites, news sites, academic magazine sites, gaming sites, file sharing sites, bulletin boards, social networking sites and websites that provide real-time stock market data. Starting in 2017, end-users can access websites on a range of devices, including desktops, laptops, tablets, smartphones and smart TVs.

2.6 Website History

The development of the World Wide Web was initiated in 1989 by Tim Berners-Lee an international scientific organization based in Geneva, Switzerland, where they created the Hypertext Transfer Protocol, which unites servers and clients. Text-based web browsers were released in January 1992, when the Web gained rapid acceptance and a Web browser called Mosaic developed in the United States by Mark Andersen and others at the National Center for Supercomputing Applications at the University of Illinois was launched in September 1993.

2.7 Importance of Websites

1. Helps connect people with each other through public or specialized forums, social networking sites, online dating sites or any other site that offers commenting on material that is published to the public.
2. Provides information to the various people free of charge, through encyclopedic sites, sites specialized in certain types of science and knowledge and this is why anyone who yearns to know from the possession, where people can get the right information in many times with ease.
3. The problems of time constraints and lack of money for people have been solved by speeding up routine work especially government work. Most of the work today can be carried out very easily and quickly through specialized websites such as government websites bank sites and more.
4. Websites have made it easier for people to shop through e-shopping sites, where people can purchase any purpose they need from anywhere in the world and these sites are characterized by their high reliability in addition to facilitating ways for payment.

5. Facilitates the completion of the educational process by individuals through distance learning via communication with the university to which the student joined. In this context the websites facilitated regular students in the universities the process of losing their marks and conditions and communicating with their teachers through students' portals available on the websites of these universities.
6. Some worked to provide different types of well-being for people. People can watch TV channels, play entertaining and useful games and watch movies, read books, watch cartoons, watch videos, anywhere in the world, at any time.
7. Through some websites, individuals can start private businesses that generate a good income on individuals leading to financial independence.

2.8 Elements of the website

Web sites are made up of many elements. This name is not called after having met with a group of elements:

1. "Domain" is a chosen name, for example "www.YourDomain.TLD". The TLD is the abbreviation for the Top Level Domain, which is known as "Net, Com, Info ... etc. "To further clarify, the Arabic site's domain is" www.ArabiaWebsite.com ".
2. Site pages which is the entire website.
3. Hosting is the space that is reserved for the construction of the website on them and the domain is linked to that area and start work
4. This is all about the elements of the website simply. If you own a domain and a hosting space you can start designing your own website.

2.9 Advantage and Disadvantage of Websites

1. Advantage

- Fast Browsing - Because all sections are on the same page they provide a fast browsing experience. Visitors can simply click or navigate through the menus and jump to the right section. Makes it easy for the user to browse without affecting performance.
- Simplicity - The website has been developed to achieve more with less which means a Minimalism. This is what each site is about in a page. At any time

there is no need to redirect the user to a specific page and no major mobility is required.

- Quality - Focuses on the best quality of the site based on quantity. Only words of interest are expressed.
- High conversion rates - Visitors are mostly going down to skip the site content. This requires a great order of the page layout where the user must see and trigger the action you want on your website.

2. Disadvantage

- Longer Load Time - If your website has more content pages may take longer than regular websites. This can cause users to lose their page load times.
- Excellent Creativity - Good well-designed single pages offer a great experience. Creating an excellent user interface requires the best technical and creative help of an experience like Technologies Web Designers in India.
- Shareable content - A one-page website does not allow content sharing to easily communicate with social media. It represents undeniably the benefits to specific goals. On the other hand one must think very negative.

2.10 How a website works choosing a domain name

The domain is defined as the field with the highest browsers which can directly access the site usually in the form www.example.com and it is important to have certain criteria in the domain, including:

- Avoid any spelling or typographical errors.
- Free of numbers.
- Avoid using tags in the domain name such as: (-).
- Link the brand name with the content of the site and his evidence of the brand to be published on the Internet.

2.11 Educational Websites

Educational websites can include games, videos or related resources that serve as a means of improving learning and completing classroom instruction. These websites help make the learning process fun and attractive for the students. Although such sites have many advantages we also need to recognize negatives. Students should be appropriately guided. Without proper guidance, students can find sources and content that are unreliable or contrary to the direction of classroom teaching. Some

websites are very large and offer a wide variety of games and resources. Students can easily move away from such sites and spend time on activities that are below their level or that do not include or add to classroom classes. Unlimited access and freedom on the Internet can be dangerous, especially for young students. When planning activities remember the necessary technology. Do students use their computers in the classroom. Devices such as an iPad, smartphone or tablet can be used to access certain types of websites and events. Think about the creative ways you can integrate these sites into the learning process and complete what you've already taught. Use screen shots a help booklet or a document that contains images to guide students. Jing, Screen, Awesome Screenshot and Bounce are some common programs that help you easily capture screenshots. One way to make this process effective is to set goals for students while using websites. Check their tags ask them to give a presentation or maybe create your own comics. If students work at home you may want to teach them how to take screenshots to show their progress. The process becomes fun and educational. This will work better if you receive support from both school and parents. Many parents monitor their children's use of the Internet so you may also want to provide a preliminary document to help them understand your goals.

2.12 Ten websites providing free education to students

1. EdX: edx.org

   Students may opt for this website, which was founded in 2012 by Harvard University and MIT. EdX is MOOC's online learning goal and provider and offers high-quality courses to students from the best universities and institutions around the world. Out of 90 universities the university has the highest international degree.

2. Academic Earth: academicearth.org

   The site offers a wide range of academic options from students to traditional studies to contemporary studies. They offer online certification courses from Accounting and Economics to Engineering, and they also contain materials on special topics such as Behavioral Psychology. The website owner also collaborated with a reputable college group such as Oxford University, MIT, Stanford University and others. With student interest in mind the portal includes videos and podcasts on all materials.

3. Internet Archive: archive.org

   Above all the Internet archive is an original site for storing original copies from various large sites. For example, American libraries contain a collection of free books added directly to college library sites. This is one of the best sites that offer free and accessible information.

4. Big Think: bigthink.com

   Big Think has more than 2,000 friends who have earned a reputation in their own countries. These experts develop essays and student works by the authors and the content is organized by the on-site editing team and students are given original materials. Students can make great use of this site by creating their own distinctive ideology because they have different views on a topic. In addition, students may receive expert opinions.

5. Coursera: courser.org

   The moment the student opens this site, he/she must select the number of courses he/she is interested in. The site is easy to use. Students can find major universities and acquire their e-course certificate. The courses include recorded video lessons, automated evaluation peer review and community discussion forums. When you complete a course you will receive an e-course certificate.

6. Bright storm: brightstorm.com

   Secondary school scientists can use this site as a reference instead of an interactive reference site that reduces learning problems. It is not easy for a student to understand complex technical terms, so the website makes textbooks easy for students. They provide help with everything from mathematics, science, history and other materials. Admission exams for students in general are laborious and this site can solve the problem. They organized the subjects symmetrically, erasing the atmosphere and structure of competitive exams.

7. Cosmo Learning: cosmolearning.com

   Unlike other websites this portal provides students with skill-based learning. Students can apply to the materials offered or enroll in any of 58 courses. The site is compiled with three main options including study materials, courses and documentaries. The subjects are divided into two parts: academic subjects and academic curriculum.

8. Futures Channel: thefutureschannel.com

   This is not just an electronic portal but an educational channel for students. Unlike other websites it stores important data that only addresses the problems students face. For example, since students often face a problem with algebra they create a special section for algebra.

9. How cast: howcast.com

   It is a comprehensive website of all topics and none of the above portals contain these frames. While the essence of living curiosity remains alive the portal works on common keywords that contain the word "how".

10. Khan Academy: khanacademy.org

    Khan Academy is an online educational site. Students who cannot receive education can apply to this site. It includes a dashboard dedicated to the progress report, providing students with the freedom to learn according to their speed providing a useful situation. Includes all traditional subjects including mathematics, science, computer programming, history, art history, economics and more. Moreover, from kindergarten to mathematics, they all have lessons at one station. In order to promote content for students, NASA has partnered with the Museum of Modern Art the California Academy of Sciences and the Massachusetts Institute of Technology. In addition content is available in 36 languages.

2.13 Functions Website

Web sites can be classified in terms of their functions. It may be tempting to think that websites with the most elegant visual designs are the most complex in functionality but the opposite can often be true. Amazon, for example is an elegantly-designed website, but is designed to perform a wide range of functions. There are five main types of websites for jobs:

1. Brochure

   Brochure is the simplest website type in terms of site functionality. Booklets usually contain only a few pages and are used by small businesses that need a simple online presence. For example, a small plumbing company will need a brochure site with only the contact details the business page and a few photos of their work. Websites look like an online business card for potential customers.

2. Ecommerce

   An e-commerce site is a website where users can pay for an online product or service. This will usually involve a company that sells to multiple users but can also be in the form of a multi-seller e-commerce website, commonly known as "market" sites. Market websites allow multiple vendors from the same site to sell to customers. Examples include eBay and Etsy.

3. Portal

   The portal collects information from many different sources on the web. First examples include Aol and Yahoo, which offer email address function, forums, search engines and news through their home pages. Portals can also be used for internal use in a school, university or company, enabling students or employees to access e-mail messages alerts and files from a single location.

4. Wiki

   A wiki is a site that allows people to collaborate online and write content together. The most popular example is Wikipedia itself, which allows anyone to modify add and evaluate the content of their articles.

5. Social media

   Social media websites are platforms for exchanging images or ideas. They encourage online interaction and sharing the most popular social networking site is Facebook with 2.07 billion active users. Other social media sites include YouTube, Twitter, Instagram and LinkedIn.

2.14 Design Websites Content

The design of a website is determined by the content of its pages. This may depend on how dynamic the content of the page is and how it developed for all devices. Based on the frequency a website's content is updated, there are two categories:

- Static/ Fixed
- Dynamic

1. Static/ Fixed

   Static or "fixed" websites are the simplest. The content does not vary by user and is not updated regularly. Static Web sites are often created using simple HTML code that provides information.

2. Dynamic

   A dynamic website or web page will show different content each time you visit. Examples include blogs e-commerce sites or sites that are often updated regularly. Dynamic websites can also be created to show different content to different users at different times of day and the like. Dynamic websites are more interactive and they create interactive experience for the user. However, they can be more complex during development and load a little slower than static ones.

2.15 Design Websites responsiveness

With regards to how to optimize the website for all devices, its design will fall into one of three categories:

- ✓ Static/ fixed
- ✓ Fluid/ liquid
- ✓ Responsive

1. Static/ fixed

   A fixed website is not optimized for screens of different sizes. It is designed to have a fixed pixel width. If you open a fixed location on a mobile device you must zoom in to see what it says on each page. Again, difficult sites can be loaded a little faster due to its simplicity. However, it is not recommended for those on mobile devices or tablets due to poor user experience. It is believed that more than 50% of calls are made on mobile devices so this is an important consideration.

2. Fluid/ liquid

   A website with a liquid or liquid design makes the site look the same in proportions regardless of the screen size. Each site item, such as the navigation bar occupies the same relative area for each device.

3. Responsive

   The responsive design website goes one step further than the liquid or fluid kind. The responsive design is perfect for the website on mobile phones and tablets to the extent that the website will actually look different on each device. If a large portion of your audience uses devices other than a computer to view the site, it is equally important that the website responds because it provides the best experience for users.

2.16 Related Studies

The previous section shows the "effectiveness of electronic exam s" and many studies which were applied in America, Europe and other developed countries which aimed to compare the electronic and paper exam s. These studies have either yielded small differences for paper exams or small differences in favor of electronic exams and either differences between them. The following is a review of a number of these studies:

Vispoel (1993) this study was devoted to adaptive and non - adaptive electronic exams. Comparison of the students grades in these two electronic exams and to identify the students' attitudes this was applied the study to (165) students at the university level and the presence of the Threshold stability for adaptive exams. The study also showed that students had positive attitudes towards the offer instructions and practical items but they did not favor the huge amount of review and skip options.

Neuman & Baydoun (1998) the aim of this study was to identify the degree of equivalence between paper exams and undergraduate computing. 411 students participated in the study, were clustered into ten groups and administered remote exams. The study was concluded that it was discovered that there is no statistical significance between paper and electronic exams, especially when following the same guidelines and conditions in both exams.

DeBeer & Visser (1998) This study was conducted on (613) students in secondary school in South Africa, In order to compare the results of paper exams and computerization to identify the equivalence between the two exams in the measurement of academic achievement. The study found out that there was no equality between both and that paper examing was better in measuring students’ academic prowess.

Clariana & Wallace (2002) this study was applied to (105) students at the undergraduate level in business administration, in order to study the difference in (4) factors between paper and electronic exams. These factors are knowledge of content computer knowledge competitiveness and gender. The students were exposed to two copies of the same exam, but one paper and one computer. There was no difference in the factors related to gender competitiveness and computer literacy while there was a difference in the knowledge of content factor.

Sim & Horton (2005) this study was applied to 20 students in the third year of primary school in the United Kingdom. The aim of this study was to identify the differences in the students' performance in the paper and computing exam and to know the attitudes of the students towards computerized exam. The study showed that 50% of the students performed better, (25%) performed better in exam and computing and 25% performance was similar in paper and electronic exams. The study also showed students favoring computerized exam above paper exam.

Lim, Ong, Wilder-Smith & Seet (2006) the study was conducted to determine the attitudes of students at the University Of Singapore School Of Medicine toward computerized exams and the degree to which students prefer them compared to paper exams. I was impressed with the results of the study, which was applied to (231) students of the last year that a large proportion (79.8%) of students preferred the computerized version of the objective exam and more than half of the sample the computerized version of the frying exam preferred (54.4%). With respect to the results, it showed that students opted for computerized exam return for several reasons the most important of which is the clarity of images and shapes in the exam and the ability to progress as desired by the examiner. The study concluded that the formula in computerized exams may be more appropriate for objective exams.

Demirci (2007) the study examined students' attitudes towards computerized duties compared to paper duties, The study was applied to (103) students of the university in Turkey, distributed to two groups one of which performed tasks by computer and the other in the traditional paper method. The results showed positive trends towards electronic duties, but the grades in the paper duties were greater than students' grades in electronic duties.

Akdemir & Oguz (2008) the study was applied to 47 students from the University of Turkey to find out the equivalence of paper and computing exams and to determine whether there is a relationship between gender and performance in electronic exams. The effects of the learning presented that there are no differences in the grades of students between the two types of exams. The study did not show a relationship between gender and performance in electronic exams. The researchers concluded that the electronic form of the exams would be the future of the exams in Turkey and recommended its dissemination to Turkish society because of its advantages.

Stowell & Bennett (2010) the study was based on the hypothesis that providing the exams electronically will lead to reduce the level of exam anxiety of the buyers and thus improve the level performance and get higher scores in the exam. The study was conducted on (69) university students, they undertook paper and electronic exams. The results show that students who usually suffer of exam anxiety - the female performance of traditional exams - their anxiety rate has significantly decreased the performance of the electronic exam. On the other hand the study showed that students who do not suffer - usually – from exam anxiety the performance of paper exams has increased their anxiety rate for the performance of the cationic exam performance. The researchers found that the relationship between exam anxiety and exam performance was weaker in electronic exams than in paper exams.

2.16.1 Comment on previous studies

A review of previous literature and studies shows that most of these studies have been applied in developed countries such as America and Europe. Arab researchers were not interested in studying electronic exams. Previous studies also indicate a typical presence in this methodology studies. Most of these studies were in comparison between electronic and paper exams in order to identify the equivalence of paper exams with paperwork. That means the trust accumulated in the paper exams and that the researchers have further confirmed the existence of this confidence in Electronic exams. This also means that studies are still going on about making sure there is sufficient degree of confidence and credibility for electronic exams compared to paper exam. When substantial confidence in electronic exam Ming is gathered it can be applied to more diverse studies dealing with the design of electronic exams interactive methods influencing factors and other topics. The current study seeks to exam the degree of trust and credibility in electronic exam s in the Arab world, by comparing them with paper exams that are reliable in educators at the global and regional levels. It is therefore important to establish more studies in-depth on various subjects in electronic exams and its standards.

2.17 Related studies of universities

King Khalid University towards electronic examinations the electronic exam system for the course "Methods and Techniques of Education" was implemented in the Faculty of Education and Sharia using the iPad and the professor of the course

conducted a survey of the views of the students who have experienced the experience the results were as follows:

There is a consensus of (100%) of students of the Faculty of Sharia and the fundamentals of religion as well as students of the Faculty of Education General Diploma. Students who specialize in Arabic language strongly agree as well as students of general diploma and the percentage of consensus was (94.4%). These percentages included the above-mentioned terms have the following: I hope to have the opportunity to be exam electronically in the rest of the courses. It also provides the student grades in an instant and ensures a reliable evaluation strategy. It contributes to the measurement of the level of students' ingenuity without cheating. For the first time iPad devices were used in electronic exams. This experiment was successfully implemented in the Faculty of Medicine as a successful technical alternative to the traditional computer labs where the electronic exam was conducted in the classrooms with all success.

Experience of King Abdulaziz University the University of King AbdulAziz has announced the implementation of a unique experience by providing students with the opportunity to participate in the exam at their residence, announcing that it will be in four cities: Riyadh, Adhamal, Al Qassim and Abha as a first stage and in two disciplines for the Faculty of Arts and Humanities. The University's initiative the exams were activated by the desire to spare them the hardships of traveling for their exams. The university conducted an evaluation study of this experiment by surveying the views of its students and found that most students showed their complete satisfaction and acceptance of the system of electronic examinations. The evaluation was high in terms of: user satisfaction and acceptance of the new system, mobility within the system is clear. Some students prefer to have a course training to learn how to use the system before the exam some prefer to exhaust the exam to the end of time. Through these conclusions the study recommended that the Deanship should make some improvements to the system, including: giving the user more options about hiding or showing the time remaining within the program choosing to see the final grade or not and giving the students training courses before the final exams.

Faculty of Arts, Alexandria University the Faculty of Arts at the University of Alexandria began to implement the electronic exams system for students at the

Egyptian universities. The experiment was applied in the exams that are currently being conducted for the students of the Department of Acoustics, which is based on a bank of questions prepared over two years. Students under this system undertook the computer-based exam and answer a certain type of question based on the choice between multiple answers based on their knowledge. This process ensures the evaluation of students through electronic computers with complete transparency and accuracy and will be circulated that experience across all sections of the college in the following year.

Yarmouk University Experience the idea of holding the exams at Yarmouk University began with the beginning of the academic year 2002/2003. The College of Information Technology started the English language exams for new students using computer. In view of the success of this experience the College carried out the examination of the first, second and final exams of the courses of the Language Center, where the student receives a score of 100 upon completion of the examination. As the computerized exams provided him with accuracy and saving in effort and time, other courses of other colleges were computerized. It was decided to establish a computerized examination unit at Yarmouk University.

Mutah University in accordance with the directives of the university administration, Mutah University has achieved the standardof computerized examinations to achieve fairness among students in their academic achievement. In the past two years, computerized examinations have doubled from (6) to (45) computerized examinations. The computerized exam system has been able to reduce the number of students who take an incomplete exam from (200) students during the past year to (50) students this year. Therefore the University has developed a strategic plan for e-learning and the university has started training the faculty members to use the e-learning organization (MOODLE), university is in the process of signing an agreement with a local company to train faculty members to develop electronic content using this system.

University of Isra the system was developed for electronic exams in the Faculty of Science in the academic year 2002/2003 and information technology and the computerization of the examinations of Arabic and English materials only at that time. The system has received the satisfaction of users. One of the most important

features was ease and high efficiency. The system retained in the examination outcomes for several years. The Deanship of Information technology of the College started developing a strategy to benefit from e-learning in full. It conducted a broad study of the global system in use and selected the e-learning system (Moodle). It has been modified to serve the privacy of the college. The system is designed to take the substantive exam and follow-up activities of students for each subject with high efficiency. There are currently two servers dedicated to e-learning. The first is used for the three level exams (Computer, Arabic, English), and the Faculty of Arts and Administrative Sciences used to hold examinations for some materials. The second server serves the Faculty of Information Technology and the Faculty of Nursing and currently contains nearly two thousand users including the members of the faculty and all the students enrolled to the Faculty of Information Technology and the College of Nursing. Currently the Faculty of Information Technology (IT) whose subjects have been computerized holds 100% independent integrated e-learning center based on its service. It will also organize training courses for faculty members and students and issue educational and guidance bulletins. A number of research teams at the Faculty of Information Technology have also conducted studies on e-learning, especially the Moodle system at the University and some other Jordanian universities.

CHAPTER III

METHODOLOGY

This study is based on information obtained from secondary sources especially online materials and documents of relevant institutions. Knowledge of these documents is required and certificates were obtained in computer performance exam Ming. Academic papers articles, essays and press reports were worked upon for extraction of information and essential knowledge on this work. The information obtained provides a review of the phenomenon. The forget area for students university. This site is an excellent resource for exploring a rich array of portable and web-based applications for qualitative researchers. These applications can assist in all aspects of data management, collection, and processing and analysis project management. Digital tools also enable qualitative researchers to fill traditional gaps between the field and the laboratory and between the researcher and the participant.

The major types of qualitative research are:

1. **Participant observation**

Field Work / Natural observation. It involves collecting data in the natural environment which includes natural behavior.

2. **In-depth interviewing**

In-depth interviews uses open-ended questions to obtain as much information as possible. It allows the usage of open questions in order for interviewed respondents respond within the framework of their references rather than as references. It is limited to the nature of the questions that are arranged prior to the interview. It is also suitable in facilitating the collection of new ideas.

3.1 Addie model

The analysis, design, development, implementation and evolution (ADDIE) Model was made at Florida State University as an instructional asset and can be used to manufacture versatile volunteer preparing. The repetitive procedure uses a retrogressive designing model to enable you to see what realizing goals you plan to achieve and what steps you can take to meet these targets.

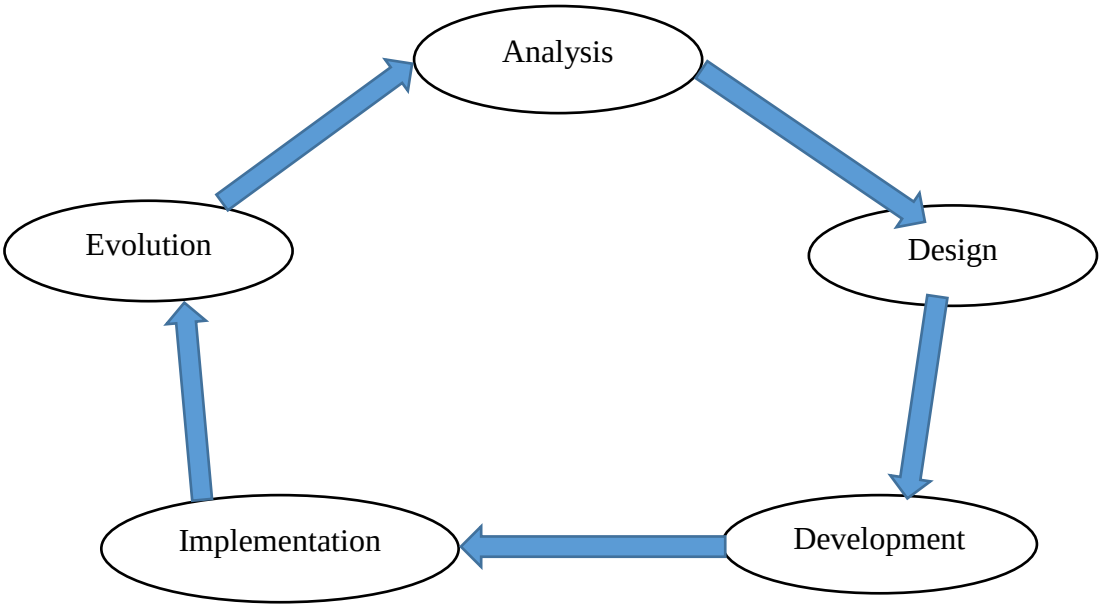

Figure 3.1: Addie model

3.2 Software Development Cycle

The software development is a structure characterizing assignments performed at each progression in the software development process. It described all the processes from; analysis, design, development, implementation, evolution exam, up to the development of the application. It comprises of a point-by-point design portraying how to create keep up and supplant particular programming. A waterfall model was used as a model, which has five processes as shown in Figure 3.2.

- System Analysis
- Design
- Development
- Implementation
- Evolution

Figure 3.2: Process Addie model

3.2.1 System analysis

The system analysis is fundamentally, what is expected of the system. This analysis can be seen to be the need and need as far as the analysis quality the system functionalities and features. It involves initial assessment and feasibility study on the system. The system analysis is fundamentally sorted into two gatherings which is demonstrated below.

A-Functional requirement: This type of requirements are the requirements and needs that are expected from the system in regard to the practices and the functionalities that the system can perform, what the system should do or what is expected from the system. The function of a system or its segment is a function that described as a set of inputs outputs and behavior.

B-Non-functional requirement: These types of requirements are the properties that are relied upon of a system to have. These properties are utilized to characterize the nature of the system and additionally used to judge the operation of the framework as opposed to portraying what the system ought to do and be determining the practices. The non- functional requirements put imperatives on the outline.

3.2.2 Design

User requirement is a user requirement document (HTML) or user document (WAMP) can be utilize as a manual for planning cost, timetables, exam, milestones. The express idea of the HTML enables the user to demonstrate it to different partners to ensure every single important element is described. Existing system evaluation of the designed application.

3.2.3 Development

After the requirements specifications then comes the design phase which involves the design of an inner structure of the whole system the modules and classes that the system needs and the inter-relations among all classes and modules in the system are specified. If the software structure is not well -designed then the system will be difficult to build exam or maintain. Before starting the modeling process objects of the system have been identify and used the approach which depends on the personal experience. Detailed system specification application is been implemented the programming languages applications and framework used.

3.2.4 Implementation

During implementation, the plan is implemented a teacher training procedure is developed. Material is delivered or distributed to ten teachers. After birth, the effectiveness of educational materials is assessed.

3.2.5 Evolution

Summary evolution consists of tests designed for benchmarking reference items and providing opportunities for feedback from ten teachers. Evaluations are made as required.

3.3 Analysis of Proposed System

The proposed system is a web-based application that allows users to make an assessment. Real-time updating of the central database. The new system in design will reduce the problems associated with the existing system. To increase reliability of the DBR training module, the following process will be used:

1. The student will have a registration page and a verification page. This registration page will enable the student to register check and record email others to their mobile devices.
2. When the student comes to the system takes a picture to download to the database. The list of available courses will be displayed.
3. All students will create two videos, one video for screen computer and the second video recorded for person. After the two video have been uploaded by the user.4. After clicking the course a list of available exams will be displayed.
4. Before the student attempts the exam a one-time password will be issued by the instructor before the exam starts.
5. Each assessment consists of five questions, each type is 8-15 questions. The system will give random questions for different students.
6. At the end of the evaluation the student will be able to see the results. Copies are sent to the student's email account (email).

3.4 System Architecture

The levels are introduction level center level and information level. The introduction level is the User Interface and it is structured utilizing HTML. The center level interfaces the introduction level and information level together. The center level is likewise called application level or business rationale. The center level was planned utilizing PHP and it keeps running on the server. The information level is the piece of the framework that is in charge of retaining information (database). The database executes the framework. The framework utilized for building up this framework is MySQL database server. Engineering of the framework is demonstrated as follows.

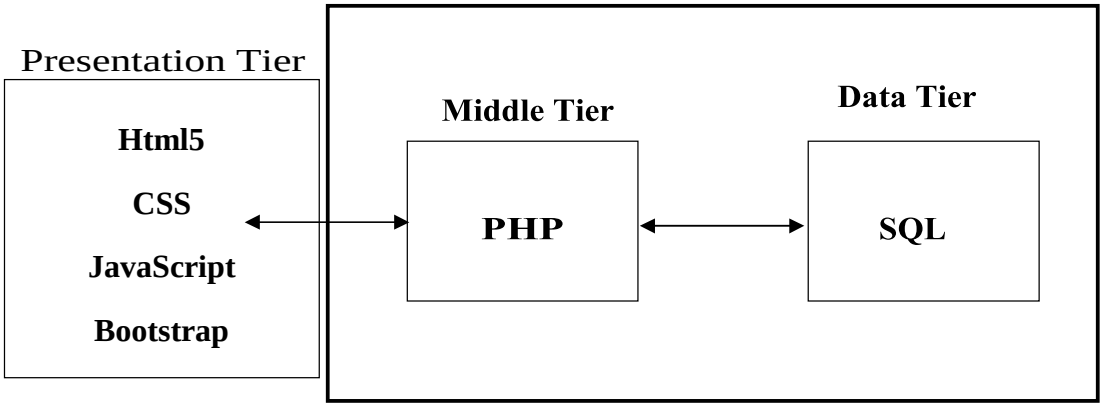

Figure 3.3: System Architecture

3.5 Use Case Diagrams

Use case diagram are a graphical method for collecting and analyzing requirements. They represent the functional requirements of the system. Use focus states to conduct the system from an external perspective. Use cases are improved during the collection of requirements. They are reviewed and revised during the process. In addition this chart shows a set of use cases actors and relationships. It also demonstrates players that are external entities interacting with the system. Examples of players include users and Manager, bank, customer or any system such as a central database.

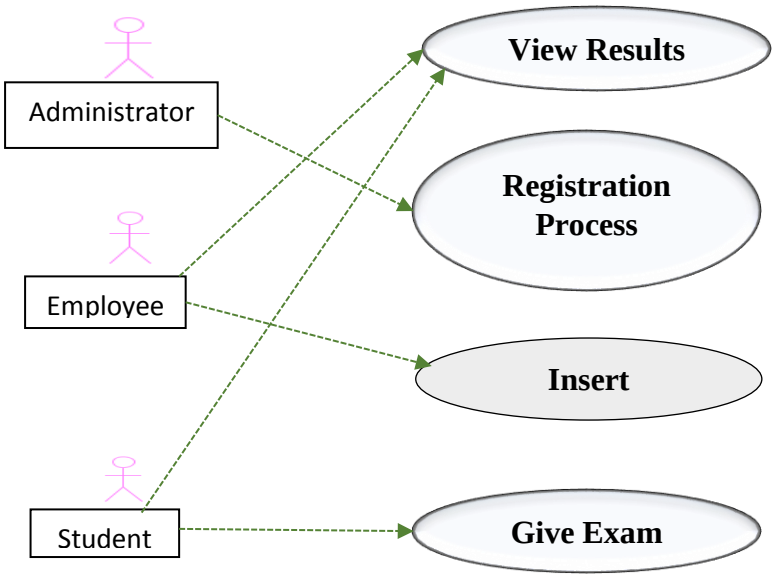

Figure 3.4: The basic function for each actor

3.6 Context diagram

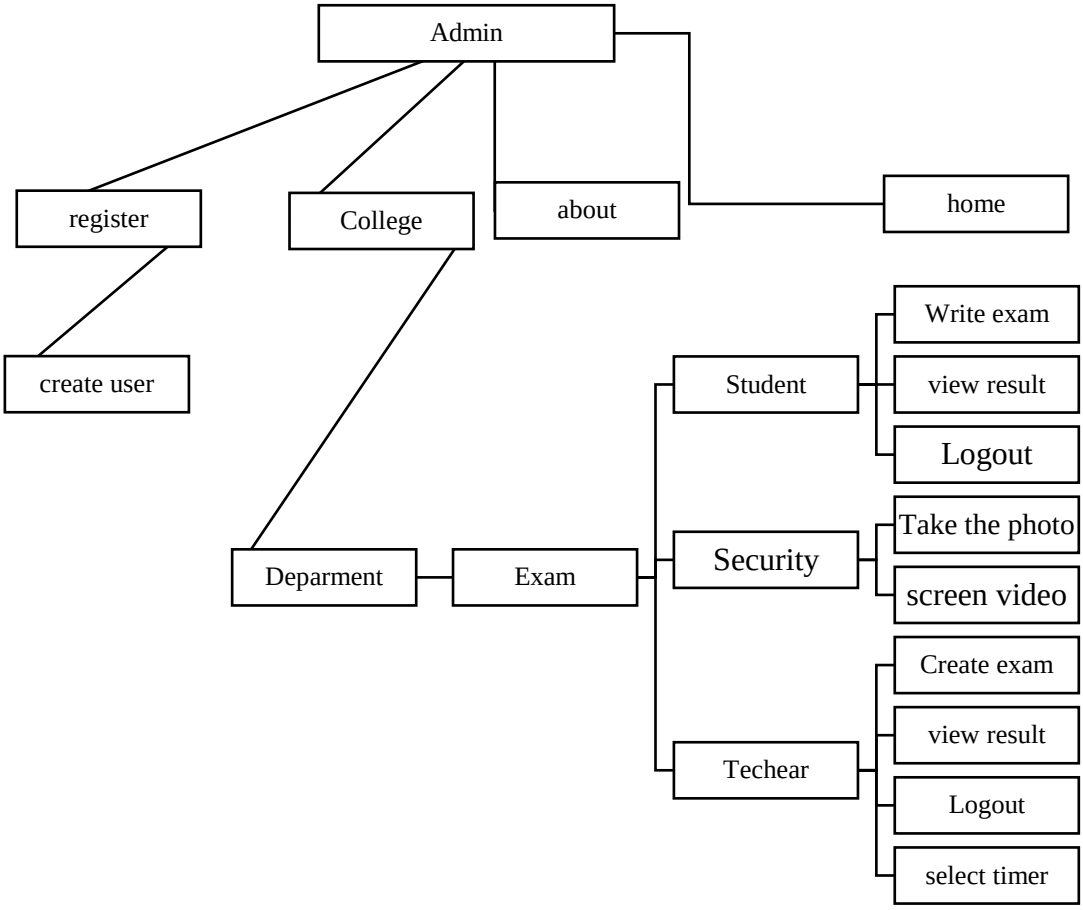

Figure 3.5: the content diagram electronic exam system

3.7 Model project

This diagram shows the limits and scope of the electronic exam system project. Explain the main purpose of the system and related institutions.

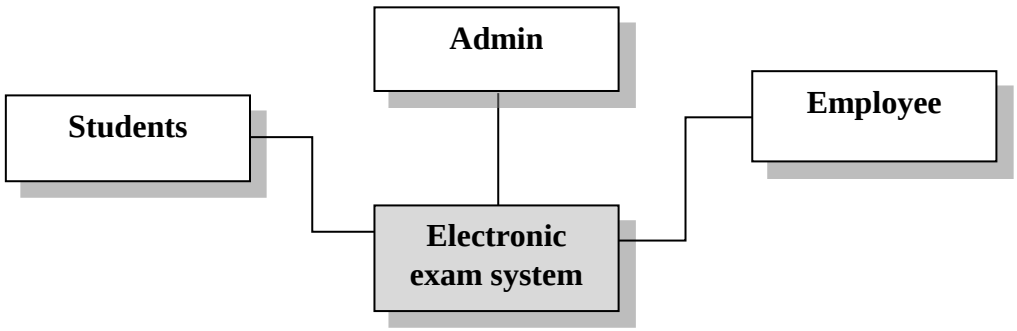

Figure 3.6: Use Case Diagram of the Proposed Syste

3.8 Design of the Proposed Database

Database Design

The social database model was utilized to structure the database. The social database server used to make the database is MySQL.

Table 3.1
Admin

Field Name	Character Length	Data Type
Email	50	Varchar
Password	15	Varchar
Name	50	Varchar

Table 3.2
Employees

Field Name	Character Length	Data Type
Emp_id	10	Int
Name	100	Varchar
Email	100	Varchar
Password	100	Varchar
Address	100	Varchar
College_id	11	Int
Dep_id	11	Int
Emp_title	50	Varchar
Birthdate		Date
Mobile	20	Varchar
Gender	‘male’ or ‘female’	Enum
Registered_at		Timestamp

Table 3.3

Students

Field Name	**Character Length**	**Data Type**
Std_id	11	Int
Std_email	50	Varchar
Std_Password	15	Varchar
Std_name	100	Varchar
Address	100	Varchar
Birthdate		Date
Gender	‘male’ or ‘female’	Enum
Mobile	20	Varchar
College_id	11	Int
Dep_id	11	Int
Stage	15	Varchar
Registered_at		data time

Table 3.4

Subjects

Field Name	**Character Length**	**Data Type**
Sub_id	11	Int
Sub_name	100	varchar
Stage	50	varchar
College_id	11	Int
Dep_id	11	Int

Table 3.5

Colleges

Field Name	**Character Length**	**Data Type**
College_id	11	Int
College_name	100	varchar

Table 3.6

Departments

Field Name	**Character Length**	**Data Type**
Dep_id	11	Int
Dep_name	100	varchar
College_id	11	Int

Table 3.7

Exams

Field Name	**Character Length**	**Data Type**
Exam_id	11	Int
Exam_description	255	Varchar
Exam_sub_id	11	Int
Exam_dep_id	11	Int
Exam_college_id	11	Int
Exam_stage	50	Varchar
Exam_date		Date
Exam_time		Time
Exam_mark	11	Int
Q_mark	11	Int
Exam_answer_time	11	Int
Exam_type	‘multi choice’,’true_false’,’other’	Enum
Emp_id	11	Int
Notify	‘yes’, ‘no’	Enum
Exam_registered_at		Datatime
Dep_id	11	Int
Stage	15	Varchar
Registered_at		data time

Table 3.8

Multi_choice_q

Field Name	**Character Length**	**Data Type**
q_id	11	Int
Exam_id	11	Int
Question	255	Varchar
Choice1	255	Varchar
Choice2	255	Varchar
Choice3	255	Varchar
Choice4	255	Varchar
Correct_choice	50	Int

Table 3.9

True_false_q

Field Name	**Character Length**	**Data Type**
q_id	11	Int
Exam_id	11	Int
Question	255	varchar
Correct_answer	‘t’,’f’	enum
Answer_false	255	varchar

Table 3.10

Other_type_q

Field Name	**Character Length**	**Data Type**
q_id	11	Int
Exam_id	11	Int
Question	255	varchar
Answer	255	Text
Img_name	50	Varchar

Table 3.11

Std_answers_multi_choice

Field Name	Character Length	Data Type
A_id	11	Int
Exam_id	11	Int
Q_id	11	Int
Std_id	11	Int
Std_answer	255	Varchar
Std_score	11	Int
Correct_answer	255	varchar

Table 3.12

Std_answer_true_false

Field Name	Character Length	Data Type
A_id	11	Int
Exam_id	11	Int
Q_id	11	Int
Std_id	11	Int
Std_answer	255	varchar
Std_score	11	Int
Correct_answer	255	Varchar
Answer_false	255	Varchar

Table 3.13

Std_answer_others

Field Name	Character Length	Data Type
A_id	11	Int
Exam_id	11	Int
Q_id	11	Int
Std_id	11	Int
Std_answer	255	varchar
Std_score	11	Int
Correct_answer	255	varchar

Table 3.14

Std_exam_timer

Field Name	Character Length	Data Type
Counter	11	Int
Std_id	11	Int
Exam_id	11	Int
Start_time		Timestamp

CHAPTER IV

FINDINGS AND DISCUSSION

4.1 Development Process

Electronic exam is a complete web application. There are three processors in the system configuration: Administrator, Employee and Student. Manager submitted by employee, student, faculty and subject. The employee-level configuration wizard can create new exams and modify existing exams. The employee handler can intelligently upload questions and answers to the topic. The Student Wizard is a special page where students can register for the exams that determine the entrance exam.

Hypertext markup language. It is the basic coding language of the Internet. The original HTML feature was to allow web authors to define the structure of a page. This language is used to plan pages that can display all kinds of information that the internet contains. The web page consists of elements for each, identified by HTML code or tag. The label is captured by angle brackets and most signs come in a pair with opening and closing signs. The internet explores the entire web to get information around the world.

PHP is one of the most popular programming languages used in website creation. The web server interprets and executes its own code sends the result to be displayed in the user's browser, uses PHP to create dynamic web pages. This content changes as a result of interaction with the user.

It is widely used to build interactive web applications whether large or small. It is not difficult to learn the PHP language, but it requires effort and knowledge of the basics of HTML, CSS and JavaScript.

Bootstrap 4 Framework HTML, CSS and JavaScript are very common for developing a responsive Web site and Web applications. Bootstrap 4 is first used to create Web sites that respond to mobile devices. Bootstrap 4 is easy to understand and has dynamic features. Bootstrap 4 has features required for building a Bootstrap site from scratch. Bootstrap 4 is a free open source front end for use.

On the client side of your HTML document, Java Scripts are used to optimize your web pages in numerous ways.

Asynchronous JavaScript and XML or AJAX is a set of interrelated web development techniques used to create interactive web applications or function-versatile internet applications. Using Ajax, web applications can retrieve data from the server asynchronously in the background without interfering with the current page view and behavior. Data is retrieved using HTTP and XML using an object or remote script Unsupported browsers. Despite the name there is a need to use JavaScript, XML and asynchronous. Ajax has become a wide variety of web technologies that can be used to implement a web application that connects to a server in the background without interfering with the current state of the page.

WAMP stands for Windows, Apache, MySQL, and PHP. WAMP server is a web hosting and development environment for Windows. Allows you to create web applications using Apache2, PHP, and MySQL database. WAMP server also includes PHP My Admin which allows you to manage databases easily.

CSS is a style sheet language used to define the width of a document written in markup. The most common application is to design web pages written in HTML, which is used locally by web page readers to determine colors, fonts, layout and other features of document viewing. It is primarily designed to separate document content (written in HTML or similar markup language) from document viewing (written in CSS). This section can improve access to content provide more flexibility and control over presentation features and reduce the complexity and repetition of structural content. Multiple rules match a specific item. Sequentially priorities or weights are calculated and determined according to rules so that the results can be predicted.

The database in MySQL consists of a series of tables that contain data and other objects including views and indexes that contain data stored procedures and triggers. Before objects are created in the database the database must be created and understood on how to change settings and configure the database. This includes tasks such as expanding or collapsing the database or specifying the files used to create the database.

4.2 System activities

1. Log-in system

Log-in system includes the following programs

- Logging in as an Administrator

Once the administrator name and password are already registered a user can log on to the system as an administrator to manage administrator activities. The logging in is only successful if the login details match the details in the database, otherwise an error message will be displayed.

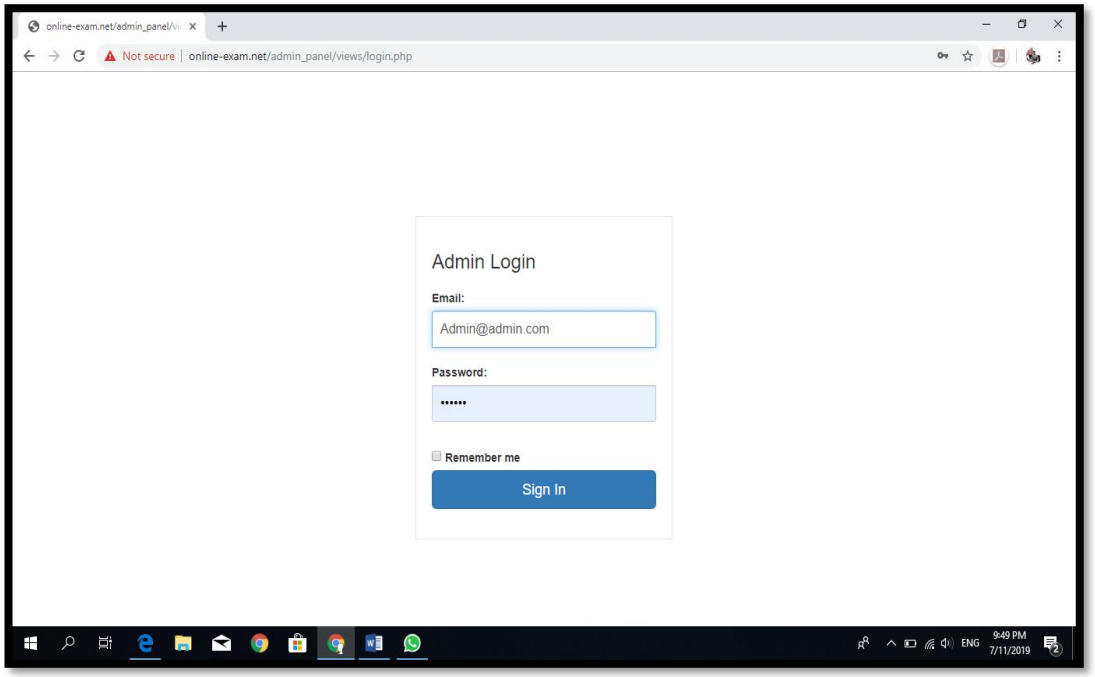

Figure 4.1: Log in Admin

- Logging in as an Employee

If the employee name and password are already registered a user can log on to the system as employee to carry out employee activities. The registration is successful only if the login details match the information in the database, otherwise an error message will be displayed.

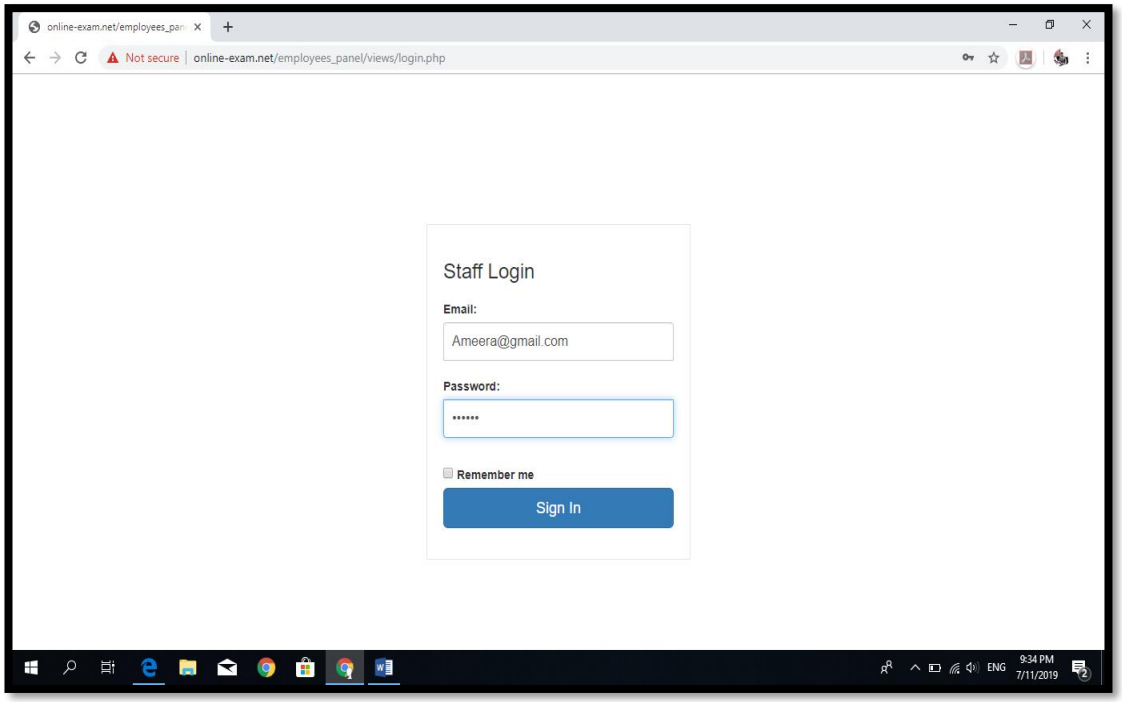

Figure 4.2: Log in Employee

- Logging in as a Student

The information of each student will be listed by the administrator during the registration process to allow the designated student to log on to the system without having to register again. The registration is successful only if the login details match the database information, otherwise an error message will be displayed.

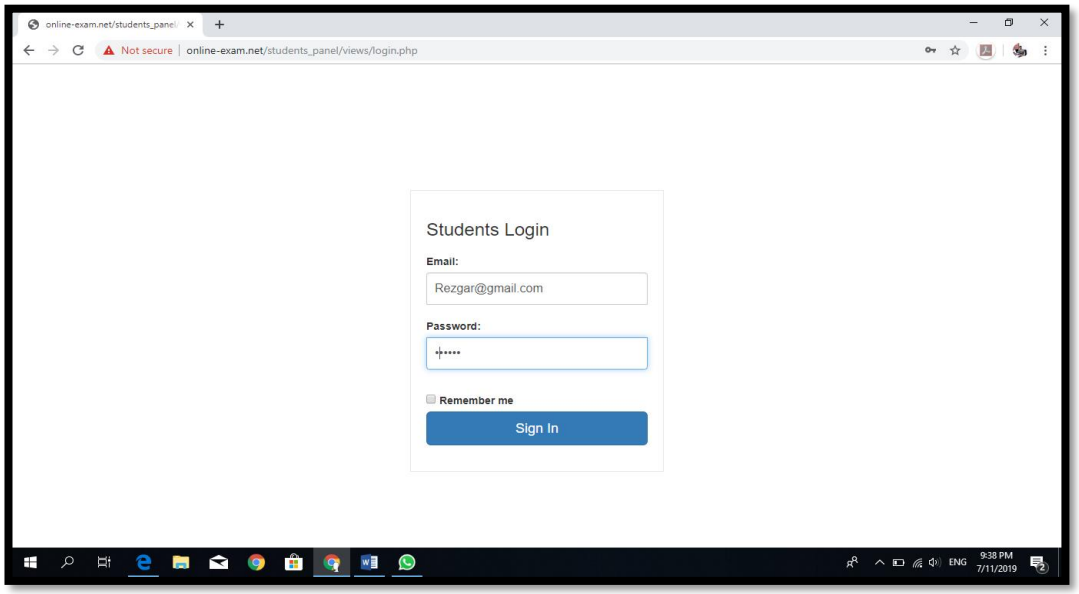

Figure 4.3: Students Login

2. Admin activities

i) Adding employees and Students

ii) Deleting and editing (Employees, students, college, department and subjects).

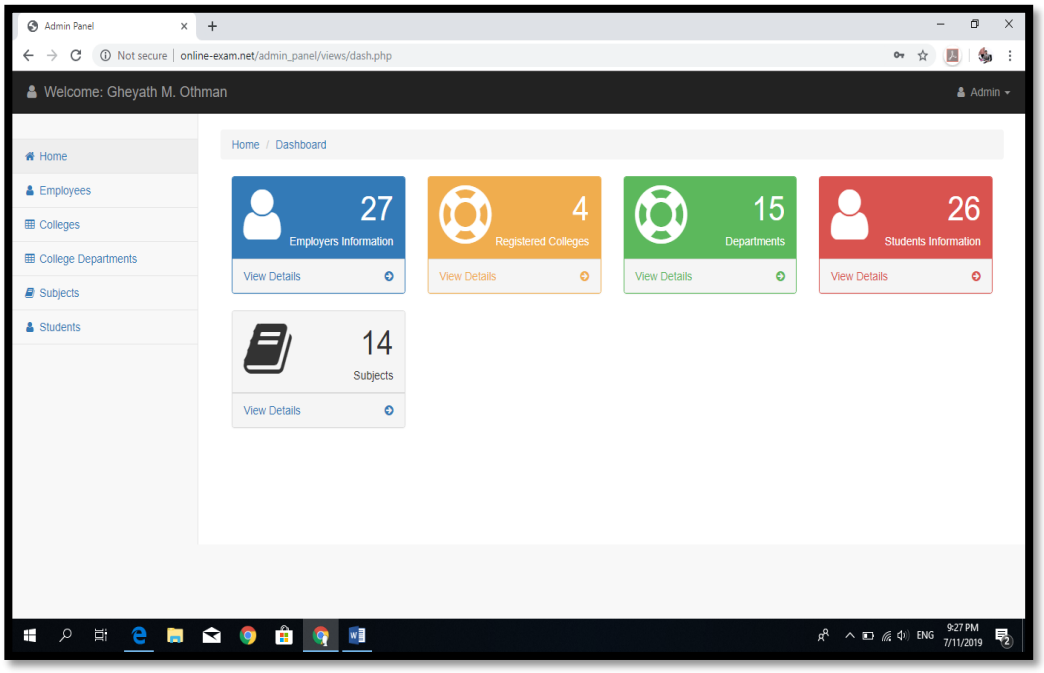

Figure 4.4: Deleting and Adding

3. Employee Activities

Employee activities include the following programs:

I) Create exam.

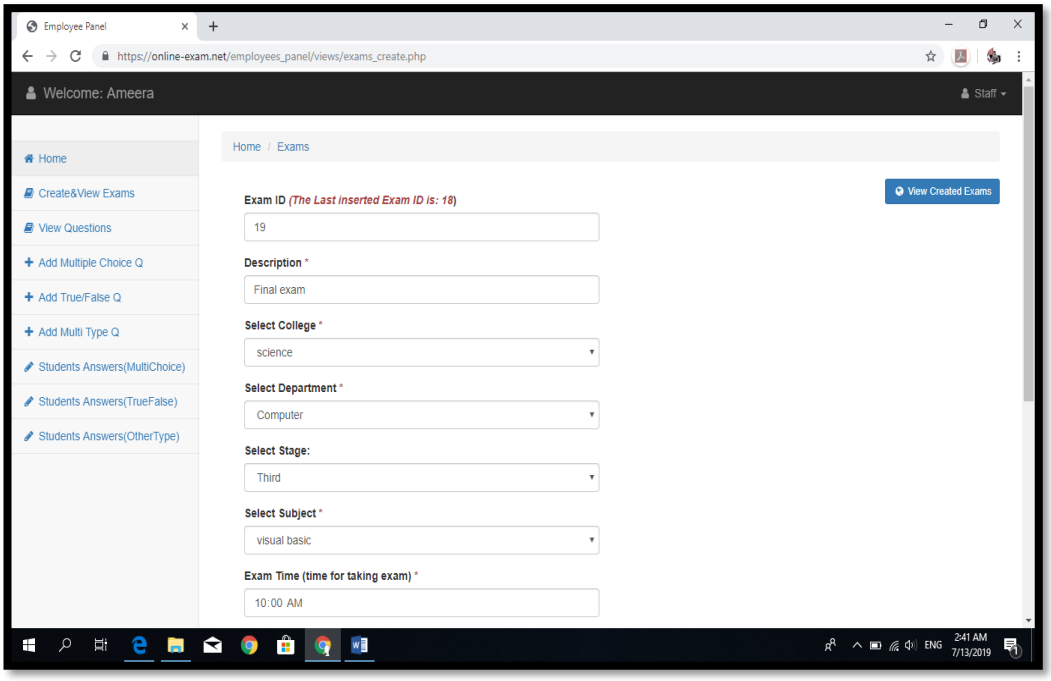

Figure 4.5: Create Exam

II) Adding a question: Five question types (True/ false, multiple choice options, Definition, explain image, explain video) according to the employee request.

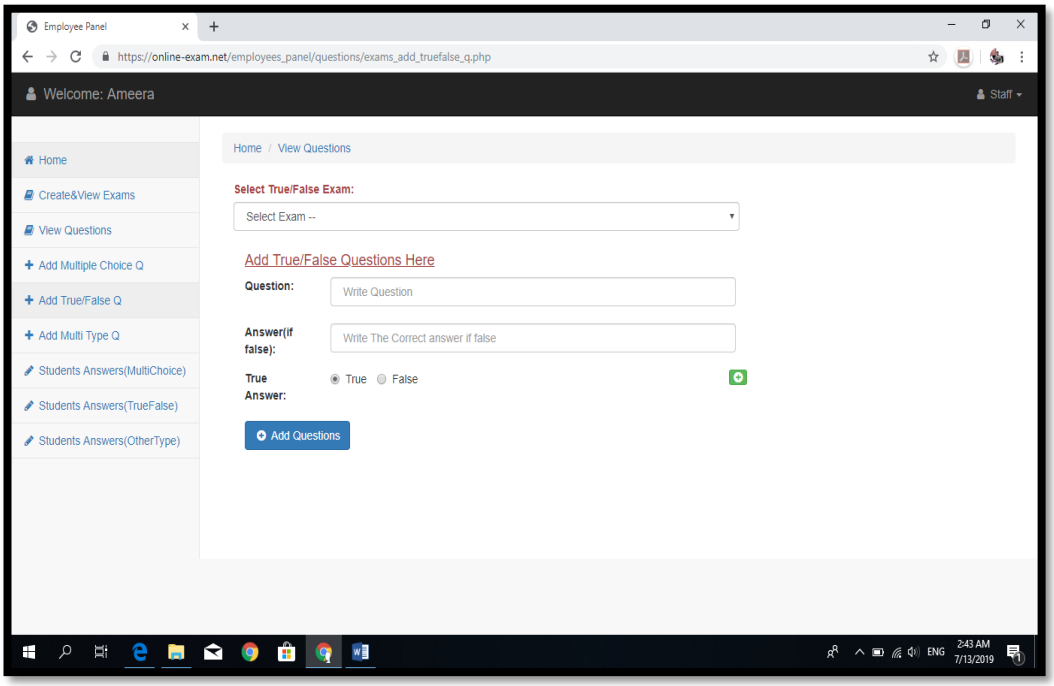

Figure 4.6: Adding Question

III) Deleting questions: Deleting questions for five question types (True/ false, multiple choice options, Definition, explain image, explain video).

IV) Checking exam results for all students.

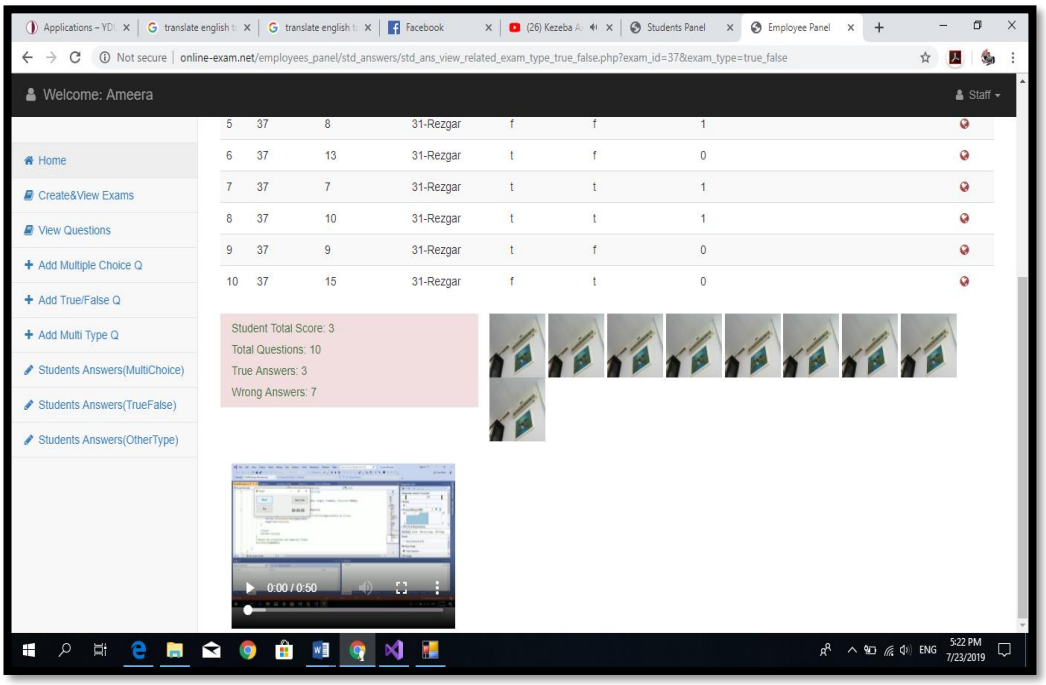

Figure 4.7: Check answer exam students

4. Student Activities

Students have the following main processes:

i) Student Enrollment: this include the information of each student (student email and password) to complete the enrollment process.

ii) Security exam online :

❖ Create screen video for computer from C# program.

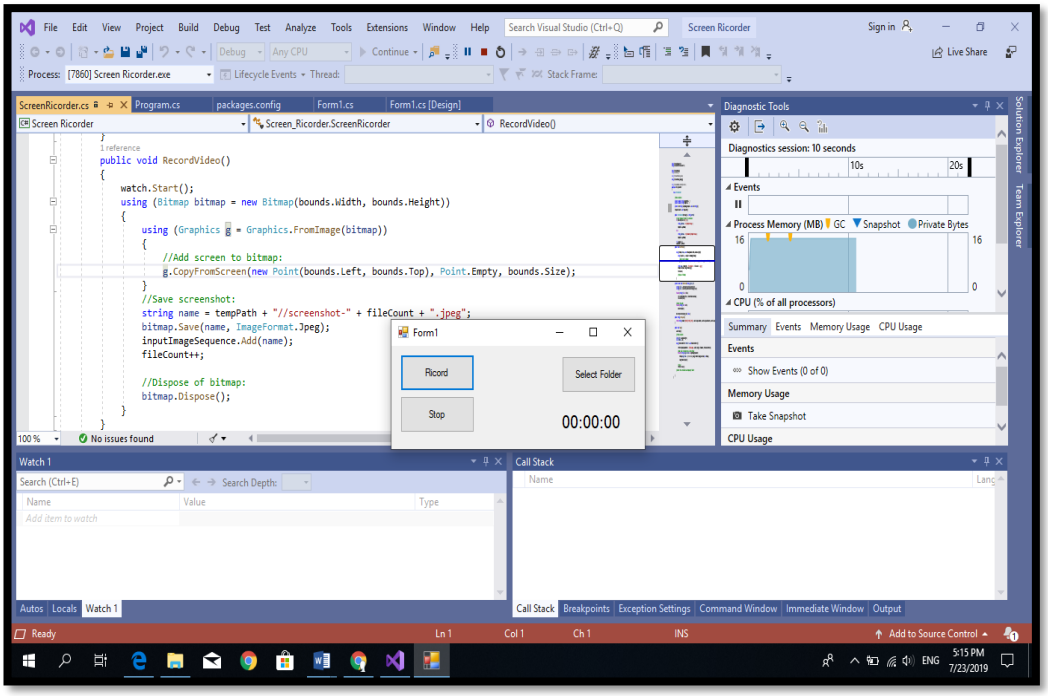

Figure 4.8: Screen Video

❖ Taking the photo for students.

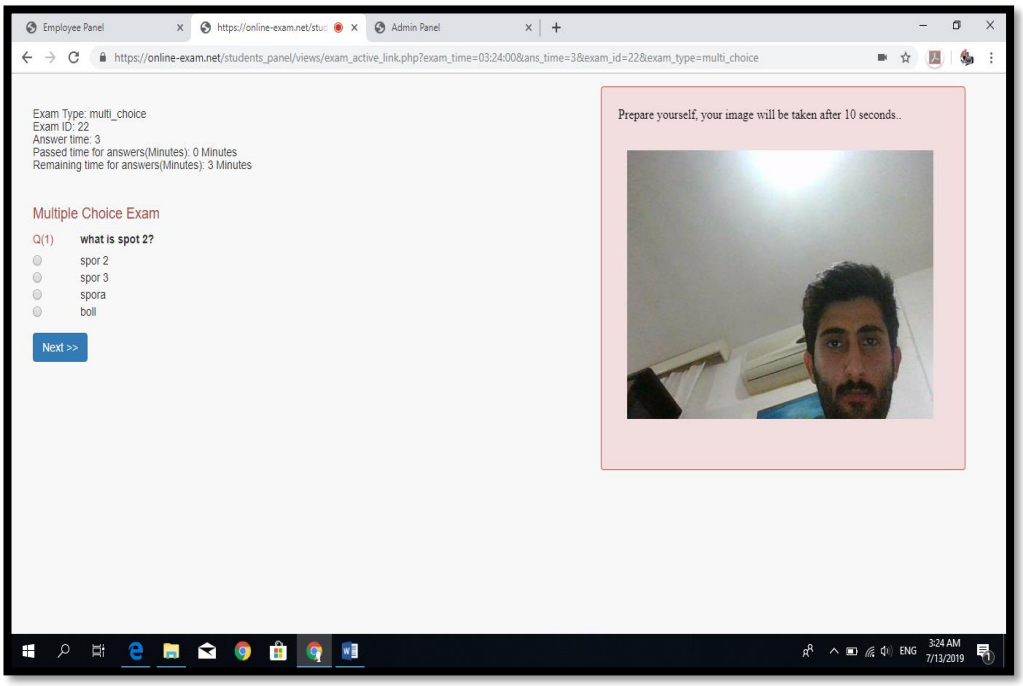

Figure 4.9: Take photo Students

iii) Students will do the exam and they will answer the questions.

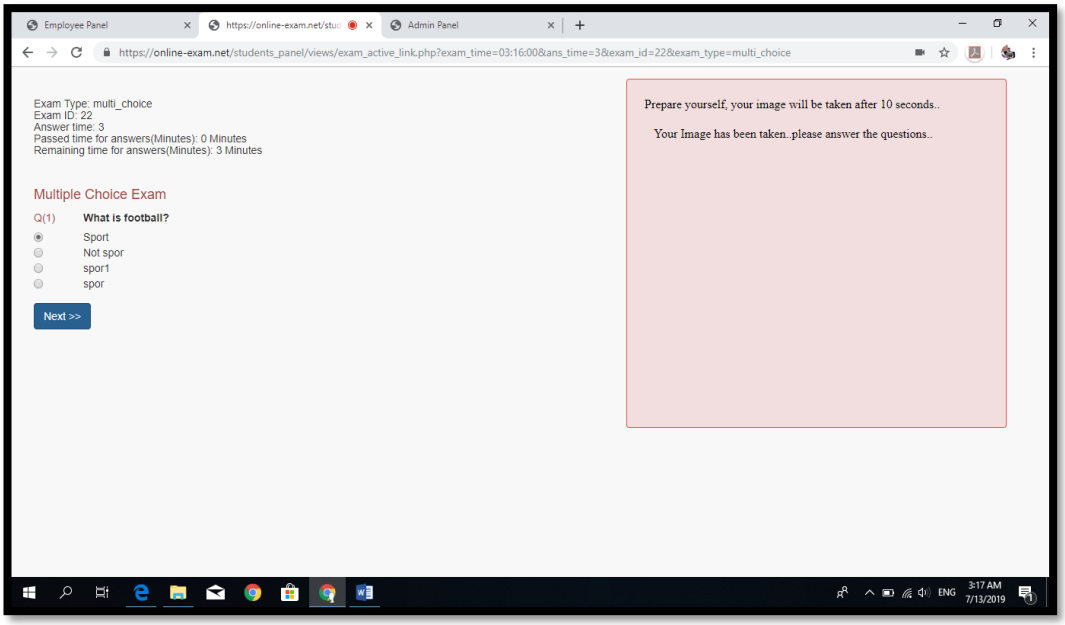

Figure 4.10: Students exam

iv) Upload video before starting the exam, create a screen video for computer from C# program.

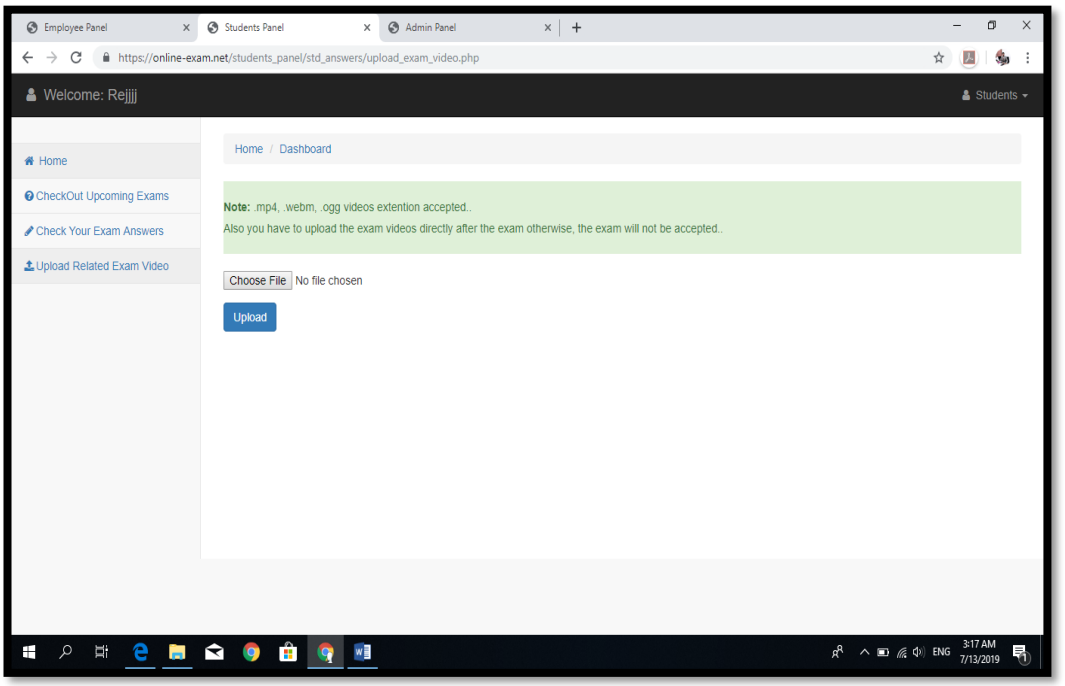

Figure 4.11: Upload screen video

v) Getting Results: After answering all the questions within a certain timeframe, the results of all students will out within the next day.

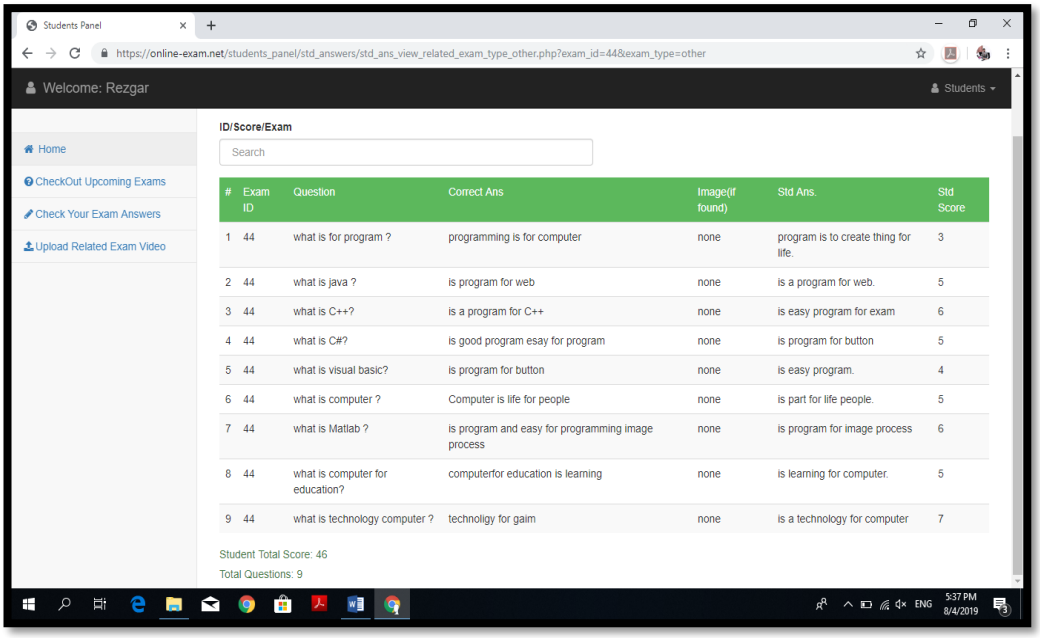

Figure 4.12: Result exam

4.3 Database design

For optimal use of MySQL server technology it is important to ensure that the database is well designed. The names of the files selected to tag all tables created in the database are to reflect the purpose of the table, thus contributing to a good design system. The basic step in the design is to decide the tables to be created and the type of information each one should keep according to the project requirements and characteristics.

Implement System

1. Administrator:

When the user chooses to login as administrator, the login page takes him to the administrator login page, which requests e-mail address and password. As shown in the figure 4.13.

The administration can be done following these process:

- ✓ Add/delete accounts (Employee and Students)
- ✓ Add/delete (college and department)
- ✓ Add/delete(subject)

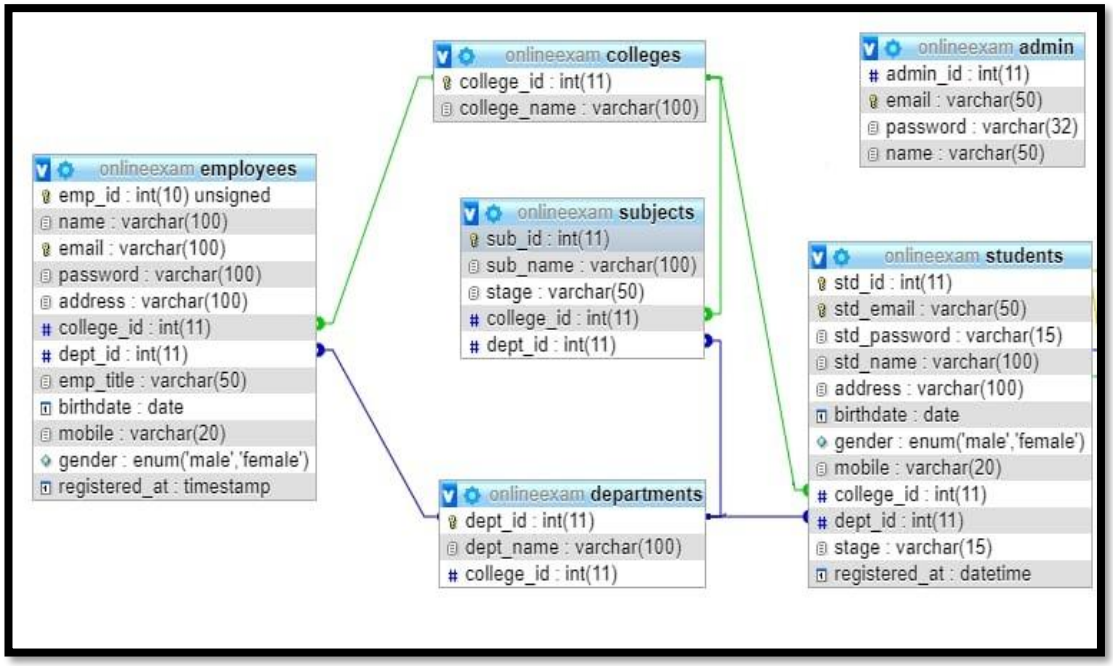

Figure 4.13: Structure Admin

2. Answers Exam

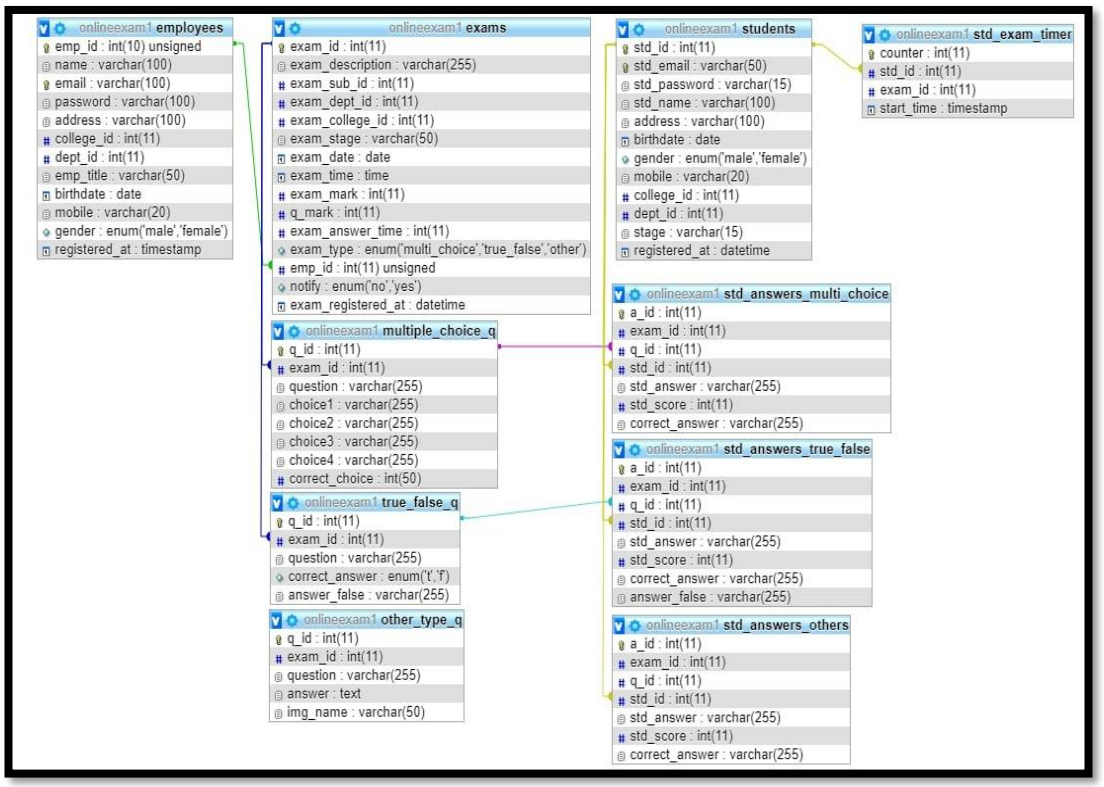

Figure 4.14: structure Answers Exam

4.4 Database Design Answer Exam

The relational database model was used to design the database. Relational database server are used to create a MySQL database.

- **The employee actions include the following:**

- Create exam
- Insert questions(five types of question)
- View questions
- View result

- **The Students can do the following:**

- Take photo, Screen video
- Attend the exam
- Create two video uploads by the user
- View exam results

4.5 Opinions of experts for website

	Question	Usability	Design	Security	Result
1	All questions good	Web site usability	Good design	25 second take photo student	Question multi choose automatically
2	Add question structure	Result Student Accuracy	Design one page different another page	See teacher screen student online	Teacher check result after finish exam and see security
3	Blanks	Upload video difficult	All page button color different another	Video screen for c# program good security	Teacher have to look answer shit than pout students result
4	All questions good	Delete and edit exam usability	Button for (admin, employee, student) not link	Program for screen student if open any exam Zero	Student check result one day
5	All Question for one exam	Add exam usability	Design log in good	Teacher see security all photo and video	Teacher check all question
6	All Question for one exam	Admin usability	All question for design different	Student before take exam record video screen	Teacher check result accuracy
7	All type question is important for exam	Edit and delete user usability	Design screen computer left take photo and right exam in good	Photo and videos save data base	Question true and false automatically
8	Three questions for one exam	Create exam usability	Design all result different is good	Student upload video screen	After exam student see result
9	All questions good	Check result usability	Design page exam student is good	Good security for exam	Check result easy
10	Two question for one exam	Register easy	Check security Design good	Video student upload save user teacher	Teacher have to look question by question pout result for the first question than to next question

CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This study was aimed at determining the efficiency of electronic exams compared to paper exams by identifying the differences in the performance of students in computerized and paper exams. This study also made a recognition of the amount of time taken from students and that can be saved by institutions with the approach of electronic exams. The study also aimed at identifying the impact of the students' exposure to electronic exams in sensitizing them positively towards electronic exams.

This web application provides an easy way to run the world of online exam on a large scale. (Bieniecki et al., 2010) he according Electronic exam frameworks are basically missing in the exams. The Central Examination Committee will direct the principal exam in e-stamping. We trust that our exploration, the proposed improvements, will add to the advancement of evaluation and examination framework. Saves time because it allows many students to take the exam at the same time and results are presented day after. It is automatically generated by the server. (Bauer et al., 2013) he according After the exam data for exam save in data base result for exam after the exam because this exam you have just two type question (true/false, multi chose) check result automatically. The employee has the privilege to create, modify and delete exam pages. Special questions can be uploaded by the employee and students can log in attend the examination and see the results. (Hussein et al., 2016) he according secure login resumption capacity, multi-teacher, random question selection, irregular inquiries dissemination, arbitrary decision appropriation and compactness execution strategy. Fix and work from prior works, this book proposes an Online Examination System (OLES).

We gave this web site to tend teachers almost the teachers they should that all kinds questions have been created for exams and this a good thing. Usability of this website is easy. The design for each page different to another page is good. Security for the exam over students is very good because you can see all thing in details by camera. All teachers said that results are easy to be shown.

5.2 Recommendation

1. While the employer has the access in the E- exam system to create exams all kinds of questions can be included.
2. In case the students doing the exam the network should be fast.
3. In future when has an exam in electronic exam system he can reset his exam in online.
4. For an impressive security a camera should be installed that the teacher can watch the students online while attending the exam.
5. To add another program that monitor students' activities on the examination screen. The security feature should alert the invigilator in case students open other applications during the exam.

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Ek 1. Ethics Committee Report

YAKIN DOĞU ÜNİVERSİTESİ

BİLİMSEL ARAŞTIRMALAR ETİK KURULU

24.07.2019

Dear Rezgar Hasan Saeed

Your application titled “Development and Examination Process of Electronic Exam” with the application number YDÜ/EB/2019/365 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Direnc Kanol

Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.

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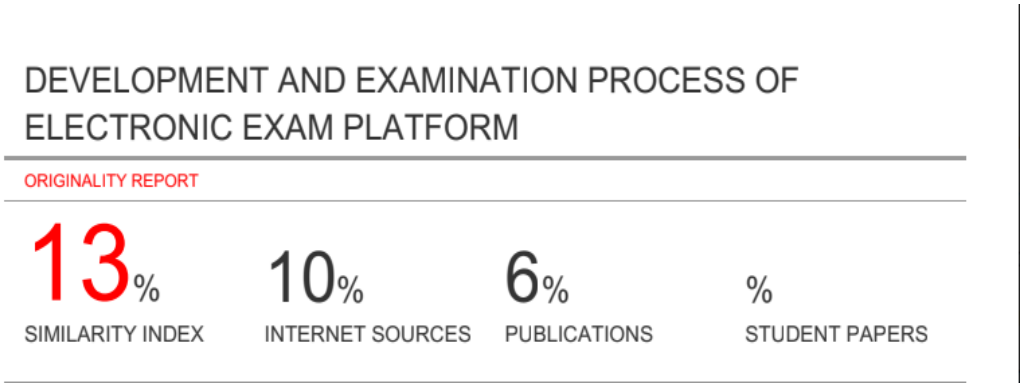

DEVELOPMENT AND EXAMINATION PROCESS OF ELECTRONIC EXAM PLATFORM

ORIGINALITY REPORT

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