

# Challenges of Online Exam, Performances and problems for Online University Exam

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## Abstract

In this paper, we propose a system that provides security to improve on-line examination by utilizing technologies such as biometric authentication, internet-firewall, cryptography, network protocol and object oriented paradigms. Furthermore, we propose a framework for conducting on-line exams through insecure internet backbone. However, the proposed system will provide a secure communication based cryptography and group communications. In our research paper, we discuss the performance of student's online course exam with respect to security and main challenges faced by online course exams within the university. We conclude that by improving the security system using biometrics face recognition that can be incorporated into the proposed system to fulfill the challenge of online exam.

**Keywords:** Biometrics, Course, Online Exam, Security, University Course, Camera, Fingerprint Scanner

## Introduction:

Online exam has expanded rapidly [1], [2]. Even so, the off-line exam is usually chosen as evaluation method for both on-line and off-line exams.

Online course examinations are useful to evaluate the student's knowledge using modern computer technology without any effects on the traditional university course exam that uses Pens, Papers and invigilators.

Online exam can improve the standards of student's examination whereas the traditional examination system using the pen and paper requires more effort on the part of students and invigilators.

Online examinations are considered an important source for university exam, and the development of network technology polices has given the possibility to conduct the exams online. Thus, the university students can benefit from these services.

University course exams , using the multiple choice questions and allowing the students to choose only one answer from alternative answers or the true/false questions, are traditionally using the paper and pens and they have always been a heavy load for both students and lecturers. Computer new technology has been generally useful to the fields of education. In attitude and tools, the new computer technology gives the lecturer the advantage of an effective assessment.

The traditional way of identifying the students is checking the student card, driving license, resident card or Passport.

The online process and security of the online exam system helps with eliminating cheating. This paper proposes the usage of biometrics which supports the security control, authentication and integrity of online exam process. E-monitoring of students uses finger prints and cameras for preventing cheating and substitution of the original student.

This paper targets the online exam for Basic computer in university courses with students at particular locations, at a fixed time and same questions for all examinees at the restricted physical location of the examinees.

## Literature Review:

Most modern online education uses Web-based commercial courses management software [3] such as Web CT [4], blackboard [5], or software developed in-house. This software is not used widely for online exams, due to security vulnerabilities, and the system must rely on students' honesty or their having an honor code [6].

Online course exam nowadays becomes more efficient than before; online course exam need for enhancing the security. Jung, I.Y proposes an

enhanced secure online exam management environment mediated by group cryptography using remote monitoring and control of ports and input [7].

Holding the Online course exam for any substance requires more preparations, whether the teacher or through the support of university students. University on the duties assigned to it to provide the necessary environment entrusted to them. Everyone is there to serve the student and we have to encourage students and train them psychologically for a computerized exam, note that many universities in the world of the complexity of computerized tests on its campus. More of recent research shows the advantage and disadvantage of using online course exam on the university campus such as Al-Mashaqbeh, I.F. and Al Hamad, A. in the Dept. of Computer. Educ., Al al-Bayt Univ., Mafrq, Jordan reached to good results showed that there was a positive perception towards the adopting of online exam. They measured students' perceptions toward the use of online exam as an assessment tool on university campus within a Decision Support System Course at Al al Bayt University [8].

A study has been conducted on online exam and traditional exam which indicates that an online exam has better results than traditional exams. [9]

Considerable discussion has taken place on group protocols and group-mediated communications to ensure secure communications among group members [10], [11]. This discussion has included the consideration of secure group composition, secure intergroup communication using a public key, and secure intragroup communication using the symmetric key through the Diffie-Hellman key exchange [12]. This paper adopts two groups for secure communication between distributed entities in the online exam system. The intergroup communication is protected through public key infrastructure (PKI), while intragroup communication uses several symmetric Diffie-Hellman Keys. The "group" in this paper is a concept for entities with similar roles. [12].

In this research, we try to bring out the challenges and some best solutions that may solve the problems. This paper considers the **Challenge of personal identity** and unauthorized invention of other users in the **network using other clients**

### Solutions for the above challenge

#### 1) Challenge of personal identity:

The special cameras of 360° and finger print recognition device will be incorporated for identifying the identity. The camera and the finger print device will be placed at one location in each lab. The biometric scan devices (finger print scanner and camera 360°) will check the students from the data base which is collected and stored in the registration department. The 360° camera is used for dual purpose of identifying and controlling of examination hall activities. Thus, we are utilizing the same resource for identifying the students.

#### 2) Unauthorized interference of other users in the network using other clients

To solve this challenge of students entering from different IPs into the domain and attempting the exam for their fellow students, we propose a system, where we create a domain with the set of students user id's allocated by the university domain and each instructor will add all the students user id's of his course; then he will give them the specific permissions like read and write for the specific time of that particular course exam.

The students who enter from the different IP's cannot use the allocated domain and thus the system is secure.

unauthorized user attempts to access the system from different location he is not allowed.

### The proposed system

The special exam group is created by grouping the hostnames / IP of clients for a specific location (Computer Lab) and time.

To avoid the malpractice in the exams we use different types of biometrics as a means to log into the exam.

We use the camera and finger print scanner to identify the students as shown in the **figure1** above.

The user after identified login into the system uses the user-id and password provided by the university, which are authenticated by the server.

This gives him/ her permission to open the exam from the server otherwise the students cannot login into the system.

The unauthorized users attempting to log into the system from remote computers are blocked by the proposed system

Once the session begins the timer is on, the student completes his exam within the allocated time and once the time is up the system send an alert and logs the user off.

**Figure 2:** The **figure 2** shows the flow chart of the secured online exam system proposed. It shows the series of steps of online exam starting with the secured login using biometrics and system login through server till the end of exam results.

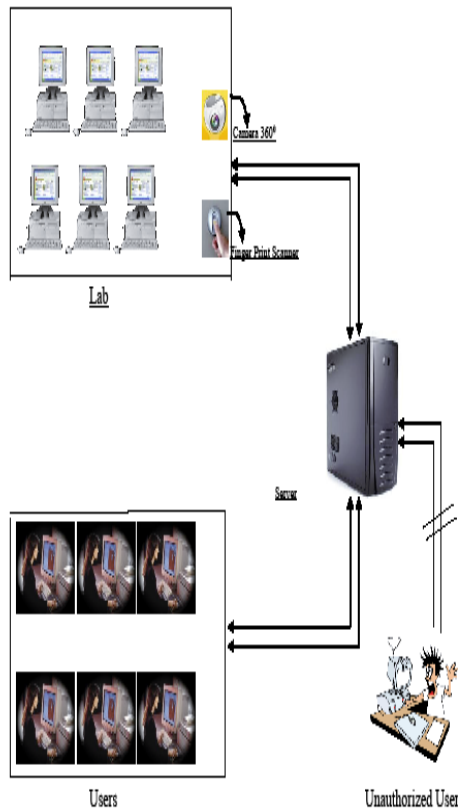
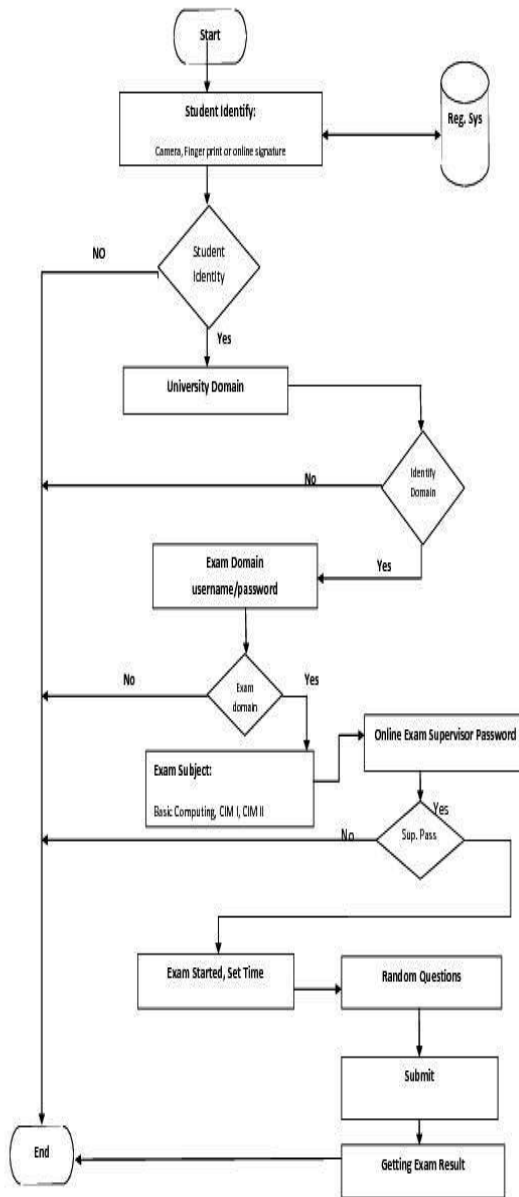


Figure1: System architecture

**Figure1:** The systems are connected using the star topology. The camera and finger print scanner inside the lab are connected to the security server; once the security server authenticates the biometrics of user, then the users are allowed to write the exam at the specific terminal provided to them. When an



**Figure2: Flowchart of secure online exam proposed**

**Algorithm:**

**Step 1: Student Identification:** The system will check the identity of the student by using biometrics which will take the picture and the fingerprint before entering the exam. This will also check whether the student is eligible for that particular exam.

**Step 2: University Domain Login:** The student will log into the domain of the university with the user name and password provided by the university domain login (Ex: username: SUC, Password: suc).

**Step 3: Special login into exam domain:** The system asks the user to write the user name and password. If the user name and password are correct, then the user will be able to log into the exam.

**Step 4: Access the Exam:** The user will complete the exam file that is located in the domain desktop window (Online Exam)

**Step 5: Online Exam Supervisor Password:** The supervisor password is given to the students who are successfully logged into the exam domain. This gives them access to the exam and the exam session begins for that specific exam.

**Step 6: Random questions and Results:** The random questions are given to the students, who submit the answers to the server; when the session is completed, the system generates the result of the exam.

**Step 7: End.**

**Conclusion:**

We believe the online format is considerably superior to paper-and-pencil exams for our courses. We have come to the conclusion that the above mentioned challenges can be solved by introducing the following security systems. Using biometrics we overcome the traditional way of checking the ID cards of the students after they start the exam. Biometrics will identify the student as he enters the exam hall.

The IP address check allows as follows:

- 1-Using online signature or displaying student photo
- 2-Using fingerprint

3-We can provide more security to identify the students by using online cameras which are more useful than the traditional method of checking the ID cards. Since we check the identity before the start of the exam, there are some more security problems regarding the questions and answers which are for a further research.

This type of online exam system reduces the examination work.

The future scope of this research can be the security of online remote exam systems.

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## A Brief Author's Biography

**Mohammad A Sarrayrih** - graduated from Mutah University in 1999-Jordan, major in Computer Science. Upon completing his Master's degree from Al-Neelain University 2004 Amman Branch, he started working as a teacher of Computer Science, his experience of date being of more than 12 years. Mr. Al-Sarrayrih has also a two-year experience as Programmer in the Banking Systems and Online Systems (Phone banking and ATM's). Currently, Mr. Al-Sarrayrih is acting as Deputy Chair of Information Systems and Technology at Sur University College as well as a full time instructor.

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