NOVATEUR PUBLICATIONS
International Journal of Research Publications in Engineering and Technology [IJRPET]
ISSN: 2454-7875
VOLUME 3, ISSUE 10, Oct. -2017

ADVANCED SECURE EXAM MANAGEMENT SYSTEM THROUGH QR CODE BASED AUTHENTICATION

MR. OMKAR RAJENDRA URUNKAR
M. E. Computer Engineering Flora Institute of Technology Pune, India urunkaromkar123@gmail.com

PROF. S. A. JOSHI
Department of Computer Engineering Flora Institute of Technology Pune, India devendra8319@gmail.com

ABSTRACT:

M-Learning has enhanced the e-learning by making the learning process learner-centered. However, obligating exam security in environments which are open, every student has devices or Laptop connected to a Wi-Fi network or internet. Such environments are such that the students can easily exchange information over the network during exam time.

INDEX TERMS: Access control, m-learning, e-learning, proctor.

I. INTRODUCTION:

Students mobile/tablet devices or computer/ laptop are connected to the schools Wi-Fi or LAN network through which they may illegally exchange information during an exam. Applying simple policies, such as turning the network down during exams to cut off any possible communication between students, is not a practical solution as students in different classes may not take their respective exams at the same time. Moreover, the network has to be up during exams in order to be able to submit student's answers to the exam server. There is a need of having dynamic network access policy and it should be applied on each student's device according to predefined conditions. Employing an identity based firewall with dynamic access policy seems to be a good solution to be adopted in such a scenario. Learning Management Systems (LMSs), have been adopted by many organizations to establish and provide access to online learning services due to being essential tools of e-learning. From student's point of view, m-learning could personalize their learning process as well as enable them to collaborate with other students or teachers. From teacher's point of view, they could continue to use LMSs as their working platform, leaving mobile devices for students. The problem is that the integration of m-learning applications and LMS is not an easy task. Indeed, LMSs usually designed as monolithic or layered systems and do not generally contain interoperability standards to communicate with external applications; Hence obligating exam security in environments which are open, every student has devices or Laptop connected to a Wi-Fi network or internet. Such environments are such that the students can easily exchange information over the network during exam time is an difficult task.

II. CORE SERVICES AND FUNCTIONALITIES:

The core services of the proposed Exam Engine are discussed below.

A. Random Distribution of Exam Questions The teacher must have to define a question bank and link them to the appropriate / respective subject. There are many types of questions i.e. objective type questions, descriptive kind of questions. In case of objective type of question Each question have a set of options. Teacher must have to specify those options and specify correct answer among them to enable the exam engine to evaluate student's answer.

B. Authentication of students

C. Random Distribution of questions

III. REVIEW OF LITERATURE:

Mustafa Yaci, Menderes nal [2] A new design and application of adaptive online exam system are accepted in this paper. Adaptive exam systems determine dissimilar question sets automatically and interactively for each student and measure their ability on a certain area of discipline instead of comparing their gains with each other. Since questions are focused so that they can allow making clear deductions about student gains, they are able to notice student competencies more effectively. Requiring less total time for calculating and being more flexible in the exam management system are among the advantages provided by the system. Self-sufficiency of the system in terms of arrangement, repeating and assessment of the measurement process especially allows itself to be used in the individual education sets. Through this system, student competencies can be determined more effectively in cases such as distant learning, in which some challenges are experienced frequently.

Ruth Raitman, Leanne Ngo, Naomi Augar and Wanlei Zhou[3] This paper reports the role of security in the collaborative e-learning background, and in particular, the social aspects of security and the significance of identity. It also represents a case study,

completed in Nov 2004, which was conducted to test the logic of security that students experienced whilst using the wiki platform as a means of online collaboration in the tertiary education environment. The difference between two wiki studies will be made whereby one group employed user login and the other maintained anonymity throughout the course of the study. The results consider the independent participation and evolution of the work requirements over time, which in fact determines the no validity of administrative identification.

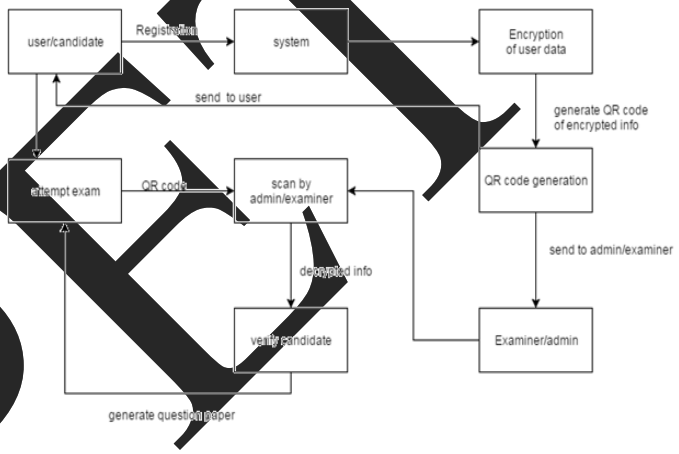
NajwaHayaatiMohdAlwi and Ip-Shing Fan[4] E-learning is a new system of learning and it depends on the Internet in its execution. Internet has become the place for a new set of prohibited activities and E-learning environment is now uncovered to the threats. In this paper the advantage and growth of e-learning is explained. This paper deliberates the security elements desired in e-learning. In addition, explains the circumstance and existing research on security in e-learning. Information security management is advised to contribute in preparing the secured e-learning environment.

Yong Chen and Wu He[5] This paper describes a survey of online education which attempts to determine online education providers awareness of potential security hazards and the protection measures that will reduce them. The authors use a mixture of two methods: blog mining and a traditional literature search. The findings identified diverse security hazards and have proposed solutions to mitigate the security threats in online education. The modifications shown in the survey results generated by the two different methods check that online learning sources and practitioners have not considered security as a top priority. The paper also deliberates the next generation of an online education system: a safer personal learning environment which needs a one-stop solution for authentication, assures the security of online assessments, and balances security and usability.

IV. SYSTEM ARCHITECTURE:

The main objective of this research work is to identify various low moral acts or vulnerabilities that can violate exam security in m-learning environments and to design the appropriate security services and countermeasures that can be put in place to ensure exam security.

It also aims to integrate the resulting secure exam system with an existing, open source and widely accepted Learning Management System (LMS) and its service extension to the m-learning environment, namely the Moodbile Project. To design a Secure Exam Management System (SEMS) that meets the distinct security requirements of m-learning environments and to integrate it with the current Moodle/Moodbile platform. This will result in a complete LMS that is both equipped with secure exam services and suitable for mlearning. Our intention of integrating SEMS with a well-known LMS such as Moodle is so to get the benefits of Moodles readymade services in other learning aspects such as course material administration, documentation, etc. which have been experienced and appreciated for the last 15 years. However, the proposed SEMS can also work as a standalone secure exam management system for m-learning environments without integration with Moodle.



A. METHODOLOGY:

1) Step1: In this first phase every candidate or user has to register themselves in order to give an exam.

2) Step2: After registration they will get a QR code image that actually is encrypted information of user. The same information will be stored at the server side for admin/ examiner record.The secret key K is send to admin record, which is used for decryption purpose.

3) Step3: user will bring that QR code image while coming for exam then, admin. Examiner will scan that QR code image to check whether authenticated candidate has come for exam or not, the verification process done by that user information stored on server or examiner record, upon verified the admin will send the question paper Q to user account.

4) Step 4: user will login to system, to attempt an exam.

B. MATHEMATICAL MODEL:

Let S be the set of whole system i.e. S=input, process, output

Where, - Input is the set of inputs given to the system. – Process is step or techniques applied to the system. – Output is outcome of the system.

1) Input: Input = U, QR, K, Q. Where, - U be the user. - QR be the QR generated from users details. - K be the secret

key to decrypt the encrypted QR code. - Q be question paper.

2) Process:

Step1: This is the registration phase here every candidate or user has to register themselves in order to give an exam.

Step2: After step 1 they will get a QR code image that is actually encrypted information of user . The same information will be stored at the server side for admin/ examiner record. The secret key K is send to admin record, which is used for decryption purpose.

Step3: user will bring that QR code image to exam then, admin examiner will scan that QR code image to check whether real/authenticated candidate has come for exam or not, the verification process done by that user information stored on server or examiner record, upon verified the admin will send the question paper Q to user account.

Step 4: user will login to system, to attempt an exam.

3) Output: Secure Exam Management System (SEMS) to reduce the exam security threats that exist in m-learning environments.

C. ADVANTAGES:

1) It has a Service Oriented Architecture.
2) Provide better security.
3) Can be access more lightly.

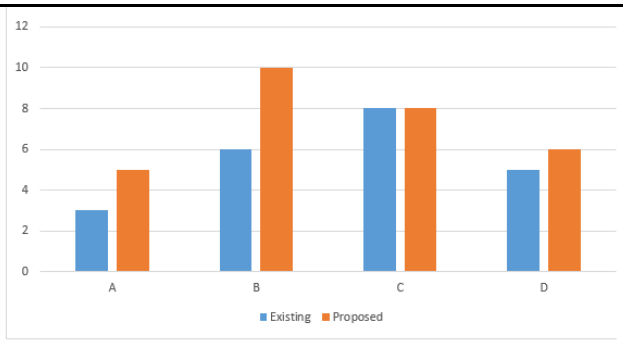
V. RESULT ANALYSIS:

Input Here, Whole System taken many more attribute for the input purpose but here author mainly focuses on the Time and performance of system. Considering few attributes like Unauthorized logins and access., confidentiality, Paperless work and time predicted analytical results of proposed system with respect to existing system. A.

Result:

A = Unauthorized logins and access.
B = Confidetionality.
C=Paperless work
D = Time.

	Existing	Proposed(Implemented)
A	3	5
B	6	10
C	8	8
D	5	6



VI. CONCLUSION:

The design of a new Secure Exam Management System (SEMS) has been carried out to reduce threats to the exam security that exist in m-learning environments. In addition to this the SEMS also offers many services like: secure and random distribution of examination questions and turbo-mode assessment. This will also help in preventing the issue of unattended questions. The QR code based authentication system prevents students from exchanging their devices during an examination, conducting exam securely through online or offline strategies and auditing.

REFERENCES:

1) Mustafa Kaiiali, Armagan Ozkaya, Halis Altun, *Designing a Secure Exam Management System (SEMS) for M-Learning Environments*, IEEE Transactions on Learning Technologies (Volume: 9, Issue: 3, July-Sept. 1 2016)
2) Mustafa Yaci *, *Menderes nal, Designing and implementing an adaptive online examination system,* 5th World Conference on Educational Sciences - WCES 2013.
3) Ruth Raitman, Leanne Ngo,Naomi augar, S*ecurity in the Online E-learning Environment,* Advanced Learning Technologies, 2005. ICALT 2005. Fifth IEEE International Conference on 5-8 July 2005 10.1109/ICALT.2005.236.
4) Najwa Hayaati Mohd Alwi; Ip-Shing Fan, *"Information security management in e-learning,"* 2009 International Conference for Internet Technology and Secured Transactions, (ICITST)
5) Yong Chen and Wu He, *Security Risks and Protection in Online Learning: A Survey,* IEEE Trans. Autom. Contr., vol. 51, no. 5, pp. 766781, May 2006. [6] J. S. Kissinger, The Social and Mobile Learning Experiences Of Students Using Mobile E-Books, J. Asynchronous Learning Networks, vol. 17, no. 1, pp. 155-170, Jan. 2013.