

ELECTRONIC TEST SYSTEM

Candidate User/Panel

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Abstract : The Electronic Test System (ETS) will streamline the assessment process. Examiners can conduct exams by integrating a set of questions, which can be multiple choice or text-based. The system will automatically process assessment results based on the questions input by the admin. It will intelligently evaluate text solutions by identifying not only exact matches but also synonymous solutions. Additionally, ETS allows for manual overrides, enabling examiners to manually adjust results if necessary. The interface is user-friendly for examiners, candidates, and super admins. Any user can act as an examiner or candidate. Once logged in, candidates can view and take their scheduled assessments. The main aim of this online, network-based ETS is to provide a comprehensive, fully automated assessment process that saves time and delivers quick, accurate results. Candidates can take exams from any location using the internet, eliminating the need for traditional tools like pen and paper.

Keyword- ETS, candidate, Django, ASP.net

I. INTRODUCTION

The Electronic Test System (ETS) is an online, network-based test methodology designed to assess the knowledge and skills of candidates on a given topic. Traditionally, exams required candidates to gather in a hall at a specific time. However, with online examinations, candidates can take exams at their convenience using their own devices, provided they have a browser and a stable internet connection.

ETS is a software solution that enables colleges, institutes, and organizations to set, direct, and manage exams in an online environment. Manual assessment systems face challenges such as slow result processing, filing issues, high risk of record misplacement, and difficult system maintenance. Online assessment, a critical part of modern academic methodology, is effective, fast, and minimizes resource use. This research paper outlines the principles of the ETS engine, its primary motivations, the auto-generate test paper algorithm, and discusses system security measures.

An online assessment methodology allows establishments to conduct assessments via the internet. Various organizations have adopted this approach due to its speed, ease, and convenience. This methodology simplifies exam administration and result collection. It facilitates online assessments anywhere and anytime, eliminating the challenges of traditional pen-and-paper exams. Automation has successfully supported online assessments for years, accommodating more candidates and alternative assessment methods. However, preventing cheating remains a significant challenge.

The study developed an online assessment methodology for creating tests from a question bank, suitable for both Academic and Non-Academic assessments. It explored the development of a Multiple Choice Examination System and Online Quizzes for general subjects, highlighting the main aspects and applications of such systems, including applicant evaluation and security issues. Some studies have examined the impacts, challenges, and reliability issues of existing electronic examination methodologies.

ETS is crucial for candidates preferring to take tests from home. They can attend various courses and take tests at the end. The system can host numerous study videos and offer both paid and free courses. Users can access their tests online. Online assessments are advantageous and fast, especially for large classes, and reduce the use of paper.



ETS can handle both MCQ-based tests and essay-type questions, according to the examiner's needs. It offers faster grading and greater accuracy. However, it can become complex for large exams. ETS can also reference alternative web pages where related tests are conducted and provide links to higher-level tests in the same field.

ETS has become a popular assessment method due to its speed and accuracy, requiring less manpower. Most organizations now conduct objective exams online, saving candidates' time and allowing organizations to quickly check performance and release results. This method also benefits the environment by saving paper.

In ETS, there are two types of exams: demo exams and paid exams. Demo exams are free and allow new candidates to register or existing candidates to log in and take a free test. Paid exams are offered in several plans: Bronze, Silver, Gold, and Platinum.

II. METHODS AND MATERIAL

The rapid development of computer and network mechanization makes profound changes to human beings in the fields of study, work and way of life. With the enrich and renew equipment's in the teaching establishments and the training establishments, the establishment of Multi- media classrooms and campus network, the World Wide Web mechanization's maturity and the popular of computer-aid education (Du Ploov 1992), the course of actions of assessment which is used to check the quality of teaching and teaching effectiveness, assess the candidates learning and identify the skills have been changed greatly (Breithaupt et al 2005, Buchanan 1999).

The first experiment was performed in 1997 when candidates sat a formal supervised assessment in which the assessment paper and the candidates solutions were transmitted between the Open University and the remote assessment sites using electronic means. The work on assessments and testing has focused on free-text entry style solutions (Du Ploov 1992).

The second experiment, orchestrated early in 1999, enabled candidates to take a 'mock exam accessed via an online net page as part of their revision. The experiment was designed to test out the technical feasibility of offering an unsupervised home assessment. Candidates accessed the paper via an online network site and submitted their solutions in a similar way. The candidates keyed their solutions into an ordinary word processor, the results of which were encrypted and returned via a secure online network page by the invigilator at the end of the assessment period (Breithaupt et al 2005, Carswell et al 1999).

Ping Guo et al (2008) proposed that the online assessment system (OES) can be divided into two models, they are Browser-Server (B/S) model and Client- Server (C/S) model (Buchanan 1999, Liu et al 2004), the basic functions of them remained the same. An OES has a series of functions including intelligent auto- generating test sheet (Zhang and Zhan 2001), tracking and recording of the process of candidates' answering intelligent marking and the statistical analysis of candidates' grades and so on. It can not only reduce the work of teachers, ensure the effectiveness of assessment results and the principles of fairness and justice of the assessment, but also reduce the work of organization of the assessment and save the cost of the assessment. The monitoring methodology sends the images in every assessment room to the monitoring departments of the assessment management centre (EMC). the invigilation teachers and leaders can know the situation at a remote place, which can prevent the candidate from abnormal behaviors, such as cheating, and the fairness and impartiality are ensured very well. In addition, all the images. transmitted in to the monitoring department can be recorded and are the most significant evidence for intendency after a test.

Hongmei Nie Math, Physics and Information Engineering College conveyed online assessment is the essential part among online education. It is effective as well as fast plenty and decreases the substantial number of material resources. Online Examination methodology is developed base on online network. Their paper discovers the principle of the design methodology, that represents the main functions of the methodology, analyses the algorithm of generating question paper, and talk about the dependability of the methodology.

Shahidabt Mohd Jamail Abu Bakar Md Sultan Faculty of Computer Science and Technology, Selangor, Malaysia communicated that the assessment procedure is significant activities for establishments to evaluate performance of candidates, hence the quality of the Exam questions will determine the quality of the candidates develop by the establishments, also preparing exam questions is challenges, extended winded and take more time for the instructors. Ongoing technologies will help mentors to add the question banks in pool of data. The issue communicated was how the ongoing technologies would even help the mentors to auto produce the various sets of question keys from time to time witho thinking about repeating and matching from the pass exam while the exam bank thriving.

Sophal Chao and Reddy (2008) designed a World Wide Online network-based assessment methodology which is flexible for teachers to set and control the applicant assessments. It has a feature to share information among departments, user groups and institutes, not like the alternative online examination systems on the market: A Online network-Based Assessment and Evaluation System for Computer Education (Yuan and Zhenming 2006), Mixed-method validation of pedagogical concepts for an intercultural online learning environment (Effie Lai- Chong Law 2007), Tablet PC in a collaborative learning environment (Jean and French 2007), and Online annotation- research and practices (Lan and Glover 2007). Though, it has unique feature of sharing information, it does not talk address the scalability issue.

Virkrum Jamwal and Sridhar Iyer (2001a,b, 2003), Virkrum Jamwal (2001) have implemented mobile agent based methodology for distance evaluation (MADE) of candidates distributed over substantial areas by using Voyager ORB framework. They found that this approach yields many advantages over alternative traditional approaches in terms of scalability, flexible structuring, dynamic extensibility, and independence from network disconnections. Alternative advantages gained were in the form of implementation layer multicasting, support for dynamic content and provision for both push and pull mode of information dusemination.

However, Their methodology still needs suitable techniques for 20 proper control and management of these striking mobile agents. Better course of actions of handling autonomy and improving the overall methodology reliability need to be formulated and implemented. Besides, they lack the critical requirement, protection of agents (e.g. Solution Agent) from malicious tampering, when they move from closed to open environments. Though multi agent based teacher assistant (MATA) for universities, colleges and schools around the world assisting teachers in applicant evaluation, grading and enhance applicant teacher interactions in an intelligent automated way thus reduces burden on faculty members and provides services to the candidates around the clock. MATA can not only be view as an alternative of the customary intermediary. an individual teacher backing, which bridges amid teacher and candidates but also an triumph of a methodology that could assist teachers in the process of evaluation. The methodology (MATA) has the problems in inaccessible administration in case of the failure of main nodes which provide the serious setback in MATA and lacks of the proper control and supervision of the striking mobile agents, overall methodology reliability and protection of agent Yong Ou-Yang and Hong-Fang Luo (2009) explained an improved genetic algorithm and proposed a latest method of test paper generating based on applicant's learning situation. It generate personalized test paper dynamically that satisfying every applicant according to applicant's online self-condition in detachment education network and factors reflected during learning such as emotional status, knowledge and implementation level.

III. SYSTEM DESIGN

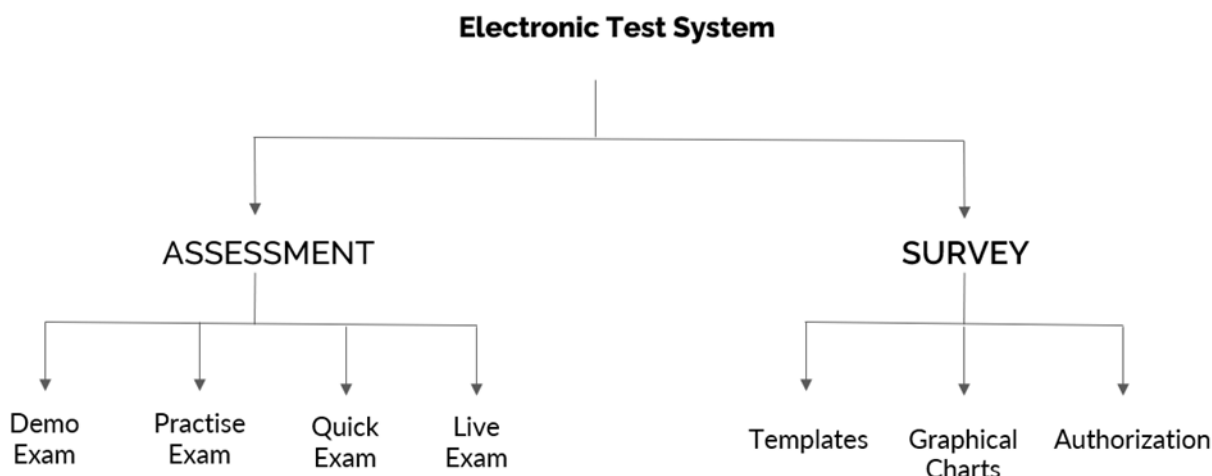


Figure no.1- ETS Main components

Users:

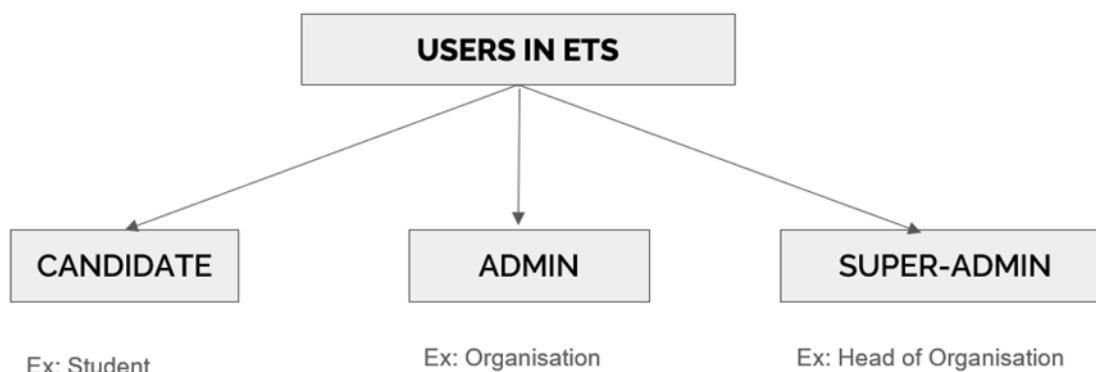


Figure no.2- Users Of ETS

After login, candidate will get dashboard, which will display all the exams details that were orchestrated by him. It also displays number of all exams given by candidate, Schedule exam (exams that are scheduled but yet to complete), orchestrated exam (exams that are Scheduled & got over), pending exam (Exams that are generated but not scheduled yet), user registrations, and upcoming exams. Also, his ongoing plan will be in display.

Candidate needs to select category, subject, exam name, section, question picker method (manually needs to enter questions one by one/ excel sheet needs to download CSV, Edit it & upload it), Question type to add questions. According to question type, text editor will appear. Candidate will add question & its choices. He needs to check the corrected solution & save it. Here, candidate can view/edit the generated exam. He can edit exam before scheduling it, once he scheduled the exam, he will be no longer able to edit it.

IV. SYSTEM ARCHITECTURE

After entering Electronic Test System, user will enter the home page of Test System. ETS's home page is the main page a visitor will navigate. The home page is used to facilitate navigation to alternative pages on the site by providing links to prioritized and recent articles and pages, and possibly a search box.

If user is not registered, user can make a new account as a candidate or examiner. Candidate can appear for exams and examiner can therefore Flow conduct peculiar exam.

If registered, user can act as an examiner or candidate and perform their privileges. If user acting a role of a candidate and if has registered or did his login in ETS, he can appear for exams by applying to it. Candidate will be informed about the plans and courses he can apply for which in turn will serve him/her various benefits. Plans will be paid plans and courses will be paid as well as free according to the type of coarse candidate is willing to option. Exam will be given by candidate in a specific time allotted by examiner. Exam will be of a precise time duration allotted by examiner. Exam can include MCQ's as well as essay type questions. Certificate will be generated after exam. (See Figure:-2)

Manage assessment: Examiner can enjoy various privileges such as allotting exam to mass number of candidates as well as specific number of candidates/examinee according to the plan he opted. Examiner who is generating the exam will have to apply a schedule as well as time period for it. Scheduling of exam will be conveyed to the examinees through SMS services or through e-mail. While the process of generation of exam admin/examiner has to mandatorily add questions (either MCQs/Essay types) and submit the exam

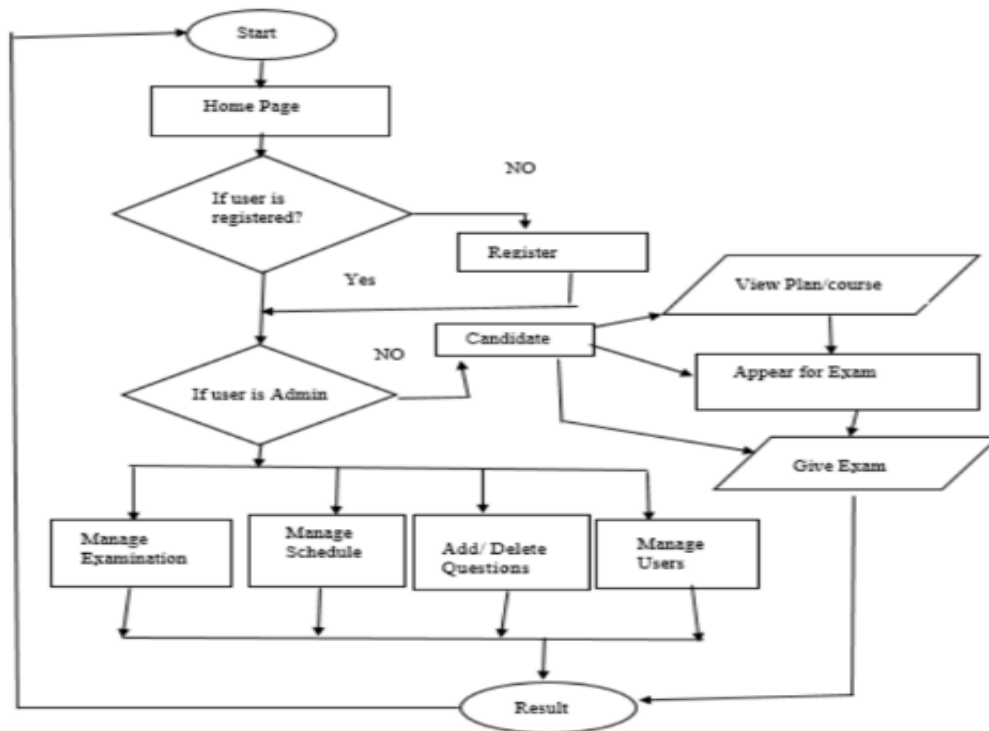


Figure no.3- Overall Flow diagram of ETS

Examiner can also delete discrete questions from the exam if he wishes to. Examiner/Admin has authority to manage accounts of candidates. He can add/delete candidates who has opted for exam. Examiner can modify and manipulate so counts of users/examinees. After completion of exam user will get the certificate of the exam, he attempted. He/ She will be redirected to the homepage or ongoing account after the end of cam process.

ETS will also have the flexibility of conducting various courses and after the completion of coarse user will get redirected to home page and completion certificate will be allotted to him/her. Examiner can allot

multiple exams at a single time as well. After completion of any task allotted by examiner/admin, he/she will be redirected to his account or homepage depending upon type of ongoing task.

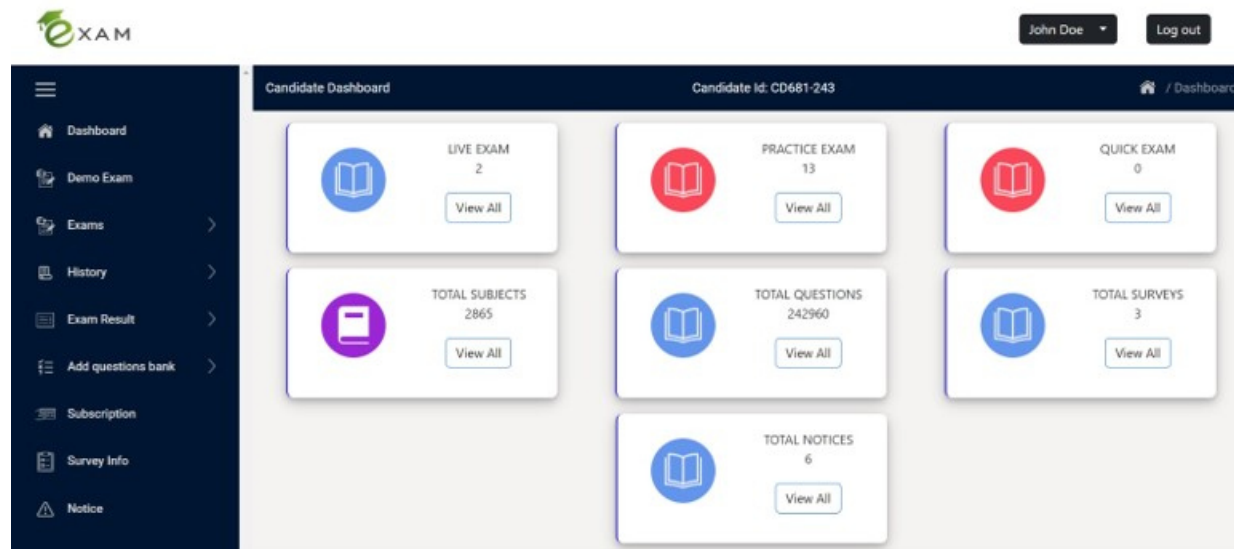


Figure no.4- Candidate Dashboard

The above figure shows Candidate dashboard, where he can create, manage and schedule practice exams, and attempt Quick exam. . Except that, he can even add question bank and notifications to an exam. The dashboard is a type of account where he can change his plans, password, edit account details, remove his/her account and many more.

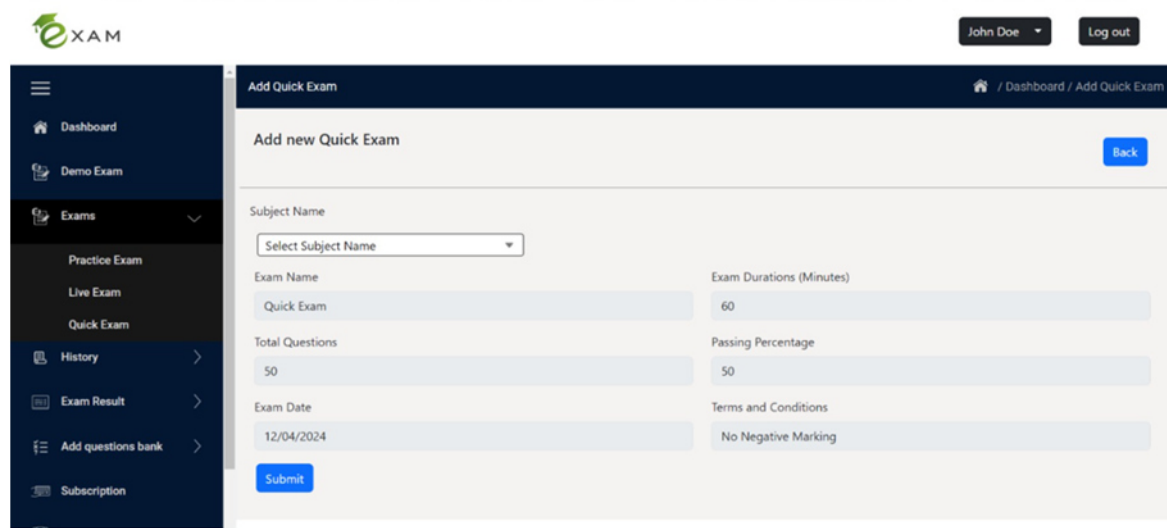


Figure no.5- Add Quick Exam

As discussed above, candidate can add a quick exam on any subject of his choice. Where he can option for categories, subjects, titles, description of the exam and so on.

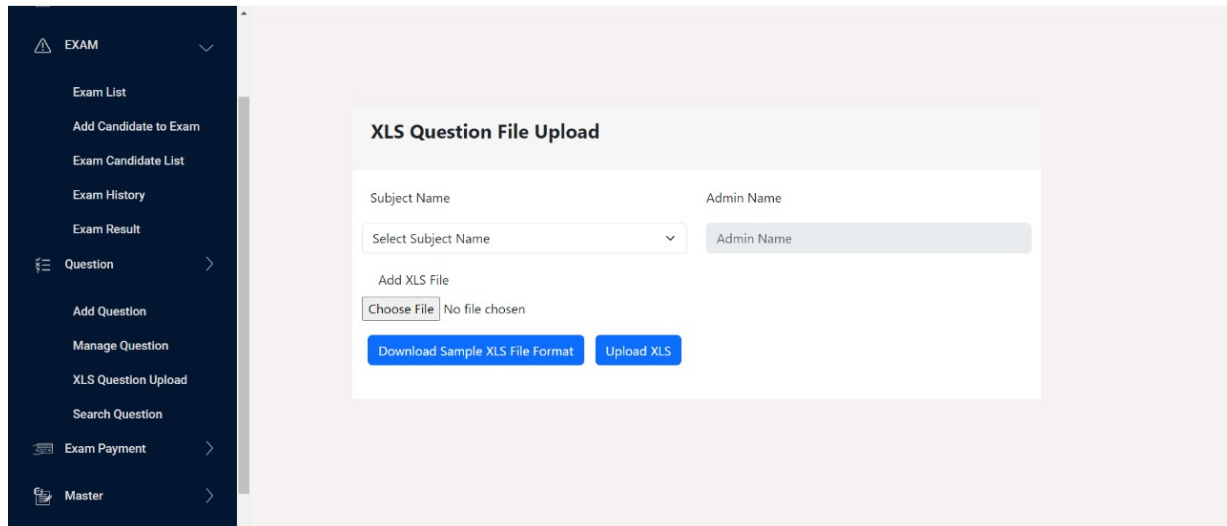


Figure no.6- Add Question Bank

Electronic Test Systems can handle MCQ based tests as well as essay-type questions according to the need of assessment. Above figure shows, an examiner adding a question where he is sets the correct option to 'a'.

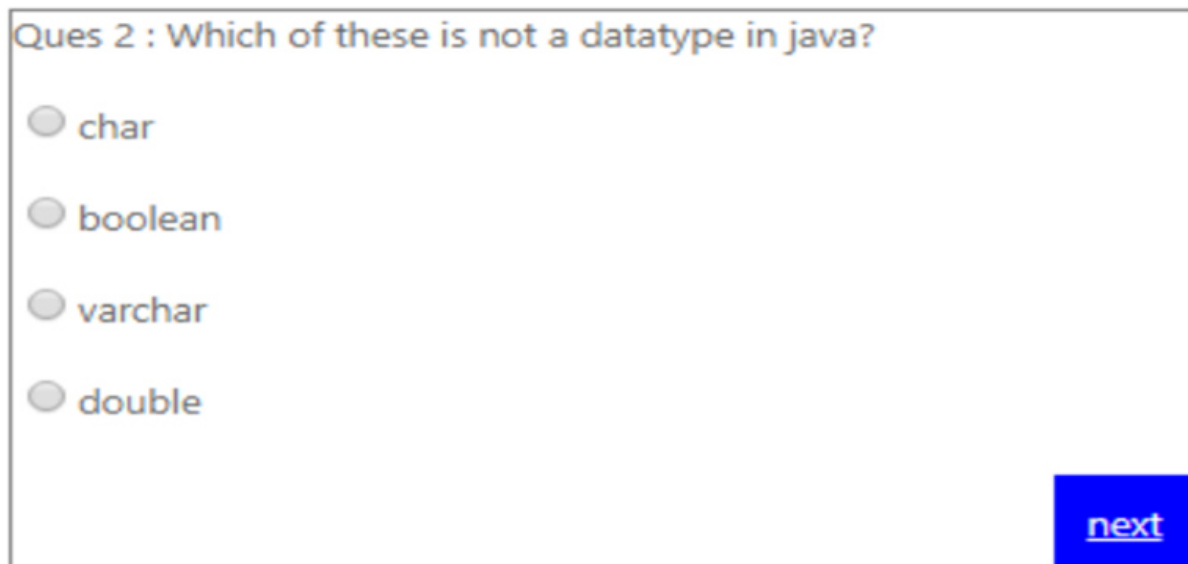
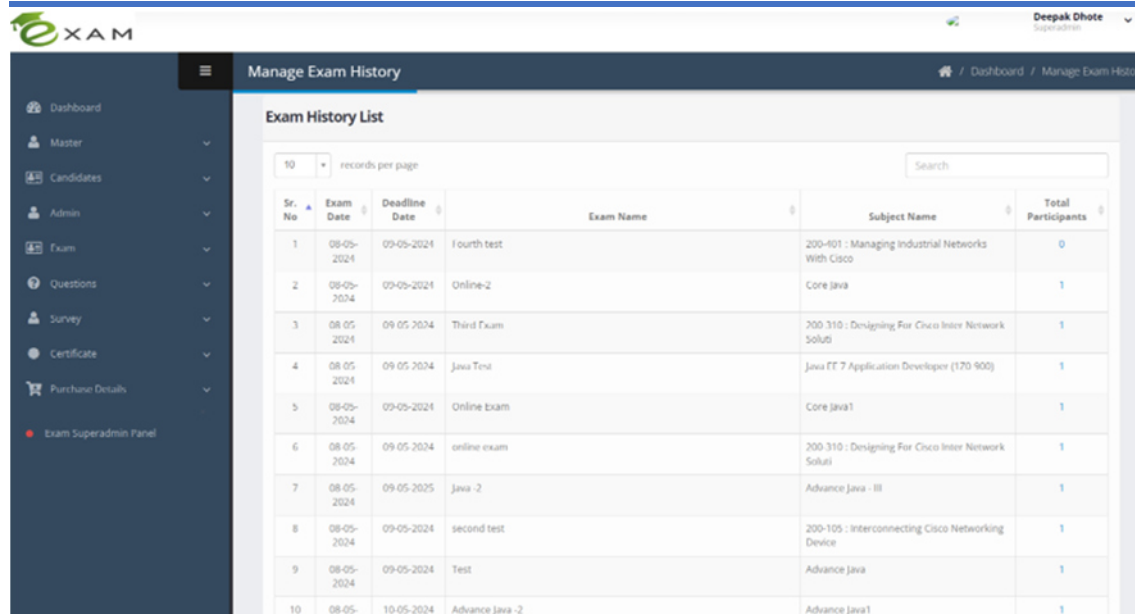


Figure no.7- Testing Model of Examination in ETS



Sr. No	Exam Date	Deadline Date	Exam Name	Subject Name	Total Participants
1	08-05-2024	09-05-2024	Fourth test	200-401 : Managing Industrial Networks With Cisco	0
2	09-05-2024	09-05-2024	Online-2	Core Java	1
3	08-05-2024	09-05-2024	Third Exam	200-310 : Designing For Cisco Inter Network Soluti	1
4	08-05-2024	09-05-2024	Java Test	Java EE 7 Application Developer (170-900)	1
5	08-05-2024	09-05-2024	Online exam	Core Java1	1
6	08-05-2024	09-05-2024	online exam	200-310 : Designing For Cisco Inter Network Soluti	1
7	08-05-2024	09-05-2025	Java -2	Advance Java - III	1
8	08-05-2024	09-05-2024	second test	200-105 : Interconnecting Cisco Networking Device	1
9	08-05-2024	09-05-2024	Test	Advance Java	1
10	08-05-2024	10-05-2024	Advance Java -2	Advance Java1	1

Figure no.8- Exam History List

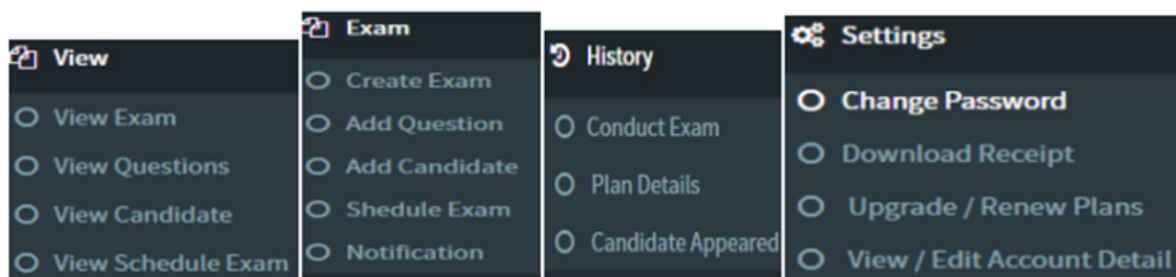


Figure no.9- Menu available to user

After setting up the examination by the candidate user can give exam in the format given above. Above is an MCQ based examination. After Examination candidate will be redirected to a feedback form, followed by a certificate of the exam.

After the examination process, candidate will be made available to the score card, where he/she can view his total marks, percentage and his passing or fail notification. He can view and download his/her certificate for appearing for the exam where his/her grade, score and name will appear.

V. CONCLUSION AND FUTURE SCOPE

User will enter ETS web page which will direct it to its homepage. And will have to generate an account by registering in ETS web page. If user is not registered then he/she has to register as an examiner or examinee and if already registered then he/she can access ETS and do further processes such as if user is examiner, he/she can conduct exam, manage schedule, add/delete question manage candidates/examinees, generate result. If user is a candidate/examinee, he/she can - view plan and courses, option for a plan or course, give exam, achieve certificate.

ETS has a wide range of future scopes after its implementation which includes features such as chat options between examiner and examinee. Various courses can be added according to streams. The Methodology can be made more trustworthy and secured. Guest module can be added in which any person not a

part of ETS can access the services through guest mode. It can be used anyplace, any time as it is online network base application. No deterrent that examiner has to be obtainable when the applicant takes the test. ETS can be made obtainable for educational institutes and private institutes to direct test of their candidates or employees respectively. There have been amount of cases of computer glitches, bugs in content. And security threats which can be solved in near future. In case of power, failure restore and backups can be added.

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