Automated generation of question paper for online MCQ test by using Shuffling algorithm

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Abstract—Online MCQ test plays important task in today’s educational world. Now a day’s there are many systems are exist in the market which conduct the online examination of multiple choice questions. As these systems conduct the demo test and final test for student but while conducting demo test student doesn’t confirm their answers are right or wrong. Also for demo test question is not disable after submitting the answer of that question. Also the overall performance of students and teachers doesn’t show and result of test is demonstrated to the students after the specific time period by this systems. In education system examinations play a essential role in testing student’s performance and they want to see their result immediately after completion of exam and want to check their answers right or wrong in the demo test. So there is an need to have such a neat system to develop online MCQ test question paper which used to develop the students knowledge as well as to test their learning skills by checking their performance.

In this paper shuffling technique is use to generate automatic question paper for online MCQ test. By using this technique we can able to set question paper and conduct the demo as well as final test. Students performance get improved by providing correct answer during the conduction of demo test. Admin able to approve respective subject teacher and teacher has authority to cancel the test. Notification about cancelation of test is given to student also result of student and teacher is shown to admin.

Index Terms—Learning Objectives, MCQ Test, Question paper, Question Repository, Answer selection.

I. Introduction

Learning objectives plays an important feature in educational system. Learning objectives defines that the expected intent of a course, lesson or any activity in terms of definite skill or information that will acquired by a student as a result of instruction [5].

Online MCQ test system conducting online test as a replacement of paper based test which conducted in institution. This concept of online examination is distributed all over the world. Examination process is important activities for educational institutions to calculate student’s performance and examining the quality of student. In examination hall there was no secrecy of the answer copy among all students. This system is based on multiple choice questions, and is focusing on monitoring this problem. Also the student will required to select the best choice by mouse-clicking on it. Every student will get the questions in randomized order, so this approach will avoid the concept of copying to some extent [2]. Thus the quality of the exam questions would define the quality of the students produced by the institutions. So there need to develop such system that generating standard question paper that examine the overall progress of students.

In this paper shuffling technique is use to generate automatic question paper for online MCQ test. In this section we discuss the introduction. Section II discusses the related literature survey. Motivation is discuss in section III. In section IV objectives are described. Section V consists of system model and system architecture. In section VI describe the algorithm used in proposed system. Section VII described implementation. Conclusion and future scope is in section VIII.

II. Literature Survey

Noor Hasimah et.al explored Auto-Generator of Examination Questions (AGEQ) using genetic algorithm. The objective of this algorithm is to determinations the problem around generating examination questions based on OBE specification. But these studies have inhibition as objective function i.e. user specification for examination paper is less optimizable thus performance of system becomes less [1].

Kapil Naik et.al presented Automated Question Paper Generation System using randomization algorithm. In this study objective function is optimizable but this exploration have limitation as question paper generator system support only question type tag. Thus question papers generated have only one difficulty level [2].

Rekha Ramesh et.al proposed Semi-Automatic Generation of Metadata for Items in a Question Repository using the concept of tagging and N-Grams algorithm for generation of question papers. In this research objective function is optimizable also it consists of efforts levels. But this research have limitation as Inherent vagueness present in the question framed also System can’t tag the question with cognitive level [3].

Mojitha Mohandas et.al planed the Automated Question Paper Generator System (AQPGS) using the Fuzzy logic algorithm. This system to produce question papers with randomly but even questions to cover most chapters of subject with difficulty level.
within seconds and mail them to colleges suddenly by allow the universities. But this research have inhibition that it can’t able to detect vague data entry in the system also adaptability is less as there is no feedback facility for system [4].

Gauri Nalawade et.al recommended Automatic Generation of Question Paper system by using a Semantically Marked Question Repository from User Entered Specifications. Depending on the type of assessment required, the system can be made to select certain question types. Also user specification is optimizable & it also can detect vague data entry in the system [5].

III. Motivation

Now a day there is growth in the field of computer science. Online test system forms an evaluation of the students knowledge of the subject area being studied. Online test systems can also be used to assess students skills, such as collaboration and persistence, as well as students characteristics, such as confidence and motivation. Also in traditional method, teachers used to generate the question papers manually. It was very challenging for the teachers to set the question paper effectively. So there is need to develop such a system which is helpful for teachers and students.

IV. Objectives

The proposed online exam system has following objectives,

- Generates the Question Paper in a matter of seconds.
- Reduce the staff efforts.
- To guide the student for wrong answers in demo test.
- Display the result of examination immediately after exam is over.
- To increase the performance of the student.

V. System Model & System Architecture

A) System Models:

System models are following:-

Admin:-
Admin first fill the registration form and then login to the system, and server is approve the admin. Admin has authority to add the subject which is teach by the teachers. Admin see the test result of every students.

Teacher:-
First teacher fill the registration form and submit it, then admin approve or disapprove the teacher, then teachers login successful or unsuccessful. Teacher has authority to approve the student. Teacher add the questions in the xml format and set the test which teacher wants(demo test or final test).

Student:-
First student fill the registration form and submit it, then teacher approve or disapprove the student. When students login is successful then teacher give the password for the students for the test. Then student can give demo test as well as final test. Student can see their overall performance. Result is show the students after submitting test.

Server:-
In our system server plays important role in to approving the admin successfully. Also question paper uploadation and result generation is done on server side.
B) System Architecture:

The Fig.1 shows the system block diagram of online examination system. System consist of two parts which are client and server. Client of the system are admin, teacher and student. Server first login to the system and then admin is register its request is accepted by server. Then teacher is register to the system, admin approve the teacher request .Teachers approve the students when they register to the system. Teachers add the questions with marks in xml format and set the test either demo test or final test. Result is immediately shown to the students after submitting the test. Admin and teachers also see the test result of students.

VI. Algorithm

1) Shuffling Algorithm:

**Input:** Uploaded questions with marks.

**Method:**

function shuffle(numberDeck){

    Random shuffle = new Random();

}
for (int shuffleNum = numberDeck.Length; shuffleNum > 0; shuffleNum--)
{
    shuffledValue = shuffle.Next(shuffleNum);
    shuffle = numberDeck[shuffledValue];
    numberDeck[shuffledValue] = numberDeck[shuffleNum - 1];
    numberDeck[shuffleNum - 1] = shuffle;
}
return numberDeck;

Output: Question paper set with shuffle question.

1. Get the input specification.

VII. Implementation

The system is implemented as a web application using WampServer(2.1) the default servers i.e. apache tomcat(2.2.17),phpadmin(5.3.5) and mysql(5.5.8) database were used. It runs absolutely fine without any issues on browser.

Screenshots of implemented system:-

1) Admin Login Form: For login admin has to enter right username and password and then click on submit button. If username & password are valid then admin successfully login to system. This login form is same for other clients like teacher, student. If any new user want to login into system then that user click on CREATE NEW ACCOUNT tab provided on the form.

Fig.2: Admin Login form
2) **Admin Registration Form**: Every new user must follow the registration process. For registration of admin must fill the information given in following registration form.

![Admin Registration Form](image)

**Fig. 3: Admin Registration Form**

3) **Teacher Registration Form**: For teacher registration process teacher must fill the information given in the following form. Also teacher must have to select classes and subject they can teach.

![Teacher Registration Form](image)

**Fig. 4: Teacher Registration Form**
4) **Student Registration Form**: Student can register to system by filling following registration form and by submitting it.

![Student Registration Form](image)

5) **Test Conduct Window**: According to the questions uploaded by teacher system generate set of question papers which contains shuffle questions.
VIII. Conclusion and Future Scope

To frequently generate question paper for online MCQ test and conduct the online exam to increase performance of students by detecting marks of student after submitting each question and also check the performance of students as well as teachers. Notification given to the student on failure of exam conduction.

In future, there is need to develop a technique which will able to detect whether the students are cheating via the internet. Security aspect of online examination process is critical to overcome malpractices or unauthorized access to the information. To overcome this we can use Secure Browsing technique.
References


