Automatic Question Paper Generator System by Keyword based Shuffling Algorithm using Randomization technique

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Abstract: Examination has an important role in student's continuous assessment process. The traditional method of conducting examination is through manual question paper generation. This is a very tedious and time-consuming process. To overcome this problem, we have proposed Automatic Question Paper Generator System. The system can store different sets of question paper on the database. It can also store diagrams and they can be fetched inside the system for representation in papers. We have implemented Keyword based Shuffling Algorithm with Randomization for generating question papers which is fast, secure & randomized. The system prevents duplication of questions and also avoids repetitions. The system can also generate class test paper which helps to maintain coverage of whole syllabus. This system tends to improve the overall quality of exam assessments.

Keywords: Generate Question Paper, Duplication, Randomization, Keyword, Shuffling Algorithm, Repetitions.

1. INTRODUCTION

A suitable design for generating automated question papers and managing related data will be vital in any Educational Institute. In the following paper, we have displayed an automated integrated system that keeps questionnaire about a particular course and prints question paper as per curriculum and syllabus. We have implemented a hierarchy which is role based that restricts user access. The system provides a safety measure so that questions are not repeated. The system enables users to edit and enter data suitable for any educational institute just by specifying syllabus, semester, courses and pattern. It allows an educational organization for generating question paper ensuring safety and non-repetition of questions in a question paper. It is very useful for institutes with handful of staff and resources. This system goal is to ensure security, data storing and quick operations for all the operations.

For teachers generating question paper is a tedious task which uses most of their time. Generally teaching staff have their own questionnaire which they usually use for generating question paper in future. In any educational organization teachers are needed to follow few rules and regulation for generating question paper.
   They are as follows:

- Different concept should be added
- Student must remain motivated
- Statistical management for the course
- Student's choices must be considered
- Valuing the different types of question
- Creating objective test questions

Question paper generation is a time-consuming process for any educational institute. The teachers waste their valuable time in generating question paper, this should be changed it shouldn't happen. This system is the solution to this problem as it helps to generate question papers within a click without repetition of questions and its working is also very simple. This system uses the SQL queries for solving the problems regarding randomization of the questions. Further we required more resources to fulfill our specifications and hence this system of Automatic Question Paper Generator was designed. This system is nothing like other question paper generator. It is enhanced with power of Microsoft SQL for generating the question paper. The questions are stacked in the database and new questions can also be added later if needed. This system is powerful enough for generating question paper in few seconds. Its main objective is the process automation for generation of question paper while reducing human efforts to very far extent. Its main objective is for generation for question paper within the universities. Automatic Question Paper Generator System is .Net based

application hence it provides robustness and feasibility while generating question papers. Administrator has the authority to view the generated question paper sets and can also edit the database to meet the criteria of institutions. It enhances the usage of technology. As Administrator has all rights to modify the database. It helps an administrator to access or view the questions and edit them whenever and where ever it wants. The system provides security to the database with login id and password so that only permitted staff can access it. This project has been developed to meet the aspirations indicated in the modern era.

Automatic Question Paper Generation System	Manual Question Paper Generation System
Efficient and Fast	Slow and Tedious
Repetitions are avoided.	Repetition may occur.
High Security	Low Security
High variety of question.	Low variety of question

2. LITERATURE SURVEY

Autonomous System for Question Paper Generation [1] This paper explains the generation of question paper through randomization technique. This technique is used in various schools, institutes, and universities. While generating a question paper the setter has to huge issue of question selection and checking its difficulty level. This paper explains ways to avoid this issue.

Automated Paper Generation System [2] This paper targets on restricted access to user. The question paper is generated when questions are stored inside the database. The questions are sorted according to particular subject wise. The system then fetches questions from database for particular subject and prints the required automated paper.

Question Paper Generation using Shuffling Algorithm [3] The important objective of this paper is to randomly generate questions paper sets that are inside the database. The system fetches questions and provides multiple sets of question papers. The teacher can specify subject name, unit number, subject code, semester/year.

Automated Question Paper Generation System Framework Design [9] This system provides a framework required for the database. In this paper question engine framework for database management such as question and unit number.

Using Semantic Tag repository generation of question paper [4] This paper explains about a software which uses different tags for a specific question. The tags are difficulty level, question type, cognitive type etc. The system generates a question paper in .xml format

Randomization technique for Paper Generation System [5] This paper explains randomization technique using Shuffling Algorithm is used in the system. The system generates a question paper based on subject, level of difficulty, question type, paper management and quality of paper sets.

3. PROPOSED SYSTEM

The proposed system proposes randomization technique using Shuffling algorithm for generating question paper. The questions are stored inside a database. We use Microsoft Office software to store questions inside the database
This proposed system is secure and random. This system aims to avoids repetitions of questions. The question paper is finally generated in PDF format which is non-editable in future. This ensures security for question papers.
  We have proposed two modules in this system. They are as follows:
- Admin module
- Teacher module

3.1 Admin Module

Inside the Admin module, admin is given the functionality of logging through his/her own login id and password. It has vast access, control and authority over the system.
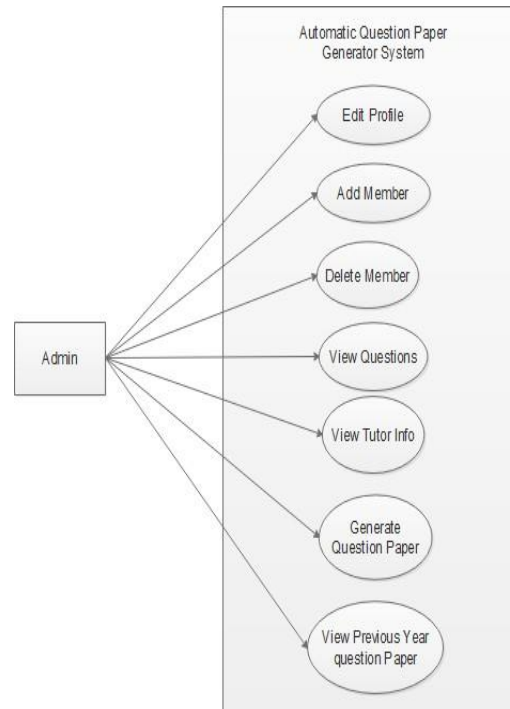

Figure 1 Use case diagram for Admin Module

The admin module provides 7 functionalities. The functionalities and their working are as follows:
- Editing Profile – Admin can edit teacher's data like name, contact, subject.
- Adding Member – Admin can insert/add new teacher inside the database.
- Deleting Member – Admin can delete a teacher's record from database.
- Viewing Questions – Admin can view questions present inside the database.
- Viewing Tutor's Info – Admin can view teacher's information.
- Generating question paper – Admin can fill out and edit information for generating question paper.
- View Previous Year Question Paper – Admin can view previously generated question papers that are according to academic year.

3.2 Teacher Module
The teacher module has been granted certain authority. The teacher module provides 4 functionalities. They are as follows:
- Editing Profile –Teachers can edit his/her own information such as Name, Contact, Email.
- Generating Class Test Paper – Teachers can generate class test paper for internal evaluation of a student.
- Viewing Questions – Teachers can view their own stored questions that are present inside the database.
- Adding questions – Teachers can add and store questions inside the database.
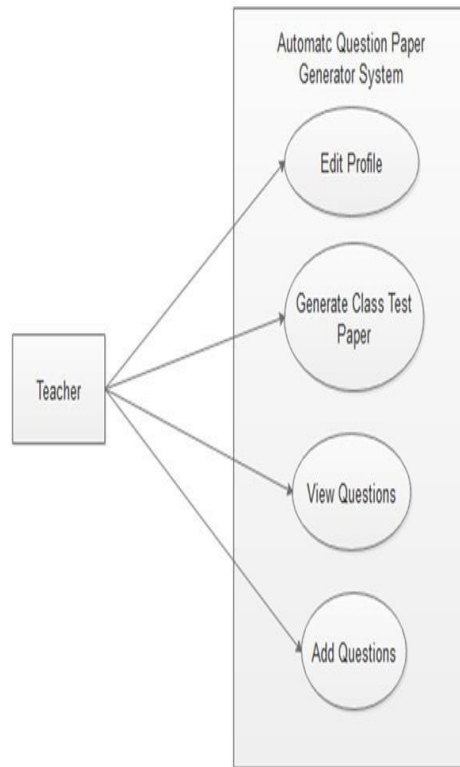
Figure 2 Use case diagram for Teacher Module

Microsoft Access software allows to view data in the database present. The final format of generated question paper is PDF format and it securely stored on database.

The teacher inputs questions from database. The system then generates unique question sets of question paper. The teacher module can also set difficulty level and can also insert diagrams for questions.

Steps for working of system:

1.   Teacher provides set of questions.
2.   Faculty provides question to subject teacher.
3.   The Admin module can be used to generate question paper for external evaluation such as Semester examinations.
4.   The Teacher module can be used to generate question paper for internal evaluation such as class test and mock exams.

The generated PDF copy of question paper can also be sent via email to various colleges and institutes.
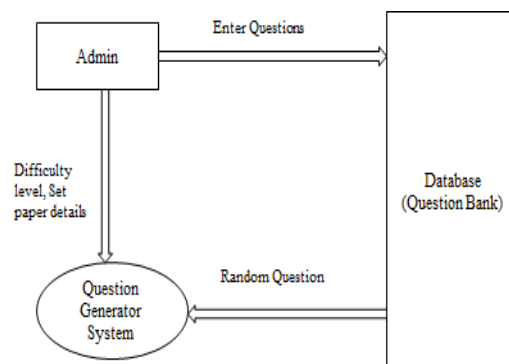

Figure 3 Architecture of Automated Question Paper System

4.   PROPOSED ALGORITHM

The algorithm used in this system is Keyword based Shuffling Algorithm using Randomization technique. The questions inside the database are fetched to avoid repetitions. This algorithm is time efficient and quickly generates question paper. The questions stored inside the database are fetched and checked for repetitions thorough logical keyword based shuffling algorithm [3]

The algorithm is implemented as follows:

1)   Create an array for question number
2)   Create an array for storing keyword
3)   Create an array for storing diagram
4)   Generate random number
5)   If (position==0)
6)   Store the generated number in array. Check if generated number = random number. If matched then go to step 4. End if
7)   Else Check for previous number. Check if generated number = random number. If matched then go to step 4. End if
8)   Else store the number in next location array
9)   Store s in keyword array (End else, end else, end else)
10)   Select questions from database that correspond to the array position, one by one
11)   Fetch question number from database that meet the required data & store it in an array (This array is used for storing question number)

5.   CONCLUSION

The proposed system uses Keyword based Shuffling algorithm using randomization. This system effectively generates unique sets of question papers. The time-consuming efforts of manually setting have been reduced. The system is fast, reliable and secure.

The system helps in avoiding repetitions and creates a easy systematic approach towards assessments. The system also provides in effectively adding diagrams without any hassle.

This proposed system allows smooth and efficient paper generation mechanism. The process for generating question paper is easy and fast. It doesn't allow repetitions and is highly secure.

6.   REFERENCES

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