

Question Gen: An Automated And Customizable Question Paper Generation System For Educational Institutions

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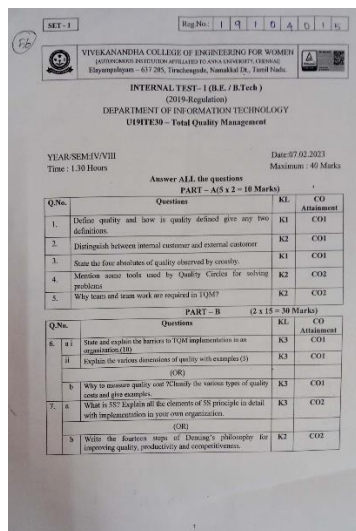
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Abstract: *Question paper is a document that contains a set of questions designed to test the knowledge, understanding, and skills of students. Question papers are used in educational institutions, such as schools, colleges, and universities, as a means of assessing students' performance in exams, tests, or quizzes. The manual method of generating question papers involves a teacher selecting questions from textbooks or other sources, arranging them in a particular order, and manually typing or writing out each question and its associated options, answers, and marks, this process is often time-consuming, error-prone, and does not offer the level of customization that is possible with a computer-based system. The Online Question Paper Generation System is a web-based application that automates the process of generating question papers for educational institutions. The system provides an easy and efficient way for teachers to create and generate question papers, thus reducing the manual workload and saving time. This system enables teachers to create question banks, add questions, and categorize them based on different subjects, topics, and levels of difficulty. Teachers can then select questions from the question bank to create customized question papers for exams, tests, or quizzes. The system also has a feature that randomizes the order of questions, thus ensuring that each student receives a unique question paper. The system is developed using Python, a popular scripting language for web development, and incorporates various features such as user authentication, question bank management, question paper generation, and result analysis. The project aims to simplify the process of generating question papers, reduce the workload of teachers, and ultimately improve the quality of education by providing students with fair and unbiased exams.*

I. INTRODUCTION

An exam question paper is a document that contains a set of questions that are designed to test the knowledge, skills, and understanding of a student in a particular subject or topic. Exam question papers are typically given to students during an examination, and they are expected to answer the questions within a specific time frame. The format and content of exam question papers can vary depending on the level of education, subject, and the type of examination. They may include multiple-choice questions, short answer questions, essay questions, or a combination of these types.



1.1. Question Model

The purpose of an exam question paper is to assess the student's level of understanding and ability to apply the concepts and theories learned in class. It is an important tool for evaluating a student's performance and determining their overall grade or

score. Exam question papers are usually administered during formal assessments or examinations and are used to evaluate the student's level of comprehension and mastery of the subject matter.

II.HARDWARE REQUIREMENTS

- **Processors** : Intel® Core™ i5 processor, 8 GB of DRAM
- **Disk space** : 320 GB
- **Operating systems** : Windows® 10

III.SOFTWARE REQUIREMENTS

- **Programming** : Python 3.7.4(64-bit) or (32-bit) and PHP
- **Client Side** : HTML, CSS, Bootstrap
- **IDE** : Tkinter, Dreamviewer
- **Database** : MySQL 5.
- **Web Server** : Wampserver 2i

LANGUAGE SPECIFICATION (PYTHON DISTRIBUTION)

PYTHON 3.8

1. Pandas
2. Numpy
3. Matplotlib
4. Scikit learn

MYSQL

1. Wampserver 2i
2. Bootstrap
3. Flask

IV. EXISTING SYSTEM

The traditional system for question paper generation involves the manual creation of question papers by teachers or examiners.

Manual System: In the manual system, question papers are created manually by teachers or examiners. This process is time-consuming and labour-intensive, as it requires the teacher to select questions, organize them, and create the final paper. There are various existing manual methods for generating question papers, which include:

- **Manual selection of questions from a question bank:** In this method, the teacher manually selects questions from a pre-existing question bank to create a question paper.
- **Manual creation of questions:** In this method, the teacher manually creates questions from scratch to include in the question paper.
- **Copying questions from textbooks:** In this method, the teacher manually copies questions from textbooks and includes them in the question paper.
- **Random selection of questions:** In this method, the teacher randomly selects questions from a question bank or from textbooks to create the question paper.

Collaboration with other teachers: In this method, teachers collaborate with each other to create the question paper. Each teacher may be responsible for creating questions from their area of expertise

V.PROPOSED SYSTEM

The proposed system for an automated and customizable web-based question paper generation system for educational institutions aims to provide a comprehensive solution to the limitations of traditional manual methods and existing computerized systems.

The proposed system will be developed using state-of-the-art technologies and algorithms to automate and streamline the question paper generation process.

The key features of the proposed system are:

- **Customization:** The proposed system will allow teachers and examiners to customize the generated question papers based on the desired level of difficulty, topic, and learning outcome.
- **Question Bank:** The proposed system will include a comprehensive question bank, which will contain a wide range of questions across different subjects and difficulty levels.

- **Machine Learning:** The proposed system will use machine learning algorithms to generate question papers automatically based on the desired criteria.

Integration: The proposed system will integrate with other educational software and platforms, such as learning management systems and student information systems.

VI. MODULES

Q Gen web Dashboard

. Q Gen Web dashboard module provides an intuitive and user-friendly interface for managing the automated question paper generation system, enabling educational institutions to streamline their examination processes and enhance the quality of their assessments.

Designing the layout and user interface of the web application, including the navigation menus, forms, tables, and buttons, using HTML, CSS, and JavaScript.

Developing the front-end of the application using the Flask web framework, which is a micro web framework written in Python.

Developing the back-end of the application using MySQL, a widely used open-source relational database management system

End User UI

The End User Interface Module is the module that allows end-users (such as Admin, professors, teachers, or exam coordinators) to interact with the system to generate question papers.

College Admin

This module is responsible for managing the system. It includes functionality for adding or deleting users, managing exams, and managing questions. This module deals with providing an easy-to-use dashboard for the admin to manage all the modules.

Staff in Charge

The Staff in charge module of the proposed system allows the user to assign staff members to be in charge of creating and generating question papers for specific courses or subjects. This module helps to ensure that each staff member is responsible for generating the question papers for their respective courses, thereby reducing the risk of errors and ensuring accountability.

Question Management

This module allows the admin/user to manage the questions added to the question pool. It includes functionalities such as adding questions, editing questions, deleting questions, and searching for questions based on criteria like subject, topic, and difficulty level.

3.1. Question Pool Module

This module displays all the questions added by the user and enables the user to select questions for an exam. This module stores all the questions added by the admin/teacher in a centralized location. It allows the admin/teacher to select questions from the pool while creating the exam.

3.2. Question Pool Upload Module

The module is a feature of the proposed web-based question paper generation system that allows authorized users to upload a CSV file containing a pool of questions that can be used to generate question papers.

Question Paper Generation

Preview

The Preview module is an important component of the automated question paper generation system, which allows users to preview and verify the generated question papers before they are used in actual exams.

Print

The Print module fetches the final question paper data from the database and formats it into a printable document. The generated HTML or PDF document includes the logo of the educational institution, the title of the question paper, and the questions and answers in a readable format.

Download

The Download module supports popular file formats such as PDF, DOCX, and TXT. The user can select the desired format and the module will generate a file in that format. For example, if the user selects PDF, the module will generate a PDF document of the final question paper.

Reports

The report module in the Automated and Customizable Web-based Question Paper Generation System allows the system to generate various reports related to the question paper generation process.

The module provides a comprehensive overview of the question papers generated, the status of each paper, and the details of the questions included in the paper.
The reports can be generated for a specific subject, topic, or question type, and can be filtered based on various criteria such as difficulty level, question format, and more.
The reports can be viewed online or downloaded in various formats such as PDF, Excel, and CSV.

VII.ARCHITECTURE DIAGRAM

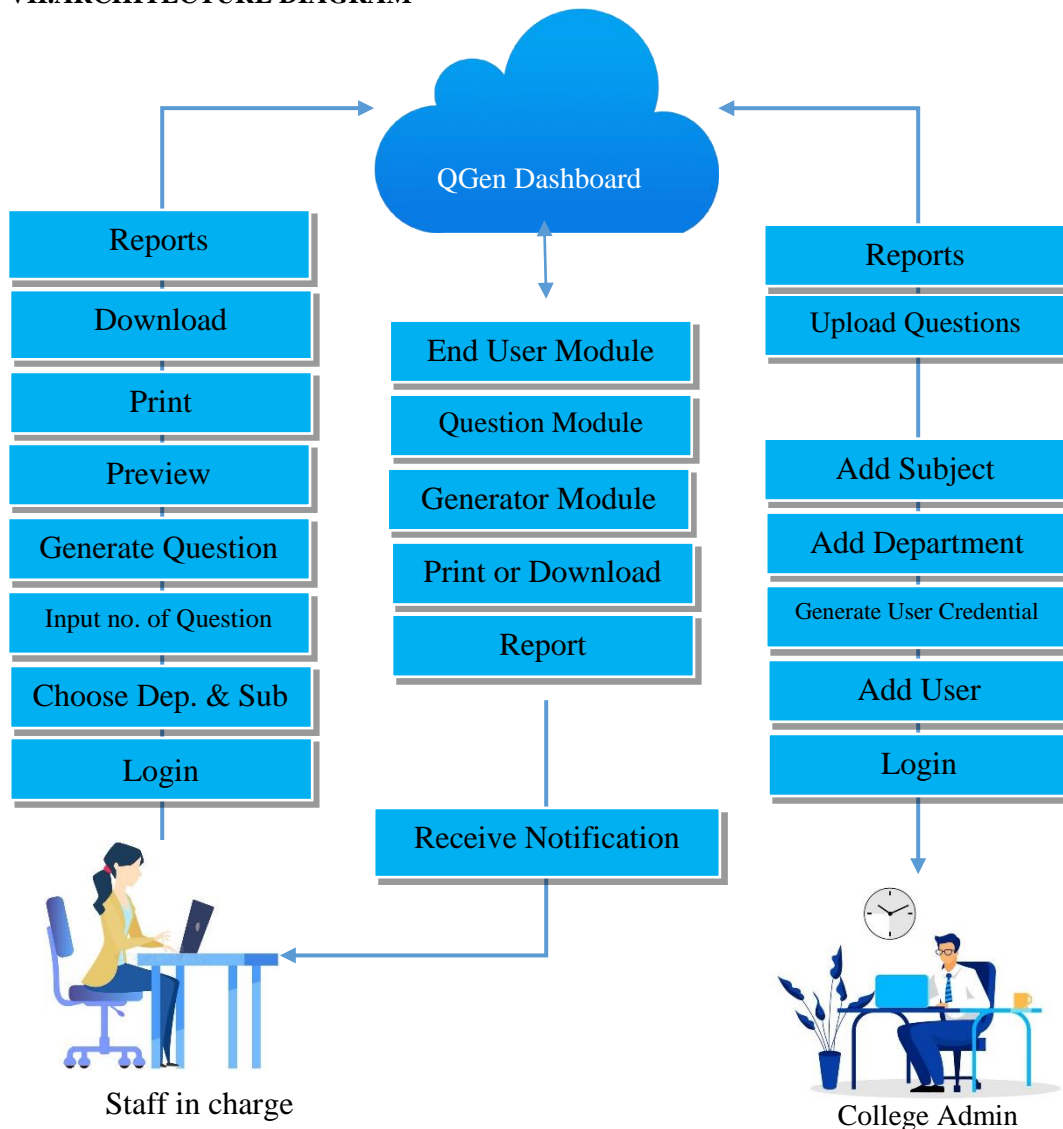


Fig.1 System Design

VIII. RESULT

An automated and customizable web-based question paper generation system for educational institutions can offer several benefits, such as:

1. **Time-saving:** The system can save time for teachers and administrators by automating the process of creating question papers. Instead of manually selecting questions and formatting them, the system can generate question papers based on pre-defined criteria and question banks.
2. **Customization:** The system can be customized to meet the specific needs of different educational institutions, courses, and subjects. Teachers can create their own question banks and set criteria for selecting questions based on the difficulty level, topic, and other factors.
3. **Reduced error:** The system can help reduce errors and inconsistencies in question papers by automating the selection and formatting of questions. This can help ensure the accuracy and fairness of the assessments.
4. **Scalability:** The system can be used to generate question papers for large numbers of students, making it suitable for educational institutions with a large student population.

IX. CONCLUSION

In conclusion, the development of an automated and customizable web-based question paper generation system can revolutionize the way educational institutions create and manage their assessment materials. With this system, institutions can streamline their question paper generation process, customize question papers to their specific needs, and save time and resources in the process. A web-based question paper generation system can be an effective solution for educational institutions that need to produce customized and relevant exam papers for their students. Such a system can streamline the process of question paper generation, allowing educators to focus on other critical tasks like teaching and research. The automated and customizable nature of the system can significantly reduce the workload of educators. It can help them generate question papers that align with the syllabus and course objectives while also providing a variety of question types to cater to different learning styles. Additionally, the system's ability to generate multiple question papers with the same difficulty level can help to minimize the risk of cheating. The system's web-based nature makes it easily accessible to educators and students, and it can be integrated with other learning management systems. The system's security features can ensure the confidentiality of question papers, and it can also allow educators to collaborate with one another on generating question papers. Moreover, this system can improve the quality and consistency of question papers reducing the chances of errors or biases in the assessment process. The web-based nature of the system also makes it easily accessible to teachers and administrators, allowing them to create and modify question papers from anywhere and at any time. Overall, the development of an automated and customizable web-based question paper generation system can be a significant step towards improving the efficiency of educational institutions and enhancing the quality of education provided to students.

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