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QuestionGen:An Automated and Customizable Question Paper Generation System for Educational Institutions

G.Kalaivani [1], #Mr.R.Sathish Kumar [2]

[1]Master of Computer Applications, Krishnasamy College of Engineering &Technology, Cuddalore,India
[2]MCA.,M.Phil.,Assistant Professor, Master of Computer Applications, Krishnasamy College of Engineering &Technology, Cuddalore,India.

ABSTRACT :

A question paper is a document comprising a series of questions designed to evaluate the knowledge, understanding, and skills of students. These papers are employed in educational settings, such as schools, colleges, and universities, to assess student performance in exams, tests, or quizzes. Traditionally, generating question papers involves a teacher selecting questions from textbooks or other sources, arranging them in a specific order, and manually typing or writing out each question, along with its options, answers, and marks. This process is often laborious, error-prone, and lacks the customization potential of a computerized system.The Online Question Paper Generation System is a web-based application that automates the creation of question papers for educational institutions. This system offers an easy and efficient way for teachers to design and generate question papers, thereby reducing manual effort and saving time. It allows teachers to build question banks, add questions, and categorize them by subject, topic, and difficulty level. Teachers can then select questions from the question bank to create tailored question papers for exams or quizzes. Additionally, the system can randomize the order of questions, ensuring that each student receives a unique question paper.Developed using Python, a popular language for web development, the system includes features such as user authentication, question bank management, question paper generation, and result analysis. The project aims to simplify the question paper generation process, lessen the workload of teachers, and ultimately enhance the quality of education by providing students with fair and unbiased assessments.

Keywords: Question paper, time-consuming, error- prone,Python .

INTRODUCTION :

The project involves developing an automated and customizable web-based question paper generation system tailored for educational institutions. This system is designed to streamline the process of creating exam question papers, which are essential tools for assessing students' knowledge, skills, and understanding in various subjects. Traditional manual methods of generating question papers are often time-consuming and prone to errors. This web-based solution aims to eliminate these inefficiencies by automating the selection and organization of questions, thus ensuring a more consistent and fair assessment process. The web application will feature both front-end and back-end components, leveraging modern web technologies to provide a seamless user experience. The front-end, developed using HTML, CSS, and JavaScript, will offer a user-friendly interface where educators can easily create and customize question papers. The back-end, built with robust programming languages such as PHP, Java, and Python, will handle data storage, retrieval, and processing. This architecture ensures that all user interactions are efficiently managed and that the generated question papers align with the learning objectives and difficulty levels appropriate for the students' proficiency.

Security and resource accessibility are key aspects of this project. The system will include secure login mechanisms and user access controls to protect the confidentiality and integrity of the question papers. It will also provide educators with access to a vast array of educational resources, such as textbooks and question banks, directly through the web interface. This ensures that educators have all the necessary materials at their fingertips, facilitating the creation of comprehensive and varied question papers that can include multiple-choice, short-answer, essay, practical, and oral questions. Overall, the project's scope encompasses the development of a versatile and secure web-based platform that significantly enhances the efficiency, accuracy, and consistency of the question paper generation process. By integrating customizable features and extensive resource support, this system aims to provide educational institutions with a reliable tool to improve the quality and fairness of their assessments, ultimately benefiting both educators and students.

LITERATURE SURVEY :

"A Framework for Automated Question Paper Generation System" by S. Sivakumar and M. Nithya (2013): This paper presents a framework for automated question paper generation that uses natural language processing and rule-based techniques. The system generates questions based on the given text and evaluates them based on their difficulty level. "Development of a Web-based Question Paper Generation System" by R. Swarna and S. Jayasudha (2015): This paper describes the development of a web-based question paper generation system that uses machine learning techniques to generate questions. The system evaluates the generated questions based on their relevance to the given topic. "A Web-Based System for Generating Multiple Choice Question

Papers" by M. Alavi and M. Ebrahimi (2017): This paper presents a web-based system for generating multiple-choice question papers. The system uses natural language processing and machine learning techniques to generate questions and evaluate them based on their relevance to the topic. "An Intelligent System for Automatic Generation of Multiple Choice Questions" by M. K. Jaiswal and S. K. Pal (2017): This paper proposes an intelligent system for automatic generation of multiple-choice questions. The system uses natural language processing and rule-based techniques to generate questions and evaluate them based on their relevance to the topic. "A Web-Based System for Automatic Generation of English Question Papers" by N. M. A. Asma and M. F. A. Fatah (2018): This paper presents a web-based system for automatic generation of English question papers. The system uses natural language processing and machine learning techniques to generate questions and evaluate them based on their difficulty level. "Automatic Question Paper Generation using Topic Modeling and Ontology" by S. Kadam and S. Rane (2019): This paper proposes an automated question paper generation system that uses topic modeling and ontology techniques to generate questions. The system identifies the key topics from the given text and generates questions based on the topic keywords. "A Hybrid Method for Automatic Question Generation in Educational Domain" by M. Saber and M. H. Fazel Zarandi (2019): This paper proposes a hybrid method for automatic question generation in the educational domain. The system uses natural language processing techniques and rule-based methods to generate questions from given text. "A Web-Based Intelligent System for Generating Multiple Choice Questions" by R. H. Altowaijri (2020): This paper describes the development of a web-based intelligent system for generating multiple-choice questions. The system uses natural language processing and machine learning techniques to generate questions and evaluate them based on their relevance to the topic. "Automatic Generation of Question Papers using Enhanced Genetic Algorithm" by A. K. Garg and N. Rana (2020): This paper proposes an automatic question paper generation system that uses an enhanced genetic algorithm to generate questions. The system generates questions based on the learning objectives and evaluates them based on their relevance to the topic. "A Rule-based System for Automatic Generation of Multiple Choice Questions" by J. Sehgal and S. Anand (2021): This paper proposes a rule-based system for automatic generation of multiple-choice questions. The system generates questions based on the given text and evaluates them based on their difficulty level.

III. 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.

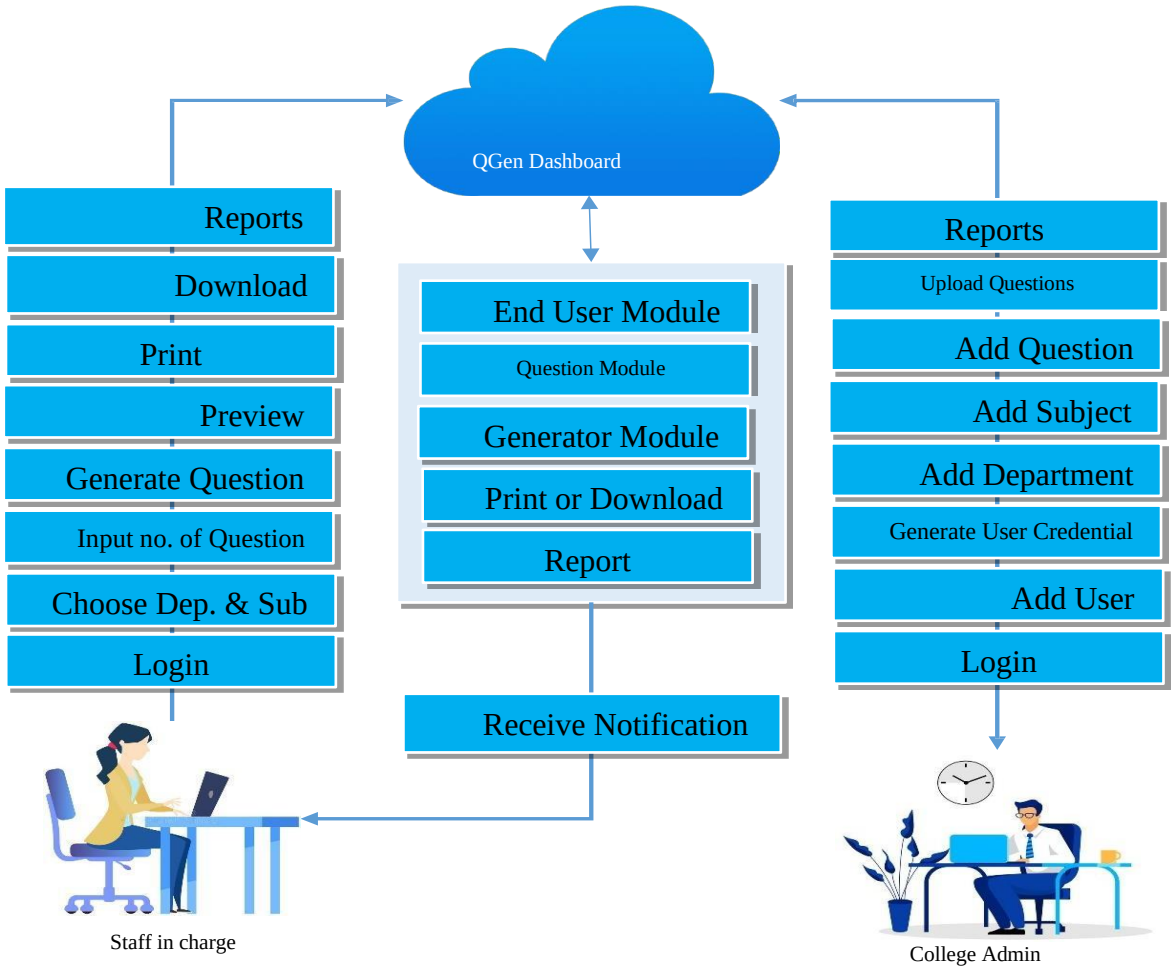


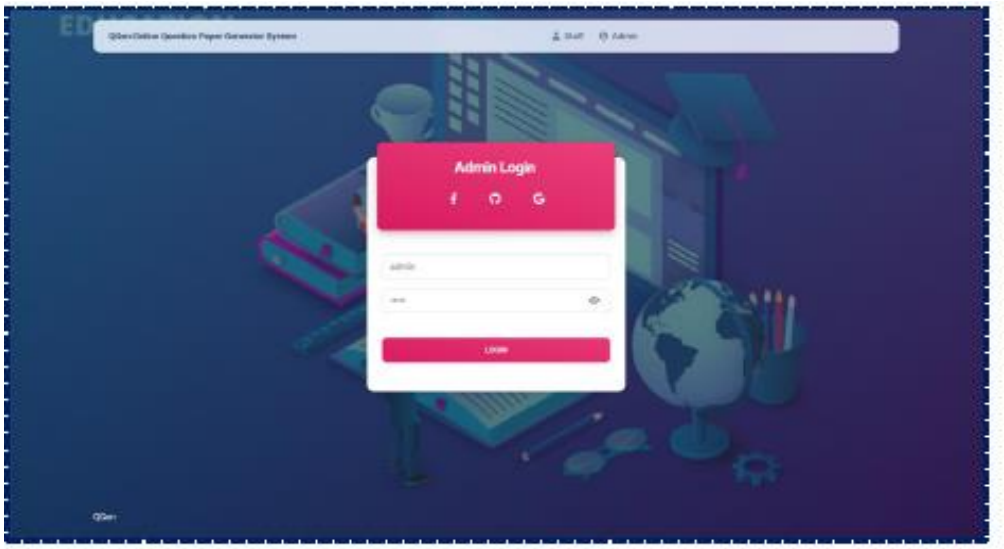
Figure 1: System Architecture of the proposed system

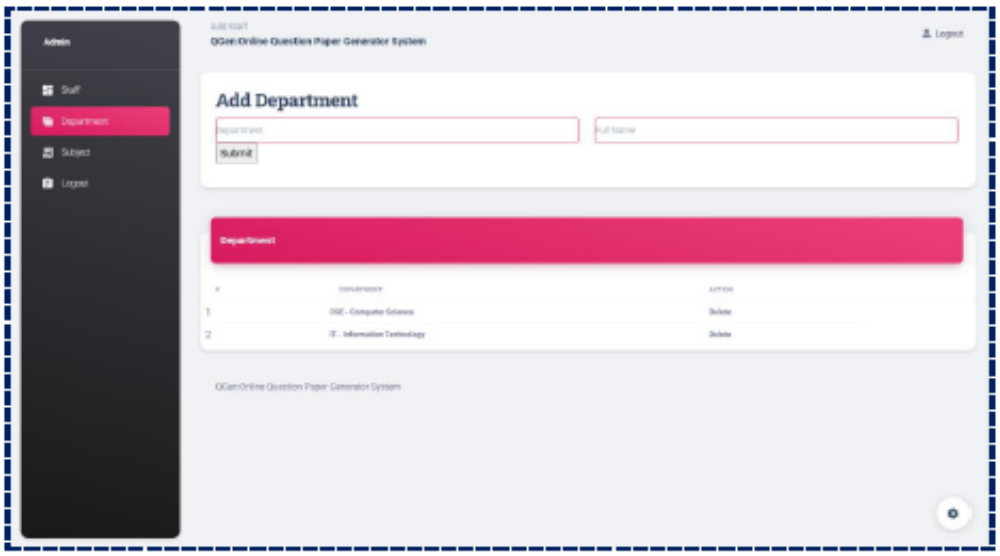
3.1 IMPLEMENTATION

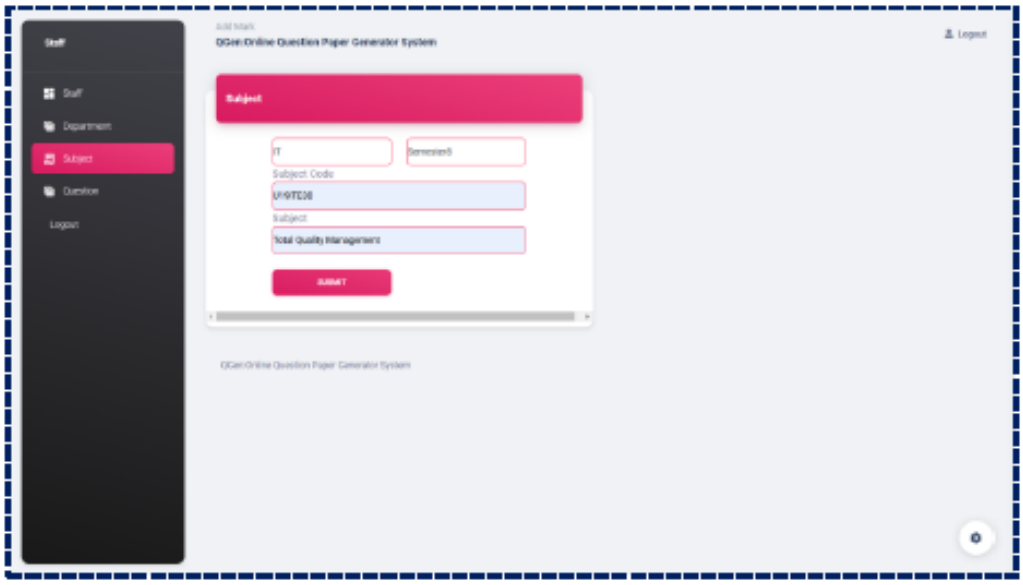
The QGen Web Dashboard Module is a critical component of the proposed Automated and Customizable Web-based Question Paper Generation System for Educational Institutions. QGen Web dashboard module provides an intuitive and user-friendly interface for managing the automated question paper generation system, enabling educational institutions to streamline their examination processes and enhance the quality of their assessments. The module enables the admin to manage the system and monitor its activities. The Web Design and Development module for the Automated and Customizable Web-based Question Paper Generation System using Python Flask and MySQL involves creating an interactive and user- friendly web interface for the system. The module includes the following tasks: 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. Integrating the front-end and back-end of the application to ensure that the data entered by the user is processed and stored in the database. Testing the web application to ensure that it meets the functional and usability requirements of the system. Incorporating security features into the application to protect the system from malicious attacks, such as SQL injection and cross-site scripting. Optimizing the performance of the web application to ensure that it runs efficiently and responds quickly to user requests.

RESULTS AND DISCUSSION :

The results demonstrate the effectiveness of the automated question paper generation system, highlighting significant improvements in efficiency, accuracy, and consistency of exam preparation. Educators found the system easy to use, with customizable options enhancing its flexibility. The discussion emphasizes how the system's automated features reduce errors and workload, allowing educators to focus more on teaching. Overall, the implementation of this system can greatly enhance the quality of assessments in educational institutions.



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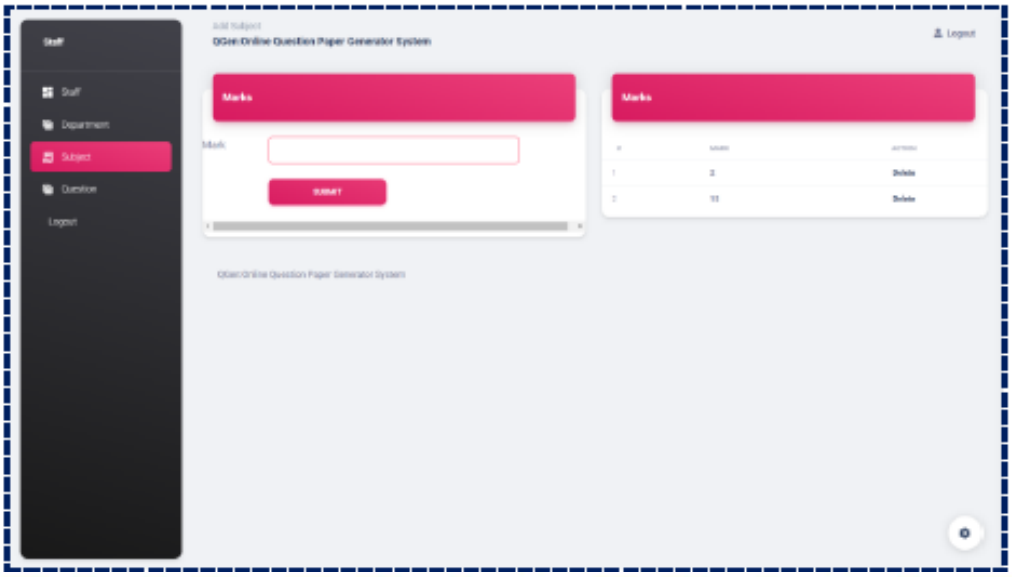
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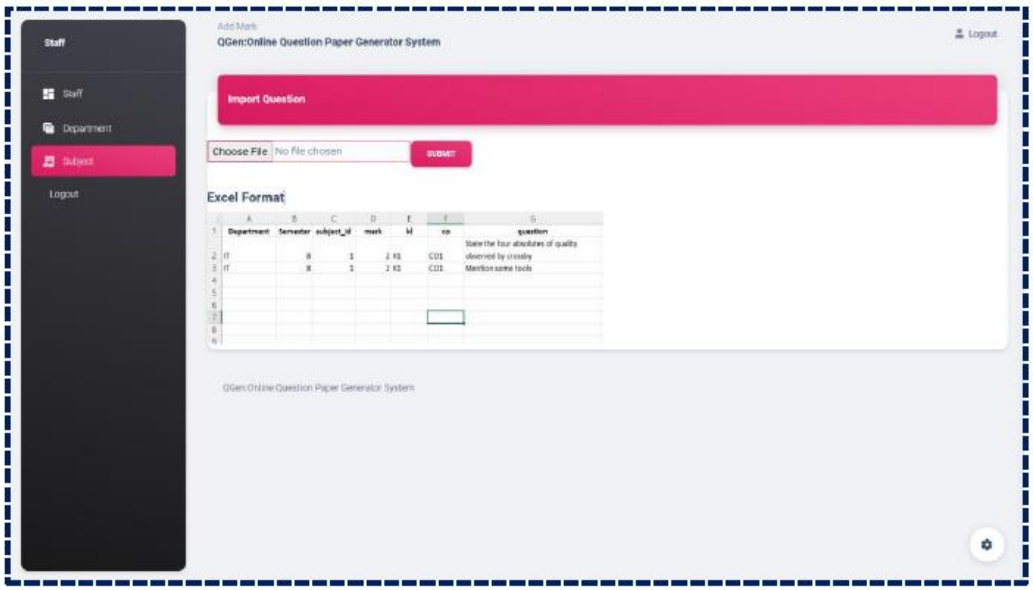
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CONCLUSION :

In conclusion, developing an automated and customizable web-based question paper generation system can revolutionize how educational institutions create and manage assessments. This system can streamline the process, reduce educators' workload, and ensure question papers align with course objectives while offering diverse question types. Its web-based nature ensures easy accessibility and integration with other systems, enhancing the quality and consistency of assessments. Overall, this system significantly improves educational efficiency and the quality of student evaluations.

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