



## Teacher's Assistant- Automatic Question Paper Generator

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**Abstract:** Examination process is an important activity for educational institutions to assess student performance. However, preparing the exam questions is very challenging, tedious and time consuming for the instructors. Generating an effective question paper is a task of great importance for any educational institute. The traditional method, where lecturers manually prepare the question paper, is very tedious and challenging. The aim is to automate the entire process of question paper generation and correction using the PC.

Hence, with the help of this project we present the solution in form of "Teacher's Assistant" (TAS). This system includes several modules like user administration, subject selection, difficulty level specification, question entry, paper generation, answer checker and paper management. Thus the system optimizes the human effort involved and also reduces the overall time consumed in the process of generating question papers

**Keywords:** Randomization algorithm, fuzzy logic, least recently used, difficulty level

### I. INTRODUCTION

Since the invention of computer, life at the corporate level has been automated through a great extent, but this automation isn't seen much at the institutional level. There is a huge need to automate most of the procedures taking place at university levels to minimize human efforts. The main intention for building up this project is ease the overall work for generating a question paper and make it a hassle free and an error free process. Examination process is an important activity for educational institutions to assess student performance. However, preparing the exam questions is a task for the professors. Generating an effective question paper is a task of great importance for any educational institute

### II. FEATURES

- Automating the entire examination process.
- Assigned difficulty level based on number of times question has appeared in previous papers
- Only the administrator has rights to generate question papers. The professor can view the paper 1 hour before the test begins, which is a security feature
- New questions can be added/removed anytime by the professor and the administrator.
- While generating the paper, the administrator not only has to specify the required difficulty level, but he also has to specify the most occurred: least occurred questions' ratio.
- There will be no duplication of questions in a single paper.
- Questions will not appear outside the syllabus as questions will be retrieved strictly from the database.

- Hassle free paper generation, thus saving the professor's time and efforts.

### III. LITERATURE SURVEY

- The paper presents the solution in form of Automatic Test Paper Generator System which makes use of a randomization technique. This system includes several modules like Login Module, Professor Module and Administrator Module. The Professor needs to specify the Department, Semester, Subject, Question, Weight age and Unit number and from the entered input, the examination paper will be generated automatically. The system shows characteristics like simple operation, a good interface, excellent usability, and high stability along with reliability. [1]
- The research paper Framework for Automatic Examination Paper Generation System has provided a thorough insight into the process of automated paper generation. As the manual generation of a balanced question paper by an individual is quite complex, the blending of technology into teaching and learning process is inevitable. A simple and efficient way for an examination paper generation is provided. A three tier model is provided in this framework. Generation of Examination Papers is governed by the Syllabus Engine, Pattern Composer and Question Aggregator. The generated question paper is based on the pattern or skeleton of the course Questions are entered through the Question Aggregator. The attributes related to questions are type, marks and complexity. All these attributes are efficiently

used during Question Paper Generation .The paper generator selects a question according to the pattern and complexity. This engine also introduces a marking systems wherein any selected question is marked so that it might not be selected again. This prevents repetition of questions in subsequent papers. Finally, generated papers are stored as a PDF. [2]

- The paper on Automatic Question Paper Generation System using Randomization Algorithm describes a system which uses a shuffling algorithm (existing algorithm) as a randomization technique. The system defines several modules such as user administration, subject selection, difficulty level specification, question entry, question management, paper generation, and paper management. It supports multiple languages. Also, mathematical formulae and diagrams can be integrated in questions. The system has a dual interface viz., web-based and desktop-based. The system introduces a highly efficient shuffling algorithm which uses an array to store randomly generated numbers. The questions are then selected against these array elements, thereby ensuring completely random generated question papers. However, this system fails to utilize the highly efficient marking system. So, questions once selected may be repeated in subsequent papers. This is a limitation of this system. [3]
- CQG (Cloze question generation) system that generated list of cloze questions given in English article. CQG system is divided into three main module, Sentence selection, key selection and distracter selection. In the first stage, informative and relevant sentences are selected and in the second stage, keywords (or words/phrases to be questioned on) are identified in the selected sentence key selection will not be noun or adjective it would find on the basis of NER. Distracters (or answer alternatives) for the keyword in the question sentence are chosen in the final stage. First two stages are not domain specific. third stage is domain specific and evaluation of the system is done manually through three phases
  - a) Evaluation of the selected sentence
  - b) Evaluation of selected keyword and
  - c) Evaluation of selected distracter. [4]

#### IV. REQUIREMENTS

##### A. Functional Requirements

- Logging into system
- Setting up the requirements and type of paper to be generated.
- Converting the generated paper into PDF.
- Inviting fellow professor to review the question paper.

##### B. Equations Non functional requirements

- Performance: After generating the question paper using the mentioned algorithm, the professor should be able to review it before converting it into a PDF.
- Portability: The website is made using HTML and CSS which makes the system platform independent.
- Backup: The frequencies of the questions used in the generated question papers must be updated in the database.

#### V. PROPOSED DESIGN

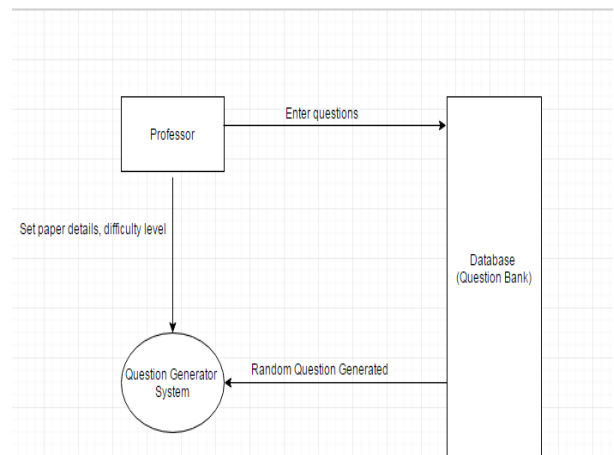


Figure: 1. Architecture

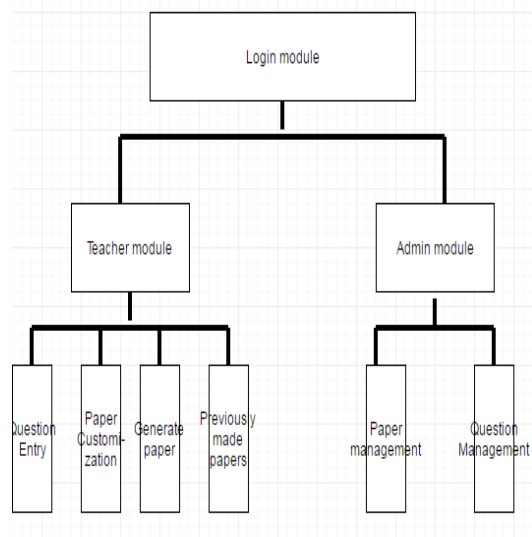


Figure: 2. Flowchart of system

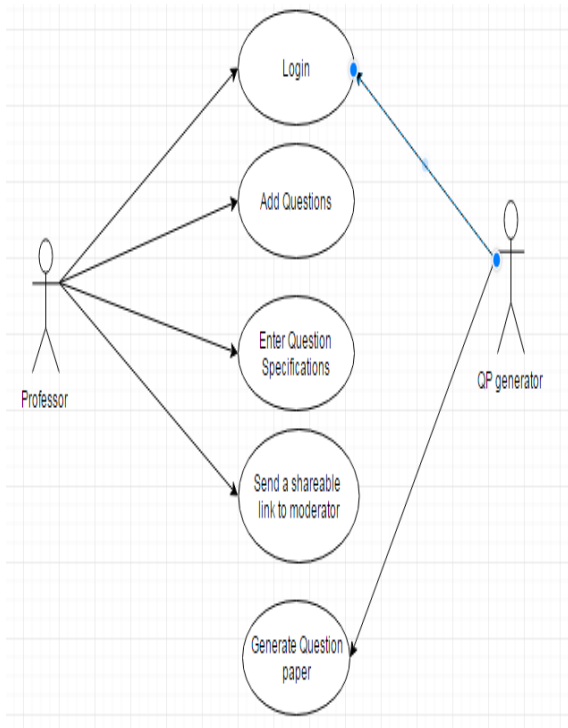


Figure: 3. Use-case diagram of system

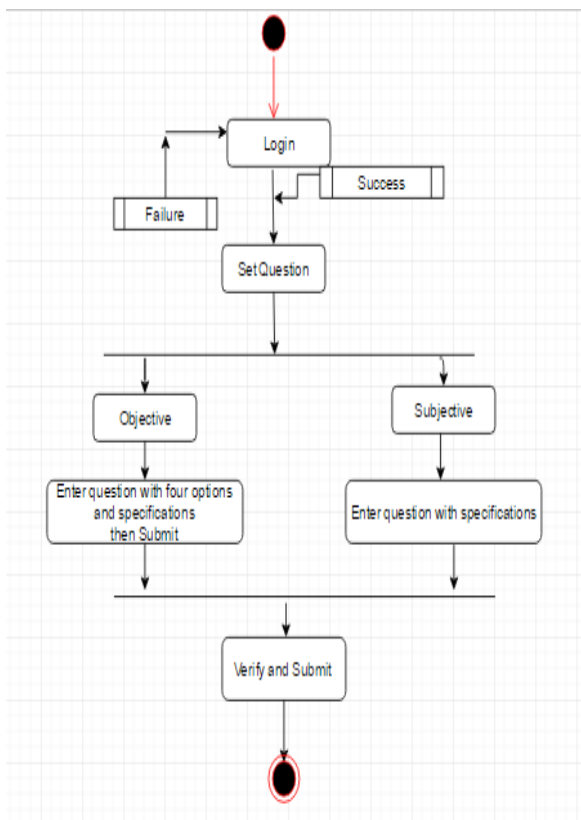


Figure: 4. Activity diagram of system

## VI. SYSTEM FRAMEWORK

- Administrator login- This is an exclusive login module for the administrator. His sole responsibility would be to generate question papers and manage them. Also, he has the authority to add a new faculty and manage existing faculties.



Figure: 5. Admin login interface

- Staff login- This module is for the faculty access. The duties of faculty include adding a new question and managing existing questions. In case of adding a new question the faculty can enter question of the any type. He has to specify the 4 options/choices which shall be given for a mcq type question. The faculty can also delete /preview the already generated questions from the database. While adding a new question, the faculty also gets assistance of keywords specific to a particular subject which can be used to check if a question he/she wants to add already exists or no.



Figure: 6. Adding a new question

- Randomization algorithm- A randomized algorithm is an algorithm that employs a degree of randomness as part of its logic. The algorithm typically uses uniformly random bits as an auxiliary input to guide its behavior, in the hope of achieving good performance in the "average case" over all possible choices of random bits. This algorithm is used for shuffling and generating random sequence of questions without any duplication in our system. [3].
- Fuzzy logic- Also known as the "degree of truth", this is a theoretical concept that extends the Boolean

concept of the variable having only 2 values, 0 or 1. The concept of fuzzy logic is used to implement difficulty level specification and generate question paper as per the level specified by the faculty member. The levels given by a menu will be of the three categories - easy, medium and hard. [5]

- Least recently used/Most recently used algorithm- If a particular question is repeated in many question papers, it seems easy to the student. Likewise, if a question is appearing for the first time, it will be a tough one for the student. Therefore, this concept is used to group questions according to the years in which they appeared. Also, while setting the paper, the admin has an option to choose a ratio for lru:mrp which is also a parameter for overall difficulty level of the paper.

← → | @ localhost:8080/QGenerator/viewmcq.jsp

VIEW ALL QUESTIONS DETAILS

SR No.	Question	Option A	Option B	Option C	Option D	Action
1	Pick the odd one out	array type	boolean type	character type	integer type	EDIT DELETE
2	Long form of HTML	Hyper Transfer Medium Language	Hyper Transfer Markup Language	Hyper Text Medium Language	Hyper Text Markup Language	EDIT DELETE

Figure: 7. Viewing all questions saved in the database.

### I. RESULTS AND CONCLUSION

The system will successfully be able to authenticate both admin and professor based on username and password. The system will successfully record all the requirements stated by the admin for the paper he desires to generate. All the previously appeared questions and the number of times they have appeared will also be stored in the database of the system. Once a paper is generated, it is stored in the question paper bank.

The resulting system will ease the process of question paper generation and be able to generate different types of papers successfully. The GUI should be user friendly and no question should be repeated in the generated paper. A user friendly GUI with the stated functional requirements intends to save professor's time and efforts and to automate the entire process of question paper generation

SN	CS36
<b>1 B.E. Degree Examination, 2017-03-16</b>	
<b>C++</b>	
Time : 3 hrs	Max. Marks: 80
Note : Answer any four full questions.	
<b>Answer All 4 Question</b>	
Q.1) What is a function? Explain Inline function?	5
Q.2) What is constructor in C++ and Explain with one example?	5
Q.3) What is mean by OOPS? Define?	5
Q.4) What is inheritance in C++ and name the different types of inheritance?	5
<b>Answer All 2 Question</b>	
Q.1) Collaborate different types of data types in C++? With example?	10
Q.2) Definition of C++? Explain?	10
<b>Answer All 2 Question</b>	
Q.1) What is pointer? Explain in Brief with example?	10
Q.2) Write Simple Program Book Entry Using structure Variable in C++ Programming?	10
<b>Answer All 2 Question</b>	
Q.1) Different types of data type in C++	10
Q.2) Explain with example?	10
<b>Answer All 2 Question</b>	
Q.1) Write Simple Program for Exception Handling with Multiple Catch Using C++ Programming?	10
Q.2) Check give number is Even or Odd? using C++ code?	10

Figure: 9. Sample question paper that is created

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