Digital Test Generator And Answer Assessment System

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***Abstract*— In any educational course curriculum, the courses are defined with learning objectives. Teachers conduct assessments to know if students have achieved certain learning objectives or not. Teachers produce assortment of question papers according to the colleges' evaluation prerequisites. It is trying for the teachers to make question papers with changed inquiries and which and which meet learning objectives of the course. There are no standardized methods to ensure quality of question paper. Hence, emerges a need of a system which will consequently produce the question paper from teacher entered detail inside couple of moments. Specialists suggest diverse arrangements of labels, for example, difficulty level, kind of question, content/theme for characterizing a question paper and so on. The current tools are inflexible and bolster essential or restricted labels. The proposed system will consequently produce a question paper from questions stored. This system offers adaptability by supporting each of the four kinds of question and permits section of each property in the type of extents for example lower bound and upper bound. The assessment and evaluation of the answers provided is also an important factor. This system also provides a framework for answer assessment by assigning marks to the answer received, by comparing the given answers with the model answer provided and stored in the database.**

***Keywords*— automatic generation, different set of tags, evaluation and assessment**

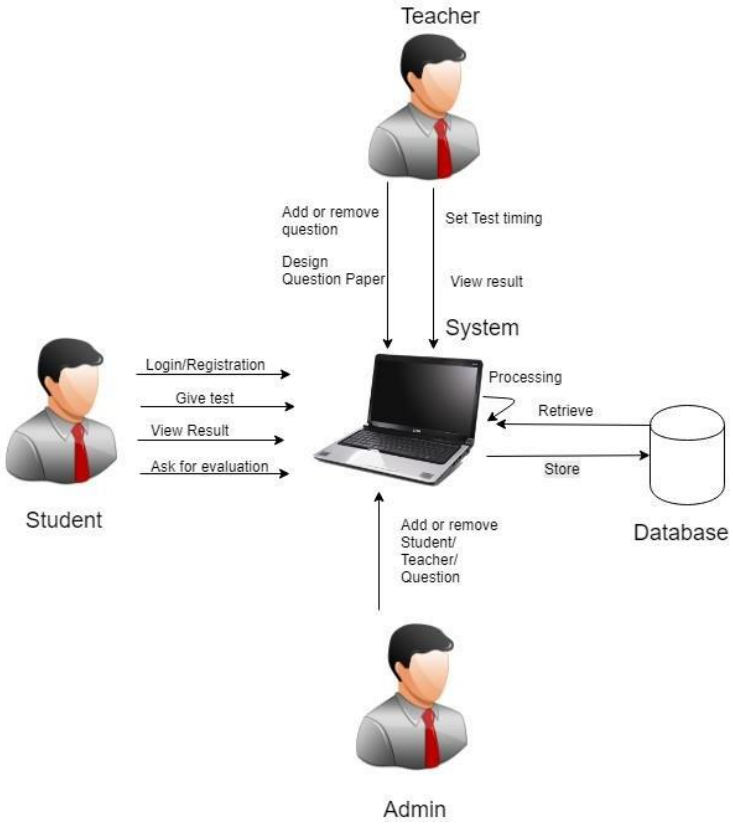
I. INTRODUCTION

Online system turns into a fast-growing education method because of its speed and accuracy. Many companies/institutions started conducting their objective test online. This requires less manpower and saves time. Through online system, one can evaluate students' performance. Automatic question paper generator helps various school, colleges and universities to automatically generate question papers. This study proposes automatic question paper generation system in which each question paper will contain different set of questions from the database. It helps to generate question according to different levels of Revised Bloom's taxonomy. The software performs the task of paper setting according to predefined instruction and generates a word document containing questions which can be downloaded. Education model is utilized as a proposal design, i.e. to integrate short term course studies, to implement the instructional terms and to authorize teacher in the classroom. One of the automatic architecture designs in this research is to find the solution for examination in terms of level wise question paper. The whole examination process is a crucial segment for direct appraisal of an individual learning. So, preparing a complete test paper and the setup is relatively necessary. Currently, the customary technique of making question paper has been handbook. In current scenario the question paper generation is a manual approach leading to unproductive at times owing to bias, repetition and security concerns. The present paper presents a programmed strategy of question paper group which can be adjusted, streamlined, synchronized and verified.. Each task done by this system is automatic, such that storing space, bias and security is not an apprehension any longer. Earlier, the question paper was generated by concerned subject teacher manually and was very time consuming, man power was required and sometimes the question paper lacked accuracy.

II. PROBLEM STATEMENT

The need for an online examination system arises out of the need for eliminating manual answer evaluation. The proposed system separates each task which is performed according to a certain pre-written methodology in a full automated manner. It reduces the time killing process of examination. Online examination system will be used by every institution in the near future due to its flexibility and facilities offered by the system. Also, after submitting the question paper this system directly evaluates the answer as MCQ, Short answer, long answer, sums. Give result based on the answer evaluation. So according to that teacher and admin can view result along with this student. Here teacher sets question paper according to the level of questions and the answer assessment is done legitimately by the system. So, this system expels the complete heap of the teacher to create question paper and answer evaluation.

III. PROPOSED SYSTEM



Question Paper Generation

- Generate Question DB (Easy, Moderate, Hard)
- Analyze the answer of the first questions and then predict the level of difficulty for further question (only in case of MCQ)
- Give weightage to every question (1m-MCQ 0r 5m-Short Answer)

Answer Evaluation

- MCQ directly
- Short Answer using keyword extraction
- Diagram using direct MCQ
- Numerical by directly checking for answer

Teacher Module

- Add or remove subject (his particular branch)
- Design question paper using Question DB
- View Result
- Set test Timing

Student Module

- Login
- Give test
- View Result (only his/her)

Admin Module

- Add or remove student
- Add or remove teacher
- Email Student with ID and Password

Question Paper Generation

- MCQs only first few questions will be generated randomly and according to the marks scored in those questions further questions will be predicted to be generated randomly.
- Long/Short Answers
- Questions with diagram will be in MCQ format.
- Display Bloom's Taxonomy level.

IV. RELATED WORK

Jadye et al. stated an idea of using some constraints such as question paper composition, inclusion of syllabus and difficulty levels, to build a system to produce a question paper dependent on these constraints. Here, the system generates paper with the help of knapsack algorithm. It has deployed an algorithm which introduces randomization and evades reiteration of questions being referred to papers. The system creates question papers by fulfilling constraints such as question paper composition, inclusion of syllabus and difficulty levels. Assume that the difficulty level of the question paper is set to easy then the algorithm does not just select the easy level questions from the database but the difficulty level of the paper is set to be easy in general. The question paper set for the test is generated in pdf format and it is sent to the concerned examination officer of the college via e-mail [9].

Bindra et al. proposed an automatic procedure of question paper groups which can be modified, streamlined, synchronized and secured. They proposed an outcome-based education system which can predict the ability, advancements in the education system, betterment in teaching method, future interest of student etc. Various data mining classifiers like oneR, zeroR, J48, Naïve Bayes, Ibk were used for prediction [6].

Pandey et al. designed a very intelligent system which worked based on text file input to form question paper with the help of Bloom's taxonomy. The process of fetching input from the outside world is used to design the paper for the user based on their necessities. The author proposes an approach which enhances the efficiency in terms of judgment for system learning based on cognitive level [2].

Proposed approach selects some keywords from the input data and processes on the other contents depending upon clustering approach. The concept of question map was integrated with the question bank to ensure that the question modelling process is based on certain criteria like Blooms Taxonomy, marking scheme, difficulty level etc [1].

Bednarik and Kovacs combined several distinct tools for developing a prototype to generate questions automatically. Proposed approach selects some keywords from the input data and processes on the other content based on the clustering approach. All the output structure is grammatically processed by the system to form an automated question paper [3].

Nalawade and Ramesh proposed a flexible system offering a semantically tagged question repository for automatic question paper generation in the normal course teachers are responsible for assessing a student's learning outcome. The obligation of setting the question paper is on teachers which make the question paper generation task very challenging and biased. Authors proposed distinctive arrangements of attributes like cognitive level, complexity level and question type for generating questions paper automatically [8].

Ashok et al. proposed a system that completely auto-mates the procedure of generating question paper. The propelled system creates question paper dependent on database with the end goal that a wide range of questions, for example, (MCQs, Numerical sort, Theory based and so on.) are stored in database. With the assistance of natural language processing (NLP) computation type and case type questions are included in the question paper. The database contains assortment of questions with difficulty level. The user can choose paper setting manually. The system arbitrarily chooses questions from database and produces a question paper such that entire syllabus is covered [7].

Smith et al. proposed a system that automatically generates questions from passages for instructive practice and evaluation. The methodology is to over create questions, at that point rank them. System uses manually composed guidelines to perform a sequence of useful syntactic transformations (e.g., subject-auxiliary inversion) to turn decisive sentences into questions. These questions are then ranked by a regression model trained on a tiny, customized dataset consisting of tagged output from the system.. By ranking the output of rule-based natural language generation system, existing knowledge about WHmovement from linguistics can be leveraged to model the complex transformations and long-distance dependencies present in questions [4].

Sawant et al. designed a system that will automatically develop an assignment based on entry of the appropriate parameters. Parameters provided to the person generating the assignment will include, the subject and the level of difficulty for the questions to be selected. Based on the parameters selected, the system will form a dataset containing all the questions that satisfy all the constraints. The question types are Multiple Choice Questions and Subjective Questions. The evaluation of MultipleChoice Question, the correct answer will be stored in the database, the system will check if the students has entered the correct option or word respectively. For the evaluation of subjective answers, the Stanford Parser is used for parsing as well as a Parts of speech tagger. Once the part of speech for the words has been identified, all the adjectives are separated. Then, the relationship of the words in the statement will be determined. Later, the nouns, adjectives, adverbs and verbs are mined from the statement. The same is done for the answer stored in the database.

The two results are compared to check how close is the student's answer to the stored answer. Based on the similarity score, the student is allocated appropriate marks. For answers that are longer in size, the same concept is used, but an additional parameter is considered, i.e. the length. If the length of the answer is too short, or if is too long indicates that the student failed to write significant amount of information or has written too much insignificant information, respectively. If the length of the answer provided by the student falls within the appropriate length, then he/she gets the appropriate marks, if not, marks are reduced [5].

V. ALGORITHM DETAILS

Stopwords removal- Stop words are fundamentally a lot of regularly utilized words in any language. As they are used to make the data simpler to read and not required for the processing of data in the answer thus system remove them. Examples of stop words are also, the, because, become, etc. So for understanding the main keywords written in the answer system remove stopword to decrease the length of the answer and make it easy to process. A dictionary based methodology is used to expel stopwords from document.. A generic stopword list which contains 75 stopwords, is created by using a hybrid approach [10].
Implementation of the algorithm is given by following steps.

Step 1: A token is assigned to the target document text and the words are stored in an array.

Step 2: Every stop word is read from the stopword list.

Step 3: The stop word is compared to the target text in the form of an array using a sequential search technique.

Step 4: If it matches, the word in array is removed, and the comparison is continued till length of array.

Step 5: Once the stopword is removed completely, another stopword is read from the list of stopwords and again the algorithm will follow step 2. The algorithm will run until all the stopwords are looked at.

Step 6: Resultant content, which is without stopwords, is shown, likewise the required insights like stopword expelled, no. of stopwords expelled from target message, the complete number of words in target content, quantities of words in the resultant content and an individual stop word include which is found in target content is shown.

Table 1: List of Stopwords

Letter	Stopword
A	a, about, again, all, almost, also, although, always, among, an, and, another, any, are, as, at
B	be, because, been, before, being, between, both, but, by
D	did, do, does, done, due, during
E	each, either, enough, especially, etc
F	for, found, from, further
G	Gene
H	had, has, have, having, here, how, however
I	i, if, in, into, is, it, its, itself
J	just
K	keep, know
L	latter, least, less, lest, let, last, like, little, ltd
M	made, mainly, meanwhile, many , maybe, make, may, mg, might, ml, mm, most, mostly, must
N	nearly, none ,need, neither, never, nevertheless, new next, no, nobody, nor
O	obtained, of, often, on, our, overall
P	perhaps, protein, particular, per, perhaps, placed, please, plus, possible, presumably, probably, provide
Q	quite
R	rather, really, regarding
S	seem, seen, sequence, several, should, show, showed, shown, shows, significantly, since, so, some, such
T	than, that, the, their, theirs, them, then, there, therefore, these, they, this, those, through, thus, to
U	Upon, use, used, using
V	Various, very
W	was, we, whoever, whether, were, what, when, which, while, with, within, without, would,well,went
Y	yes, yet, you, yourself, yourselves

Tokenization - It is additionally called as lemmatization. For some grammatical reasons, the documents may utilize diverse types of a word, for example, compose, sorts out, and arranging. We cannot equate or compare these words with each other,

which will cause the answer to be evaluated as wrong even if the keywords are present. To avoid this, we change all the words into its basic form.

For example:- car, cars, car's, cars' ⇒ car
This helps the system to process the data properly

Since tokenization depends for the most part on basic heuristics so as to isolate tokens, it follows the given steps:

- Tokens or words are isolated by whitespace, accentuation stamps or line breaks.
- White space or accentuation imprints might possibly be incorporated relying upon the need.
- All characters inside touching strings are a piece of the token. Just alpha characters, alphanumeric characters or numeric characters can be utilized to make tokens..

Tokens themselves can likewise be separators. For instance, most programming dialects enable identifiers to be put together with number juggling administrators without void areas. It might appear this is a solitary word or token, the sentence structure of the language really thinks about the numerical administrator (for example a token) as a separator, suggesting that notwithstanding when different tokens are packed up together, they can in any case be isolated by means of the mathematical operator [11].

VI MODULE DESCRIPTION

1. Login:
   The user must login using username and password. Every user will be provided with a unique username and password.

2. Data Collection, Upload, View and Assessment:
   The data for paper generation will be collected. A model paper will be generated. The appropriate responses will be stored in the database.

3. Output:
   The question paper will be produced with differing dimensions of trouble. A proper question paper will be chosen by the concerned authority as a output.
   The answers stored in the database will be compared to the answers received, and the result of the assessment will be provided as an output.

VII.FLOWCHART

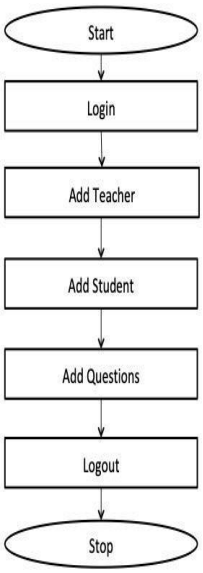


Fig. 1: Flowchart for Administrator

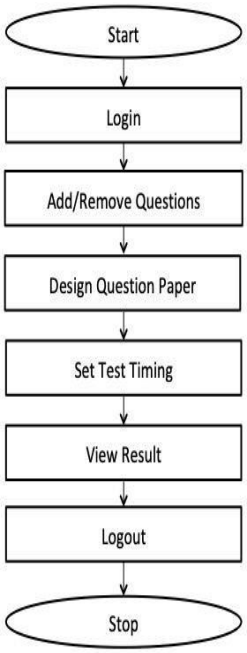


Fig. 2: Flowchart for Teacher

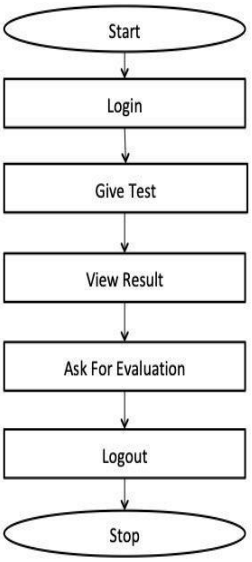


Fig. 3: Flowchart for Student

VIII. ADVANTAGES

- System can generate question randomly.
- The system can help save time for preparing a question paper for the examination.
- Questions can be added to the question bank at any time during the creation process.
- If the auto generation fails due to some reason, the teacher can use the simple drag and drop feature to set the question paper in a few seconds.

The questions, which are generated by the system, are not known by anyone including the system.

IX. RESULTS

Every module activity in this system is mutually exclusive since the robust hierarchy of the system does not allow overlapping of authority or access rights. The question papers are generated based on the specified constraints designed by the teacher. The students' attempt on a given question paper is recorded and fairly evaluated against data provided by the concerned authority.

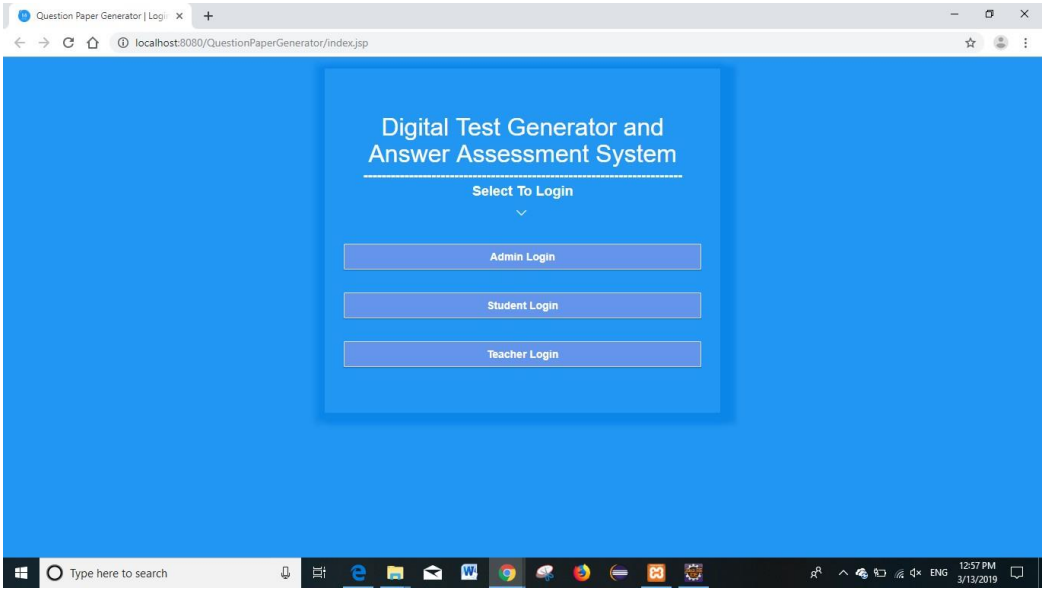


Fig. 4: Homepage

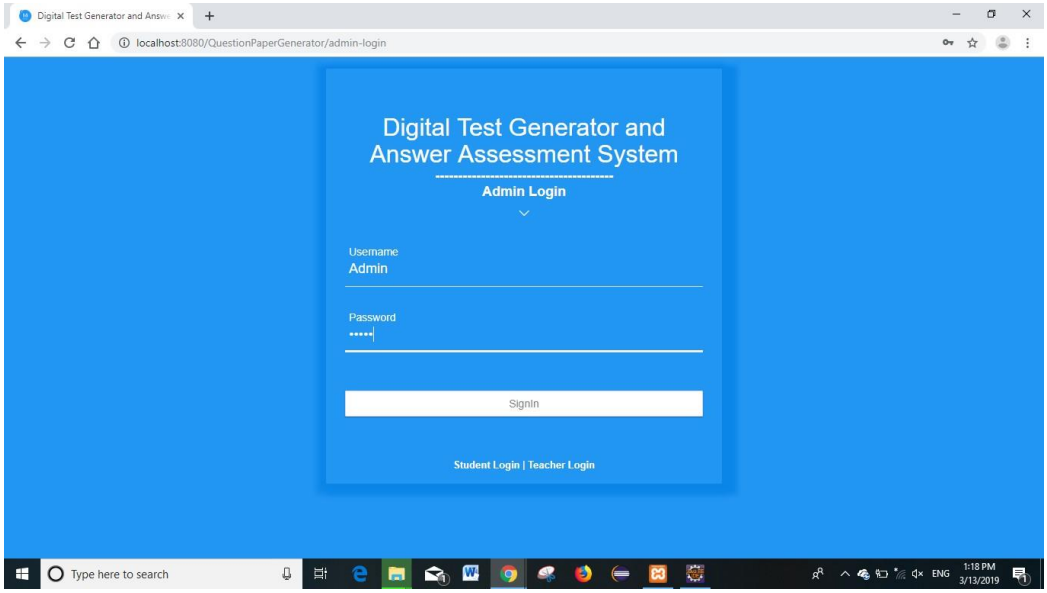


Fig. 5: Admin Login Page

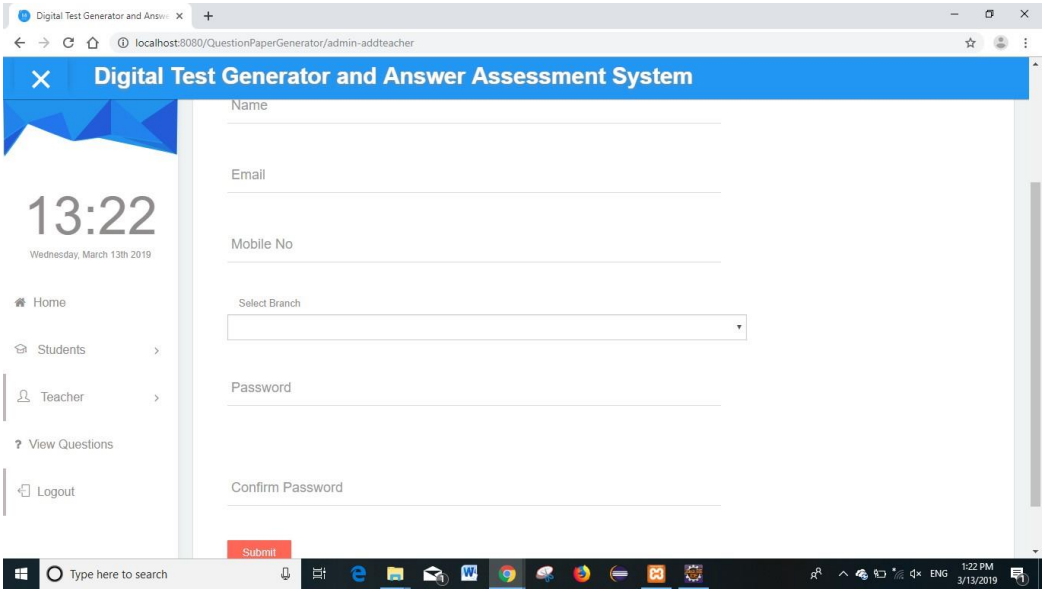


Fig. 6: Admin Adds Teacher

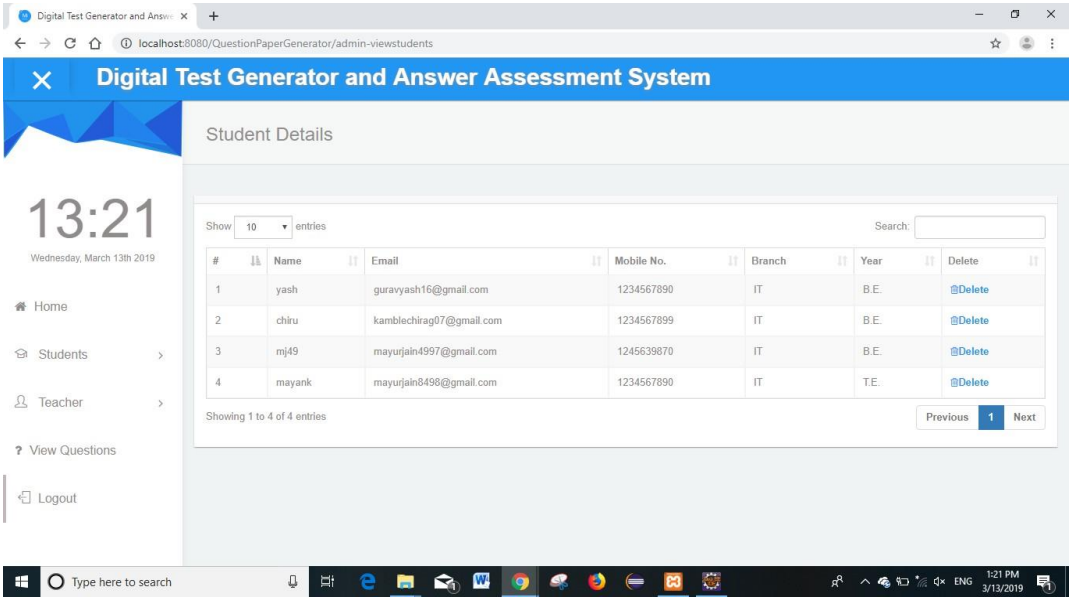


Fig. 7: Admin Views Student Details

X. FUTURE SCOPE

- The digital system can be implemented during internal tests and assignments.
- The professor can take advantage of the answer assessment feature to quickly analyze the weight of the answers instead of reading through each line manually.
- This can be upgraded to accommodate large database of question and answer sets.
- New features for relevance comparison can be added in order to increase the reliability and accuracy of the system in order to assess complex answers with diagrams and mathematical problems.
- In future implementation the student can also ask for paper re-evaluation.

XI. CONCLUSION

To frequently generate good question paper which meets learning objectives of the course, teachers need to give additional attention to the course objectives related to the syllabus of that subject. But there is a shortage of time for teachers in institutions or university. Existing systems lack the flexibility to support all types of format identified. The system is a great aid for teachers in generating question papers automatically from question repository.

While the system designed stands out in all available systems, there is scope for more enhancements to make it more useful. In light of the kind of appraisal that is required, the framework can be designed to choose certain or explicit question types. For example, if a user wants an assessment of an online quiz, it would cleverly incorporate all the MCQs or if the user picks term test assessment, long and short answer addresses must be favoured. Also, users would be delighted to have a feature to present statistics for gaps in user given specifications and system generated specifications.

XII. REFERENCE

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