

Automated Analysis of Question Papers for Semester Examinations

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Abstract

Examination is a critical component in Indian Education System. Examination is conducted to assess the intellectual ability of students on a particular subject. The assessment must be done based on the learning outcomes of a particular subject. Examination is a good means to assess student's reasoning and logical skill, their ability to analyze the question and express themselves and also the way they approach each question to draw conclusions. It also helps the teacher to understand the learning level of students and also address the areas that needs more attention. The teacher can also use examination as a tool to analyze his/her own teaching. Student's performance in examination will help the teacher to understand whether to change their own style of teaching so that a particular concept can be taught in a better way. The question paper is the main tool used in examination which evaluates the teaching-learning process. On many occasions, question papers are under discussion because of the level of difficulty, lengthy content, unit coverage and its integrity. So more attention and care has to be given in the framing of question paper. The paper setter should have an ample knowledge on the subject and prepare questions based on the coverage of each unit. The paper setter should prepare the questions in a such a way that that fifty percent of the questions could be answered by an average student, twenty percent by a good student and the remaining thirty percent by an intelligent student. The objective of this research paper is to develop a system which will automatically analyze the format of the question paper, unit coverage, number of questions in each section, time duration and the maximum marks.

Keywords: Question paper, blueprint, examination

1. Introduction

Examination provide a better means to evaluate student's knowledge on a particular subject. It is a powerful tool in the evaluation of teaching learning process. The curriculum pertaining to every subject is framed according to unit wise and the number of hours would be allotted for each unit. The question paper should be designed in such a way that it should be according to the format approved by the Board. Sometimes the question paper may not be according to format and there may be errors with respect to the coverage of syllabi, questions, marks, duration etc. The questions may not be having that quality standards with respect to what is expected or it may be the "Out Of Curriculum". The question paper should balance the questions in a such a way that it could be answered by a below average student, average and an intelligent student. The paper should include challenging questions and not only the questions which would check only the student's remembrance level. According to Bloom's Taxonomy, the question paper should reflect the prerequisite to test the students capability to Remember, Understand, Apply, Analyze, Evaluate and Create. Examination plays a significant role in testing students logical and reasoning ability and it has a great impact in teaching-learning process. So utmost care has to given while framing a question paper. Though there would be a committee of Board of Examiners to scrutinize the papers, it is not practical to check each and every paper with maximum attention. Keeping in mind the necessity of analyzing the question paper, this paper focus on developing an algorithm which would find the major errors and faults in the question paper automatically.

2. Literature Review

Dr. Rajvinder Kaur^[1] have made a detailed study analysis on different question papers in class IX at school level examinations. The question paper must have all type of questions and that would help the paper setter to cover the entire syllabi for reliable testing. He also suggested that the instructions should be given in the question paper and there should be clarity in the language used. It should clearly communicate to the stakeholders and also the question paper analysis must be done by the subject experts after the examination is conducted for further improvements. Anujna M., Ushadevi^[2] A *et.al* proposed a system for retrieving the relevant data from the document. The proposed system implement the stop word removal and stemming using portal algorithm. Regular expression algorithm is used for pattern matching and search time to find how much time system takes to search users data in an excel sheet.

Mukesh Kumar Gupta^[3] *et.al* presented an innovative approach to extract features from source code files. The research uses text mining and pattern matching techniques to extract basic features and HTML context features in web pages. Mukesh Kumar *et.al* proposes a method which will detect the harmful code files in development cycle itself and concentrate only on those files which will reduce the vulnerabilities. Mr. Rahul B. Diwate^[5] *et.al* proposes an analysis of different pattern matching algorithms in terms of efficiency and complexity. The paper also gives a detailed description of pattern matching techniques and also gives an idea of which algorithm is suitable for which type of data. R. Janani^[4] *et.al* applied existing string matching algorithms to find all occurrences of a limited set of patterns in a document. The research also proposed enhanced string matching algorithms and made a comparative analysis in terms of accuracy, search time and number of iterations.

3. Methodology

The objective of this research paper is to report the errors that exists in the question paper by comparing it with the blueprint. The question paper has different sections and marks allotted for each section is also different. This would vary with respect to subject. Every question paper would have a blueprint which describes the number of questions to be taken from each unit. This is calculated with respect to the number of hours allotted to a particular unit which is specified in the curriculum. The flow of the project is given below:

- ❖ Analyze the format of the question paper with respect to headers, title, course, time duration, and maximum marks allotted.
- ❖ Comparison of question paper of each subject with the blueprint provided with respect to
 - ✓ Sections and the number of questions in each section.
 - ✓ Marks distribution of each section
 - ✓ Repetition of questions

In this study three different papers of 70 marks and 100 marks were compared with its blueprint. Given below is the blueprint of one of the paper:

Title: Computer Graphics

Time : 3 hrs Max. Marks: 70

Instructions	
Part A:	Students are requested to write any <i>ten</i> questions from <i>twelve</i> questions
Part B:	Students are requested to write any <i>four</i> questions from <i>six</i> questions
Part C:	Students are requested to write any <i>three</i> questions from <i>five</i> questions

Unit \ Part	Part A	Part B	Part C
Unit 1	3	2	1
Unit 2	3	1	1
Unit 3	2	1	1
Unit 4	2	1	1
Unit 5	2	1	1
Total	12	6	5

Figure 1: Blueprint

Initially the question paper is converted to a csv file which would store the data in a tabular form. The headers, title, semester, maximum marks, time duration are compared with the standard format. The blueprint of the same paper is checked against the question paper to find out whether the mark distribution of each unit is same or not. The total number of questions in each section is compared with the blueprint and report the same if it is different. The proposed algorithm also checks whether any repeated questions exist or not.

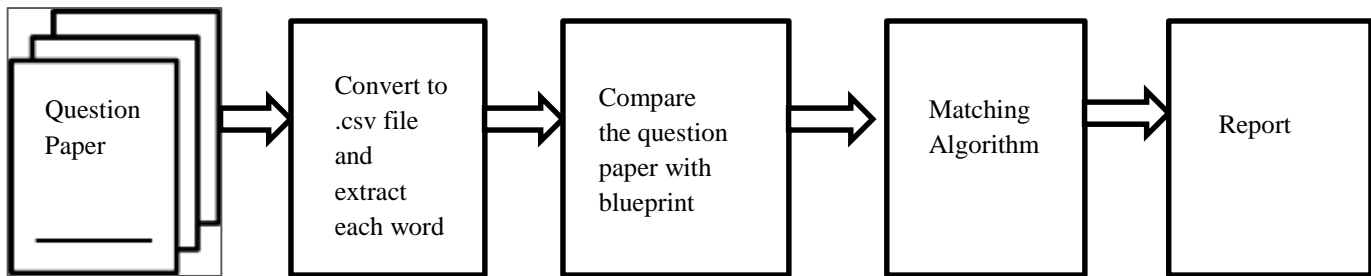


Figure 2: Flow Diagram

4. Results

Three different papers were taken in to consideration and the results are shown below:

5. Conclusion and Future Enhancements

Paper	Max Marks	Sections	Max Marks in each section	No of questions in the blueprint	No of questions given in question paper	Repeated Questions	Report
Computer Graphics	70	Part A	24	12	12	Nil	Validated
		Part B	30	6	6	Nil	Validated
		Part C	50	5	5	Nil	Validated
Computer Architecture	100	Part A	24	12	11	Nil	One question in part A is missing
		Part B	30	6	6	Nil	Validated
		Part C	90	6	6	Nil	Validated
Database Management Systems	70	Part A	24	12	12	Nil	Validated
		Part B	30	6	6	1	One question in Part B is repeated
		Part C	50	5	5	Nil	Validated

This research paper focus on comparing the question paper with its blueprint and report if any error exists. The paper proposes an algorithm to find the number of questions in each section and also checks the marks distribution of each section. It also check the format of the paper and make a decision on whether it is valid or not. In this research work only the major errors would be identified and take action to rectify those errors. This work could be extended to discover the unit wise coverage of the syllabi and also identify the questions which are out of the curriculum. The meaning of questions could be analyzed and use the same to check whether any repeated questions are existing in different sections or not.

6. References

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