

AUTOMATIC SYSTEM FOR GRADING MULTIPLE CHOICE QUESTIONS AND FEEDBACK ANALYSIS

Soumitra Patole¹, Aniket Pawar², Avanish Patel³, Akshay Panchal⁴, Prof. Ravindra Joshi⁵.

¹⁻⁵Department of Electronics and Telecommunication,
K.C. College of Engineering & Management Studies & Research,
Thane, Maharashtra, India.

patolesam14@outlook.com, pawar.aniket.257@gmail.com, avanishkumarpatel92@gmail.com,
akshaypanchal49@gmail.com

Abstract — This paper proposes a new idea for grading multiple-choice test which is to develop a method to use a personal computer plus a scanner and a program based application, that will grade a specially designed MCQ exam test and feedback analysis paper. The program will test to detect the correct answers by comparing each paper with a correct answer which will be pre stored in database. Also students can give the feedback about the lecturer who conducts lectures during the semester. It will thereby help in analysis of the staff record on grade entered by student in the feedback form in schools, colleges and other institutions. This project use C# an object-oriented programming language from Microsoft that aims to combine the computing power of C++ and contains features similar to those of Java, a software application that will have simple interface that would be understandable to all with minimal cost and can be used in various education institutions for conducting multiple choice questions to judge student's academic performance and also staff performance on the basis of feedback given by student.

Key words — Multiple Choice Questions, exams, C#.

I. INTRODUCTION

In our country, the multiple-choice questions have become an important part of the educational system. Important exam tests also use multiple-choice questions to judge the student's academic performance. The Indian Institute of Technology (IIT) JEE MAINS & MH-CET, AIEEE etc. are just some of the many important tests conducted in INDIA to get the students on a common stage. Every year millions of students take these tests and they have to answer various questions asked by highlighting the circles in OMR sheets. These exam conducting organization uses, a specialized machine for grading MCQ paper based exams, this machine is very expensive and it needs a specially trained operator to operate the machine correctly and efficiently. These institutes use expensive OMR software along with the machines associated to evaluate the OMR sheets.

So, small organizations, institutes, individual teachers and coaching institutes cannot use this easy method

of grading without spending lot of money. They resort to manually grading answer sheets. To check the OMR sheet test responses of a student takes 10 minutes on an average. The main theme of our project comes from the idea that we could build a software application that will save their precious time and being inexpensive, can be used in small scale.

We have a possibility that our application would do the following activities:

- checks the answer sheet scanner,
- detect responses for each question .
- Compare student responses with reference answers which would be pre stored in database .

So our idea is to develop a method to use a personal computer plus a scanner and a program based application that will grade a specially designed MCQ exam test paper with questions with four choices for each question which the student can choose only one answer per question. The program will tested to detect the correct answers by comparing each paper with a correct answer which will be pre stored in database, The program is written in such a way that it can tolerate rotating the papers in the scanning operation using the process of image registration.

II. PROPOSED SYSTEM

The program will be used a simple software application such as OpenCV is library of programming function for implementation of the image-processing algorithm, SQL for database, Visual Studio in which program code will be developed. IDE (Integrated development environment) is a software application that facilities to computer programmers for software development all these will have simple interface that would be understandable to all. At the end of the test, the candidate will total the selected choices for questions and the test result can then be obtained by inputting the total choice value in a simple spreadsheet

program. The spreadsheet program was written specifically to decode that number and indicate the number of correct answers.

Software uses the technology of optical reading by scanner. It contains three main elements: the software, the answer sheets created by it, and a high-volume scanner. Depending on the scanner used, this tool allows you to process more than 12,000 answer sheets per day. Discover how to use Software to create and grade your exams. Equipped with a user-friendly and practical exam-creation wizard, Software enables you to create multiple-choice exams in a few mouse clicks. With its answer-sheet creation function, its question-weighting module and its automatic importing of candidate lists (among many other features), QCM Direct 5 is genuinely automatic software.

III. SYSTEM DESIGN

A. COMPLETE SYSTEM BLOCK DIAGRAMS

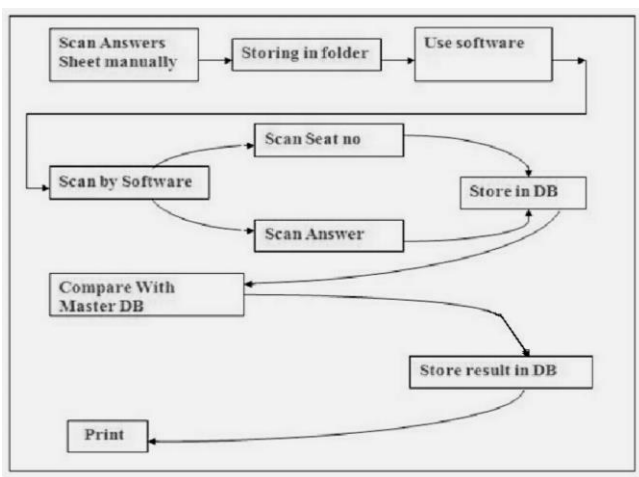


Fig. Block Diagram

An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a source code editor, build automation tools and a debugger. Most modern IDEs have intelligent code completion.

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web applications and web services. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code. Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring. The integrated debugger works both as a source-level debugger

and a machine-level debugger. Other built-in tools include a forms designer for building GUI applications, web designer, class designer, and database schema designer. It accepts plug-ins that enhance the functionality at almost every level—including adding support for source-control systems (like Subversion) and adding new toolsets like editors and visual designers for domain-specific languages or toolsets for other aspects of the software development lifecycle .

OpenCV (Open Source Computer Vision) is a library of programming functions mainly aimed at real-time computer vision. The library is cross-platform and free for use under the open-source BSD license# (pronounced as see sharp) is a multi-paradigm programming language encompassing strong typing, imperative, declarative, functional, generic, object-oriented (class-based), and component-oriented programming disciplines.

SQL (Structured Query Language) is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS).

B. ELEMENTS OF THE SYSTEM.

THE SCANNER



Fig. Scanner

THE ANSWER SHEET

Fig. Answer Sheet Format

The answer sheet is made up of two elements: a title section, for identification of the exam and the candidate, and a response grid, for the candidate's answers to the questions. The personnel-identification section appears on the upper part of the answer sheet. It serves to identify the exam candidate. Different personal-identification templates can be used with Software. Depending on the template used, you can insert text boxes for surname and given name, date of birth and a student ID code.

Fig . Software

IV . EASE OF USE

- Our system requires normal scanner, which has a very low price.
- Our system requires very less storage space, so it has no storage problem.
- File size is also low.
- It is flexible enough.
- No constraints to use only pencil can use pen etc. for marking.
- It has a fast processing speed.
- Black & white printer is only requirement for printing answer sheet.

V. FUTURE SCOPE

- Education institute can be able to use for record ,the performance of students which can be possible in less time.
- The Feedback of the staff which is also possible in various institutions.
- Increase the number of questions in the paper.
- Increase the number of option for each question in the paper.
- It can also be implemented at low level ,so that benefits of it will help in betterment of society.

VI. CONCLUSION

For flexible use and lower cost, our proposed grading system used scanner to capture answer sheets rather than costly OMR (Optical Mark Reader) system. The experimental results not only demonstrated that the proposed algorithm is dynamic and efficient but also effective at different resolutions as well. A wide variety of knowledge testing and evaluation systems are for administrating the test on-line and hence it addresses the issues such as formulating different types of objective questions, keeping student profiles, grading individual performance of the student as well as lecturers and collecting question related statistics.

Automatic paper correction of questions has a definite role to play in pc-based testing systems. Some of the direct benefits of the system versus traditional question based evaluation include, better scalability, suitability to asynchronous mode of evaluation. Finally, an algorithm that will group answer regions belonging to the same question and thereby provide feedback is being proposed which is simple and easy to implement .

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