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Examination Marks Management for VNRVJIET

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Abstract: ***With the increase in the number of branches, students, and examinations at VNRVJIET, a more efficient examination marks managementsystem is necessary. Currently, manually keeping track of all the examination data is time-consuming, prone to mistakes, and lacks a user-friendly interface. To address these shortcomings, we developed a new Examination Marks Management System. Our solution is a web application designed to manage the marks of the Semester End Theory and Laboratory examinations at VNRVJIET.***
We utilized uploaded images to extract student data and marks, adding checkpoints to validate errors at each step of the process. The system also maps examination data to student ID data and generates necessary reports. Our team worked on the entire exam marks management system, from creating an exam and generating an exam ID to extracting marks data and storing it in a database. The web application we developed is user-friendly and provides a more accurate way to manage examination data. In summary, our new Examination MarksManagement System offers an efficient way to manage examination data at VNRVJIET. It eliminates the challenges associated with manual record keeping, reduces errors, and provides an intuitive user interface. With this system in place, VNRVJIET can easily manage examination data for its growing number of branches, students, and examinations.

I. INTRODUCTION

A. Introduction

The use of technology in education has become increasingly prevalent in recent years, with computers and the internet playing a vital role in the transformation of the educational system. This has enabled large universities to save time and money, as well as allowing for education to be delivered anywhere and at any time. Traditional printed books are being replaced by online and offline applications, while access to large databases is made possible through computer software. This has brought about a fundamental revolution in education and facilitated the quick and easy flow of information. One such technological development is the examination marks management system, which is designed to aid the examination branch in extracting, storing, and generating reports for studentgrades. Optical mark recognition (OMR) is another automatic technique used to obtain data, which involves using a scanner to detect marks on a sheet of paper through contrasting reflectivity at predefined locations. This method distinguishes itself from optical character recognition as it only requires the ability to recognise the existence of marks, rather than being able to read them accurately. OMR is commonly used in examswith multiple choice questions, where students indicate their responses and personal information by darkening circles on a pre-printed sheet. Overall, the advancement of technology has benefited all business industries, including education, by making transactions faster, more accurate, and more successful. As time goes on, computers are becoming increasingly useful for every transaction. The use of technology in education is set to continue growing, bringing about further transformations in the way education is delivered and managed.

B. Objective

Aggregating the aforementioned information, our concise problem definition is “The development of a web application that is capable of managing the examination marks of thestudents of VNRVJIET for both theory and laboratory examinations. The web application will automate the process of extracting and storing the examination marks data of students while generating reports as and when necessary

II. LITERATURE SURVEY

This section offers a review of prior studies that evaluated the behaviour and effectiveness of marks management systems. Numerous studies on subjects related to online marks managementhave been conducted. Below, you'll find numerous illustrations of other people's study. We may be able to gain a more thorough grasp of how online marks management systems operate by doingthis. In the paper “Student Result Management System”[1] written by L Varun Ramesh, R Sai Anusha Priyanka, SNSS Venkata Lakshmi and V Mounika, the major goal of this project is to give the students results in an easy-to-understand manner.

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Students canget their results using their roll numbers on the college or institution website. The results are provided with individual scoresand the corresponding percentage after analysing the result statusand using the university's standard calculating method. The student is the system's target user. The student can log in using their login information and password to view each of their findings. Web development tools like HTML, CSS, PHP, Javascript, and MySQL may be used to do this. The faculty can examine a subject-by-subject breakdown of the students' overall performance in the semester exams. The subject-specific visualisation of the total results (including the pass and failure rates). A lot of inputs for the creation of our user interface were inspired from this paper.

After analyzing the paper "Web Based Student Information System"[3] written by S. R. Baharamagoudar, R. B. Geeta and S. G. Totad, with the help of this paper, we could get an insight into what technologies are needed to implement the data storing functionality of our project. We also had to use an SQL based database to store all information related to examinations. The Student Information Management System (SIMS) offers a straightforward user interface for updating student data. It may beused by colleges or educational institutions to easily keep studentrecords. All types of student information, academic reports, college information, course information, curriculum, batch information, placement information, and other resource information are all dealt with by the student information system. It keeps track of a student's information from the start of the courseuntil the end, and can be used for 7 reporting purposes, tracking attendance, progress in the course, completed semesters, years, coming semester year curriculum details, exam details, project details, or any other assignment details. All of this information is accessible through a safe, online interface built into the college's website. The paper "Automated Students Result Management System using Oracle's Database, Forms and Reports"[6] written by Akinmosin James, focuses on the design and implementation of an application that will allow users to keep student results and access them from any computer as long as it is connected to the same network as the application server. With the appropriatepermissions, users of this programme can add new userinformation, student examination records, and change these data as needed. Oracle's database, Oracle forms, and Oracle reports were the technologies utilised to construct this programme. Basedon this, we tried using google firebase instead of oracle. The database stores the records (data), while the forms provide the userinterface and the reports provide the user with information.

III. SYSTEM OVERVIEW

A. *Existing System and its Disadvantages*

Currently, our institute, VNRVJIET, has an existing system for examination marks management system. But, it has a lot of drawbacks and shortcomings as follows –

1) It doesn't read the images properly
2) The existing system causes errors while reading the marks from the uploaded images and this causes discrepancies in the final result.
3) The marks need to be bubbled only with a blue or black pen
4) The existing system reads the marks from the OMR sheets only if it has been bubbled with a blue or black pen, it doesn't accept any other colour or pencil to be used.
5) The errors are displayed only at the end
6) The existing system displays the errors while scanning marksonly at the end instead of at the respective step. This results in a lot of extra work to identify the step where the mistake has occured and correct it.
7) It only works for theory papers
8) The existing system extract marks only from the theory papers as there is no OMR system for laboratory exams. So, for laboratory exams, the marks have to be manually entered into the database.

B. *Proposed System*

We aim to create a system which will automate the process of examination marks management. The user can create an exam and an exam ID is generated automatically. Then, for exam exam, the user can upload the scanned control sheets and markssheet bundles, the student data, absent and malpractice records.Our system will now extract the marks and student data, map the marks to student data and store it in a database. The user cangenerate and download reports as required for each exam

Advantages of Proposed System

1) Better accuracy and more speed
2) Marks will be extracted from the OMR sheetirrespective of the colour of the ink used
3) Checkpoints are present at each step to validate theerrors instead of showing all the errors at the end
4) Both theory and laboratory examination of thestudents can be extracted and stored

C. Design of Proposed System

Our web application has three major aspects, they are, exam management, marks management and report generation. Implementing our methodology in a sequential order, we perform the following steps:

1) First, we go to the exam management page, navigateto create a new exam, enter the name of the exam and upload the student registration data also known as the student ID mapping data. Then, the new exam will be created and displayed in the exam management page.

2) Now, go to the marks management page, from the dropdown, choose the exam you wish to upload scripts for.

3) Enter the bundle number of the script you wish to upload and upload the script. If there is an issue with the script,an error will be displayed. If there is no error, the script will beuploaded successfully.

4) Now, from the uploaded script, we will extract the bubbled marks and we will scan the barcode to get the numberbehind it.

5) We will first map the marks to the barcode numberand then map the barcode number to the student ID details data(student registration data) 11 uploaded while creating the exam.

6) All of this will be stored in the database.

7) Once all the scripts have been uploaded, we can goto the generate reports page and choose the exam we want to generate the report for.

8) A report containing the required details will be generated and we can click on the download report button to download the marks data mapped to the student data.

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IV. ARCHITECTURE

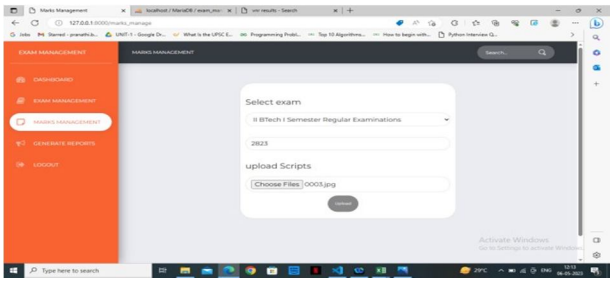


Fig-3: Marks Management Page

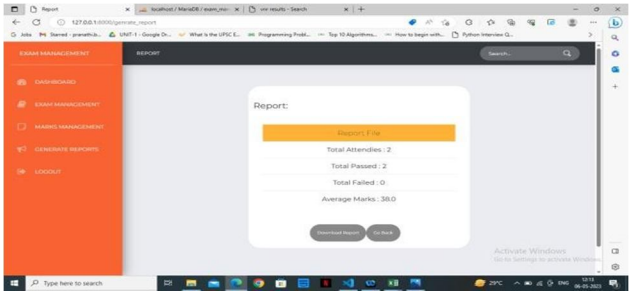


Fig-4: Report Generation Page

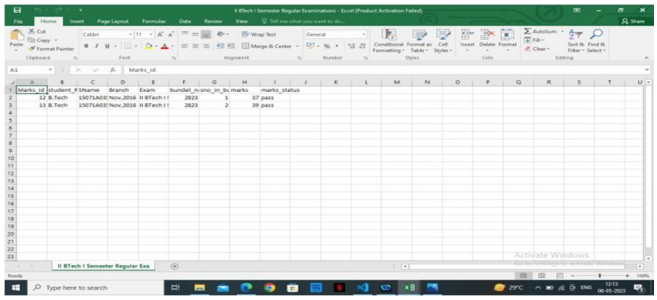


Fig-5: Sample report

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V. RESULTS

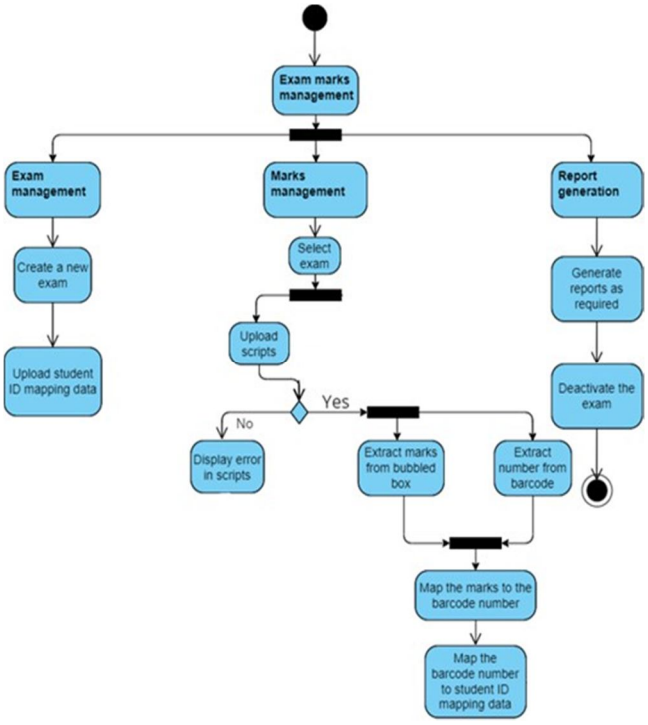


Fig-1: Flow Diagram

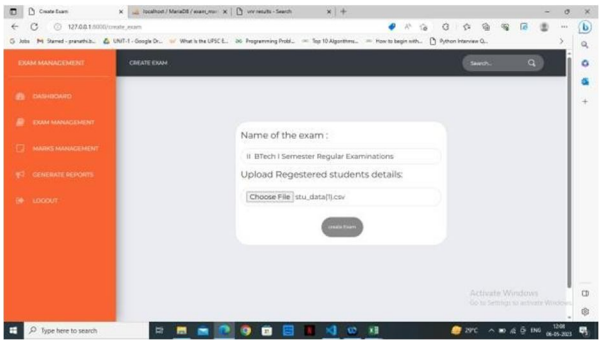


Fig-2: Exam creation Page

VI. CONCLUSIONS AND FUTURE SCOPE

The examination marks management web application is a valuable tool for educational institutions and examination boards as it automates and streamlines the process of managing examination marks data. The project uses OMR and barcode scanning technologies to read and extract data from answer sheets and student records, respectively. The extracted data is then mapped and stored in a structured database accessible through a user-friendly web interface, allowing for easy retrieval and analysis. The project reduces the risk of errors andinconsistencies, improves efficiency, and can be customized tomeet specific institutional needs, making it a comprehensive and efficient solution for managing examination marks data.

A. Future Enhancement

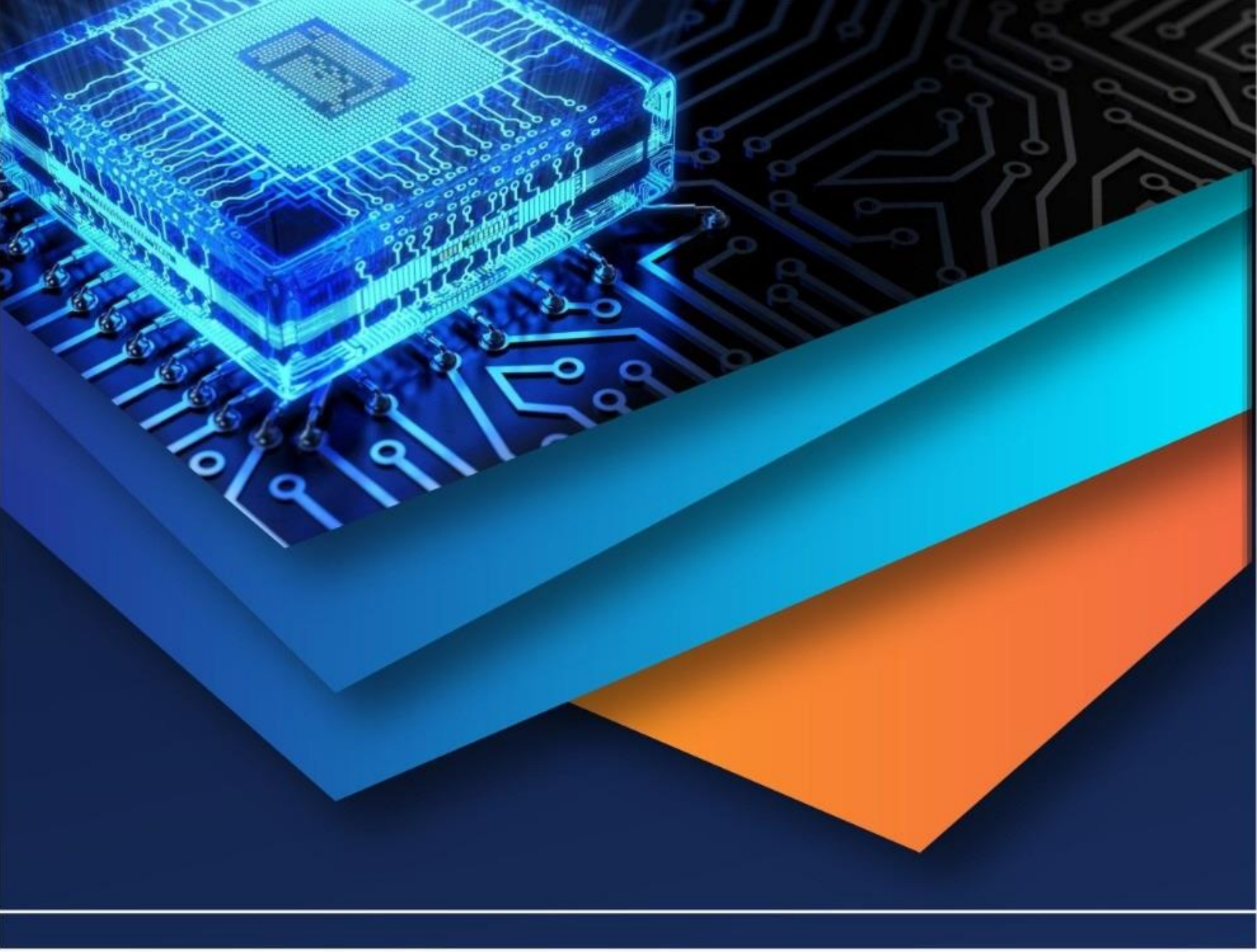
An exam marks management web app can improve the way educational institutions manage student performance data. The future scope includes accepting all answer scripts and control bundles as input, making it accessible from any device, and adding data visualization, predictive analytics, and machine learning features to identify areas for improvement.

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