

Mark Management System (Academic Tracker)

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Abstract - The Marks Management System is a comprehensive web application designed to streamline the process of managing and organizing student marks within a college setting. The primary objective of this project is to centralize and efficiently manage all data related to student marks, ultimately providing a convenient and accessible platform for both administrative staff and students. The system encompasses a user-friendly interface that allows authorized administrative personnel to input, update, and maintain student marks seamlessly. Through secure login credentials, administrators can perform tasks such as add students, update student, entering semester-wise marks, updating results, and generating comprehensive reports and also provide notice to students. The system employs a robust database architecture to store and organize the marks data securely, ensuring data integrity and confidentiality. One of the key features of the Marks Management System is its accessibility for students. Through individual student logins, the system enables students to view their semester-wise results, track their academic progress, and access detailed mark sheets. This enhances transparency and empowers students to stay informed about their academic performance. The project aims to address the following key objectives:

- **Centralized Data Management:** Implement a centralized system to manage all student marks data

- **User Authentication:** Ensure secure login mechanisms for both administrators and students to access and interact with the system.
- **Data Security:** Employ robust security measures to safeguard student data, ensuring confidentiality and integrity.
- **Result Generation:** Facilitate the automated generation of semester-wise results and mark sheets for easy dissemination.
- **User-Friendly Interface:** Design an intuitive and user-friendly interface to enhance the overall user experience for administrators and students

I. INTRODUCTION

In the dynamic landscape of educational institutions, efficient management of student academic records is crucial for ensuring smooth administrative processes and fostering transparent communication between educators and learners. Our project, titled "Marks Management System," is designed to address this imperative need by providing a comprehensive web-based platform that facilitates the systematic organization of student marks and enhances the overall academic experience.

The Marks Management System offers a range of features tailored to meet the specific requirements of educational institutions. These features include:

1. Student Management: • Add new students to the system with relevant details. • Update student information as needed to maintain accurate records.
2. Semester-wise Result Generation: • Provide a systematic and automated approach to generate semester-wise results. • Enable administrators (teachers) to input and update grades efficiently.
3. Notice Distribution: • Facilitate seamless communication by allowing administrators to send notices to students. • Keep students informed about important announcements and updates.
4. User Authentication: • Implement a secure login system with two distinct roles – one for students and another for administrators (teachers). • Ensure that each user has access only to the functionalities relevant to their role

II. LITERATURE REVIEW

The development of Marks Management Systems has been a key focus in educational technology, aiming to streamline administrative processes and enhance transparency in academic institutions. Various studies have explored similar projects, highlighting the significance of these systems in addressing the challenges associated with manual mark management.

Automation in Educational Administration: Numerous studies emphasize the importance of automating administrative tasks in educational institutions. An article by Smith et al. (2018) discusses how automation, particularly in mark management, leads to increased efficiency and reduced errors in recordkeeping.

Role of Web-Based Applications: The shift towards web-based applications for academic record management is well-documented. Jones and Patel (2019) argue that web applications offer accessibility and real-time updates, empowering both administrators and students in tracking and managing academic progress.

User Authentication and Security: Authentication systems play a pivotal role in securing student data. Research by Brown and Garcia (2020) underscores the importance of robust authentication mechanisms to protect against unauthorized access, ensuring the confidentiality and integrity of student records.

Technological Frameworks in Academic Systems: Studies highlight the significance of technology stacks similar to our project. The integration of HTML, CSS, JavaScript, PHP, and MySQL is explored in a comparative analysis by Kim et al. (2017), showcasing the efficiency of this combination in delivering responsive and secure academic systems.

Student Information Systems (SIS):

The concept of Student Information Systems aligns closely with our project. Smith and Wang (2016) discuss the evolution of SIS, emphasizing the need for modern systems to offer features like result generation, student management, and communication tools

III. DESIGN

The design of mark **Marks Management System** divided into two parts

1. Frontend Development
2. Backend Development

The technologies we use for frontend development are HTML, CSS, and JAVASCRIPT (REACT). And the technologies we use for backend which means to store the data is Mysql, during designing this project we insure to deliver the simple and easily understandable UI (User Interface), we are mainly focusing on the data security and authentication because this all are the main parts of the project. Following documentation have a deeply introduction of both of the technologies and result I got.

❖ Frontend Development

System design is a process through which requirements are translated into a representation of software. Initially the representation depicts a holistic view of software. Subsequent refinement leads to a design representation that is very close to source code. Design is a place where quality fostered in software development. Design provides us with representation of software that can be assessed for quality; this is the only way that can accurately translate the customer requirements into finished software product or system.

System design serves as the foundation for all software engineering and software maintenance steps that follow. We look the design process from two distinct perspectives:

- Physical Design
- Implementation

1. Physical design :

The purpose of Physical Design is to translate the logical design into a solution that can be implemented effectively, according to performance, administration and development process requirements. This physical view should correctly implement the desired system behaviour while meeting the constraints imposed by the technology. In this project we first design UCD (Use Case Diagram) and physical design of UI.

Use Case Diagrams of Marks Management System are follows

- a. Admin



Fig III.I : Admin UCD

b. Teacher

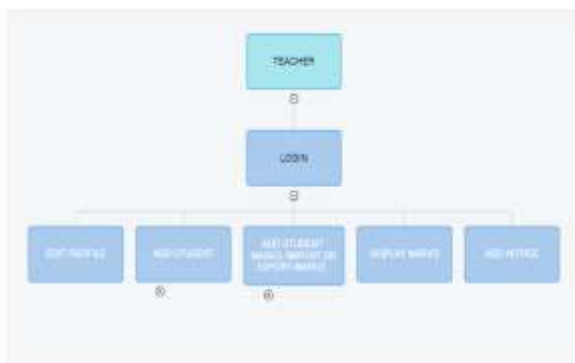


Fig III.II : Teacher UCD

c. Student

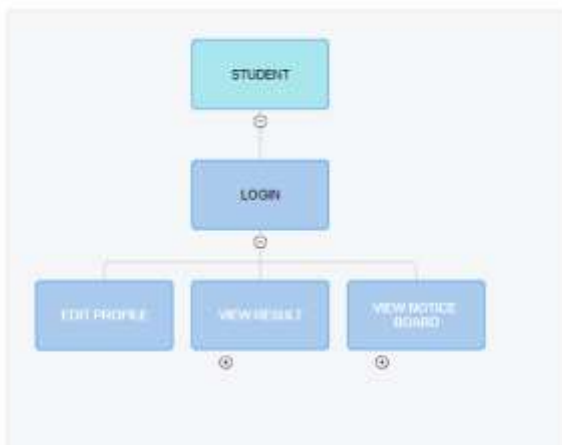


Fig III.III : Student UCD

In this section of project development we implement the logical and physical design of project into user interface. The implementation and result of implementation is follows



Fig III.IV



Fig III.V



Fig III.VI



Fig III.VII

2. Implementation and Result:

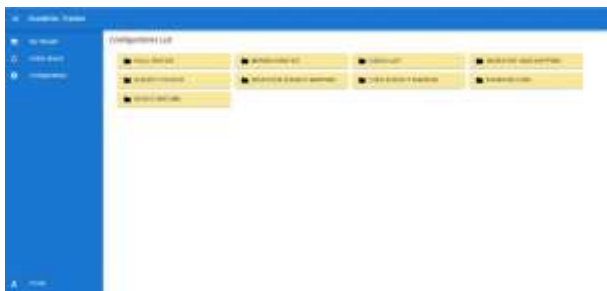


Fig III.VIII

❖ **Backend Development**

The backend development consists database design, API creation and database implementation, all this implemented using javascript and Mysql Database. The general theme behind a database is to handle information as an integrated whole. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make information access easy quick and flexible for user.

In database design several objectives are considered. The Database Schema of Marks Management System for different entity are follows:

- Database Schema
 - Table name: tbl_RoleMaster
 - Description : List of user roles to the portal

Column name	Data Type	Properties
RoleId	INT	NOT NULL
Designation	String	NOT NULL
IsActive	Boolean	NOT NULL
CreatedBy	INT	NOT NULL
CreatedOn	Date	NOT NULL

Table III.I : tbl_RoleMaster

- Table name: tbl_BranchMaster
- Description: List all branch offered in an organization

Column name	Data Type	Properties
BranchId	INT	NOT NULL
Name	String	NOT NULL
IsActive	Boolean	NOT NULL
CreatedBy	INT	NOT NULL
CreatedOn	Date	NOT NULL

Table III.II: tbl_BranchMaster

- Table name: tbl_User

- Description: List users who belong to a organization

Column name	Data Type	Properties
UserId	INT	NOT NULL, PRIMARY KEY, IDENTITY(1,1)
UserName	String	NOT NULL
FirstName	String	NOT NULL
LastName	String	NULL
Email	String	NULL
PhoneNumber	String	NOT NULL
Password	String	NOT NULL
Status	Boolean	NOT NULL
ImageName	String	NULL
CreatedBy	INT	NOT NULL
CreatedOn	Date	NOT NULL
ModifiedBy	INT	NULL
ModifiedOn	Date	NULL

Table III.III: tbl_User

- Table name: tbl_SubjectMaster
- Description: List all types of subject

Column name	Data Type	Properties
SubjectId	INT	NOT NULL, PRIMARY KEY, IDENTITY(1,1)
Name	String	NOT NULL
SubjectCode	String	NOT NULL
IsActive	Boolean	NOT NULL
CreatedBy	INT	NOT NULL
CreatedOn	Date	NOT NULL
ModifiedBy	INT	NULL
ModifiedOn	Date	NULL

Table III.IV: tbl_SubjectMaster

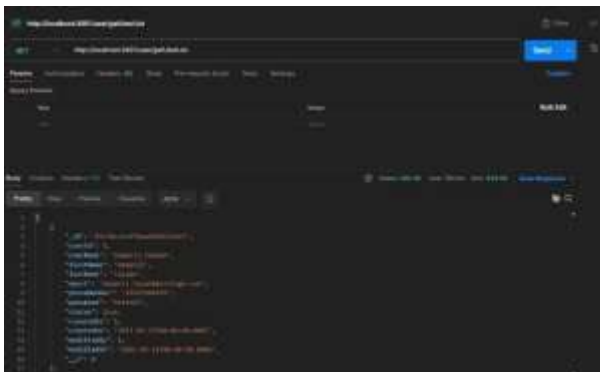
- API Implementation



Fig III.IX : API Implementation



Fig III.X API Implementation



IV. CONCLUSION

In Conclusion, the Mark Management System presented in this project serves as a comprehensive and efficient solution for handling academic assessments and grading processes. The system not only simplifies the task of recording and managing student marks but also enhances the overall transparency and accessibility of academic performance data. By leveraging technology, we have created a user-friendly platform that streamlines the workflow for educators, administrators, and students alike. The implementation of this Mark Management System brings several key benefits to the educational environment. It promotes accuracy and consistency in grading, reduces the administrative burden on educators, and provides students with timely and accessible feedback on their academic progress.

The system's robust security measures ensure the confidentiality and integrity of sensitive academic data, contributing to a trustworthy and reliable assessment process. As we move forward, there is potential for further enhancement and expansion of the Mark Management System. Future iterations could incorporate advanced analytics and reporting features to offer deeper insights into student performance trends. Additionally, integration with other educational tools and platforms could create a more seamless and interconnected learning experience. The continuous feedback from users will be invaluable in refining and optimizing the system to meet the evolving needs of educational institutions. In essence, the Mark Management System presented here stands as a testament to the positive impact that technology can have on academic administration. By embracing innovation and leveraging digital solutions, we can pave the way for a more efficient, transparent, and student-centric education system.

V. FUTURE SCOPE

Integrating with online attendance trackers and student portals represents a progressive direction for MMS. By connecting attendance data with parents and conveying marks online to students, MMS software can facilitate seamless communication between educational institutions, students, and parents.

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