**Student marksheet management**

Submitted in partial fulfillment of the requirements of the

degree.

**BACHELOR OF ENGINEERING IN**

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

BY

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**CERTIFICATE**

This is to certify that the project entitled **“Student marksheet management”** is a bonafide work of the following students, submitted to the University of Mumbai in partial fulfillment of the requirement for the degree of **“Bachelor of Engineering”** in **Artificial Intelligence and Machine Learning.**

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**PROJECT REPORT APPROVAL**

This project report entitled **“Student marksheet management”**by following students is approved for the degree of **Bachelor of Engineering**  in **Artificial Intelligence and Machine Learning.**

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**DECLARATION**

I declare that this written submission represents my ideas in my own words and where others’ ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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**ABSTRACT**

The Student Management System is a comprehensive software solution designed to streamline administrative tasks related to managing student records in educational institutions. Developed using Python with Tkinter for the user interface and SQL for database management, this system offers a user-friendly interface for administrators to efficiently manage student information, academic records, and other relevant data. It includes features such as user authentication with role-based permissions, student profile management for creating, updating, and deleting student profiles, course and class management for organizing academic schedules and assignments, and attendance tracking for monitoring student attendance. Additionally, the system facilitates grading and progress monitoring by allowing teachers to record and manage student grades, generate progress reports, and communicate academic performance to students and parents. Fee management functionality enables administrators to manage student fee payments and financial transactions, while reporting and analytics tools provide insights into student performance, attendance patterns, and administrative activities. The system aims to enhance operational efficiency, improve data accuracy, and promote better communication and collaboration among stakeholders within educational institutions.

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**1.1 INTRODUCTION**

The Marksheet Database Project is a comprehensive system designed to efficiently manage and analyze student academic records. It offers features such as generating reports on student performance, identifying students who have failed in specific subjects, and filtering marks based on different criteria. This project aims to streamline administrative tasks and provide valuable insights into student performance, ultimately enhancing the overall management of academic records in educational institutions.

**1.2 MOTIVATION**

The motivation behind the Marksheet Database Project stems from the need to modernize and streamline the management of student academic records in educational institutions. Traditional methods of record-keeping are often time-consuming and prone to errors, leading to inefficiencies in administrative processes. By developing a comprehensive database system, we aim to:

* Enhance Efficiency
* Improve Data Accuracy
* Provide Insights

**1.3 PROBLEM STATEMENT AND OBJECTIVE**

Problem Statement:

Traditional methods of managing student academic records in educational institutions are often inefficient, error-prone, and time-consuming. Paper-based systems can lead to lost or misplaced records, making it difficult to maintain accurate and up-to-date information. Additionally, manual processes for generating reports and analyzing student performance can be labor-intensive and prone to errors.

Objective:

The objective of the Marksheet Database Project is to develop a comprehensive database system that streamlines the management of student academic records. The system aims to:

Digitize Student Records: The project will digitize student academic records, including marks obtained in different subjects and assessments, to improve data accuracy and accessibility.

Automate Administrative Tasks: The system will automate administrative tasks related to managing student records, such as generating reports on student performance and identifying students who have failed in specific subjects.

Enhance Data Analysis: The project will provide tools for analyzing student performance, including filtering marks based on different criteria (e.g., below 35, above 90) and generating customized reports.

Improve Communication: The system will facilitate communication between educators, students, and parents by providing easy access to academic records and progress reports.

Ensure Data Security: The project will implement measures to ensure the security and confidentiality of student data, with access restricted to authorized personnel only.

Overall, the objective of the Marksheet Database Project is to enhance the efficiency and effectiveness of managing student academic records in educational institutions, ultimately improving the overall learning experience for students.

**1.4 ORGANIZATION OF REPORT**

Literature Review

Review of existing systems for managing student academic records

Discussion of relevant technologies and tools (Python, Tkinter, SQL)

Overview of best practices in database design for educational institutions

Methodology

Description of the development environment (Python, Tkinter, SQL)

Database design (tables, relationships, attributes)

User interface design (screenshots, mockups)

Implementation details (coding approach, algorithms used)

System Features

User can filter different requirement about students

Can get required info of students in just one click of a button

Results

Demonstration of the marksheet database system in action

Screenshots and examples of generated reports

Discussion

Evaluation of the project objectives

Comparison with existing systems and technologies

Challenges faced during development and how they were addressed

Conclusion

Summary of key findings

Impact of the project on educational institutions

Future directions for the project (e.g., enhancements, additional features)

**2.LITERATURE SURVEY**

**2.1 SURVEY OF EXISTING SYSTEM**

Database Management Systems: Many projects utilize relational database management systems (RDBMS) such as MySQL, PostgreSQL, or SQLite to store student data. These systems offer robust features for data storage, retrieval, and management.

Web-Based Interfaces: Several projects provide web-based interfaces for accessing and managing student records. This approach allows for easy access from any device with an internet connection and often includes features for generating reports and analyzing data.

Mobile Applications: Some projects offer mobile applications for accessing student records. These apps typically provide a user-friendly interface for viewing grades, attendance, and other academic information on the go.

Data Analysis and Reporting: Many projects include features for analyzing student performance data and generating reports. This functionality can help educators identify trends, track progress, and make informed decisions to improve student outcomes.

Integration with Other Systems: Some projects integrate with other systems such as learning management systems (LMS) or student information systems (SIS) to streamline data management and improve data accuracy.

**2.2 LIMITATION OF EXISTING SYSTEM**

Scalability: Some systems may struggle to handle large amounts of data or a high number of concurrent users, leading to performance issues or system downtime.

Limited Functionality: Some systems may lack certain features or functionality that are important for managing student records effectively, such as advanced reporting tools or integration with other systems.

User Interface Complexity: The user interface of some systems may be complex or difficult to navigate, leading to usability issues for administrators, teachers, and other users.

Data Security Concerns: Data security is a major concern for marksheet database systems, and some existing systems may not have adequate measures in place to protect student data from unauthorized access or data breaches.

Compatibility Issues: Some systems may have compatibility issues with certain browsers or operating systems, making it difficult for users to access or use the system effectively.

Cost: Some proprietary marksheet database systems can be costly to implement and maintain, especially for smaller educational institutions with limited budgets.

Lack of Customization: Some systems may not offer enough customization options, making it difficult for institutions to tailor the system to their specific needs and requirements.

**2.3 MINI PROJECT CONTIRBUTION**

Scalability: Some systems may struggle to handle large amounts of data or a high number of concurrent users, leading to performance issues or system downtime.

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Cost: Some proprietary marksheet database systems can be costly to implement and maintain, especially for smaller educational institutions with limited budgets.

Lack of Customization: Some systems may not offer enough customization options, making it difficult for institutions to tailor the system to their specific needs and requirements.

**3.PROPOSED SYSTEM**

**User-Friendly Interface**: The system will have a user-friendly interface designed to be intuitive and easy to navigate, ensuring that administrators, teachers, and other users can access and manage student records with ease.

**Advanced Reporting Tools:** The system will offer advanced reporting tools that allow users to generate customized reports on student performance, including identifying students who have failed in specific subjects and filtering marks based on different criteria (e.g., below 35, above 90).

**Data Security**: The system will implement robust security measures to ensure the security and confidentiality of student data, including encryption, access controls, and regular security audits.

**Scalability:** The system will be designed to be scalable, capable of handling large amounts of data and a high number of concurrent users without compromising performance.

**Integration**: The system will be designed to integrate seamlessly with other systems, such as learning management systems (LMS) or student information systems (SIS), to streamline data management and improve data accuracy.

**Customization**: The system will offer a high degree of customization, allowing educational institutions to tailor the system to their specific needs and requirements.

**Cost-Effectiveness:** The system will be designed to be cost-effective, with a focus on minimizing implementation and maintenance costs for educational institutions, especially for smaller institutions with limited budgets.

**ARCHITECTURE / FRAMEWORK**

We have made this project using python postgreSQL and python packages:

Python:

Python is a versatile and easy-to-learn programming language known for its simplicity and readability. It features a clean and concise syntax that makes it a popular choice for beginners and experienced developers alike. Python's extensive standard library provides ready-to-use modules and packages for a wide range of tasks, from web development to scientific computing. It supports multiple programming paradigms, including procedural, object-oriented, and functional programming, giving developers the flexibility to choose the approach that best suits their needs. Python's platform independence and open-source nature make it a powerful tool for building applications that can run on any platform and benefit from a large and active community of developers.

PostgreSQL:

PostgreSQL is a powerful open-source relational database management system known for its reliability, extensibility, and advanced SQL features. With support for custom data types, functions, and extensions, PostgreSQL is highly flexible and can handle complex queries and data structures. Its ACID compliance ensures reliable transaction processing, making it suitable for a wide range of applications from small projects to large-scale enterprise systems.

Python packages :

Python packages are collections of modules that extend the functionality of Python. They are essential for various tasks, from scientific computing to web development and machine learning. NumPy, for example, provides support for large, multi-dimensional arrays and matrices, while Pandas offers data structures like DataFrame for data manipulation. Matplotlib is used for creating visualizations, and Scikit-learn provides tools for machine learning. Django and Flask are popular web frameworks, and TensorFlow is widely used for building and training neural networks. These packages, along with many others, make Python a versatile and powerful language for a wide range of applications.

**DETAILS OF HARDWARE AND SOFTWARE**

Below are the hardware and software requirements for the project:

Windows 10 or latest

Minimum 4GB RAM required

A minimum of 10GB of disk space on hard drive

Excel

Python compiler with some packages

**4.DESIGN AND METHODOLOGY**

**4.1 DESIGN**

**4.2 METHODOLGY**

**4.3 ALGORITHM IMPLEMENTATION**

**5.RESULT AND DISCUSSIONS**

**5.1 IMPLEMENTATION**

**6.conclusion and future scope**

In conclusion, the marksheet database project offers a comprehensive solution for managing student academic records in educational institutions. By digitizing student records and providing advanced reporting tools, the system enhances administrative efficiency and provides valuable insights into student performance. With features such as user authentication, course management, and data analysis, the system aims to streamline administrative tasks and improve the overall learning experience for students. By addressing the limitations of existing systems and leveraging the power of Python, Tkinter, and PostgreSQL, the project demonstrates the potential for modernizing and enhancing the management of student academic records in educational institutions.

**6.2 future scope**

The marksheet database project has several future scope possibilities for further enhancement and development:

Mobile Application: Developing a mobile application that allows students, teachers, and parents to access academic records, receive notifications, and communicate with each other can enhance the project's usability and accessibility.

Data Analytics: Integrating advanced data analytics tools and algorithms can provide deeper insights into student performance trends, helping educators identify areas for improvement and personalize learning experiences.

Machine Learning Integration: Incorporating machine learning models for predictive analysis, such as predicting student grades or identifying at-risk students, can further enhance the system's capabilities.

Cloud Integration: Integrating the system with cloud services like AWS or Google Cloud can improve scalability, reliability, and accessibility, especially for institutions with a large number of students and users.

Enhanced Security Features: Implementing advanced security measures such as encryption, two-factor authentication, and regular security audits can further protect student data and ensure compliance with data protection regulations.

Integration with Learning Management Systems (LMS): Integrating the system with popular LMS platforms can improve interoperability and data sharing between different educational systems.

Feedback and Survey Tools: Adding tools for collecting feedback and conducting surveys among students, teachers, and parents can help institutions gather valuable insights and improve overall satisfaction.

Integration with External APIs: Integrating with external APIs for services like weather forecasts, traffic updates, or news updates can enhance the system's functionality and provide additional value to users.

**Reference**