DEPARTMENT OF INFORMATION TECHNOLOGY

MINOR PROJECT REPORT

B.TECH (5TH SEMESTER)

SUBMITTED TO :

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MARKS MANAGEMENT SYSTEM

Project Report

(Developed Using Java Swing)

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1. Introduction

The **Marks Management System** is a desktop-based application developed using **Java Swing**. The purpose of this project is to simplify and automate the academic management process in an educational institution by providing a structured system for managing students, subjects, marks, attendance, grades, and class reports.

Using Java Swing, we designed a graphical user interface (GUI) that helps administrators and faculty manage academic data efficiently and accurately.
The entire project is divided into multiple modules, each developed by a team member to ensure smooth collaborative development.

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2. Objectives

- To create an easy-to-use Java Swing GUI for handling academic records.
- To automate student record management, marks entry, and grade display.
- To provide quick and accurate result calculations.
- To maintain attendance digitally.
- To offer class performance reports for teachers and administrators.

- To ensure secure access through a login module.

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3. Project Scope

This desktop application is suitable for:

- Schools
- Colleges
- Coaching institutes

The system manages the entire academic workflow:

- Adding students and subjects
- Entering marks
- Viewing and modifying marks
- Generating results and grades
- Maintaining attendance
- Creating class reports

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4. Technology Used

Frontend & Logic

- Java (JDK 8 or later)
- Java Swing for GUI components
- AWT for event handling and basic UI elements

Backend / Database

- MySQL or SQLite (depending on implementation)

Development Tools

- VS Code
- JDBC for database connectivity

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5. Module Description

Below is the module distribution.

Login Page

- Developed using Java Swing JFrame and JTextFields.

- Validates username and password from the database.
- Ensures authorized access to the system.
- Redirects users to the Dashboard upon successful login.

Dashboard Page

- A central home screen for navigation to all modules.
- Developed using JButtons, JPanels, and layout managers.
- Provides quick access to **Student, Subjects, Marks, Attendance, Reports, Grades**.
- Ensures user-friendly and structured navigation.

Student Management Module

- Allows adding, updating, deleting student records.
- Uses JTextField, JTable, and JScrollPane for data entry and display.
- Stores student information in the database.
- Forms the foundation for marks and attendance modules.

Subject Management Module

- Enables adding and updating subjects with subject codes.
- Uses Swing forms for subject creation.
- Ensures accurate mapping of subjects to classes.
- Data stored using JDBC.

Marks Entry Module

- Faculty can enter internal/external/practical marks.
- Uses JTable for fast entry of marks.
- Validates data to prevent impossible values.
- Saves marks automatically to the database through JDBC.

Marks Viewing Module

- Displays marks of all students using JTable.
- Provides filter options such as class, student ID, or subject.
- Useful for verifying entered marks.

- Ensures proper arrangement of marks for further processing.

Result Generation Module

- Calculates total, percentage, and final result using Java logic.
- Applies grading rules (S,A,B,C,D,U,I).
- Generates compact result summary for each student.
- Fully automated—no manual calculations needed.

Class Report Module

- Displays consolidated class performance.
- Shows highest marks, lowest marks, average, topper list, etc.
- Helps teachers analyze student performance.
- Developed using Java Swing tables and charts.

Attendance Management Module

- Allows teachers to mark daily/weekly attendance.

- Calculates attendance percentage.
- Stores attendance records in the database.
- Integrated with student records for seamless workflow.

Display Grade Page

- Shows final grades after results are generated.
- Uses predefined grading logic.
- Provides a clear, formatted output using Swing labels and tables.
- User-friendly screen for final result viewing.

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6. Database Structure

Major Tables

- **students**
- **subjects**
- **marks**

- **users (for login)**

Each table is connected using student ID and subject code as primary references.
JDBC is used for all database operations including insert, update, delete, and select.

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7. Features of the System

Functional Features

- Manage students, subjects, marks.
- Auto result and grade generation
- Interactive and responsive Java Swing GUI

Non-functional Features

- Reliable
- Fast processing
- Easy navigation
- Offline usability
- Extendable and maintainable code

8. Conclusion

The **Marks Management System** successfully fulfills the requirements of an academic management solution.

Using **Java Swing**, the team built an interactive, efficient, and reliable desktop application.

The modular design helped each member contribute independently, ensuring faster and cleaner development.

The application provides essential features such as marks entry, attendance recording, result generation, and class performance analysis, making it a suitable tool for educational institutions.