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Subject	OOP with Java
Marks	10

# Title Page

**Student Grade Management System Documentation**

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## Problem Statement

**Problem Statement 8:** Develop a GUI-Based Student Grade Management System.

**Requirements:**

- Login Page:**  
Create a login interface for students and administrators with role-based access.
  - Grade Entry and Management:**  
Administrators should be able to add, edit, and delete student grades. Each student's grade record should include subject, marks, and grade.
  - Student View:**  
Students can log in to view their grades for each subject, including the overall GPA.
  - Search and Filter:**  
Implement a search feature for administrators to filter students by name, grade, or subject.
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# Methodology

The Student Grade Management System is built using Java Swing for the GUI components and follows an object-oriented programming approach. The system consists of multiple classes, each serving a specific function, from managing user data to handling grades and providing the user interface.

## Class Descriptions

1. **Grade Class**  
Represents a student's grade in a specific subject, containing fields for the subject name, marks obtained, and the corresponding grade.
  2. **GradeManager Class**  
Manages the collection of grades for all students. It allows adding, retrieving, modifying, and deleting grades. It also handles loading and saving grades to a CSV file for persistence.
  3. **User Class**  
Represents a user with fields for username, password, and role (admin or student). This facilitates role-based access control during login.
  4. **LoginPage Class**  
Displays the login interface, where users can enter their credentials. It validates the credentials and redirects users to either the admin or student view.
  5. **AdminView Class**  
Provides the interface for administrators to manage student grades, including adding, modifying, and deleting grades. It also includes filtering capabilities for viewing specific records.
  6. **AddGradeDialog Class**  
A dialog for entering new grades for a selected student. It validates input and updates the grade manager upon submission.
  7. **ModifyGradeDialog Class**  
A dialog that allows administrators to modify existing grades. It pre-fills the dialog fields with the current grade data and updates the manager after changes.
  8. **StudentView Class**  
Allows students to view their grades and GPA after logging in. It displays a table of grades and calculates the GPA based on the grades.
  9. **StudentGradeManagementSystem Class**  
The main entry point of the application. It initializes the grade manager and launches the login page.
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# How to Use the Code

## 1. Compile the Code:

Ensure you have Java Development Kit (JDK) installed. Compile the code files using your IDE or command line.

## 2. Run the Application:

Execute the `StudentGradeManagementSystem` class to start the application.

## 3. Login:

- Use the following credentials for admin access:

Username: `admin`

Password: `adminpass`

- For students, use usernames that exist in the grade manager (e.g., `student1`, `student2`) and password for both the student logins are `studentpass`

## 4. Admin Functions:

- Once logged in as an admin, you can add, modify, or delete grades.
- Use the filter fields to search for specific students or subjects.

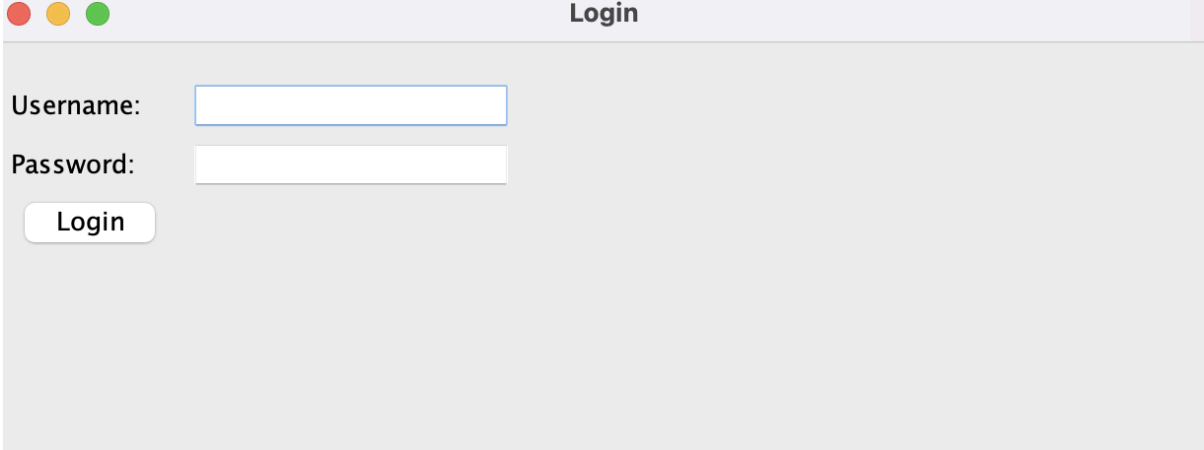
## 5. Student Functions:

- After logging in as a student, view your grades and overall GPA.

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# Results and Screenshots

*Login Window*

A screenshot of a Java Swing window titled "Login". The window has a light gray background and a title bar with three colored buttons (red, yellow, green) on the left. Inside the window, there are two text input fields. The first field is labeled "Username:" and the second is labeled "Password:". Below the password field is a button labeled "Login".

Username:

Password:

Login

Admin Window View

Admin Grade Management

Filter by Student:

Filter by Subject:

Filter by Grade:

All

Filter

Student	Subject	Marks	Grade
student2	Science	85	B
student2	Math	76	C
student1	Math	95	A
student1	Science	89	B
student1	CS	91	A

Add Grade

Modify Grade

Delete Grade

Add Grade Window

Add Grade for student2

Subject:

Marks:

Grade:

A

Add

Cancel

Modify Grade Window

Modify Grade for student2

Subject:

Math

Marks:

76

Grade:

C

Modify

Cancel

Filter window(by student/grade/Subject)

Admin Grade Management

Filter by Student:

Filter by Subject:

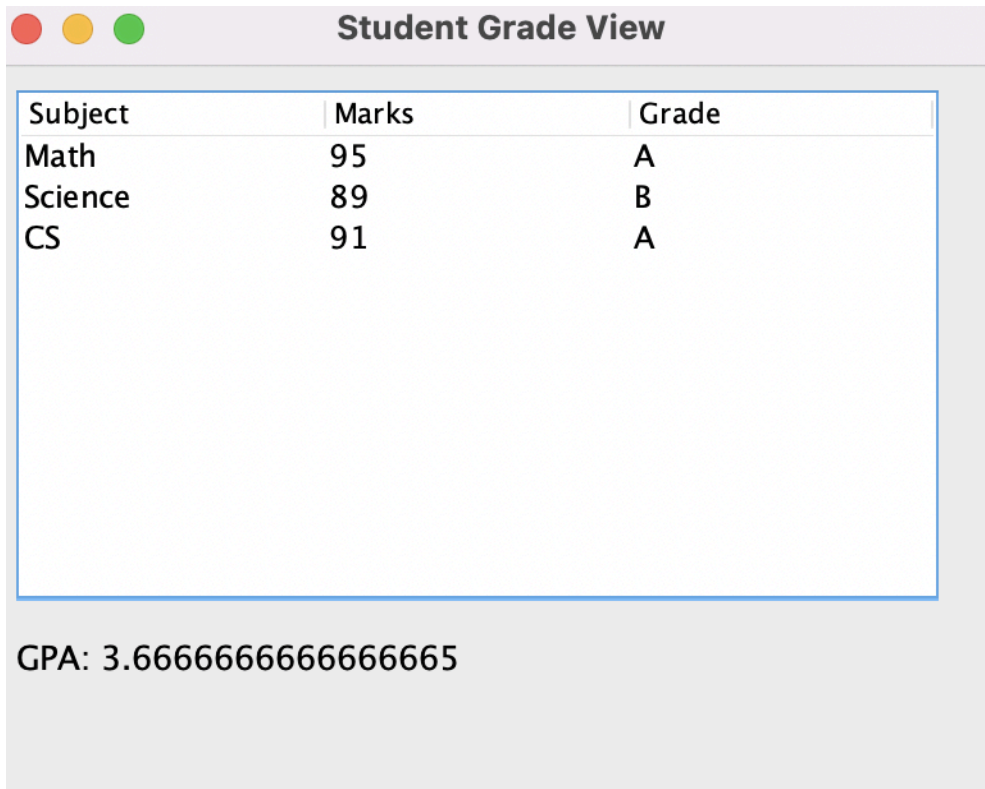
Filter by Grade:

All

Filter

Student	Subject	Marks	Grade
student2	Science	85	B
student2	Math	76	C
student1	Math	95	A

Student view window

A screenshot of a Java Swing window titled "Student Grade View". The window has a standard macOS-style title bar with red, yellow, and green buttons. Inside the window, there is a table with three columns: "Subject", "Marks", and "Grade". The table contains three rows of data: Math (95, A), Science (89, B), and CS (91, A). Below the table, the text "GPA: 3.6666666666666665" is displayed.

Subject	Marks	Grade
Math	95	A
Science	89	B
CS	91	A

GPA: 3.6666666666666665

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## Program Code with Comments

*Code in Zip File.*

1. *AddGradeDialog.java*
  2. *AdminView.java*
  3. *Grade.java*
  4. *GradeManager.java*
  5. *grades.csv*
  6. *LoginPage.java*
  7. *ModifyGradeDialog.java*
  8. *StudentGradeManagementSystem.java*
  9. *StudentView.java*
  10. *User.java*
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## References

- Java Documentation: <https://docs.oracle.com/en/java/javase/>
- Java Swing Tutorial: <https://www.tutorialspoint.com/swing/index.html>

