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SYCS
Java Project

Attendance Management System.

1. Introduction

This document describes a Java Swing application for managing and tracking student attendance in various subjects. It allows users to add students and teachers, mark attendance for specific subjects, and view attendance percentages.

2. Components

2.1 Classes

2.1.1 Student (Class 1)

- **Purpose: Represents a student and their attendance records for different subjects.**
- **Attributes:**
  1. `name` **(String): Student's name.**
  2. `totalClassesBySubject` **(Map<String, Integer>): Tracks the total number of classes for each subject.**
  3. `attendedClassesBySubject` **(Map<String, Integer>): Keeps count of attended classes for each subject.**
- **Methods:**
  1. `Student(String name)`**: Initializes a new student with their name.**

2. `void addAttendance(String subject, boolean attended)`: Updates attendance records for a specific subject.
3. `double getAttendancePercentage(String subject)`: Calculates and returns the attendance percentage for a subject.
4. `String getName()`: Returns the student's name.

2.1.2 Teacher (Class 2)

- **Purpose: Represents a teacher associated with a subject.**
- **Attributes:**
  1. `name` **(String): Teacher's name.**
  2. `subject` **(String): Subject taught by the teacher.**
- **Methods:**
  1. `Teacher(String name, String subject)`: **Initializes a new teacher with their name and subject.**
  2. `String getName()`: **Returns the teacher's name.**
  3. `String getSubject()`: **Returns the subject taught by the teacher.**

2.2. AttendanceManagementSystem (Main Class 3)

- **Purpose: Creates the graphical user interface (GUI) and manages user interactions.**
- **Attributes:**
  1. `students` **(Map<String, Student>): Holds all registered students.**
  2. `teachers` **(Map<String, Teacher>): Holds all registered teachers.**
  3. **Various GUI components like text fields and buttons.**
- **Methods:**
  1. `AttendanceManagementSystem()`: **Sets up the GUI components and organizes the layout for navigation.**

2. `private JPanel createAddStudentPanel()`: **Creates the panel for adding new students. (Method 4)**
3. `private JPanel createAddTeacherPanel()`: **Creates the panel for adding new teachers. (Method 5)**
4. `private JPanel createMarkAttendancePanel()`: **Creates the panel for marking attendance. (Method 6)**
5. `private JPanel createViewPercentagePanel()`: **Creates the panel for viewing attendance percentages. (Method 7)**
6. `public static void main(String[] args)`: **The starting point of the application that launches the GUI. (Method 8)**

3. Functionality

1. **Add Student (Method 4): Users enter a student's name and click "Add Student" to register them.**
2. **Add Teacher (Method 5): After adding a student, users input a teacher's name and subject, then click "Add Teacher" to register the teacher.**
3. **Mark Attendance (Method 6): Users can select a student, specify a subject, and indicate presence/absence using radio buttons. They then click "Mark Attendance" to update records.**
4. **View Attendance Percentage (Method 7): Users can enter a student's name and subject to check attendance percentage. The result displays in a read-only text field.**
5. **Exit (Method 8): The application can be exited using the "Exit" button in the percentage view panel.**

4. Usage Instructions

4.1. Compile the Code

- **Ensure Java Development Kit (JDK) is installed.**

- **Save the provided code in a file named `AttendanceManagementSystem.java`.**

Bash

```
javac AttendanceManagementSystem.java
```

4.2. Run the Application

- **Open a terminal or command prompt.**
- **Navigate to the directory where the file is saved.**
- **Launch the application with:**

Bash

```
java AttendanceManagementSystem
```

4.3. Interacting with the GUI

- **Follow the instructions on each panel to add students, teachers, mark attendance, and view percentages.**

5. Example Scenario

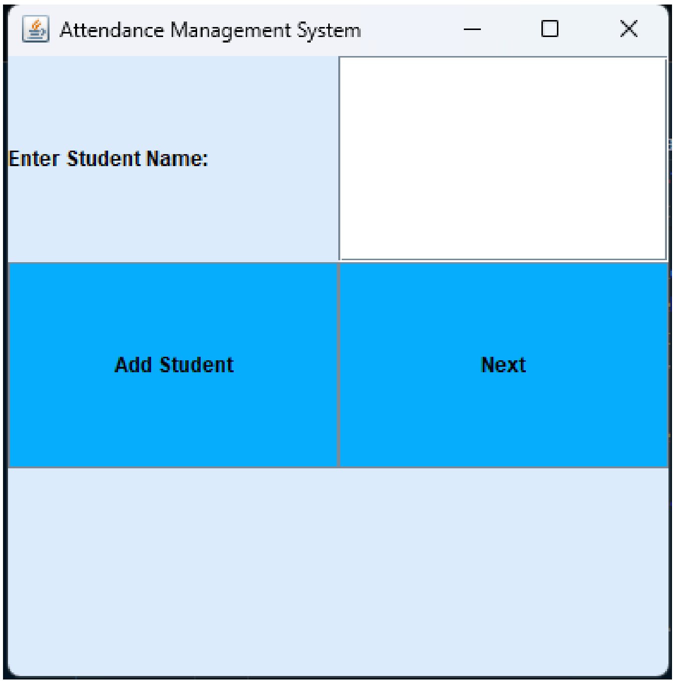
1. **Add a student named "Alice".**
2. **Add a teacher named "Mr. Smith" for the subject "Mathematics".**
3. **Mark attendance for Alice in Mathematics as present.**
4. **Check the attendance percentage for Alice in Mathematics.**

6. Additional Notes

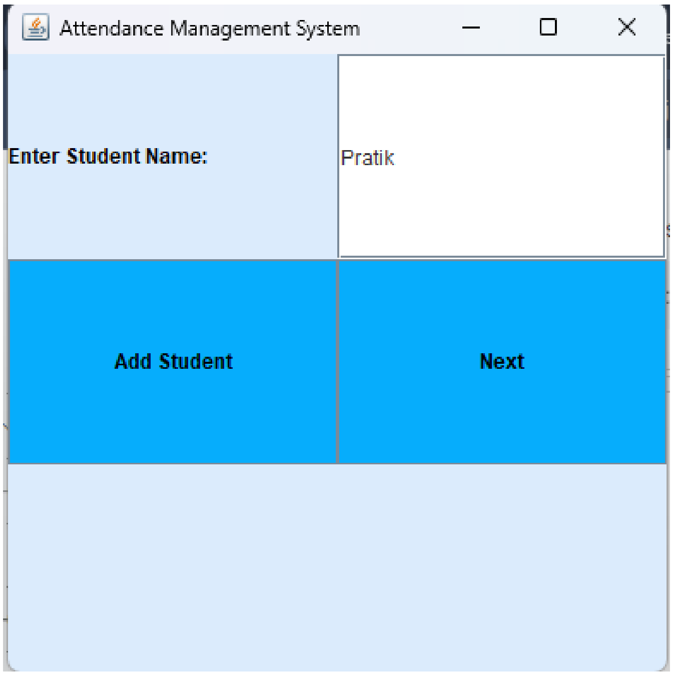
- **The application uses a simple Swing**

Code Execution :

1. The window:

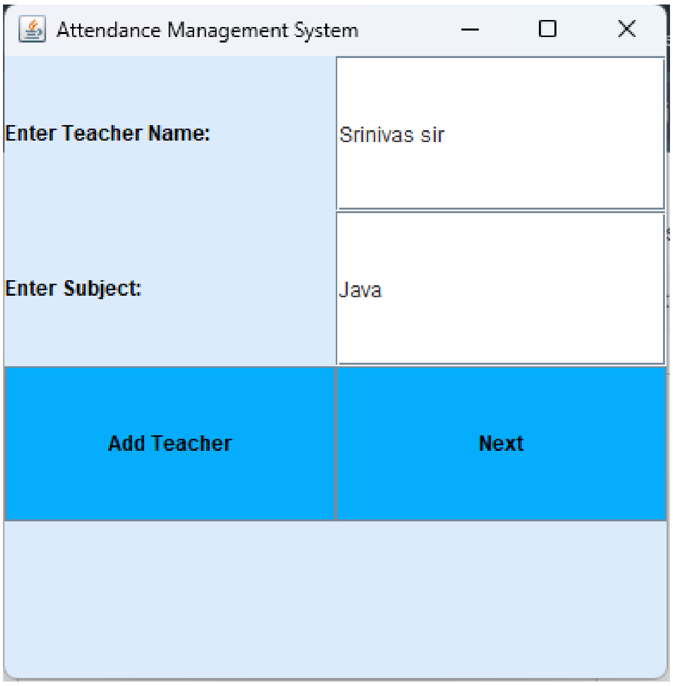


2: Entering student name and Adding(saving) it then Next :



Pratik

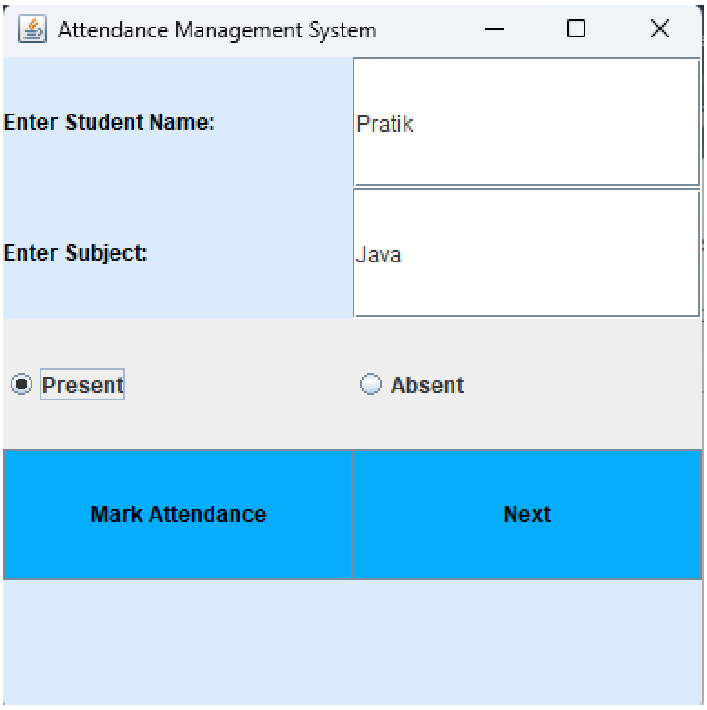
3. Next enter the teacher’s name and subject & Adding (saving) it then Next :



Enter Teacher Name: Srinivas sir

Enter Subject: Java

4. Marking Attendendance and Next :

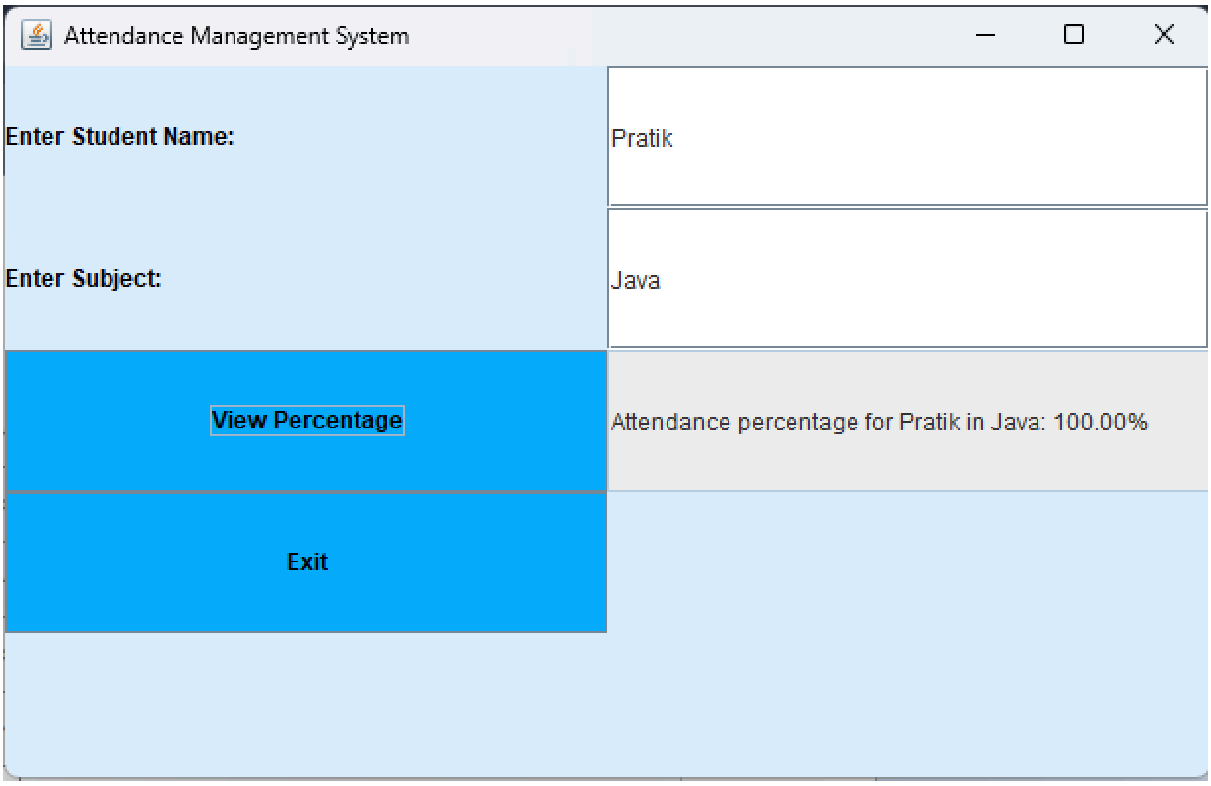


Enter Student Name: Pratik

Enter Subject: Java

● Present ○ Absent

5. Checking attendance in percentage & Exit.



Attendance Management System

Enter Student Name: Pratik

Enter Subject: Java

Attendance percentage for Pratik in Java: 100.00%

Thank You, the execution is ended.