JAVA PROJECT

ATTENDANCE MANAGEMENT SYSTEM

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ATTENDANCE MANAGEMENT SYSTEM

The Attendance System is a software developed for the attendance of the students. It will give the access to the students to view the information about the current attendance of the student, to the teacher to fill up the attendance. The system will also help in evaluating the eligibility of the student to attend the examinations.

The main purpose of this system is to computerize the traditional way of registering attendance and keeping its records. The present system of attendance is tiresome, dull and laborious. This system computerizes everything and will reduce the work of the faculty to maintain the records.

FEATURES:

- Members can log in to the system by providing valid id.
- Students can find the details of their attendance.
- Students can know their eligibility.
- Teachers can fill up the attendance of the students.
- Teachers can give remarks to the particular student.
- Administrator can access the system at any time, provided there are no teachers currently working.
- Administrator can update the attendance details provided by the teachers into the main database.

Overview of Modules:

1. ADMINISTRATOR:

- An administration has complete access over the entire software system.
- They must have valid username and password to log in to the system.
- After providing the valid log in info, the admin can view the list of attendances filled up by teachers.
- The administrator can update the entries into the main database.

2. TEACHER:

- Teachers must have valid user id and password to log in to the system.
- They can view their personal details.
- They can fill up the attendance of the students.
- They can give remarks to the students of the class that he/she takes.

3. STUDENT:

- Student must have a valid id and password to log in to the system.
- They can view their personal details.
- They can view their attendance details for each subject.
- They will be shown their eligibility for giving the exams i.e. whether they have enough attendance to meet the criteria to give the exam.

CONCEPTS OF JAVA:

1) Inheritance:

Inheritance in JAVA is a mechanism in which one object acquires all the properties and behaviours of the parent object.

2) Interfaces:

An interface describes a set of methods that can be called on an object, but does not provide concrete implementations for all the methods. You can declare classes that implement (i.e. provide concrete implementations for the methods of) one or more interfaces. Each interface method must be declared in all the classes that explicitly implement the interface.

3) Packages:

The package is both a naming and a visibility control mechanism. You can define classes inside a package that are not accessible by code outside that package. Classes and packages are both means of encapsulating and containing the name space and scope of variables and methods.

4) Exception Handling:

A java exception is an object that describes an exceptional (error) condition that has occurred in a piece of code. When an exception arises, an object representing that exception is created and thrown in the method that called the error. Exceptions can be generated by java run-time system, or they can be manually generated by your code.

5) Multithreaded Programming:

Java provides built-in support for multithreaded programming which contains two or more parts that can run concurrently.

Threads exist in several states. A thread can be ‘running’. It can be ‘ready’ to run as soon as it gets CPU time. A running thread can be ‘suspended’, which temporarily halts its activities. A suspended thread can be ‘resumed’, allowing it to pick up where it left off. A thread can be ‘blocked’ when waiting for a resource. At any time, a thread can be terminated, which halts its execution immediately. Once terminated, a thread cannot be resumed.

6) Event Handling:

Event Handling is the mechanism that controls the event and decides what should happen if an event occurs. This mechanism have the code which is known as event handler that is executed when an event occurs. Java Uses the Delegation Event Model to handle the events. This model defines the standard mechanism to generate and handle the events.

7) AWT:

The Abstract Window Toolkit (AWT) is Java's original platform- dependent windowing, graphics, and user-interface widget toolkit preceding Swing. The AWT is part of the Java Foundation Classes (JFC) — the standard API for providing a graphical user interface (GUI) for a Java program.

DOCUMENTATON

- The attendance management system is a substitute to the laborious paper work of maintain the attendance entries in registers and then counting them for each student to see if the student has crossed the criteria for giving the exams.
- This system stores the attendances of each student for each of the subjects studied and calculates the eligibility of the student to give the exam. The system is accessed by three types of users: Student, Teacher and Admin.
- When the system is first run, it shows the login page. There are buttons for each type of user which are selected by the user respectively. The user can enter the system only with a valid user id and password.
- Every user is appointed a unique id and password and the proper button should also be selected. The login frame also contains of two buttons: Enter and Exit. At the time of pressing the enter button, the system checks to see if the id and password match, and also the radio button selected. If any these have any problem, then appropriate message is shown.
- The exit button exits the system. Looking at the three different modules in detail.

STUDENT:

- When the valid id and password for a student is entered, the respective student frame opens. This frame contains all the relevant information regarding the particular student.
- There are tabs on the top which has the names of all the subjects studied by the student. The student can click on any one of the tabs and the data regarding that subject is displayed.
- Every tab contains four types of data: (1) Remark: Shows the latest remark given by the respective subject's teacher. (2) Presence Percentage: It displays the current percentage of presence of that student in that particular subject. (3) Eligibility: It displays if the student is eligible to give the exams or not. (4) Attendance History: It shows the history of the student's attendance in that subject.
- In the right hand side of the frame, the personal details of the student is displayed like name, roll no, department, email id, and contact number.
- All of the above data required to be displayed is fetched from the database and by executing respective queries to get the data.
- There are 2 buttons in this frame namely logout and exit. When these buttons are pressed, respective popup dialogue boxes are displayed for the confirmation of the action.
- Logout buttons logs out the student from the system, whereas exit button closes the entire system.

TEACHER:

- When the valid id and password for a teacher is entered, the respective teacher frame opens.
- The main work of the teacher is to fill up the attendance of the students in his/ her subjects. Here we have taken for assumption that each teacher is teaching two classes.
- There are two buttons on the top for the two subjects taught by the teacher. Clicking on any of them would show the students of that subject and entry about their attendance can be filled.
- The teacher fills up the date for which the entry is to be done and then checks the boxes across the student's name to mark the student present. After this the submit button is pressed that will submit this data entry into the database.
- When submit button is pressed, system checks to see the date is selected properly, and then it checks if the entry for the date is already present in the database or not. In any case if there is some problem, then respective dialogue boxes are shown and with the error.
- The teacher is provided with the facility to give remarks to the students studying in his/her class. Here the condition is there, that the remark can be given once the attendance for the student has been made.
- The same things can be done for the other subject taught by the teacher. By pressing the submit button, the data will be sent to the database.
- In the right side of the frame, personal details of the teacher is displayed. These are name, subject 1, subject 2, email id, contact number and date of joining of the teacher.
- All the data that needs to be displayed on the screen is either dynamic or static. Like the buttons submit, update, logout and exit, and the labels that have instructions, are all static. The rest of the data has to be dynamic since it will be different for different teachers.
- All the data that is dynamic is fetched from the database and by executing respective queries to get the data.
- There are 2 more buttons in this frame namely logout and exit. When these buttons are pressed, respective popup dialogue boxes are displayed for the confirmation of the action.
- Logout buttons logs out the teacher from the system, whereas exit button closes the entire system.

ADMINISTRATOR:

- When the valid id and password for a teacher is entered, the respective teacher frame opens. The administrator has the control of the data entries.
- The administrator consists of a list that displays the date and the subject for which the attendance entries has been done.
- The entries made by teachers are not yet permanent and the student frame will not reflect the data updates by the teacher.
- The data becomes permanent only when the administrator updates them. The administrator selects one of the data entry from the list and clicks on the update button. This stores this data into the permanent database.
- The student frames reflect data entries that are updated by the administrator. The right side of the frame consists of some instructions for the admin.
- There are 2 more buttons in this frame namely logout and exit. When these buttons are pressed, respective popup dialogue boxes are displayed for the confirmation of the action.
- Logout buttons logs out the admin from the system, whereas exit button closes the entire system.

MULTITHREADING BETWEEN TEACHERS AND ADMINISTRATOR:

- The teachers and administrator have been developed with multithreading. These two users cannot work together since one (teacher) stores entries into a database table and another (admin) fetches this data from the same table.
- Many teachers can work simultaneously. If one teacher is working, then another teacher can login to the system and do his work.
- But if the Admin is currently working, then the teachers will have to wait until the admin has finished his work and only then can they enter the system.
- The teachers accessing the system after the Admin are put to wait. They are notified by the Admin once he has finished his work.
- If many teachers are still working (say 3) when the admin tries to enter, then the admin is put to wait until these 3 teachers have finished their work. But new teachers will not be allowed to enter once the Admin is waiting. These new teachers will be put to wait.
- Once the 3 old teachers have finished their work, Admin enters and does his work. After this the admin notifies all the teachers that were put on wait.