Data Structure Course project
Project update
Topic:Attendance Management System

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Project Overview

An **Attendance Management System** is a software solution designed to track, manage, and monitor the attendance of students, employees, or participants in various settings, such as schools, workplaces, or events. The primary goal is to streamline the process of recording attendance, ensuring accuracy, and generating useful reports for analysis.

Key Features of The system,

- We will be using linked lists to mark the attendance. Each subject will have one linked list each which will contain three sets of data for each student having name ,roll no and attendance for that subject.
- Enter the student detail:lets you enter the details of students like roll no, Name. This will be later sorted according to the roll number.
- Mark Attendance: Mark students as "Present" or "Absent" for today's date or a specified date.
- View Attendance: View attendance records for a specificstudent. View attendance history for a particular student.
- Edit Attendance: Modify attendance records for a specific student.

Algorithms Used

- Linked List : insertion at the end
- Linear search: to search for students using name or roll number.
- Sorting: sorting the students according to roll number.
- Binary search:to search for students using roll number. easily.

System Design

Menu

It will be the User interface of the system. It will contain all the Options and will use switch cases for handling the Operations. The switch will loop until the program is exited

1)Entering Student details

1) Will ask which subject the student is going to be entered in.
2) Ask for roll no and name.
3) Add the data to the linked list of corresponding subject.
4) Sort the linked list to make it ascending order according to roll number.
5) Exit

2)Mark attendance for one student

1) Ask for which subject the attendance has to be marked .
2) Ask for which student (name or roll number) to be marked as present.
3) Increment the attendance by 1.
4) Exit

3)Mark attendance for a set of students

1) Ask for which subject the attendance has to be marked .
2) Ask for a set of roll numbers that the user wants to increment the attendance for
3) Add the set of roll numbers into a an array and cross-check the roll numbers in the given subject's linked list and array
4) Increment the attendance by 1 for all roll numbers present in both linked list and array.
5) Exit

4) Edit attendance for a student

1) Ask for which subject the attendance has to be .
2) Ask for which student (name or roll number) the users wanted to edit attendance

5)View attendance

1) Ask for the subject user wants to view attendance for.
2) Print the linked list for the required subject in a orderly manner.
3) Exit

Algorithm for linked list insertion(singly):

1.Get new node and enter the data into it
2.Set the `next` pointer of the new node to point to the current head.

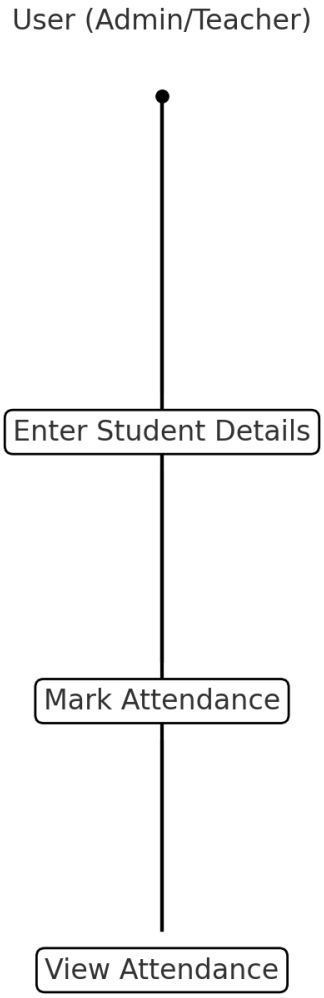
```
newNode = createNode()
newNode.data = newData
newNode.next = head
head = newNode
```

3.Update the head to be the new node.

Algorithm for linear search:

1. Start from the first element of the array.
2. Compare the current element with the target value.
3. If the current element matches the target, return its index.
4. If the current element does not match, move to the next element.
5. Repeat steps until the end of the array is reached.
6. If the target is not found, print not found.

USE CASE DIAGRAM:


User (Admin/Teacher)
Enter Student Details
Mark Attendance
View Attendance