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Project id: 6
Project Title: Repeat task
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Technical components:

Component	Tech stack
Front end	React(html,css,javascript)
Back end	Node.js with Express.js
Database	MongoDB
Api	Openapi

Problem statement:

Title: Efficient Availability Notification System for Scheduling Discipline
Duties and Repeat task that repeats over weeks and months(assigning time
table).

Context:

In our institute, it is the responsibility of the Head of Department (HoD) to allocate discipline duties to faculty members(DC). These duties are essential for maintaining order and discipline within the institution. However, the allocation process can become challenging due to the pre-existing academic schedules of the faculty members.

Problem:

The current manual method of allocating discipline duties does not efficiently account for the pre-defined academic schedules of faculty members. This often results in conflicts where faculty members are assigned discipline duties during their teaching hours or other academic responsibilities. This not only disrupts the faculty's academic schedule but also creates gaps in discipline coverage.

Objective:

To develop an automated system that assists the HoD in allocating discipline duties to faculty members. The system should ensure that no faculty member is assigned a discipline duty during their scheduled academic activities. Additionally, if a conflict arises, the HoD should receive an immediate notification indicating the conflict.

Requirements:

1. Faculty Schedule Management:
    - Maintain a database of faculty schedules, including teaching hours, meetings, and other academic responsibilities.

2. Duty Allocation System:
   - Allow manual overrides and adjustments by the HoD.

3. Conflict Detection and Notification:
   - Check the faculty's availability before finalizing the allocation.

- If a conflict is detected, notify the HoD with details about the conflict, including the faculty member's name and the conflicting schedule.
   - Provide alternative suggestions for available faculty members.

4. User Interface:
   - An intuitive dashboard for the HoD to view faculty schedules, allocate duties, and manage notifications.
   - A calendar view for easier visualization of schedules and duties.

5. Integration and Accessibility:
   - Integrate with existing academic scheduling systems to fetch real-time schedule data.
   - Accessible on multiple devices to allow the HoD to manage duties on the go.

Deliverables:
1. A web-based application for managing discipline duty allocations.
2. A database schema to store faculty schedules and duty assignments.
3. Notification system to alert the HoD of scheduling conflicts and remind the faculty of their duties.
4.User documentation and training materials for the HoD and administrative staff.

Benefits:
- Efficiency: Streamlined process for allocating discipline duties, saving time for the HoD.
- Accuracy: Reduced chances of scheduling conflicts, ensuring that faculty members are not assigned duties during their academic hours.
- Proactivity: Immediate notifications of conflicts allow the HoD to make timely adjustments.
- Transparency: Clear visibility of schedules and duties for all stakeholders.

By implementing this automated system, our institution can ensure a more organized and efficient allocation of discipline duties, ultimately contributing to a smoother academic operation.

Functional Requirements

1. User Authentication: Secure login functionality using institutional credentials for the HoD and faculty members.
   - Role-based access control to ensure appropriate access and permissions for different user roles.

2. Faculty Schedule Management:
   - Allow faculty members to input and apply for update in academic schedules, including teaching hours, office hours, and other commitments.
   - Provide a mechanism for the HoD to review and approve schedule updates submitted by faculty members.

3. Duty Allocation System:
   - Enable the HoD to input discipline duty requirements, including date, time, and specific responsibilities.
   - Automatically suggest faculty members for discipline duties based on their free time slots and pre-defined rules.
   - Allow the HoD to manually adjust duty assignments as needed.

4. Conflict Detection and Notification:
   - Automatically detect scheduling conflicts when assigning duties, checking against the faculty members' existing academic schedules.
   - Immediately notify the HoD of any detected conflicts, providing details such as the faculty member's name, conflicting schedule, and options for resolution.
   - Offer alternative faculty members for duty assignment when a conflict is detected.

5. Dynamic Dashboard: Provide a dynamic, real-time dashboard for the HoD to view faculty schedules, duty allocations, and any notifications. Allow filtering of schedules and duties by date, time, and faculty member for easier management.

6. Notifications and Alerts: Notify faculty members of their assigned discipline duties via email and in-app notifications.
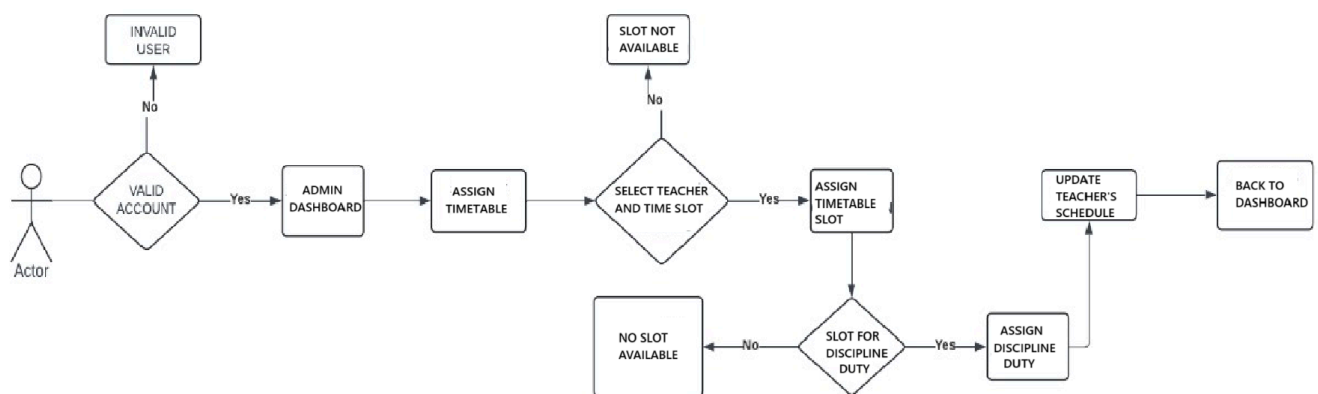
7. Integration and Accessibility: Integrate with existing academic scheduling systems to fetch real-time schedule data and updates.

8. Reporting and Analytics: Generate reports on duty allocation history, including details of assignments, conflicts, and resolutions. Provide analytics on faculty duty load to identify overburdened faculty members and suggest adjustments.

Work flow:

The following chart depicts the admin interface and how the head of the department is able to assign timetable and discipline duty according to the availability of the particular teachers.

Admin interface(HoD of the department):

User interface(faculty of the department):

Invalid account

No

login

yes

Homepage

Schedule with classes

notification

carry out assigned duty

progress marked in the dashboard

Actor

notification

new discipline duty assignment