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Student – Mentor Interaction System

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Abstract:

Mentoring has consistently proven effective in enhancing student academic outcomes and motivation levels.The Electronic Mentoring System can take the place of the conventional approach. It uses a client server architecture to act as a bridge between educators and their students. This technology facilitates the process of students entering their information and mentors accessing it. Its main objective is to help mentors better understand the challenges that their students experience in order to improve student results. This is achieved by incorporating a rating system that allows mentors to promptly evaluate student performance and concentrate on those who require assistance.

Keywords: student, management, career development, education, and mentorship.

I. INTRODUCTION

Mentorship plays a crucial role in both educational advancement and career development, especially in fields that require specialized knowledge and skill sets. A mentor is typically someone with experience and expertise in a given area who is willing to guide others in building similar capabilities. Through support, feedback, and direction, mentors help students unlock their potential and achieve academic and professional goals.However, when a mentor is responsible for guiding many students, it becomes challenging to manage their information, track individual progress, and maintain consistent communication. This is where a Mentor Management System becomes valuable. The Mentor Management System offers a centralized digital platform that helps mentors efficiently handle their assigned students. It simplifies the process of exchanging information between mentors and mentees, making it easier to monitor student growth, provide feedback, and respond to their academic needs. Students can submit their details and updates, which are then displayed on the mentor's dashboard for quick access and review. The overall objective of this system is to enhance the mentorship experience by streamlining interactions, supporting academic tracking, and helping mentors assist students more effectively in reaching their full potential.

II. LITERATURESURVEY

JaveriyaFarheen, from the Department of Information Science and Engineering at Dayananda Sagar College of Engineering, Bangalore, has developed an E-Mentoring system tailored for undergraduate students. This platform is accessible via Android and desktop devices, allowing each mentor (academic staff member) to be connected with a group of 18 to 20 students. The system is designed to establish a meaningful and effective mentor-mentee relationship that supports academic and personal development.[1].

In many schools, e-mentoring is implemented either as a targeted service for selected students or as part of specific academic projects. For instance, high school biology students may receive mentorship from university-level biology students to enhance their practical understanding. Similarly, guidance programs are often made available online for high school juniors and seniors, particularly in preparing for college admissions. These initiatives are typically managed by school staff and teachers, occasionally supported by remote mentoring professionals with relevant expertise.[2].

Cavallaro and Tan emphasize the career-related benefits of mentoring, noting that it significantly contributes to improving knowledge, enhancing future opportunities, and refining professional skills. E-mentoring, in particular, helps expand access to experienced mentors, reduces training costs for organizations, and addresses geographical and scheduling limitations. While the flexibility and reach of digital mentoring are clear advantages, building trust in virtual mentor-mentee relationships remains a challenge. Since digital mentorship is still evolving, there is a growing need for research to understand how trust can be effectively established and maintained in online environments.[3].

III. PROPOSEDWORK

In the proposed work, the Python-based system consists of three user roles: coordinator, mentor, and student. The goal of the system is to facilitate communication between mentors and students so that mentors can efficiently manage data and track progress. The following components make up the system:

1. Student: Integrated forms are used to collect the data. Students can input their personal, academic, and attendance data. These figures are available for mentors and coordinators to review. By looking at statistics, students may improve and follow their processes.
2. Mentor: Mentors are granted access to the student-submitted data. They can create tasks, set deadlines, and track student engagement. Tasks may be assigned according to each student's academic standing and specific needs. The system also features a performance analysis tool to help mentors evaluate individual student growth and participation.
3. Coordinator:Coordinators are provided with full system access, including student and mentor data. They can analyze this information to recognize trends, generate reports, and communicate with users. Coordinators play a supervisory role, using the data to enhance mentoring strategies and improve overall student outcomes.

IV.PROPOSEDMETHODOLOGY

1. Identify the Problem:

The first stage is to determine the current problems and locate the best solution platform. The authors sought to streamline communication between educators and students so that teachers could monitor their development and offer guidance.

2. Data Collection:

The system begins with collecting detailed information about mentors, including their subject expertise and availability. Additionally, through an online registration form, relevant data about students' academic interests and their expectations from a mentor are gathered. This information serves as the foundation for mentor-student mapping.

3. Database Design:

A robust and normalized database schema was created to store and organize all user information. It includes separate tables for mentors, students, mentor-student assignments, and request logs. This design ensures data consistency, minimizes redundancy, and supports secure access control.

4. User Interface Design:

A responsive and user-friendly interface was developed for all users. It includes separate dashboards for students, mentors, and administrators. Students can submit requests and view mentor feedback. Mentors can manage student queries, monitor assigned mentees, and track their progress. The admin panel allows overall supervision of user activity, mentor-student pairings, and approval of requests.

5. Backend Development:

The backend logic was implemented using programming frameworks that support secure and efficient operations. Features include data processing, form handling, user authentication, and dynamic content management. An intelligent matching system was also built to pair mentors and mentees based on shared interests and academic focus.

6. Frontend Development:

The frontend interface was designed using HTML, CSS, and JavaScript to ensure compatibility across devices. Core features include registration, login, dashboard navigation, and user notifications. Both students and mentors are provided tailored interfaces to manage their respective roles effectively.

7. Testing and Deployment:

Before deployment, the entire system underwent comprehensive testing. This included functional testing to verify system logic, usability testing to ensure user-friendliness, and performance testing under various loads. Upon successful testing, the system was hosted on a web server for institutional access, providing a reliable and interactive mentoring platform.

V. SYSTEM ARCHITECTURE

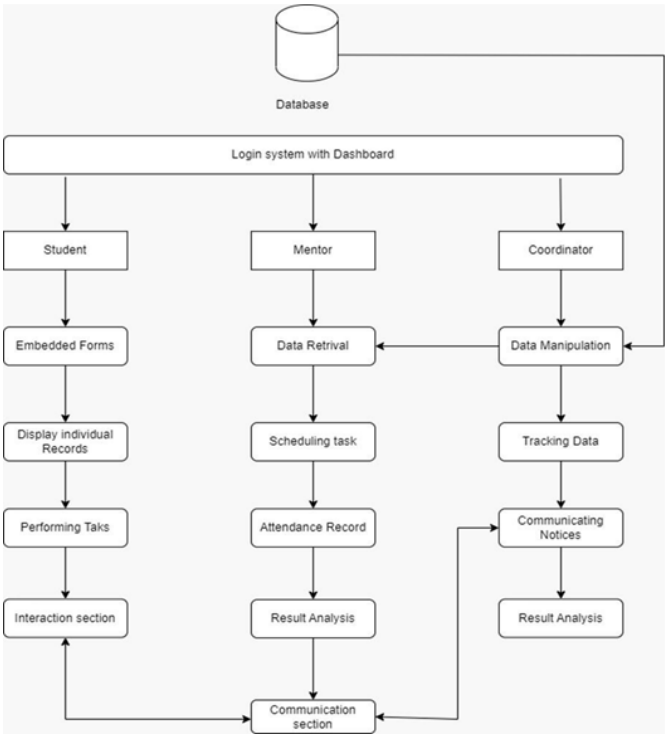

Figure 1. System Architecture

VI. EXPERIMENTAL RESULTS AND OBSERVATIONS

To evaluate the efficiency of the proposed platform in simplifying the processes of data collection, tracking, and interaction among students, mentors, and coordinators, the system was implemented and tested in a controlled environment. The following key outcomes were observed:

1. Login and registration for users:

The platform successfully restricts access to authorized users through a secure login and registration system. Each user is validated before being granted access, ensuring that only approved individuals can view or modify sensitive information. This feature has effectively prevented unauthorized access, enhancing data privacy and system reliability.

2. Mentors can respond to student's queries by:

Mentors are able to view and respond to queries raised by students directly from their dashboard. This functionality has significantly improved communication efficiency, ensuring that student concerns are addressed quickly. It also fosters stronger academic engagement between mentors and students.

3. Mentor can manage the students from their dashboard:

The mentor dashboard offers a centralized interface to monitor various aspects of student performance, including academic records, task assignments, and attendance. This has streamlined mentor responsibilities by reducing administrative overhead and making student management more accessible and organized.

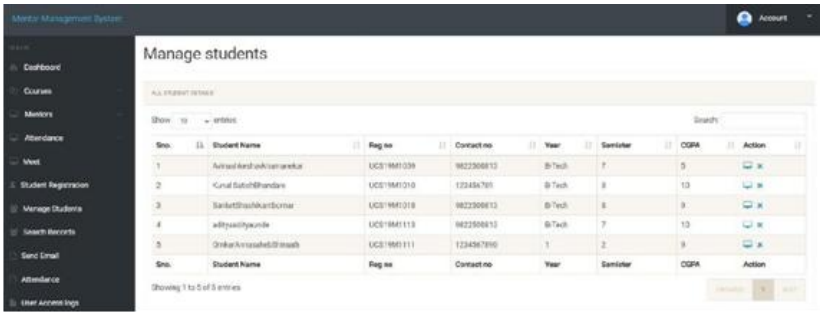

Figure 2:Student Management

4. Mentor can send an email to students:

The system includes an email integration feature that allows mentors to communicate with students directly from their dashboard. This has enhanced the responsiveness of the mentorship process and improved the overall student experience by enabling timely updates and personalized interaction.

5. Students can upload their achievements:

Students have the ability to upload certificates and records of academic or extracurricular accomplishments. This functionality provides mentors with a more complete understanding of each student's progress and growth, helping them deliver more informed feedback and support.

6. Assignment of mentors:

The system enables coordinators or administrators to assign specific students to mentors based on their academic needs. This ensures that each student is paired with an appropriate mentor for personalized guidance. The system also supports generating reports, allowing mentors to view and print the list of students assigned to them for streamlined tracking and recordkeeping.

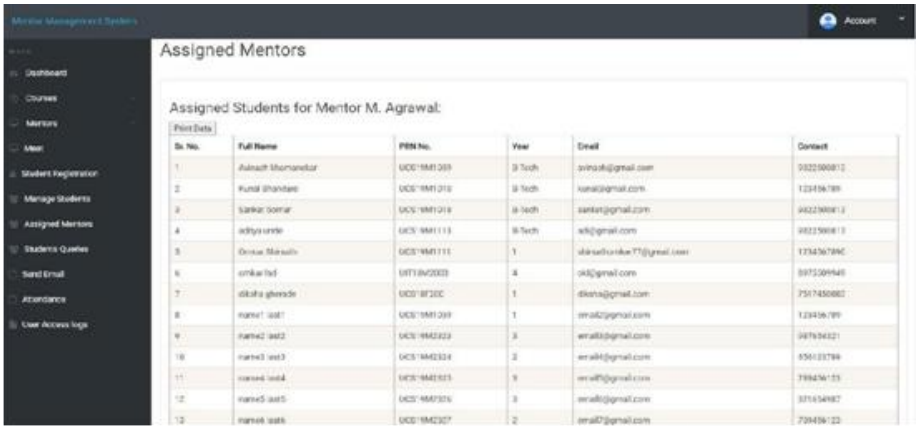

Figure 3. Mentor Assignment

7. Attendance Tracking of Students:

The system offers an attendance monitoring feature that enables mentors to track student participation, providing valuable insights into their engagement and progress. This functionality helps in identifying potential issues early, allowing mentors to take timely, supportive actions. For storing and managing large volumes of data, the platform utilizes MySQL, a widely-used open-source database system known for its strong security measures, including encryption, password protection, and access control. MySQL also supports efficient data handling through indexing, relational structures, and stable data management, which simplifies searching and maintaining records. Moreover, authorized users can securely access the database remotely, ensuring smooth coordination and communication between mentors, coordinators, and students, regardless of their physical location.

VII. CONCLUSION

This study presented the design and implementation of an electronic mentoring system aimed at improving the student-mentor interaction process. The web-based platform includes a user-friendly administrative interface that simplifies mentor responsibilities for their assigned students. Through a centralized dashboard, mentors can view student records, communicate via email, and provide timely support. The system was successfully developed and deployed, and initial user responses have been positive, highlighting its usefulness in enhancing mentorship efficiency and engagement.

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