A

Mini Project Report

on

Help Nest : A counselling system

Submitted in partial fulfilment of the requirements for the degree

Second Year Engineering – Computer Science Engineering (Data Science)

by

Aditya Kate 23107126

Tanmay Harmalkar 23107099

Roshan Ahire 23107094

Abdullah Khan 23107119

Under The Guidance Of

Ms. Richa Singh



DEPARTMENT OF CSE (DATA SCIENCE)

A.P.SHAH INSTITUTE OF TECHNOLOGY
G.B. Road, Kasarvadavali, Thane (W), Mumbai-400615
UNIVERSITY OF MUMBAI

Academic Year: 2024-25

CERTIFICATE

This is to certify that the Mini Project report on **HelpNest**: A counselling system has submitted by <u>Aditya Kate (23107126)</u>, <u>Tanmay Harmalkar (23107099)</u>, <u>Roshan Ahire (23107094)</u> and <u>Abdullah Khan (23107119)</u> who are a Bonafede students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in <u>CSE (DATA SCIENCE)</u>, during the academic year <u>2024-2025</u> in the satisfactory manner as per the curriculum laid down by University of Mumbai.

Ms. Richa Singh

Guide

Ms. Anagha Aher

HOD, CSE (Data Science)

Dr. Uttam D. Kolekar

Principal

External Examiner(s)

1.

2.

Place: A. P. Shah Institute of Technology, Thane

Date:

ACKNOWLEDGEMENT

This project would not have come to fruition without the invaluable help of our guide Ms. Richa Singh Expressing gratitude towards our HoD, Ms. Anagha Aher, and the Department of Computer Science Engineering (Data Science) for providing us with the opportunity as well as the support required to pursue this project. We would also like to thank our Project coordinator Ms. Richa Singh for their valuable suggestions and ideas when we needed them. Additionally, we extend our thanks to our peers for their helpful suggestions.

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Introduction

Help Nest is a student counselling system designed to connect juniors(students) with mentors for career guidance, internship advice, and personal development support. It provides a structured platform where juniors can seek mentorship, ask career-related questions (anonymously or named), and book one-on-one sessions with experienced seniors. Seniors can share resources, answer questions, and provide insights based on their expertise. With an intuitive interface built using Python (Tkinter) and MySQL for data management, Help Nest fosters an interactive and supportive learning environment, ensuring students receive the guidance they need to make informed career decisions.

1.1. Purpose:

The Purpose of Help Nest is to provide a structured and interactive mentorship platform where juniors (students) can connect with seniors (mentors) for career guidance, internship advice, and personal development. The System aims to bridge the knowledge gap by enabling juniors to seek advice, ask questions anonymously, and receive mentorship in a safe and supportive environment. It ensures easy access to career-related discussions, resource sharing, and one-on-one counselling sessions while maintaining engagement through feedback ratings, and community-driven interactions. By fostering mentorship, Help Nest helps students make well-informed career decisions.

1.2. Problem Statement:

Students often face confusion regarding career choices, internships, and academic development, but lack a structured way to connect with experienced seniors who can guide them. Many juniors hesitate to ask questions openly due to fear of judgment or lack of anonymity. There is a need for a secure, user-friendly, and well-moderated platform that enables guided mentorship. The system should allow juniors to ask questions (anonymously or with identity), book one-on-one sessions, and access educational resources. Seniors should be able to answer questions, share insights, and upload study materials. Admins must have complete control to moderate content, approve questions, and manage users. This approach ensures safe, personalized and effective mentoring. Ultimately, such a platform would bridge the gap between the gap between juniors and seniors while promoting personal growth.

By streamlining communication and fostering trusted guidance, the platform would create a supportive academic environment. This ensures that valuable knowledge and experience are passed down effectively across batches.

1.3. Objectives:

The primary objective of Help Nest is to establish a structured mentorship system that connects juniors (students) with seniors (mentors) for career guidance, internship advice, and personal development. The platform aims to foster knowledge sharing by allowing juniors to ask career-related questions, either anonymously or with their identity, ensuring a comfortable and open discussion environment. To enhance accessibility, questions are categorized based on topics such as careers, internships, and skill development, making it easier for juniors to find relevant information. Additionally, a structured Q&A system enables seniors to respond to queries while juniors can provide ratings to ensure the quality of answers.

Beyond Q&A interactions, Help Nest facilitates personalized guidance by allowing juniors to book one-on-one mentorship sessions with available seniors. It also encourages resource sharing, enabling seniors to upload and distribute useful materials like PDFs, notes, and guides. To maintain engagement and motivation, the system includes a mentor rating feature and a leaderboard that recognizes top-performing mentors based on their contributions.

Content moderation plays a crucial role in maintaining a respectful and productive discussion space, with admins responsible for approving questions before they are publicly visible. Furthermore, allowing users to share their opinions and contribute to platform improvements. By achieving these objectives, Help Nest creates an interactive and supportive environment where students receive valuable career insights while mentors gain recognition for their guidance and expertise through our platform.

1.4. Scope:

Help Nest is designed to serve as a structured and interactive mentorship platform for students seeking career guidance. It supports three primary user roles: Juniors (students), Seniors (mentors), and Admins, each with distinct functionalities. Juniors can ask career-related questions anonymously or with their identity, browse categorized discussions, book one-on-one sessions with available mentors, rate responses, and access shared resources. Seniors, on the other hand, can answer questions, provide career advice, accept or decline mentorship session requests, share educational materials, and track their ratings. Admins oversee the platform, ensuring content quality through question moderation, user management to enhance community engagement.

To ensure a safe and respectful discussion space, all questions submitted by juniors will require admin approval before being visible to seniors. Admins also have the authority to remove inappropriate content and manage user access. The platform further promotes community involvement through gathering insight for continuous improvements.

Proposed System

The figure 2.1. represents the proposed system of a student mentoring system, beginning with the login page that routes users based on their roles: junior, senior, or admin. Juniors access their dashboard, where they can participate in a Q&A system, book sessions with seniors, and view resources and leaderboards. Seniors, through their dashboard, can answer questions, manage their session availability, and engage in the Q&A system. Admins have access to an admin dashboard where they can moderate content and manage users. The Q&A system facilitates interaction between juniors and seniors, while the session booking feature relies on the availability set by seniors. All of these components work together to support structured mentorship and academic guidance, ensuring juniors receive timely help, resources, and personalized sessions, while seniors contribute through guidance.

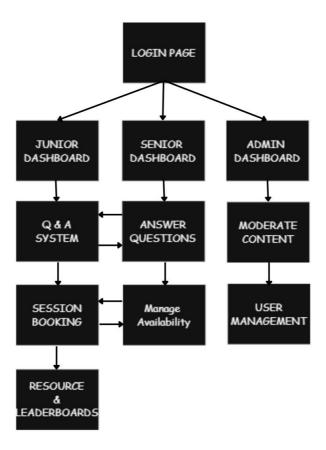


Figure 2.1. Block Diagram

2.1. Features and Functionality:

Help Nest aims to provide a structured, interactive, and engaging mentorship platform that bridges the gap between juniors (students) and seniors (mentors). By implementing the proposed system following are the outcomes expected from Help Nest counselling System:

1. Enhanced Career Guidance

Juniors will gain direct access to experienced mentors for career advice, internships, and skill development. The structured Q&A system will allow students to get answers to specific career-related doubts. One-on-one mentorship sessions will offer personalized career counselling and support.

2. Efficient mentorship Process

Seniors will have a dedicated platform to mentor students and share career insights. The ability to set availability status will ensure efficient session management. Ratings feedback will help seniors improve their mentoring skills and gain recognition.

3. Organized Knowledge-Sharing Platform

A well-categorized Q&A system will make it easy for juniors to find relevant answers. Resource-sharing will enable seniors to provide valuable educational materials, reducing repetitive queries. The platform will act as a knowledge hub, helping students make informed career decisions.

4. Improved Decision-Making for Students

Students will have access to diverse perspectives from multiple mentors, helping them make well-informed career choices. The ability to save questions and answers ensures long-term reference for future guidance. Regular mentor feedback will improve the quality of responses, making career advice, etc.

5. Streamlined Administration & Content Moderation

Admins will have complete control over the platform, ensuring a safe and professional environment. Approval-based moderation will filter inappropriate or irrelevant questions before they reach mentors. The ability to deactivate or manage users will help maintain system integrity.

6. Recognition and Motivation for Mentors

The leaderboard system will acknowledge top contributors, encouraging mentors to remain active. Ratings from juniors will allow seniors to build credibility as career advisors. The platform can serve as a valuable experience for mentors, strengthening their mentoring and leadership.

Project Outcomes

The implementation of HelpNest is expected to bring significant improvements in career guidance and student mentorship by establishing a well-structured platform that facilitates seamless interaction between juniors and seniors.

One of the primary outcomes of HelpNest is an organized and efficient Q&A system, allowing juniors to post their career-related doubts and receive responses from seniors. The platform supports category-based filtering, ensuring that users can easily navigate through different types of queries, such as internships, placements, higher studies, and skill development. Additionally, the anonymous questioning feature provides a safe space for students who might hesitate to ask publicly, encouraging more participation.

The one-on-one session booking system allows juniors to schedule direct interactions with seniors, enabling personalized mentorship. This feature ensures that juniors can receive tailored advice and career counselling, making the guidance process more impactful. The inclusion of session history tracking enables users to revisit past interactions for reference.

Another key outcome is the structured and role-based user experience. The platform provides different dashboards for juniors, seniors, and administrators, ensuring that each user group has access to relevant functionalities. Juniors can post queries, book mentorship sessions, and view responses, while seniors can answer questions, manage their schedules, and track their mentoring activity. Administrators have a dedicated dashboard for user management, content moderation, and monitoring system performance.

HelpNest also enhances content accessibility by allowing seniors to upload and share important resources related to career growth, interview preparation, and technical skills. This feature promotes collaborative learning by making valuable study materials and guides available to all users.

To encourage participation and recognize contributions, the platform includes a leaderboard system that highlights active and high-quality contributors. This feature motivates seniors to engage more actively and ensures that juniors receive guidance from the most credible mentors. Additionally, the feedback and rating system allows juniors to evaluate the usefulness of responses, promoting quality control in the mentorship process.

For administrators, the system provides user activity tracking and performance analytics, enabling better management of the platform. Admins can monitor active discussions, filter inappropriate content, and manage reported queries, ensuring a safe and constructive environment for users.

Furthermore, HelpNest ensures scalability and security by implementing proper authentication mechanisms, protecting user data, and maintaining structured content moderation policies. This makes the platform a reliable and sustainable solution for mentorship and career guidance in educational institutions.

In summary, HelpNest transforms the traditional mentorship approach into a digital, structured, and interactive platform, making career guidance more accessible, efficient, and engaging for students.

Software Requirements

The Help Nest project relies on a specific set of software tools and libraries for both development and deployment, ensuring a smooth, functional, and user-friendly application. These components work in harmony to deliver a robust mentorship platform. The following are the essential software requirements:

- Python 3.8 or Higher: Python serves as the core programming language for the project. Its simplicity, readability, and vast ecosystem of libraries make it ideal for building scalable applications.
- **Tkinter** (**Standard Python Library**): Tkinter is Python's standard GUI package and is used to create the application's graphical interface. It allows developers to design windows, buttons, forms, labels, and other interactive components with ease.
- MySQL Database Server: This is the backend database system that stores all the
 application's critical data such as user credentials, session bookings, Q&A posts,
 mentor availability, feedback, etc. MySQL provides high performance, scalability,
 and data integrity. It supports structured queries, enabling developers to perform
 CRUD (Create, Read, Update, Delete) operations efficiently.
- MySQL Connector for Python: This library acts as a bridge between Python code and the MySQL database. It allows Python scripts to execute SQL queries directly from the application, enabling real-time data manipulation and retrieval. This connector is vital for handling login authentication, data storage, dashboard updates, and other backend tasks.
- PIL (Python Image Library) / Pillow: (or its actively maintained fork, Pillow) is used for image handling within the app. For instance, it can be used to display user profile pictures, resource thumbnails, or icons in the GUI. It supports opening, manipulating, and saving images in various formats, enhancing the visual appeal and usability of the app.
- **Matplotlib**: Matplotlib is a powerful plotting library used to create static, animated, and interactive visualizations. In Help Nest, it can be used to visualize analytics on the admin dashboard—such as mentor ratings, session statistics, user engagement trends.

Project design

This chapter focuses on the architectural and design decisions that shape the system's development, covering both the architecture and the system components.

User Interface Design

The user interface (UI) is designed for simplicity and ease of use, ensuring an interactive and user-friendly experience. Key sections include:

- Login & Registration Page: Allows users to sign in or register based on their role (Junior/Senior/Admin). The registration process includes role selection, and upon successful login, users are redirected to their respective dashboards.
- Junior Dashboard: Provides quick access to essential features such as:
 - Asking questions (anonymous or named)
 - Viewing questions and answers
 - o Searching and filtering questions by category or keyword
 - o Rating on mentor responses
 - o Booking one-on-one sessions with available mentors
 - Viewing and downloading educational resources shared by seniors
- Senior Dashboard: Enables mentors to:
 - Answer career-related questions
 - View and manage their responses
 - Set availability status (Available/Busy)
 - Accept or decline one-on-one session requests
 - Upload and share educational resources (PDFs, notes, etc.)
 - Check ratings on their responses.
- Admin Dashboard: Provides system management functionalities such as:
 - Approving or rejecting questions before they are posted.
 - Moderating and removing inappropriate content.
 - o Managing users (activating/deactivating accounts).
 - o Monitoring mentor performance and leaderboard rankings given by juniors.

- Q&A Page: Displays career-related questions and answers, allowing juniors to post queries and seniors to respond. Juniors can also rate mentor responses for quality improvement.
- One-on-One Session Booking Page: Allows juniors to view available mentors, send session requests, and receive confirmation upon acceptance.
- **Resources Page:** Seniors can upload PDFs, notes, and study materials, while juniors can view and download them.
- Leaderboard Page: Highlights the top mentors based on contributions and ratings.
- Admin Moderation Page: Ensures content approval and quality control, filtering inappropriate or unverified questions and answers.

Database Design

The database is designed to store user information, questions, answers, session bookings, feedback, and resources. The system uses MySQL as the database backend. The database consists of the following tables:

- Users: Stores login details, roles (Junior/Senior/Admin), and profile information.
- Questions: Stores user-submitted questions with category tags and timestamps.
- **Answers**: Stores mentor responses linked to specific questions.
- **Sessions:** Records one-on-one session bookings between juniors and seniors, including status (Pending/Accepted/Rejected).
- Feedback: Stores ratings feedback given by juniors for mentor responses.
- **Resources:** Stores details of uploaded educational materials, including file names and descriptions.
- **Leaderboard:** Tracks mentor contributions, including the number of answers given and ratings received.
- Admin Moderation: Stores pending and approved questions, ensuring content control.

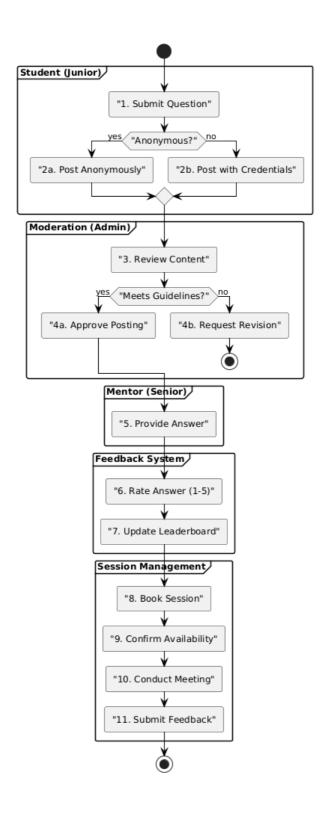


Figure 5.1. Workflow of Help Nest a counselling system

Workflow of Help Nest

This figure 5.1. represents the flow of a Help Nest. Here's an explanation of the different components and their relationships:

1. Start

The Help Nest process begins when a user accesses the platform. Based on their login credentials, they are directed to one of three role-specific dashboards: Junior (Student), Senior (Mentor), or Admin.

2. Junior Workflow

- Ask Questions: Juniors submit questions through a form, choosing between anonymous or named posting, and selecting relevant categories like Career Advice or Internship Help.
- Session Management: Juniors view mentor availability calendars, send session requests, and receive confirmation notifications.
- Provide Feedback: After receiving answers or completing sessions, they rate mentors (1-5 stars).

3. Senior Workflow

- Answer Questions: Mentors receive notifications about new questions in their expertise areas and submit detailed responses.
- Session Coordination: They review incoming session requests, accept/decline based on availability, and confirm meeting details.
- Resource Sharing: Mentors upload educational materials (PDFs, links) tagged by topic for junior access.

4. Admin Workflow

- Content Moderation: Admins review newly submitted questions/answers, approving appropriate content or flagging violations.
- User Management: They handle account suspensions, verify senior credentials, and resolve reported issues.
- System Oversight: Automated reports track engagement metrics, mentor performance, and platform growth trends and user analytics with a pie chart.

Project Scheduling

Gantt Chart: A Gantt chart is a visual project management tool that displays a timeline of a project. It consists of horizontal bars representing tasks or activities, with the length of each bar corresponding to the duration of the task.

In the first week of January, Aditya Kate, Tanmay Harmalkar, Roshan Ahire and Abdullah Khan formed a group for our mini project. We have discussed and finalized the project's topic, scope, and objectives during this meeting. In the following weeks, Aditya Kate, Tanmay Harmalkar, Roshan Ahire, Abdullah Khan used a paper prototype to explore and refine project ideas, completing this phase by the 2nd week of January.

In late August, Roshan Ahire, Abdullah Khan executed the design and integration of the graphical user interface (GUI). Afterward, on 11th of February, the first project review took place, and the faculty suggested some changes to the GUI, which were subsequently approved. Following this, Aditya Kate, Tanmay Harmalkar, Abdullah Khan collaborated to create a structured database system, facilitating the systematic storage of information.

This, in turn, made it easier for Aditya Kate and Tanmay Harmalkar to connect the database to the project. This database work was completed by end of March. Finally, the team integrated all modules and completed the report writing, resulting in our final presentation on 02th April, which was approved by the guide.

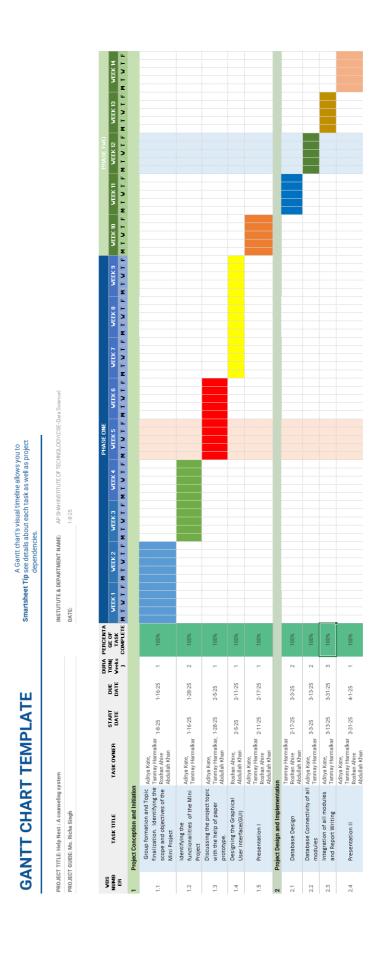


Figure 6.1. Gantt Chart

Results

The Help Nest offers several key features to enhance user experience. Users can easily register and log in, with clear messages confirming their success or informing them of errors. The Help Nest platform connects students (Juniors) with experienced mentors (Seniors) for career guidance. Students begin by submitting questions on topics like internships, resume building, or job interviews, with the option to post anonymously. These questions are first reviewed by Admins to ensure quality and appropriateness before being published. Once approved, mentors specializing in the relevant field can respond with detailed answers. Students then rate these answers on a 1-5 star scale, which contributes to a public leaderboard ranking mentors based on their helpfulness.

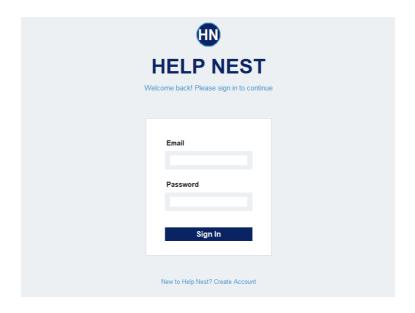


Figure 7.1. Login Page of Help Nest a counselling system

In Figure 7.1 Page showing User Login page where user can enter their credentials and enters the next page, Dashboard page (Admin, Junior, Senior), also if new user they can register new user.

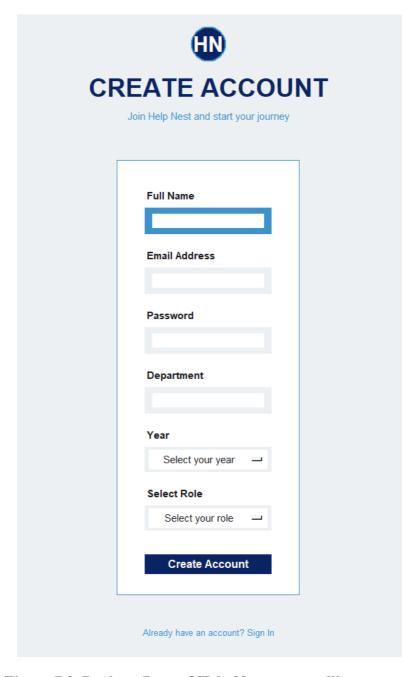


Figure 7.2. Register Page of Help Nest a counselling system

In Figure 7.2. Page showing Register Page where user can register themselves by entering following credentials and selecting Roles as Admin, Junior or Senior. After registering, can sign in with their credentials.

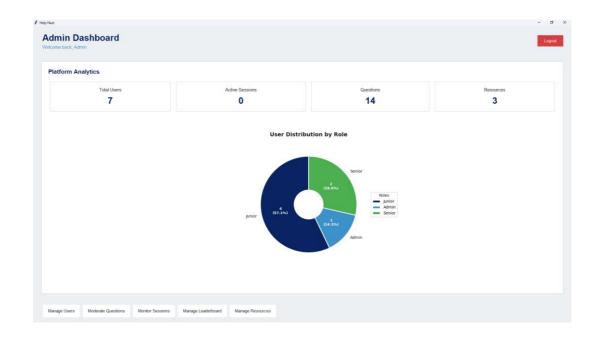


Figure 7.3. Admin Dashboard of Help Nest a counselling system

In Figure 7.3. Page showing Admin Dashboard where admin can review content provided by both Junior as well as Senior. It is Performance Analytics with a graph. With Analytics shown of users.

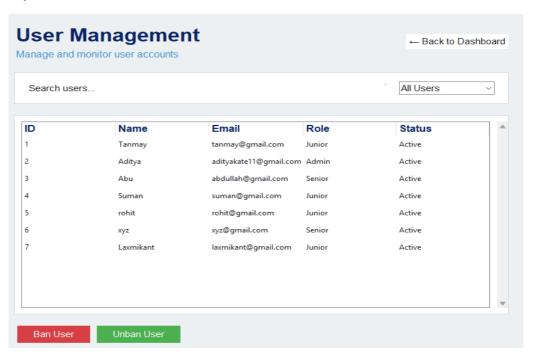


Figure 7.4. (User Management) of Help Nest a counselling system

In Figure 7.4. Page showing Admin Dashboard's User Management where Admin can Ban or unban that particular user and also can provide reasoning provided by for the user

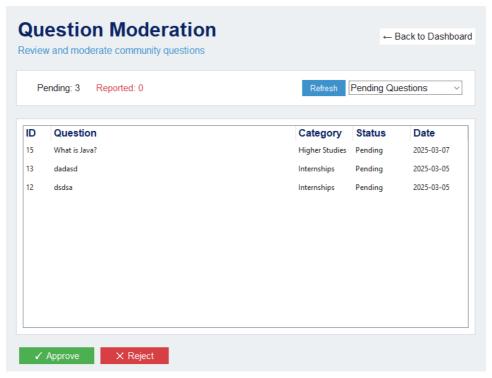


Figure 7.5. (Moderate Questions Page) of Help Nest a counselling system

In Figure 7.5. Page showing Admin Dashboard's Moderate Questions from where Admin can accept/reject questions sent by Junior to Senior.

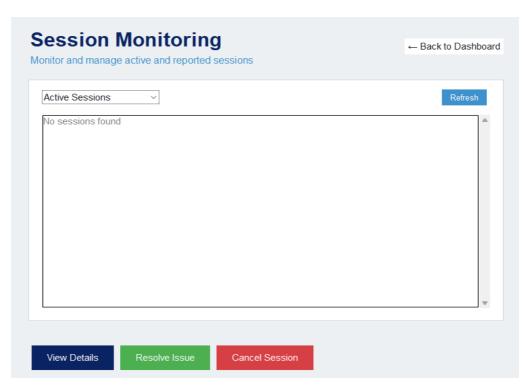


Figure 7.6. (Session Monitoring Page) of Help Nest a counselling system

In Figure 7.6. Page showing Admin Dashboard's Session Monitoring from where Admin can Monitor, View Details, Resolve Issues and Cancel Sessions.



Figure 7.7. (Leaderboard Page) of Help Nest a counselling system

In Figure 7.7. Page showing Admin Dashboard's Leaderboard from where Admin can see the Top performing Mentors (seniors), by clicking on Refresh Leaderboards updated Seniors mentor will be shown if any.

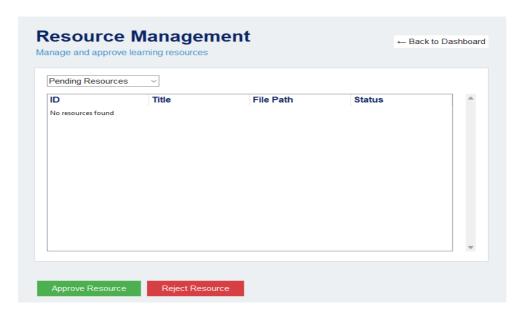


Figure 7.8. (Resource Management Page) of Help Nest a counselling system

In Figure 7.8. Page showing Admin Dashboard's Leaderboard from where Admin can see the Resources shared by Senior. Admin can approve, reject the resource that is given by the senior.

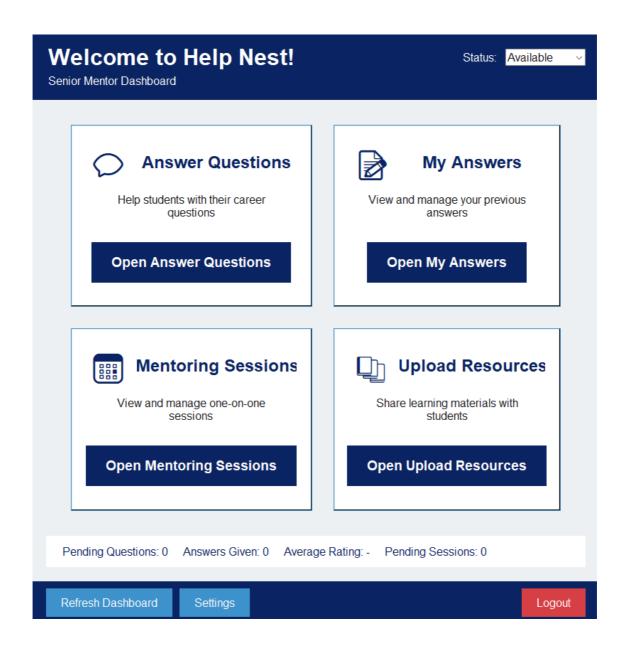


Figure 7.9. Senior Dashboard of Help Nest a counselling system

In Figure 7.9. Page showing Senior Dashboard where Senior can Answer Questions, See his/her's answers, Monitor Sessions and Upload Resources. Also, Senior will get to know about the Pending Questions, Answers Given, Average Ratings and Pending sessions in the Senior-Dashboard.

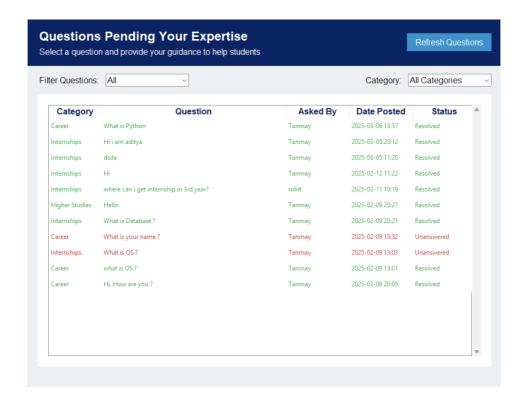


Figure 7.10. (Answer Questions) of Help Nest a counselling system

In Figure 7.10. Page showing Senior Dashboard where Senior can Answer Questions, Can see status of the questions, Date Posted and name of the junior.

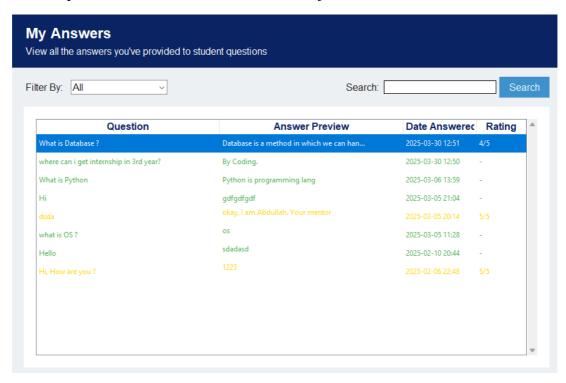


Figure 7.11. (My Answers) of Help Nest a counselling system

In Figure 7.11. Page showing Senior Dashboard where Senior can see his/her's answer posted to junior along with the question and dated answer, also as a feedback Ratings.

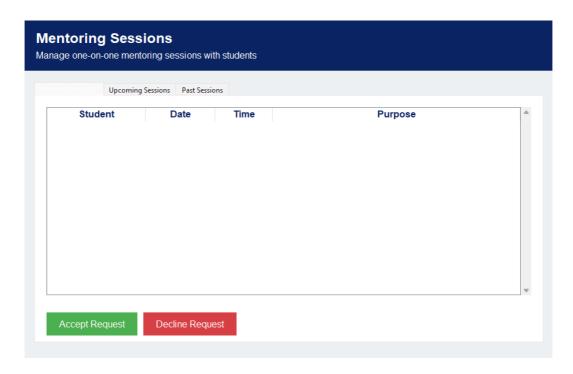


Figure 7.12. (Monitor Sessions) of Help Nest a counselling system

In Figure 7.12. Page showing Senior Dashboard where Senior can see all the Sessions of mentoring, also can accept/decline the request. All the Requests will be visible in the following page.

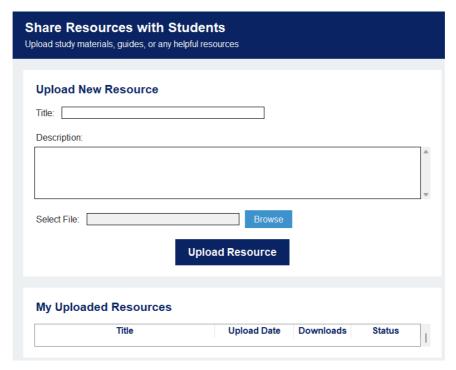


Figure 7.13. (Shared Resources) of Help Nest a counselling system

In Figure 7.13. Page showing Senior Dashboard where Senior can upload a particular resource in any format by clicking on browse button the Uploaded Resources will be showed in the 'Title' 'Upload Date', 'Downloads' and Status of the Share Resources in the page.

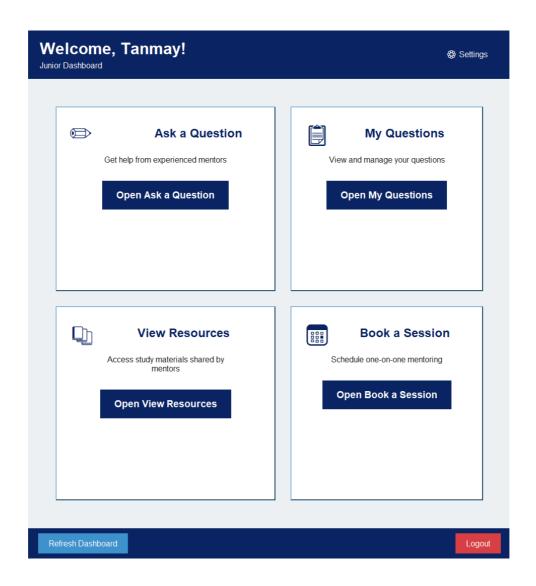


Figure 7.14. Junior Dashboard of Help Nest a counselling system

In Figure 7.14. Page showing Junior Dashboard where Junior can Ask Question, See his/her;s questions, View resources and Book a mentoring session also, can refresh dashboard so that new questions will be uploaded given by the junior to senior. Also by clicking on the Refresh Dashboard all the content will be refreshed and new content will be shown in the questions.

Conclusion

The Help Nest mentorship platform successfully bridges the gap between students seeking career guidance and experienced mentors willing to share their expertise. By offering structured workflows—such as anonymous question submissions, moderated Q&A, and one-on-one session bookings—the platform ensures a safe, organized, and efficient knowledge-sharing environment. Key achievements include the implementation of a rating system that incentivizes quality mentorship, an admin moderation panel to maintain content standards, and a real-time leaderboard to recognize top contributors.

The project demonstrates how technology can enhance peer-to-peer learning, making career advice more accessible and actionable. From a technical perspective, the project effectively integrates user management, content moderation, and real-time communication features into a cohesive system. The database design ensures efficient storage and retrieval of questions, answers, and session details, while the admin dashboard provides the necessary tools to maintain platform quality.

By fostering a collaborative ecosystem, Help Nest goes beyond simple Q&A interactions—it builds a community where knowledge is shared, skills are developed, and professional growth is accelerated. The platform's success lies in its ability to balance simplicity with functionality, making it easy for users to navigate while offering robust mentorship opportunities.

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