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MINI PROJECT

MentorHub - Mentorship Portal

PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF **BACHELOR OF ENGINEERING** IN **COMPUTER SCIENCE AND ENGINEERING** OF THE ANNA UNIVERSITY

Submitted by

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SYNOPSIS

The current education system often lacks a structured and effective mentorship program, leaving many students without the guidance and support they need to succeed. This gap in mentorship can be particularly challenging for junior and pre-final year students who are navigating important academic and career decisions. Without access to experienced mentors, these students may struggle to make informed choices about their future paths, leading to missed opportunities and potential setbacks.

MentorHub aims to address this critical issue by providing a dedicated mentorship portal where final and pre-final year students can sign up as mentors, and junior students can choose their mentors based on their interests, career goals, and areas of expertise. By creating a platform that facilitates these meaningful connections, MentorHub seeks to empower students to make informed decisions about their academic and professional pursuits, ultimately leading to greater success and satisfaction in their chosen fields.

The lack of a structured mentorship program not only hinders the personal and professional development of students but also contributes to a disconnect between academic learning and real-world application. MentorHub recognizes the importance of bridging this gap by connecting students with mentors who can offer practical insights, advice, and support. Through this platform, students can gain valuable knowledge and guidance that can help them navigate challenges, explore career options, and make informed decisions about their future.

By providing a platform for mentorship, MentorHub aims to create a supportive and collaborative community where students can learn from each other's experiences, share knowledge, and build meaningful connections that can last a lifetime. This initiative has the potential to not only benefit individual students but also contribute to a more vibrant and engaged academic environment, ultimately leading to a more successful and fulfilled student body.

1. Introduction

1.1. Description

Mentoring is a powerful tool for personal and professional development that involves a one-on-one relationship between a more experienced individual (mentor) and a less experienced individual (mentee). The mentor provides guidance, support, and advice to the mentee, helping them to develop their skills, knowledge, and career. Mentoring can be a transformative experience for both the mentor and mentee, leading to increased confidence, improved performance, and a stronger sense of purpose.

1.2. Problem Statement

In the ever-evolving realm of education, mentorship stands as a cornerstone of success, empowering students to navigate the complexities of academic life and prepare for their future careers. However, the current process of connecting mentors and mentees is fraught with inefficiencies, hindering the potential benefits of mentorship and leaving many students without the guidance they deserve.

Traditional mentorship approaches often involve time-consuming manual searches, leaving students to rely on personal connections or chance encounters to find suitable mentors. This fragmented approach not only hinders the discovery of potential mentors but also fails to consider compatibility factors, resulting in less effective mentorship relationships. Additionally, the lack of structured communication channels limits the potential for meaningful interactions and collaboration between mentors and mentees.

The absence of a centralized mentorship platform exacerbates these challenges, creating a system that is both inefficient and ineffective. Students seeking mentorship are often left to navigate a maze of disparate resources, while mentors lack a structured framework for connecting with potential mentees. This results in a missed opportunity for valuable knowledge exchange and professional development, leaving many students without the support they need to thrive.

1.3. Objectives

The primary objective of this project is to connect the students with each other so that they can learn from each other. Some objectives include:

- **Streamline the mentorship process:** Provide a centralized platform that simplifies the connection process between mentors and mentees.
- **Enhance mentorship quality:** Implement a sophisticated matching algorithm that pairs mentees with mentors based on shared interests, academic pursuits, and career aspirations.
- **Foster meaningful interactions:** Create a secure and structured environment for communication and collaboration, enabling mentees to gain valuable insights and guidance from experienced mentors.
- **Promote knowledge sharing:** Facilitate the exchange of knowledge and experiences between mentors and mentees, fostering a vibrant mentorship community.
- **Empower students:** Equip students with the tools and support they need to navigate their academic and professional journeys with confidence.
- **Increase accessibility to mentorship:** Provide a widely accessible platform that eliminates geographical barriers and ensures that all students have the opportunity to connect with qualified mentors.
- **Diversify the pool of mentors:** Expand the pool of mentors beyond traditional academic settings to include professionals from various industries, allowing mentees to gain exposure to diverse perspectives and career paths
- **Promote mentorship across disciplines:** Encourage mentorship relationships that transcend academic disciplines, fostering interdisciplinary collaboration and broadening the perspectives of both mentors and mentees.

1.4. Significance of the Project

Promote mentorship across disciplines: Encourage mentorship relationships that transcend academic disciplines, fostering interdisciplinary collaboration and broadening the perspectives of both mentors and mentees.

Firstly, MentorHub eradicates the time-consuming and inefficient manual search for mentors by providing a centralized platform. Through a sophisticated matching algorithm, mentees are paired with mentors who align with their specific needs and aspirations, ensuring the most relevant guidance and support. Secondly, MentorHub cultivates meaningful interactions and collaboration, moving beyond traditional boundaries by providing secure and structured

communication channels. Mentees gain valuable insights from experienced mentors, while mentors derive satisfaction from guiding the next generation of scholars and professionals. MentorHub's transformative potential extends beyond individual students, shaping a vibrant mentorship ecosystem that permeates the entire academic community, fostering knowledge sharing, interdisciplinary collaboration, and diversification of the mentor pool. This ecosystem not only enhances the learning experience but also contributes to the overall advancement of knowledge and innovation. MentorHub stands as a beacon of hope, empowering students and shaping a future where mentorship is a ubiquitous and accessible resource for all.

1.5. Scope and Limitations

The MentorHub project aims to develop a comprehensive mentorship portal that addresses the shortcomings of traditional mentorship approaches and revolutionizes the way students connect with mentors. The scope of the project encompasses the following key aspects:

- **Centralized Mentorship Platform:** Developing a user-friendly and accessible platform that serves as a central hub for mentors and mentees to connect, communicate, and collaborate.
- **Robust Matching Algorithm:** Implementing a sophisticated matching algorithm that pairs mentors and mentees based on compatibility factors such as shared interests, academic pursuits, career goals, and personality traits.
- **Secure Communication Channels:** Establishing secure and structured communication channels, including messaging, video conferencing, and file sharing, to facilitate meaningful interactions between mentors and mentees.
- **Mentorship Management Tools:** Providing mentors and mentees with tools to manage their mentorship relationships, including setting goals, tracking progress, and documenting interactions.
- **Performance Tracking and Evaluation:** Implementing mechanisms to track and evaluate the effectiveness of mentorship relationships, providing valuable insights for continuous improvement.

Despite its transformative potential, the MentorHub project is subject to certain limitations:

- **Initial User Adoption:** Attracting a sufficient number of mentors and mentees to create a critical mass and ensure effective matching.
- **Maintaining Engagement:** Encouraging sustained engagement between mentors and mentees to maximize the benefits of mentorship relationships.
- **Measuring Impact:** Quantifying the long-term impact of mentorship relationships on the academic and professional outcomes of mentees.
- **Universal Accessibility:** Ensuring that the platform is accessible to students from diverse backgrounds and with varying levels of technological literacy.
- **Evolving Needs:** Adapting the platform to accommodate the evolving needs of mentors, mentees, and the educational landscape as a whole.

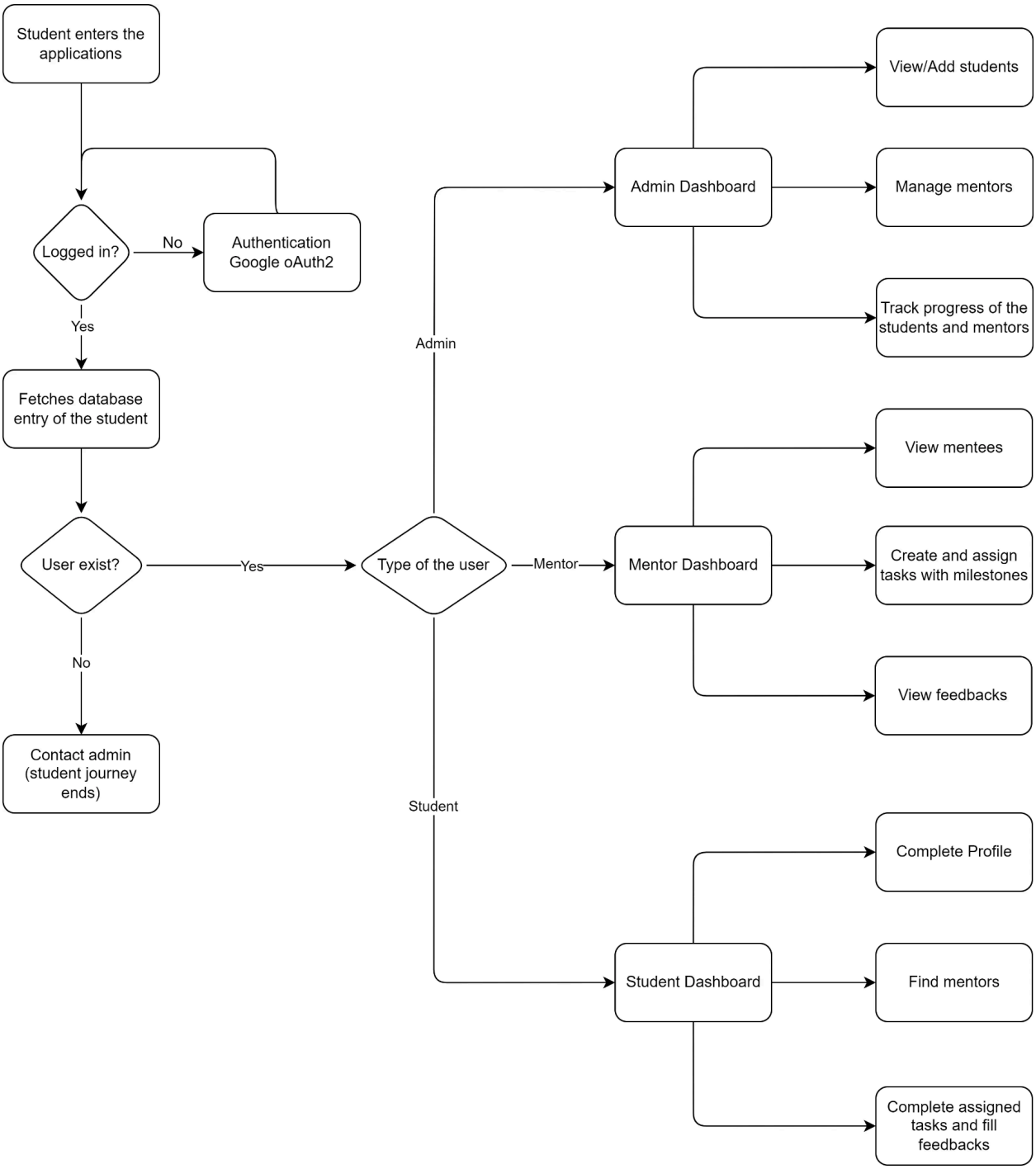
1.6. Expected Outcomes

The envisioned outcome of this project is the creation and development of a comprehensive application designed to facilitate the seamless onboarding of new mentors and students seeking mentorship in specific domains. The application aims to provide a user-friendly platform where students can easily connect with mentors, fostering a collaborative environment for knowledge exchange and professional growth. By simplifying the mentorship matching process, the application aspires to not only benefit students in their academic and career journeys but also provide mentors with a valuable tool for continuous learning and skill enhancement.

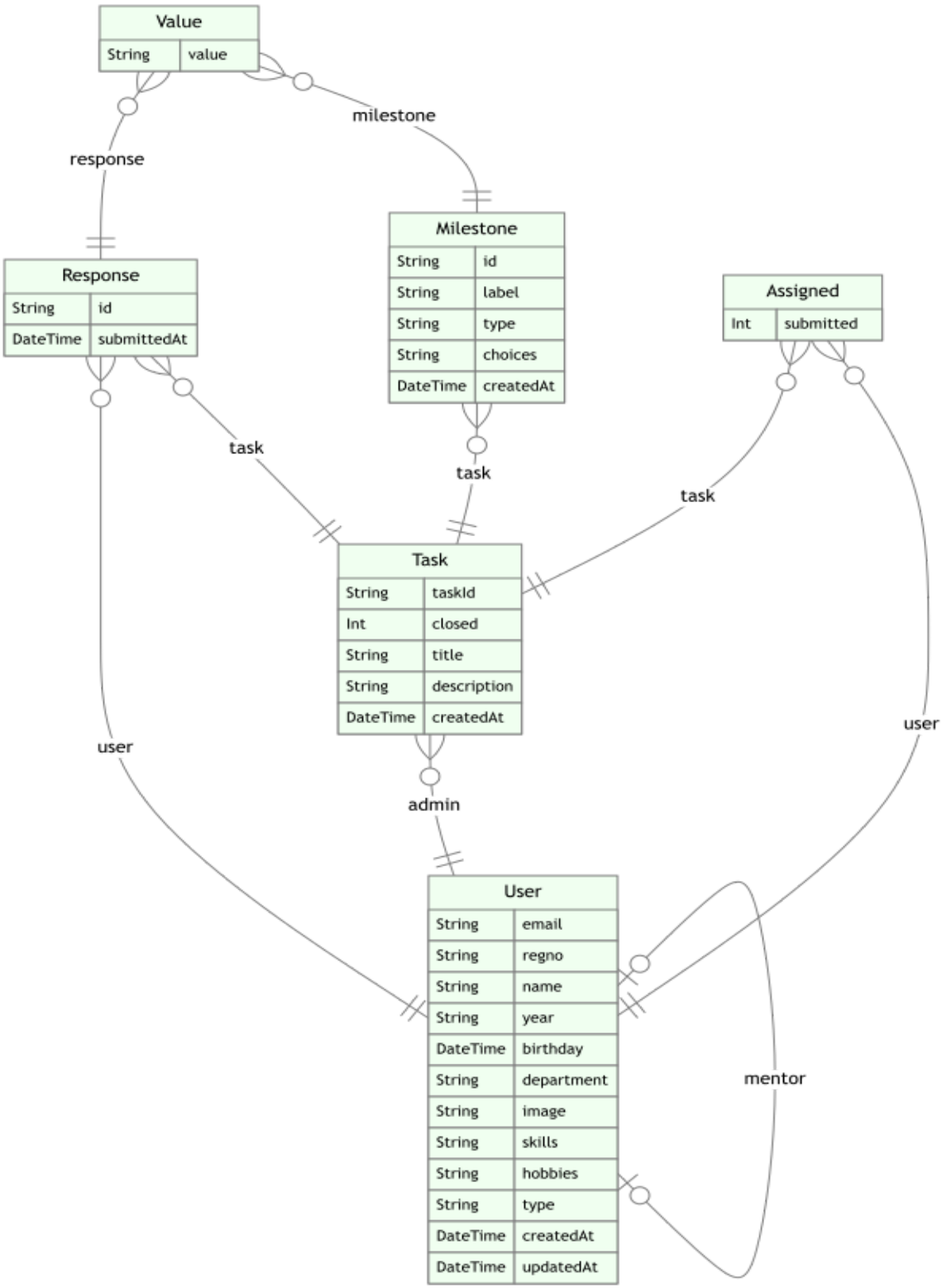
This anticipated outcome aligns with the broader goal of cultivating a culture of continuous learning within the academic community. The application's user-centric design and functionality aim to enhance the overall mentorship experience, making it accessible and beneficial for both mentors and students. Ultimately, the success of this project is measured by the positive impact it has on the educational landscape, creating a supportive ecosystem where mentorship thrives as a key catalyst for personal and professional development.

2. Application

2.1. Student Journey



2.2. Database Relations



3. Features

3.1. Adding students to the system by the admin

To facilitate efficient student management, MentorHub empowers the admin to seamlessly add students to the platform. This functionality enables the admin to maintain a comprehensive and up-to-date student directory, ensuring that all students have access to the platform's benefits.

The admin can add students individually through a dedicated form that captures essential details such as email address, name, department, and year. This approach offers flexibility and control, allowing the admin to add students one at a time, ensuring accuracy and personalization.

Alternatively, to expedite the process and manage larger cohorts, the admin can leverage Excel files to import student data in bulk. This option simplifies the task of adding multiple students simultaneously, saving time and effort. The Excel file should adhere to a specified format that aligns with the platform's data requirements.

3.2. Monitoring the progress of each mentee under a mentor by the admin

MentorHub extends beyond the mere facilitation of mentor-mentee connections, providing administrators with powerful tools to monitor and evaluate the progress of mentees. This robust functionality equips administrators with valuable insights into the performance of mentees, enabling a nuanced understanding of areas where additional support may be beneficial.

Through a dedicated dashboard, administrators can access a comprehensive overview of mentee progress within their designated domains. This includes a detailed analysis of tasks and milestones assigned by mentors, facilitating the monitoring of completion rates, assessment of learning progress, and identification of potential challenges. Adopting a data-driven approach, administrators can proactively intervene by offering targeted support to struggling mentees or providing supplementary resources to enhance their overall learning experience. This sophisticated system empowers administrators to foster an environment where mentees can thrive and achieve their academic and professional goals.

3.3. Searching and assigning themselves a mentor by the student

MentorHub streamlines the process for students seeking to acquire proficiency in new technologies. Utilizing an intuitive search feature, students can efficiently identify mentors based on specific skills, facilitating a personalized mentorship experience aligned with their learning objectives.

After pinpointing potential mentors, students can further refine their selection by considering the mentor's availability, gauged by the number of mentees already under their guidance. This methodical approach empowers students to make well-informed decisions, optimizing the allocation of time for both mentors and mentees. This strategic and efficient process contributes to a productive and collaborative mentorship experience within the platform.

3.4. Option for a student to opt in as a mentor

To participate as a mentor in MentorHub, students first need to meet specific eligibility criteria, ensuring a high standard of mentorship within the platform. Potential mentors are required to complete a comprehensive profile, offering a detailed overview of their academic background, professional experiences, and areas of expertise. This step is crucial in enabling mentees to make informed decisions when selecting mentors based on their specific needs and aspirations.

Once a student has successfully completed their profile, they can express their interest in becoming a mentor if they are in their final or pre-final years. The mentorship platform provides a streamlined process for students to opt into the mentorship program, allowing them to leverage their accumulated knowledge and experiences to guide and support their junior peers. By adhering to these criteria, MentorHub ensures that mentors are well-prepared to offer valuable insights, fostering a collaborative learning environment that enhances the overall educational experience for all participants.

3.5. Creating and assigning tasks to the mentees by the mentor

MentorHub offers mentors a powerful set of tools to enrich the learning experiences of their assigned mentees. Within the platform, mentors can effortlessly create tasks and define corresponding milestones, tailoring these elements to meet the unique learning objectives of each mentee. This structured approach provides a framework for mentors to deliver clear guidance and benchmarks, fostering a purposeful and goal-oriented mentorship dynamic.

Moreover, MentorHub's adaptive system empowers mentors to strategically allocate tasks based on their mentees' individual progress and interactions.

Whether opting for collective task assignments for all mentees or targeting specific students based on their distinctive needs, mentors can leverage the platform's flexibility to maintain a personalized and responsive mentorship experience. The platform's emphasis on adaptability extends to a continuous feedback loop, where mentees contribute insights on their task completion. This iterative feedback mechanism allows mentors to refine their guidance, assigning new tasks that align precisely with the evolving skill sets and learning trajectories of their mentees.

In this dynamic mentorship environment, MentorHub stands as a facilitator of both skill development and meaningful mentor-mentee interactions. The platform's commitment to adaptability and responsiveness ensures that mentorship remains a tailored and impactful experience for all participants.

4. Technologies used

4.1. Next JS

Next.js is a powerful React framework that streamlines the development of modern web applications by providing a robust structure and a set of conventions. One of its notable features is the ability to seamlessly handle both frontend and backend aspects of an application. In the context of MentorHub, Next.js serves as an ideal choice for both the app and API layers due to its versatility and efficiency.

By using Next.js for the app, MentorHub benefits from a performant and responsive frontend. The framework's server-side rendering (SSR) capabilities enhance the initial loading speed of the application, providing users with a faster and smoother experience. The built-in routing system simplifies navigation, ensuring a cohesive and intuitive user interface. Additionally, Next.js supports automatic code splitting, optimizing the loading times for various parts of the application.

As for the API layer, Next.js API routes enable the creation of serverless functions, offering a straightforward approach to building APIs without the need for a separate backend server. This aligns well with MentorHub's goal of maintaining a streamlined architecture. The simplicity of creating and managing API routes in the same project as the app enhances maintainability, code organization, and reduces deployment complexities.

Next.js proves to be a pragmatic choice for MentorHub, delivering a high-performing frontend and a seamless API integration within a unified

development environment. Its versatility and streamlined development process contribute to the overall efficiency and user satisfaction of the MentorHub application.

4.2. Material UI

Material-UI is a React UI framework that provides a set of pre-designed and customizable components based on Google's Material Design principles. It facilitates the development of visually appealing and consistent user interfaces. In the context of the MentorHub application, Material-UI serves as a valuable tool for creating a cohesive and intuitive user experience.

The adoption of Material-UI in MentorHub is justified by its extensive library of reusable components. These components, ranging from buttons and forms to complex data tables, adhere to the Material Design guidelines, ensuring a modern and visually consistent look and feel throughout the application. This consistency is crucial for maintaining a professional and user-friendly interface.

Material-UI's theming capabilities enable seamless integration with the overall design language of MentorHub. The framework allows for easy customization of color schemes, typography, and other design elements, ensuring that the application's visual identity aligns with its branding and user experience goals.

Moreover, Material-UI promotes development efficiency by offering a well-documented and well-maintained library. Its popularity within the React community ensures ongoing support, frequent updates, and a wealth of resources, contributing to a smoother development process for MentorHub.

In summary, the integration of Material-UI in MentorHub is justified by its rich set of components, adherence to design principles, customization capabilities, and widespread community support. Leveraging Material-UI enhances the development workflow and contributes to the creation of a visually appealing and consistent user interface for the MentorHub application.

4.3. Prisma

Prisma is a modern database toolkit that simplifies database access and management in web applications. It offers an intuitive and type-safe query builder, making it an excellent choice for MentorHub's application architecture. By integrating Prisma into MentorHub, the application benefits from efficient and secure database interactions, contributing to overall performance and scalability.

One compelling aspect of Prisma is its ability to seamlessly integrate with various databases, providing flexibility in choosing the most suitable database for

MentorHub's needs. Its support for multiple database systems, including PostgreSQL, MySQL, and SQLite, ensures compatibility with different environments and allows MentorHub to adapt to changing requirements.

The type-safe query builder provided by Prisma ensures that database queries are not only concise but also statically typed, reducing the likelihood of runtime errors related to database interactions. This feature enhances code maintainability and developer productivity, as developers can leverage the benefits of autocompletion and type-checking while working with database queries.

Additionally, Prisma's migrations feature simplifies the process of evolving the database schema over time. This is particularly beneficial for MentorHub as it undergoes updates and improvements, allowing for seamless transitions and backward compatibility.

Prisma's versatility, type safety, and support for various databases make it a robust choice for MentorHub's database management needs. The integration of Prisma enhances the application's reliability, performance, and developer experience, contributing to the overall success of the MentorHub platform.

4.4. Postgres

PostgreSQL, often referred to as Postgres, is a powerful and open-source relational database management system (RDBMS) known for its robust features and scalability. In the context of the MentorHub application, choosing PostgreSQL as the database system provides several compelling advantages.

PostgreSQL excels in handling complex data structures and relationships, making it well-suited for MentorHub's intricate data models and the diverse information associated with mentorship relationships. Its support for ACID (Atomicity, Consistency, Isolation, Durability) compliance ensures data integrity and reliability, crucial aspects for an application dealing with sensitive user information and interactions.

The extensibility of PostgreSQL allows for the creation of custom data types, functions, and procedures, enabling MentorHub to tailor the database schema to its specific requirements. This flexibility accommodates potential future developments and optimizations within the application.

PostgreSQL boasts a vibrant community and a rich ecosystem of extensions and tools. This ensures that MentorHub can leverage community-driven support and benefit from continuous improvements and security updates.

The robust features, scalability, and community support of PostgreSQL make it a strategic choice for the MentorHub application. The use of PostgreSQL aligns with the application's data complexity and relational requirements, ensuring a reliable and efficient database management system for the platform.

4.5. Google oAuth

Google OAuth (Open Authorization) is a secure and widely adopted authentication and authorization framework that allows users to log in to applications using their Google credentials. In the context of the MentorHub application, integrating Google OAuth serves as a robust and user-friendly authentication solution. Users can sign in with their existing Google accounts, streamlining the onboarding process and enhancing the overall user experience.

The use of Google OAuth in MentorHub is particularly justified by the need to filter out email addresses belonging to a specific domain, in this case, the "@gct.ac.in" domain. Google OAuth allows for seamless verification of users' email domains during the authentication process, ensuring that only users with email addresses from the specified domain can access the application. This level of domain restriction aligns with MentorHub's specific user base, limiting access to individuals affiliated with a particular institution or organization.

Additionally, Google OAuth provides a secure mechanism for token-based authentication, eliminating the need for MentorHub to store user passwords directly. This enhances the overall security posture of the application, reducing the risk associated with password-related vulnerabilities.

The integration of Google OAuth in MentorHub not only simplifies user authentication but also aligns with the application's specific requirements, facilitating a secure and tailored user experience. The ability to filter out email addresses based on a predefined domain enhances the application's relevance for a targeted user group.

5. Implementation

5.1. Database schema

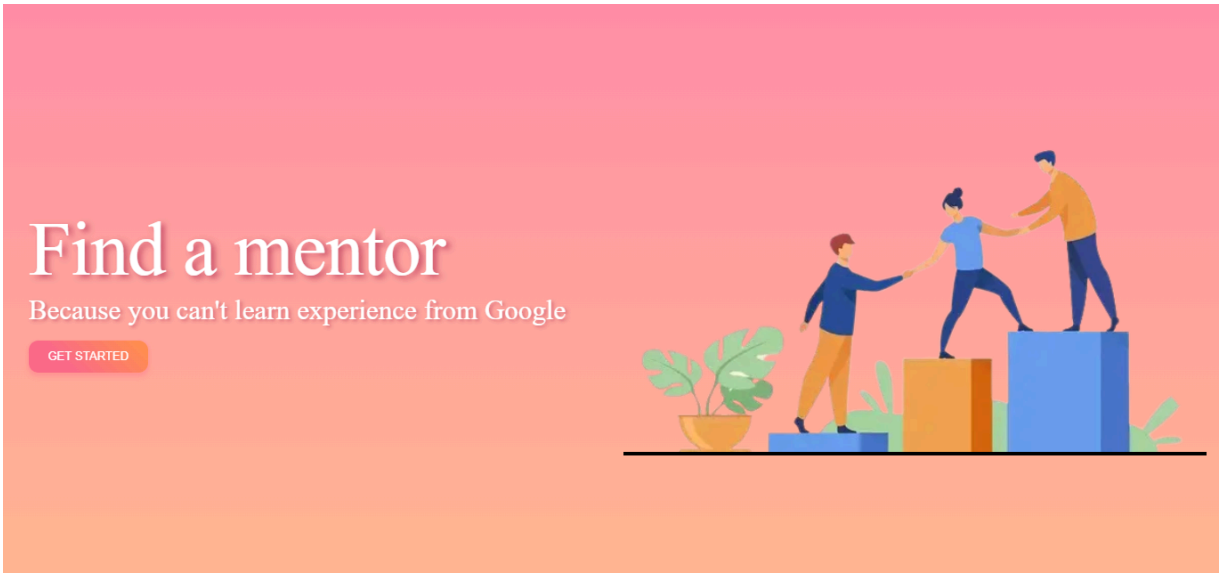
Utilizing Prisma schema involves defining the database schema declaratively using a simple and concise syntax, streamlining the process of modeling and managing database structures.

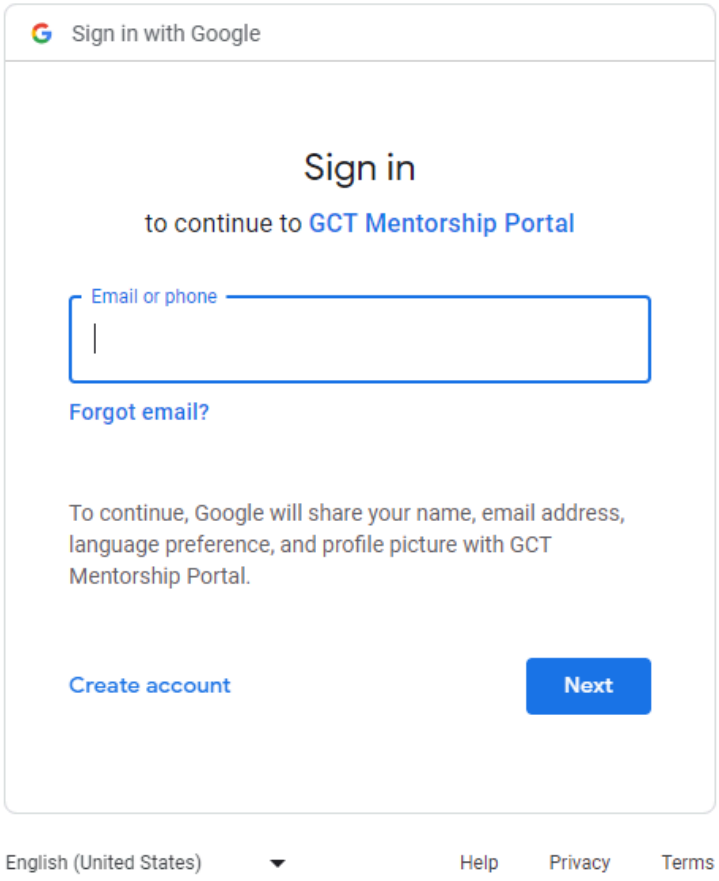
```
model User {
  email              String     @id @unique
  regno              String     @unique
  name               String
  year               String
  birthday           DateTime?
  department         String
  image              String?
  skills             String?
  hobbies            String?
  type               String
  createdAt          DateTime   @default(now())
  updatedAt          DateTime?  @updatedAt
  mentorID           String?
  mentor             User?      @relation("Mentor",
fields: [mentorID], references: [email])
  mentees            User[]     @relation("Mentor")
  responses          Response[]
  form               Form[]
  assignedFeedbacks Assigned[]
  tasks              Task[]
}

model Form {
  formID      String     @id @unique @default(cuid())
  closed      Int        @default(0)
  createdBy   String
  admin       User       @relation(fields:
[createdBy], references: [email])
  title       String
  description String
  fields      Field[]
  responses   Response[]
  createdAt   DateTime   @default(now())
  assignedTo  Assigned[]
}

model Field {
  id        String   @id @unique @default(cuid())
  formID    String
```

```
  form      Form     @relation(fields: [formID],
references: [formID])
  label     String
  type      String
  choices   String?
  values    Value[]
  createdAt DateTime @default(now())
}

model Response {
  id          String   @id @unique @default(cuid())
  email       String
  user        User     @relation(fields: [email],
references: [email])
  formID      String
  form        Form     @relation(fields: [formID],
references: [formID])
  values      Value[]
  submittedAt DateTime @default(now())
}

model Value {
  responseID String
  response   Response @relation(fields: [responseID],
references: [id])
  fieldID    String
  field      Field    @relation(fields: [fieldID],
references: [id])
  value      String

  @@id([responseID, fieldID])
}

model Assigned {
  formID    String
  email     String
  form      Form   @relation(fields: [formID],
references: [formID])
  user      User   @relation(fields: [email],
references: [email])
  submitted Int    @default(0)
```

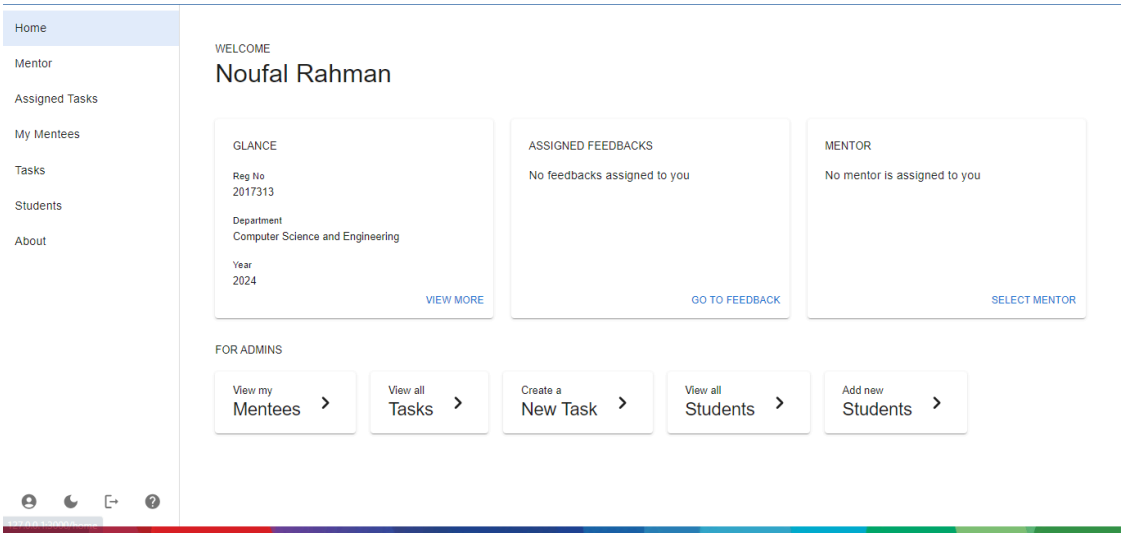
```
  @@id([formID, email])
}
model Task {
  taskID        String         @id @unique
@default(cuid())
  title         String?
  mentorID      String
  user          User           @relation(fields:
[mentorID], references: [regno])
  createdAt     DateTime       @default(now())
  descriptions Description[]
}

model Description {
  descriptionID String @id @unique @default(cuid())
  taskID         String
  task           Task   @relation(fields: [taskID],
references: [taskID])
  description   String
}
```

5.2. Google Authentication

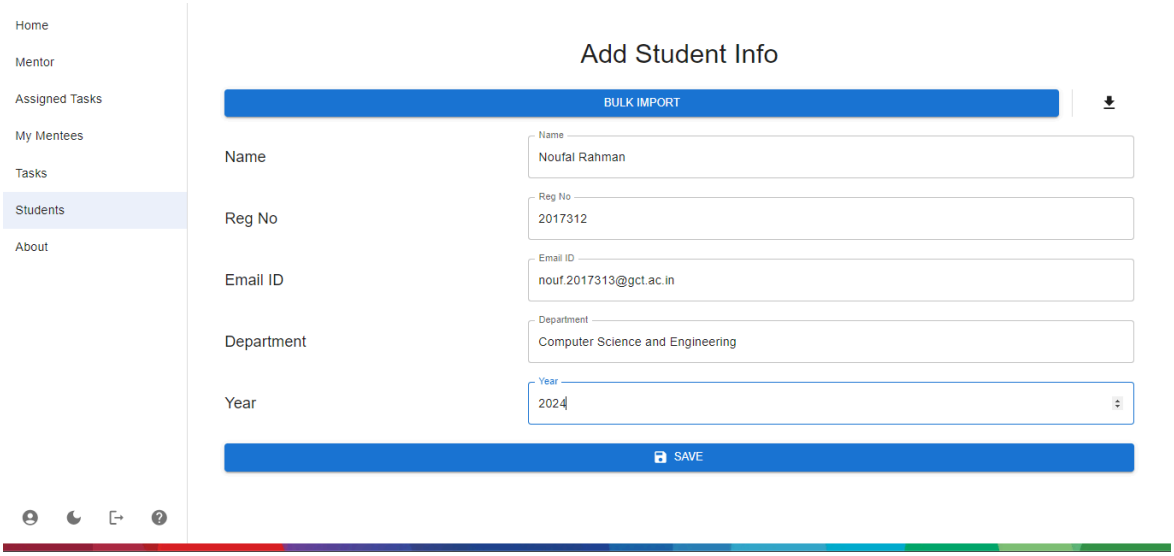


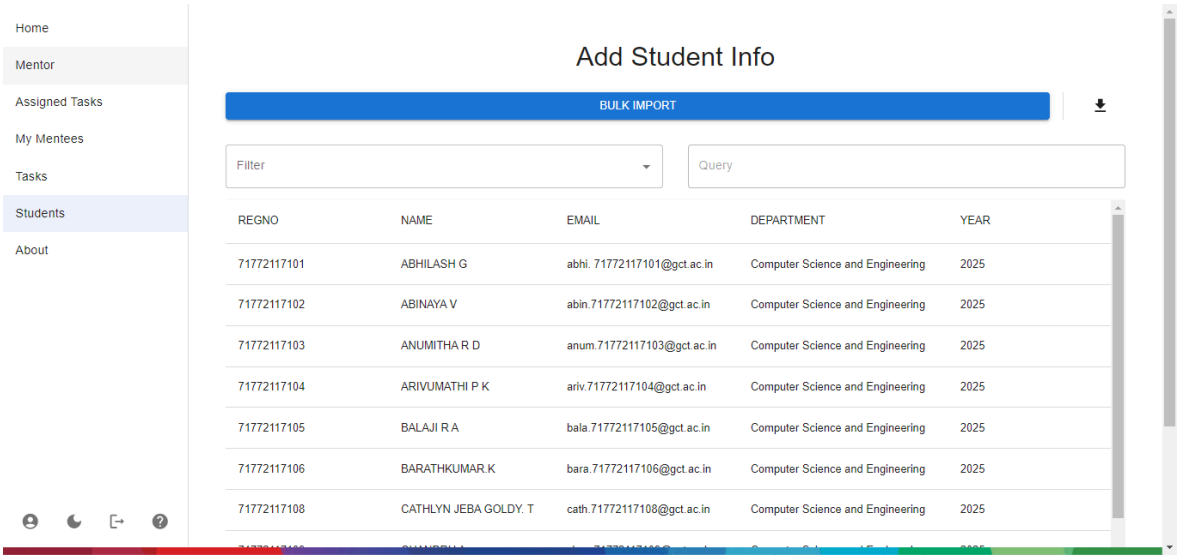

Sign in with Google
Sign in
to continue to GCT Mentorship Portal
Email or phone
Forgot email?
To continue, Google will share your name, email address, language preference, and profile picture with GCT Mentorship Portal.
Create account
Next
English (United States)
Help
Privacy
Terms

5.3. Home page

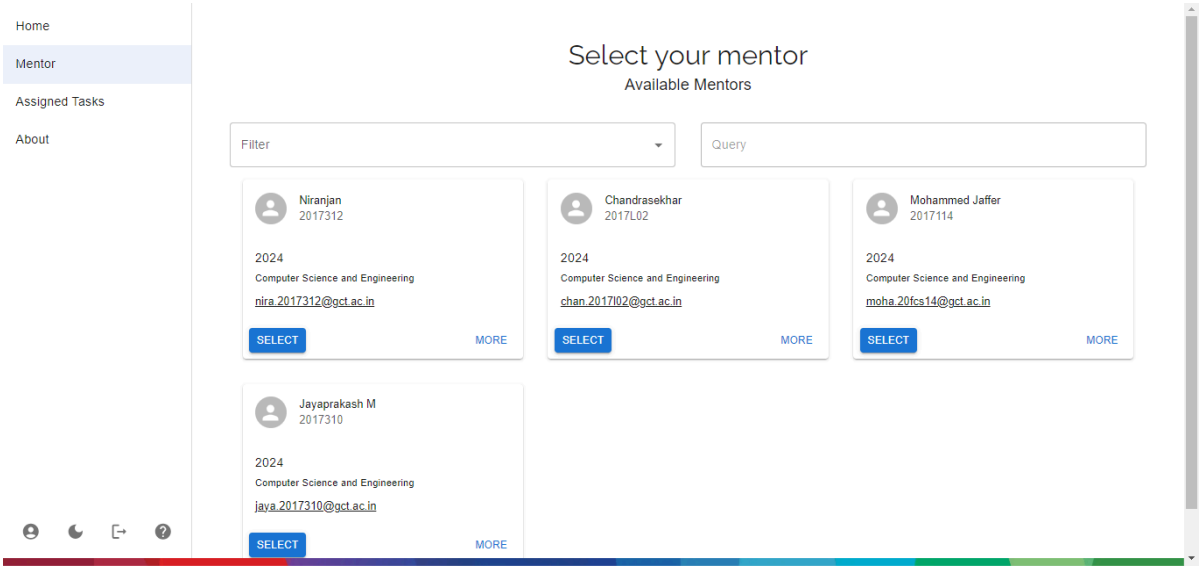

Home
Mentor
Assigned Tasks
My Mentees
Tasks
Students
About
WELCOME
Noufal Rahman
GLANCE
Reg No
2017313
Department
Computer Science and Engineering
Year
2024
VIEW MORE
ASSIGNED FEEDBACKS
No feedbacks assigned to you
GO TO FEEDBACK
MENTOR
No mentor is assigned to you
SELECT MENTOR
FOR ADMINS
View my Mentees
View all Tasks
Create a New Task
View all Students
Add new Students

5.4. Adding Students

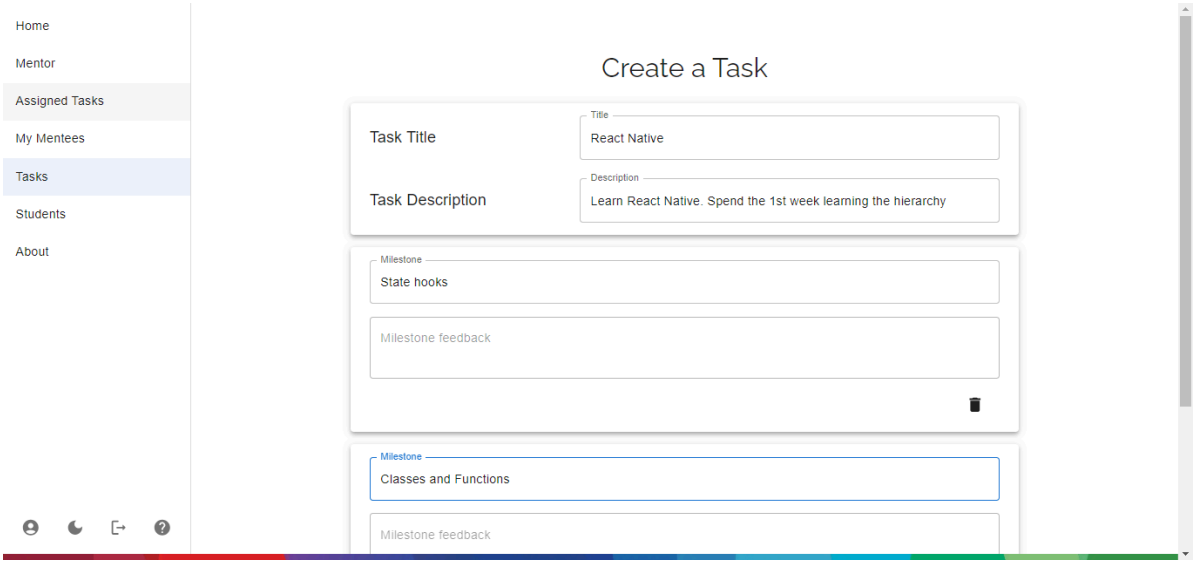


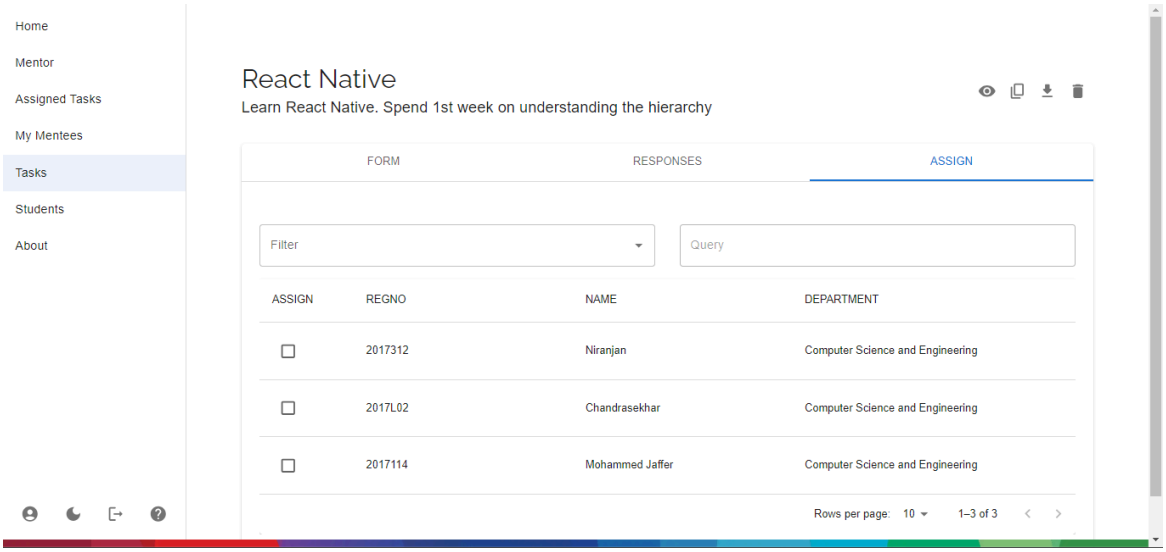


5.5. Selecting mentor



5.6. Creating and Assigning Tasks





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6. Prisma Schema - https://www.prisma.io/docs/concepts/components/prisma-schema
7. One to Many relationship in Prisma - https://www.prisma.io/docs/concepts/components/prisma-schema/relations/one-to-many-relations
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10. Typescript types - https://www.typescriptlang.org/docs/handbook/2/everyday-types.html
11. User defined types in TypeScript - https://www.typescriptlang.org/docs/handbook/2/everyday-types.html#type-aliases
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14. Creating pages in Next JS - https://nextjs.org/docs/basic-features/pages
15. Creating reusable components in Next JS - https://nextjs.org/docs/basic-features/components

16. Contexts in React - https://reactjs.org/docs/context.html
17. useEffect, useState in React - https://reactjs.org/docs/hooks-effect.html
18. MUI Themes - https://mui.com/customization/theming
19. Adding styles to MUI components with sx prop - https://mui.com/system/the-sx-prop
20. Building custom MUI components - https://mui.com/guides/composition/#customization