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MINOR PROJECT SYNOPSIS

TOPIC: STUDY NOTION

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PROJECT DESCRIPTION

Study notion is a fully functional ed-tech platform that enables user to create, contribute , consume and learn the educational content as per the pace of his understanding.

The project is mainly built on the MERN stack technology i.e. Mongo DB (for database), Express JS, React JS, Node JS (some JavaScript concepts)

Q. What Study Notion Aims to provide?

- A seamless and interactive learning for students and everyone who want to learn continuously.
- A platform for instructors to showcase their expertise and content with Learners across the globe.
- Technical Details:
 - 1.System Architecture.
 - 2.Front-end.
 - 3.Back-end.
 - 4.API Design.
 - 5.Deployment.
 - 6.Testing.
 - 7.Future Enhancements.

In order to summarize , Study Notion is a versatile and intuitive ed-tech platform that is designed to provide an immersive learning experience to students and a platform for the instructors to showcase their knowledge and expertise .

KEY OBJECTIVES

- **Accessibility :** Develop a user-friendly cross-platform application that ensures access to quality education for students in urban as well as in the rural areas , regardless of their socio-economic background.
- **Content Diversity:** Curate a vast repository of interactive and engaging learning materials video lectures, progress status bar.
- **Teacher Empowerment :** Provide tools and resources for educators to create customize and deliver content effortlessly fostering engagement and learning outcomes.
- **Data Security:** Ensures the highest standards of data security and privacy compliance to protect the personal information of user.
- **Feedback Mechanism:** Implements a feedback mechanism to collect user input and continuously improve the platform based on user suggestions.

By addressing these objectives, our full-stack edtech platform aims to revolutionize the education sector, making quality education accessible, engaging, and personalized for learners of all ages and backgrounds.

SYSTEM ARCHITECTURE

SYSTEM ARCHITECTURE:

The Study Notion ed-tech platform consists of three main components: the front end, the back end, and the database. The platform will follow a client-server architecture, with the front end serving as the client and the back end and database serving as the server. In this Section we will cover the backend part of the project.

FRONTEND:

The front end of the platform is built using ReactJS, which is a popular JavaScript library for building user interfaces. ReactJS allows for the creation of dynamic and responsive user interfaces, which are critical for providing an engaging learning experience to the students. The front end communicates with the back end using RESTful API calls.

BACKEND:

The back end of the platform will be built using NodeJS and ExpressJS, which are popular frameworks for building scalable and robust server-side applications. The back end provides APIs for the front end to consume, which include functionalities such as user authentication, course creation, and course consumption. The back end also handles the logic for processing and storing the course content and user data.

DATABASE:

The database we will be using is MongoDB, which is a NoSQL database that provides a flexible and scalable data storage solution. MongoDB allows for the storage of unstructured and semi-structured data, which is useful for storing course content such as videos, images, and PDFs. The database stores the course content, user data, and other relevant information related to the platform. Architecture Diagram Here is a high-level diagram that illustrates the architecture of the Study Notion ed-tech platform.

KEY CHALLENGES

- **User Management:** The project must implement a comprehensive user management system that allows the creation of users and login as instructor or a student.
 - **Security:** Ensuring the security of user data and the system as a whole is paramount. This project must incorporate features such as email validation and OTP verification to protect user accounts.
 - **Access Control:** Designing and implementing an access control system is a complex task. Users should not be able to access others account everyone should be logged in only with their credentials and as role they have chosen(Instructor/Student).
 - **Integration with External Services:** The project needs to integrate with external services as per the requirements during the project development.
 - **API design:** The REST API design for the Study Notion ed-tech platform is a crucial part of the project.
 - **Database Management:** Efficiently managing user data and permissions in a database is crucial for the project's success.
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REQUIREMENTS

- FRONTEND:

- HTML : For structuring the webpage.
- CSS : For designing the webpage.
- TAILWIND : A CSS Framework for designing.
- JAVASCRIPT : For Dynamic and Interactive UI.
- REACT : React is the library for web and native user interfaces.
- REDUX : For State Management at Client-Side.
- REST APIs Calls: To connect with backend APIs.

- BACKEND:

- Node.js : Node.js is used as the primary framework for the back end.
- OTP services : For validation and authentication.
- Email services : For validation and notifications.
- Express.JS : Express.js is used as a web application framework, providing a range of features and tools for building web applications.
- JWT : JWT (JSON Web Tokens) are used for authentication and authorization, providing a secure and reliable way to manage user credentials.
- Bcrypt : Bcrypt is used for password hashing, adding an extra layer of security to user data.

- DATABASE:

- Mongoose: Mongoose is used as an Object Data Modeling (ODM) library, providing a way to interact with MongoDB using JavaScript.
 - MongoDB: MongoDB is used as the primary database, providing a flexible and scalable data storage solution.
 - Atlas : MongoDB cloud database service for remote database.
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CONCLUSION

In summary, this document provides a comprehensive overview of the Study Notion ed-tech platform, detailing its architecture, features, and functionalities. It emphasizes the utilization of MERN stack technologies and REST API design, coupled with a deployment strategy employing free hosting services, Vercel for both front-end and back-end, and MongoDB Atlas for database management.

As the project progresses, significant milestones will be reached in terms of functionality implementation and interface design, aiming to deliver a seamless user experience.

Nonetheless, it's important to acknowledge that challenges may arise during development, including the integration of diverse technologies and the resolution of debugging issues.

By maintaining a proactive approach and leveraging collective expertise, these challenges can be effectively navigated, ensuring the successful realization of the Study Notion platform's objectives
