**CS302L & CS211L: SE Term Project**

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| Team number | 6 |
| Project Title | Dhruv Tara |
| Document | SE Project Concept Document |
| Existing Work | Byju’s, Toppr, Unacademy etc. |
| Differences | Most of the organisations having more reach provide paid courses and materials whereas we will provide everything for free.  Apart from courses we will be focusing on all round development of students via IQ hunter game , yourview/aapkevichaar section.  This Website will teach them as their friend via features like saathi chatbot, stress management section, etc.  Other features like Councelling and mentorship, Performance Analytics and discussion forums will be some significant differences. |
| Technologies | Html, css, javascript, node.js, react.js, angular, Django, Sql, AI/ML, MongoDb, Docker ,visual studio code |
| Audience | Students with curiosity to learn. |

**Description**

**DhruvTara** is a comprehensive, free online platform designed to support students to learn and grow. Our goal is to provide high-quality resources(major focus on jee, neet aspirants as our development team is from science backgroud), personalized guidance, and interactive tools at no cost, helping students achieve their academic aspirations without financial barriers***.***

**Profile of Users**

* **Jee Aspirants, Neet aspirants, board students** : We will help them with resources and guidance.
* **Students of age group (4-16)** : We will help them by providing a platform to develop their creative and logistic skills.
* **Teachers** : They can use our platform for sharing essential knowledge for students.

**Technology Stack**

**1. Frontend**

**Framework: React.js**

* **Why: React.js is highly efficient for building dynamic, interactive user interfaces. Its component-based architecture allows for reusability and ease of maintenance. It is also widely adopted and has a large ecosystem and community support.**

**State Management: Redux or Context API**

* **Why: For managing global application state and ensuring a consistent data flow throughout the application. Redux is well-suited for large-scale applications with complex state management needs.**

**UI Component Library: Material-UI or Ant Design**

* **Why: Provides pre-built components that follow material design principles, speeding up the development process and ensuring a modern, responsive design.**

**Alternative:** **Framework: Angular**

* **Why: Angular is a powerful, full-fledged front-end framework that is well-suited for building large-scale applications. It provides a complete solution out of the box, including routing, state management, form handling, and HTTP client. Angular's two-way data binding and dependency injection make it easier to manage complex applications. Additionally, Angular's component-based architecture encourages modularity and code reusability.**
* **Components: Angular's component-based structure allows for easy development and maintenance of different sections of the app, such as mock tests, lectures, discussion forums, and games. Components can be reused and easily modified as per the changing needs of the application.**

**State Management: NgRx (Angular's reactive state management library)**

* **Why: For managing global state and side effects in a predictable and maintainable way. NgRx is built on Redux principles and integrates seamlessly with Angular applications.**

**2. Backend**

**Framework: Django (Python)**

* **Why: Django is a high-level, robust web framework that provides a clean, pragmatic design. It comes with built-in features for handling user authentication, admin interfaces, and a powerful ORM, making it a great choice for handling complex data operations and rapid development.**

**Alternative: Node.js with Express**

* **Why: If real-time communication (e.g., for chatbots and real-time analytics) becomes a core requirement, Node.js with Express could be considered for its non-blocking, event-driven architecture.**

**3. Database**

**Primary Database: PostgreSQL**

* **Why: PostgreSQL is a powerful, open-source relational database system known for its reliability, scalability, and support for complex queries. It also integrates well with Django.**

**NoSQL Database: MongoDB**

* **Why: For handling unstructured data such as chat logs, student feedback, and dynamic content in discussion forums, MongoDB can be a good addition for flexibility and scalability.**

**4. Real-Time Functionality**

**WebSockets: Socket.io (if using Node.js) or Django Channels (if using Django)**

* + **Why: Enables real-time communication, essential for features like chatbots, discussion forums, and real-time analytics.**

**5. AI and Machine Learning**

**AI/ML Framework: TensorFlow or Scikit-learn (for Python-based backend)**

* + **Why: For implementing features like personalized learning recommendations, progress tracking, and Sathi ChatBot AI functionalities.**

**Natural Language Processing: NLTK or SpaCy**

* + **Why: To build the chat functionalities and provide intelligent responses to users' queries.**

**Can explore any other technology for implementing any other feature.**