Summer Project BCCS-2999

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1 Introduction

Most of the college students gets stuck in doubts and they can not find anyone directly to help them out and to solve their problem because there is a lot of traffic in doubt solving websites. So we are implementing a web application that provides a doubt-solving platform for college students in which they can post their questions and other students, alumni and faculties can answer the question. Users can ask the question, answer the question, get the questions and answers based on their interest, upvote the questions, upvote and downvote the answers and they can save the questions and answers that they like, sort the questions, answers according to upvote, oldest, newest and they can copy the URL of questions and answers.

2 Problem Statement

The project focuses on creating a web application that helps students resolve their doubts. Registered users (students) can log into the application, ask questions, and take part in constructive discussions by asking the questions. The application features user authentication and offers personalized categories (e.g., Blockchain, machine learning, etc.) for questions to users so that they can find the questions based on their interests. The application provides answers to students' queries and doubts, with responses coming from classmates, seniors, teachers, and alumni.

3 Objective

Our project aims to develop an integrated website ap- plication that serves as a platform for learning by en- couraging discussions among students (seniors, juniors, teachers, and alumni). By combining the actions of asking a question , upvoting , commenting and user authentication into a single platform, we aim to stream- line the learning process, making it more interactive , efficient , and accessible.Our goal is to create a user- friendly application that supports personalized doubt solving, facilitates quick doubt solving, and ensures the secure handling of user data.

4 User Authentication

Ensuring robust authentication is vital for the security of our application, 'Doubtify'. We employ a multi-layered approach to authenticate users and safeguard their accounts. Firstly, we utilize strong password requirements, encouraging users to create complex passwords that are difficult to guess. Additionally,we enforce measures such as password hashing and salting to protect user credentials stored in our database.

5 UI/UX Interface

5.1 Nav bar

- *'ask a Question'*: a pop-up screen opens, it contains a text box for typing your questions, categories, and sub-categories, the user can use the attachment icon, 'submit', and 'cancel' buttons.

- *Search bar*: user can directly type the query, and will be directed to that specific page. useful to navigate the website.

- *notification icon*: when clicked, opens a list of users, with profile pic, user name, and time of comment.

- *Profile*: when clicked, contains profile pic, user name, login in, and manage account.

5.2 Left Side Bar

- *Questions*: on clicking, a page containing all questions in a list appears. there is a filter to choose the questions based on recommended, latest, most upvoted, and no answer. the questions can be viewed with an option to upvote and view answers. the user's profile is also displayed along with the question.

- *Drafts*: Your answers yet to be posted are saved in drafts. Only you can view them. the question and answer are in a single box, along with options to 'edit' and 'discard'.

- *Bookmark:* The list of questions that have been bookmarked by you, for future reference appears here. the questions can be selected based on recommended, latest, and oldest. the questions appear with a user profile and the option of viewing 'answers' and 'upvoting'. the number of answers the question has received is also displayed. using the three dots icon, the user can share the URL link and save it to the device's memory.

- *Categories*: the page will have a search bar, and several boxes containing different categories like blockchain, machine learning, DevOps, etc. Each

of these boxes will contain the name of the topic and the number of questions asked in that topic in the database. On clicking, on that box you will be directed to that topic's question bank.

5.3 Right side bar

- *Top Categories*: a list of popular categories like machine learning, DevOps, etc. will appear there. the user can click on any of the topics to view its question bank.

5.4 Main Content

- The questions asked by various users appear there, they are in the form of boxes. Each box contains a user profile(user pic, user name, user description), number of answers, number of upvotes, and an option to upvote and view all answers. The 'answer' button, allows the users to answer the above question. The three-dot icon allows the user to save, bookmark, and view the answers given by various users.

5.5 Answer Page

- When we click on three dots present in the main content of the home page, we enter the answer page. The list of answers given by different users to that specific question can be seen easily, as we scroll.

- Each answer is in a box, containing the user details (profile pic, user name, bio, date on which the comment was made), followed by an answer posted by the user. If the text cannot fit in the box, there is a 'more..' hyperlink that will display the entire answer when clicked upon.

- Beneath the answer, there is an upvote, downvote, comment, and three-dot icon. The upvote and vote icons indicate the number of upvotes and downvotes respectively, and if clicked, then a vote will be incremented in the system.

- The comment icon shows the number of comments to that answer. when clicked, it allows the user to add his/her comment by typing into the text box and submitting it.

- The three-dot icon, offers two options 'bookmark' and 'copy link'. The user can bookmark the answer for future reference, and copy the link which can be later shared.

6 Tech Stack

6.0.1 Web Application

Below are the technologies employed in various aspects of web applications:

- *Frontend*: React, Nextjs, Tailwind CSS

- *Backend*: Node js,Express.js

- *Programming Language*: TypeScript

- DataBase: MongoDB

- File Handler: Multer

- cloud service: cloudinary

We have selected these technologies for their proven reliability in creating dynamic and responsible web applications. React and Next.js provide a solid foundation for developing interactive user interfaces. Tailwind CSS offers versatile styling options, while Node.js serves as the back end framework, enabling efficient server-side programming. The project uses many node.js models like AnswerModel.js, questionModel.js, upvoteModel.js, downvoteModel.js, interestModel.js, userModel.js, bookmarksModel.js etc. Express.js is a minimal and flexible Node.js web application framework that provides a robust set of features for building web and mobile applications. MongoDB is a NOSQL database known for its flexibility, scalability, and ease of use. Typescript is essential throughout development to ensure code quality and maintainability. Multer is a middleware for handling multipart/form-data, which is primarily used for uploading files. It is an essential tool for managing file uploads in your doubt-solving website. Cloudinary is a cloud service that offers a solution to a web application's image and video management needs, including uploads, storage, manipulations, optimizations, and delivery.

7 Outcome/Deliverables

The deliverable of this project is the development of a web-based doubt-solving application. This application will serve as a platform to facilitate students in resolving their academic queries by connecting them with their peers, seniors, teachers, and alumni. Students will have the capability to both ask questions and provide answers. Additionally, they will be able to bookmark important questions and save answers for later reference.

8 Future Work

Our vision is to enhance the doubt-solving web application by integrating advanced functionalities and superior features for our users. We are excited to introduce an audio icon, enabling users to conveniently ask and answer questions via voice recordings. Furthermore, the integration of the device camera will elevate the user experience by facilitating video recording. In addition, our integration of the search bar with the Google NLP model will revolutionize query searches.

9   References

- SDK Platfrom Tools

- Building a Web Application

- Doubtnut

- Quora

- Stack Overflow