ON-BOARDING PORTAL and DISCUSSION CLASSROOM

A Project report submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR'S OF TECHNOLOGY

in

Electronics and Communication Engineering

by

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Semester: IV

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BONAFIDE CERTIFICATE

This is to certify that the project report entitled **"On-Boarding Portal and Discussion Classroom"** submitted by **Vanshaj Mittal** bearing the **MIS No: 112016041**, in completion of his project work under the guidance of **Dr. Anagha Uday Khiste** is accepted for the project report submission in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering in the Department of Electronics and Communication Engineering , Indian Institute of Information Technology, Pune, during the academic year 2021-22.

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Abstract

One of the biggest problem of students and faculty in this online mode of schools and colleges due to Covid-19 pandemic is difficulty in asking questions/doubts. And also there is difficulty is discussing doubts with other students.

For faculties also there is very difficult to solve questions/doubts of every students individually in this online mode. The purpose of this application is to help the college and school students and faculties, so they can do Registration/Admission easily on same application and also ask questions/doubts easily on same application.

As there are many students in our college, facing these problems in asking questions/doubts and in discussion of doubts with other students. As by discussion with other students topics of all students will be revised.

To a great extent with this Website, we will be able to tackle the problem of Registration/Admission Process and Questions/Doubts asking and solving limitations in online mode of schools and colleges.

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Chapter 1

Introduction

On-Boarding Portal and Discussion Classroom is Web-Application, developed exclusively for the college students and faculty. All details and documents for Admission/Registration can be uploaded on the application by any student or faculty. All data will be kept secure and private in the database. Only admin can access the data. Any can easily ask questions/doubts on the application. Anyone belonging to the institution can discuss doubts easily on the Discussion Classroom.

1.1 Thesis Outline

The thesis is organized as follows:

Chapter 1 provides the general introduction to the thesis.
Chapter 2 introduces the motivation for the project.
Chapter 3 talks about the literature review done for this project.
Chapter 4 explains the proposed scheme, working, design of application.
Chapter 5 gives the future work that can be done to improve this scheme.
Chapter 6 gives the conclusion.

Chapter 2

Motivation

With the onset of COVID-19 pandemic, schools, colleges and other educational institutions have remained shut since March 2020 and these institutions have switched over to online teaching. In our opinion, online classes can never replace the quality of offline classes. Students and faculties are facing many issues in Registration/Admission processes.

Online teaching makes it very difficult for students to ask doubts/questions to teachers and discuss with other students. WhatsApp groups are flooded with messages, spamming etc. It is very difficult to discuss doubts with other students. It is also difficult for faculty to solve doubts/questions of every students individually in online mode. Hence there is a need for an efficient system as a solution of these problems.

The On-Boarding Portal and Discussion Classroom rescue here. This application is very efficient as a solution of such problems. As students can easily complete Registration/Admission Process of filling all required information for Admission/Registration and also upload all required documents at same application easily. And also ask their questions/doubts easily and discuss them also with everyone easily.

Chapter 3

Literature Review

Chapter 4

Methodology

4.1 Technologies Used

This Website implements the MERN Stack. It is a JavaScript Stack that is used for easier and faster deployment of full-stack web applications. MERN Stack comprises of 4 technologies namely: MongoDB, Express.js, React.js and Node.js. It is designed to make the development process smoother and easier.

4.1.1 MongoDB

MongoDB is a document-oriented NoSQL database used for high volume data storage. Instead of using tables and rows as in the traditional relational databases, MongoDB makes use of collections and documents. Documents consist of key-value pairs which are the basic unit of data in MongoDB. Collections contain sets of documents and functions which is the equivalent of relational database tables.

4.1.2 Express.js

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications. Express.js takes care of low level protocols, processes, etc by itself.

REST or RESTful API design (**RE**presentational **S**tate **T**ransfer) is designed to take advantage of existing protocols. Node.js and express.js is used to develop a RESTful API. The API will receive GET, POST, PATCH, and DELETE requests from the user. These requests are handled by Express.js and the post processing is handled by Node.js.

4.1.3 React.js

The React JavaScript library can be used for creating views rendered in HTML. This means that developers don't have to worry about managing the effects of changes in the view's state (the object that determines how components behave) or changes in the data.

Instead of relying on templates to automate the creation of repetitive HTML or DOM (Document Object Model) elements, React uses a full-featured programming language (JavaScript) to construct repetitive or conditional DOM elements.

It is used in building user interfaces and it allows us to create reusable UI components. React.js creates a virtual DOM in memory and it does all the necessary manipulating, before making the changes in the browser DOM. Every component in React.js has a state which stores the data it needs to render. This data is fetched from the API running on the server viz. user details, cards and their content, etc.

4.1.4 Node.js

Node.js was initially built for Google Chrome, and later open-sourced by Google in 2008. It is built on Chrome's V8 JavaScript engine. It's designed to build scalable network applications, and can execute JavaScript code outside of a browser. This project uses Node.js to deploy an application on the server that will be responsible for all the backend actions. It also provides a rich library of various JavaScript modules which simplifies the development of web applications using Node.js to a great extent.

4.1.5 JWT (JSON Web Tokens)

JSON Web Token (JWT) is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON (JavaScript Object Notation) object. This information can be verified and trusted because it is digitally signed. JWTs can be signed using a secret (with the HMAC algorithm) or a public/private key pair using RSA or ECDSA.

Although JWTs can be encrypted to also provide secrecy between parties, it focuses on signed tokens. Signed tokens can verify the integrity of the claims

contained within it, while encrypted tokens hide those claims from other parties. Whoncen tokens are signed using public/private key pairs, the signature also certifies that only the party holding the private key is the one that signed it.

In this case, JWTs are used for authorization. Once the user is logged in, each subsequent request will include the JWT, allowing the user to access routes, services, and resources that are permitted with that token. Single Sign In is a feature that widely uses JWT nowadays, because of its small overhead and its ability to be easily used across different domains.

4.1.6 Multer

File uploading means a user from client machine requests to upload file to the server. For example, users can upload images, videos, etc. File can be uploaded to the server using Multer module. Multer is a Node.js middleware which is used for handling multipart/formdata, which is mostly used library for uploading files.

4.1.7 Chat Engine API

Chat Engine is an API which makes it easy to build chat services. Building a chat from scratch takes a lot of time, code, and is expensive. It's better to use a product instead of writing it from scratch. We make it easy to build your chat idea in minutes.

4.2 Objective

- ❖ To create a dynamic website.
- ❖ Facility of uploading all information and documents at one application.
- ❖ Facility of asking questions/doubts on same application.
- ❖ To keep data secure in database.
- ❖ To create classroom where everyone can discuss.
- ❖ To add User Authentication as Login/Signup.

4.3 Results and Discussion

The frontend of the website is designed using React. It's UI is designed keeping the ease of navigation. The backend is written using Express JS, web application framework for Node JS and MongoDB for managing the database. Chat Engine
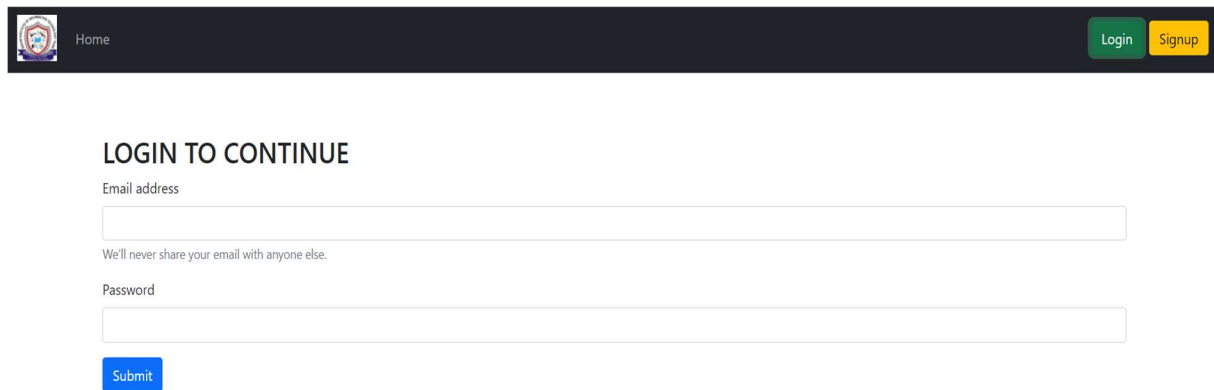
API for backend of Discussion Classroom.
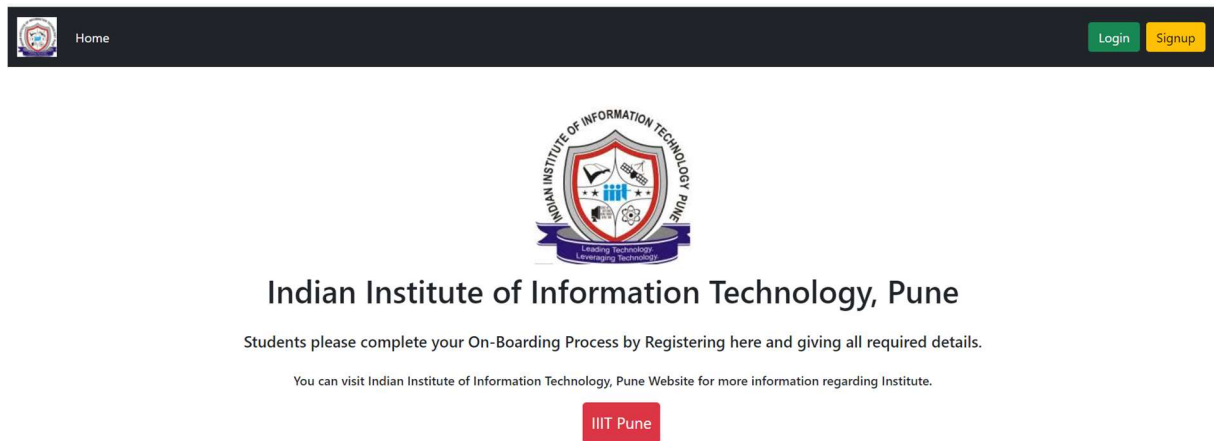
Figure 4.1

Firstly there is user authentication as Login/SignUp. User have to sign up using Name, Email Id and Password for first time. And then next time user have to login using Email Id and Password.

Figure 4.2

Figure 4.3

Then after login/signup user fill all their details/information for Registration/Admission as Personal Information then Educational Information. Then all data will store securely in MongoDB Database, only admin can access them. And then user will upload all the required documents for the Registration/Admission. All documents will store securely in a folder locally in sorted order using Multer middleware of Node Js.

Figure 4.4

EDUCATIONAL INFORMATION

COURSE PROGRAM

COURSE BRANCH ALLOTTED

YEAR OF GRADUATION

JEE APPLICATION NUMBER

JEE MAINS RANK

CLASS 12th PERCENTAGE

Figure 4.5

UPLOAD DOCUMENTS

Each File Name must be in following format :- "MIS NUMBER - NAME ..."
For Example :- "112016041-VanshajMittal.pdf"

PHOTO ID PROOF (Like- AADHAAR CARD, PAN CARD, etc.)

Choose File | No file chosen

YOUR PASSPORT SIZE PHOTOGRAPH

Choose File | No file chosen

CLASS 12th MARKSHEET/PASS CERTIFICATE

Choose File | No file chosen

CLASS 10th MARKSHEET/PASS CERTIFICATE

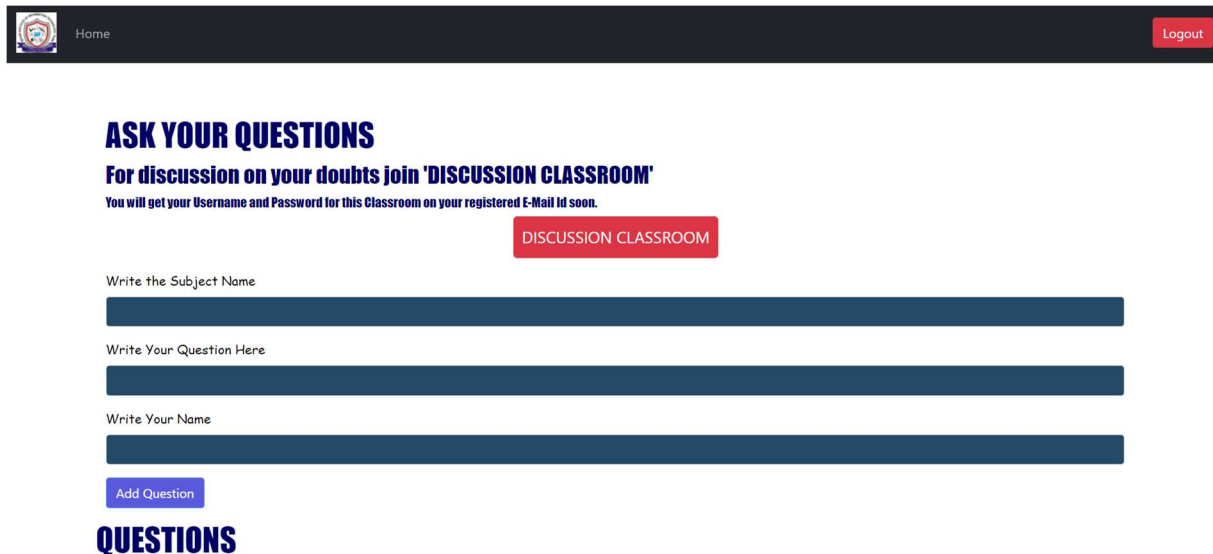Choose File | No file chosen

STUDY AND CONDUCT CERTIFICATE/CHARACTER CERTIFICATE

Choose File | No file chosen

Figure 4.6

Then user can see their profile as all their filled information on their Profile page. Then user can ask any questions/doubts by adding their question with subject name and his/her name on the application easily. Everyone belonging to institution can see all the added question. Then can also edit the question if needed. And also delete when question solved. Everyone can discuss the doubts and solution of asked question on Discussion Classroom subjectwise as there

rooms are created for every subject separately. For the backend part of this Discussion classroom Chat Engine API is used.

Figure 4.7

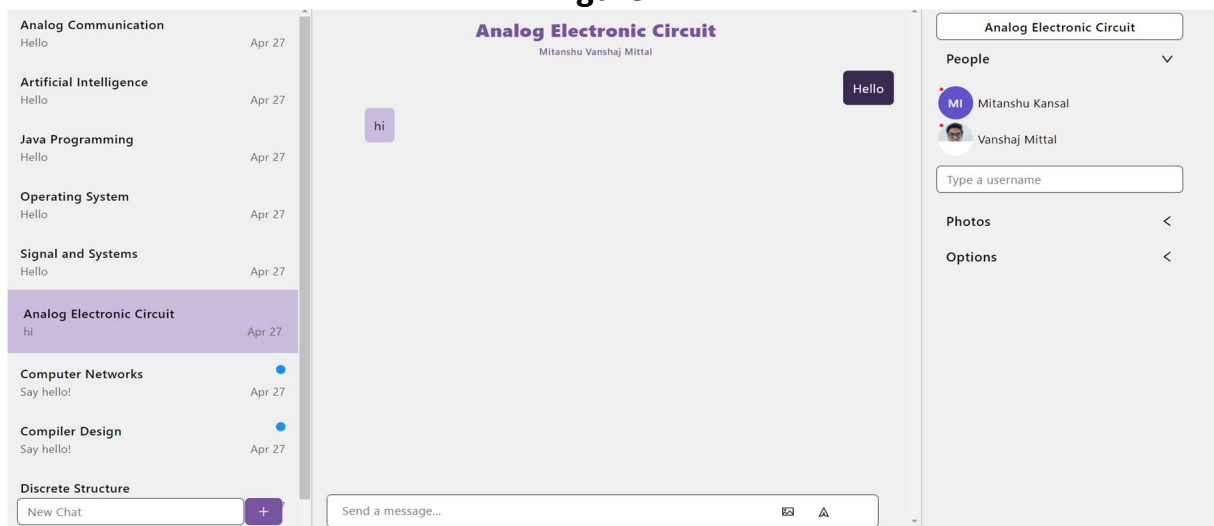**Figure 4.8**

Chapter 5

Future Work

- ❖ Intend to create Admin panel, where systematic updation/deletion of users and their data can be done by admin easily.

- ❖ Working on the application design for better look of application and better user's experience.

- ❖ Collaboration with many other colleges and schools and modify the design in a way that they can also use our application.

- ❖ Adding more functionalities to the application and removing/fixing Bugs if come across.

- ❖ Working on Login/Registration functionality of Discussion Classroom for better and smooth user experience.

- ❖ Separation of users and their data according to their year of graduation and some more aspects.

Chapter 6

Conclusion

The purpose of this application is to help the college and school students and faculties, so they can do Registration/Admission easily on same application and also ask questions/doubts easily on same application. They can also discuss doubts on Discussion Classroom easily. Since the onset of pandemic, the classes are being held online which makes it hardship for students and faculty in many ways like in doubts solving. As WhatsApp groups are with no proper management. So solve these issues, On-Boarding Portal and Discussion Classroom will be able to help predominantly during the online mode of colleges and schools. Also when colleges and schools will reopen in offline mode, this application will be very useful. Students will solve each others many doubts and get their topics revised. And faculty also help them by correcting them there is any issue in their approach. Students can easily edit their question when needed. And also delete when question get solved.

Hopefully, with this Website, we will be able to tackle the problem of Registration/Admission Process and Questions/Doubts asking and solving limitations in online mode of schools and colleges. As these problems are with lots of students in our college.

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