Full Stack Development with MERN Project

Documentation format

1. Introduction:

- **Project Title:** Freelance Finder
- **Team Members:**

Team Member	Role
D.Meghana	Frontend Development
D.Salma Banu	Backend Development
T.Rohini	Project Setup configuration&Documentation
A.Sandya	DataBase Development

2. Project Overview :

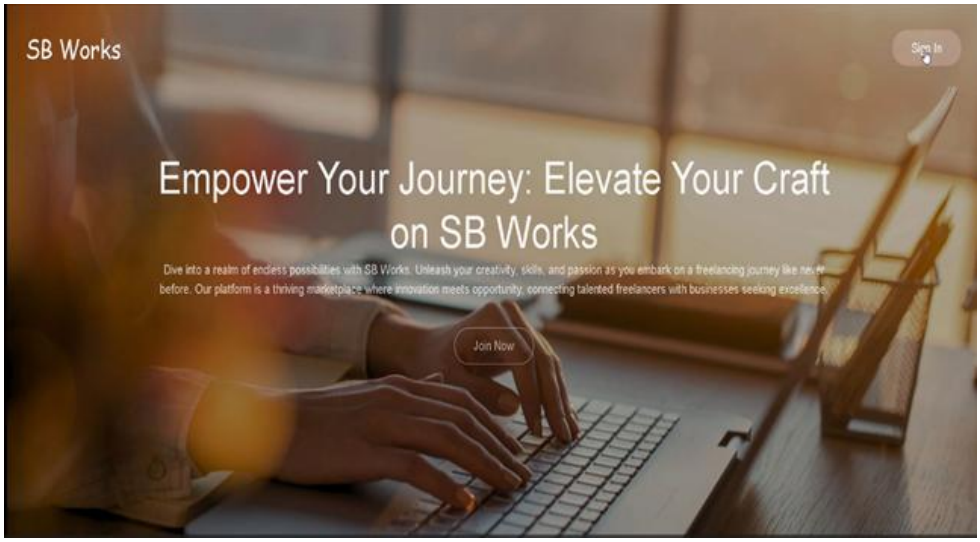
- **Purpose:**
- Connect Clients with Freelancers
- Simplify the Hiring Process
- Support Remote and Flexible Work
- Enable Direct Communication

- **Features:**
- User Registration/Login
- Post Projects
- Manage Projects
- View Freelancer Applications
- Apply for Projects

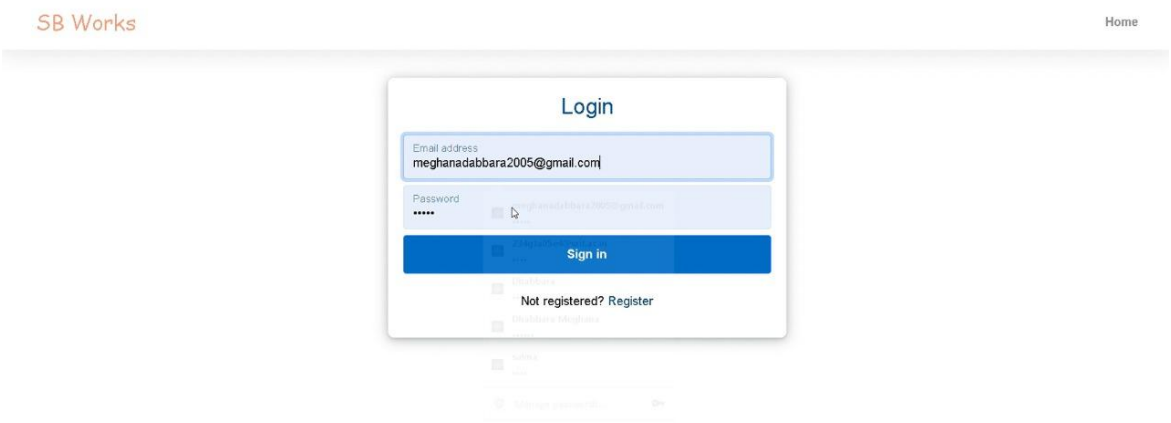
3. Architecture:

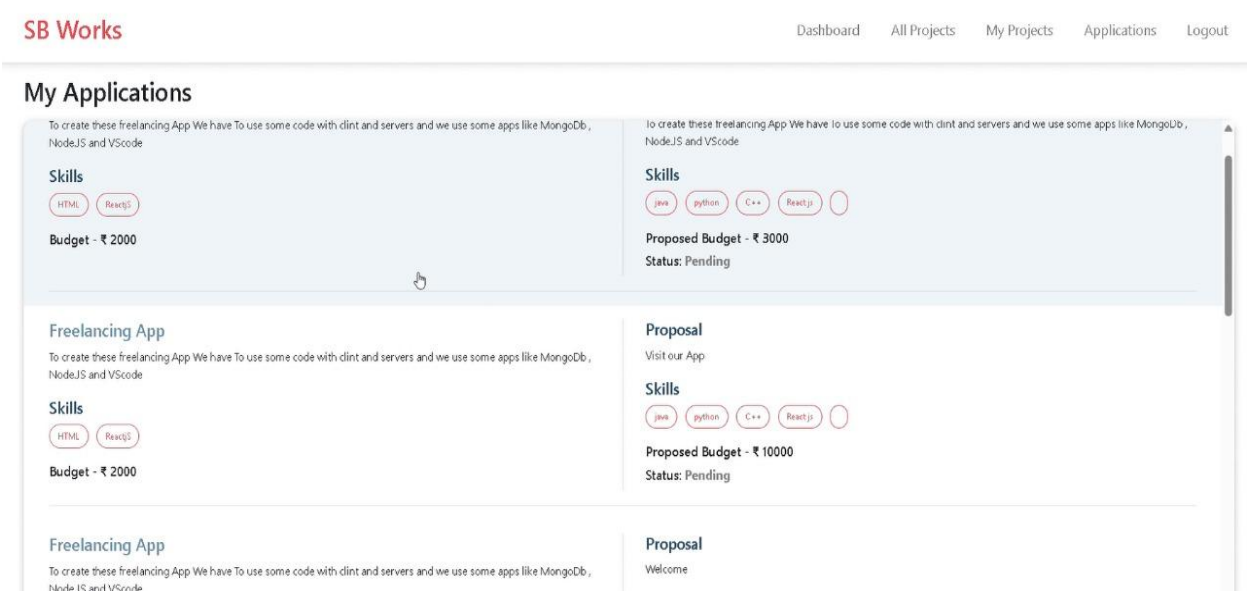
- **Frontend:**

Component	Responsibility
Navbar.js	Top navigation bar (links, login, logout)
ProjectForm.js	Form to post new freelance projects
ProjectList.js	Displays all posted projects
ProjectCard.js	Shows individual project preview
ApplyForm.js	Freelancer's application submission form
Login.js / Register.js	User authentication (login/registration forms)
Dashboard.js	Role-specific dashboard (Client or Freelancer)
Footer.js	Common page footer



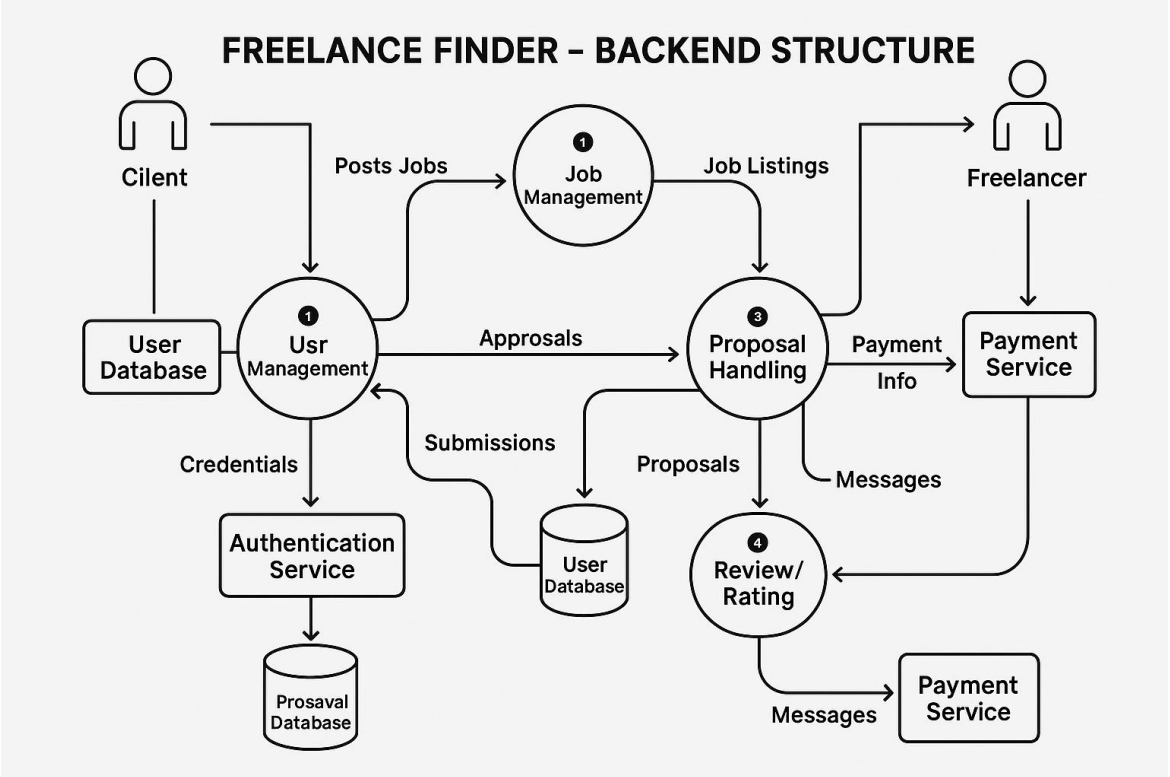
Login/Register Interface:





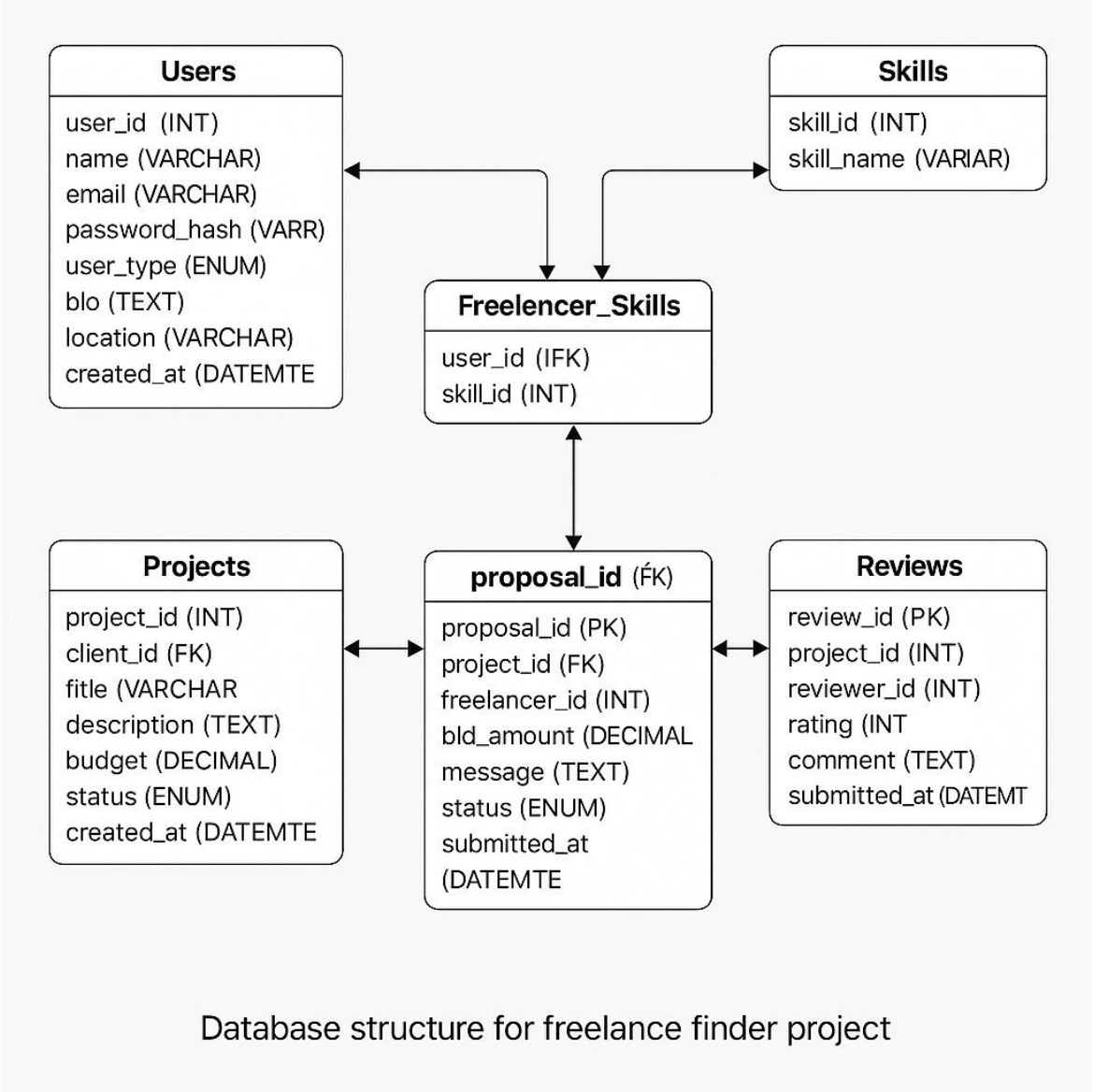
Backend:

Layer	Role
Routes	Defines the HTTP API endpoints
Controllers	Contains logic for data validation, querying, and responses
Models	Defines how data is structured in MongoDB
Middleware	Manages request handling, security, and error handling
DB Connection	Connects to MongoDB using Mongoose



Database:

Operation	Code Example
Create User	User.create ({ name, email, password })
Login (Find User)	User.findOne({ email })
Post Project	Project.create({ title, createdBy: userId })
List Projects	Project.find().populate('createdBy')
Apply to Project	Application.create({ projectId, freelancerId, coverLetter })
View Applications	Application.find({ projectId }).populate('freelancerId')



Database structure for freelance finder project

4. Setup Instructions :

- ## Prerequisites:

For Both Frontend and Backend:

Node.js (v16 or above)
→ Download Node.js
MongoDB (Local or MongoDB Atlas)
→ Download MongoDB
Visual Studio Code
Git (optional)
→ Download Git

Installation:

1. Clone or extract the project files (with client and server folders).
2. Install backend dependencies: cd server && npm install
3. Create .env in server/ with MongoDB URI and PORT.
4. Install frontend dependencies: cd client && npm install
5. Start the backend server: cd server && npm start
6. Start the frontend app: cd client && npm start
7. Open in browser at: http://localhost:3000

5. Folder Structure :

- **Client:**

```
client/
├── public/
│   └── index.html
├── src/
│   ├── components/
│   │   └── Navbar.js, Footer.js, etc.
│   ├── pages/
│   │   └── Home.js, Login.js, Register.js, Dashboard.js, etc.
│   ├── services/
│   │   └── api.js  ← Axios calls to backend
│   ├── App.js      ← Main component with routes
│   ├── index.js    ← Entry point that renders App
│   └── styles/     ← (Optional) CSS files
├── package.json
└── .env
```

Folder Purpose:

- public/
  Contains the index.html file where the React app is injected.

- src/components/
  Holds reusable UI elements like buttons, headers, navbars.

- src/pages/
  Contains full page components for different routes (like Home, Login, Register).

- src/services/
  Manages API calls to the backend using Axios.

- App.js
  Central component that defines all the routes.

- index.js
  Starting point of the app; renders <App /> to the DOM.

- .env
  Stores environment variables like the backend API URL.

This structure keeps the frontend modular, organized, and easy to maintain**.**

Server:

server/

├── models/

│ └── User.js, Project.js, Application.js # MongoDB schemas

├── routes/

│ └── userRoutes.js, projectRoutes.js # API route handlers

├── controllers/ (optional)

│ └── Logic separated from routes

├── config/

│ └── db.js # MongoDB connection setup

├── .env # Environment variables

├── index.js # Main server file (entry point)

├── package.json # Lists dependencies & scripts

Folder/Files Description

- **models/**
  Contains Mongoose schemas for different data models like users, projects, and applications.

- **routes/**
  Defines REST API endpoints (e.g., /api/users, /api/projects) and links them to logic.

- **controllers/** *(if used)*
  Holds business logic functions (e.g., login, register, create project), keeping route files clean.

- **config/db.js**
  Establishes connection to MongoDB using Mongoose.

- **index.js**
  The main entry point that sets up the Express server, middleware, and routes.

- **.env**
  Stores sensitive config values like PORT and MONGO_URI.

- **package.json**
  Declares project dependencies (e.g., express, mongoose, cors, dotenv).

6. Running the Application :

- Provide commands to start the frontend servers locally.
- **Frontend:**
- Open your terminal
- Navigate to the client directory cd client

- Start the React development server:
- npm start
- This will run the frontend at:
  http://localhost:3000

Backend:

Open Visual Studio Code or your terminal.

2️⃣ Go to the backend directory:

cd server

3️⃣ Install the required packages:

npm install

4️⃣ Create a .env file in the server folder with this content:

env

PORT=5000

MONGO_URI=mongodb://localhost:27017/freelance_finder

5️⃣ Start the backend server:

npm start

6️⃣ Backend is now running at:

http://localhost:5000

- **7. API Documentation:**

  1. Register User

  - Method: POST
  - URL: /api/users/register
  - Body: name, email, password
  - Creates a new user

  2. Login User

  - Method: POST
  - URL: /api/users/login

- Body: email, password
- Returns a token for login

3. Post New Project

- Method: POST
- URL: /api/projects
- Headers: Authorization token
- Body: title, description, budget
- Creates a project (client only)

4. Get All Projects

- Method: GET
- URL: /api/projects
- Shows list of all projects

5. Apply to Project

- Method: POST
- URL: /api/applications
- Headers: Authorization token
- Body: projectId, proposal
- Freelancer applies to a project

6. Get Applications by Project

- Method: GET
- URL: /api/applications/:project
- Shows all applications to one project

8. Authentication:

1. User Authentication

- Users (Clients or Freelancers) **register** using:
    - POST /api/users/register
- They **log in** using:
    - POST /api/users/login

2. JWT Token Generation

- When a user logs in:
    - The server checks the email & password.
    - If valid, it creates a **JWT token** using jsonwebtoken.
    - This token contains the user's ID and role (client or freelancer).

3. Token Usage

- The frontend stores the token (e.g., in localStorage).
- For protected API routes, the token is sent in the request headers:

4. Route Protection

- Middleware (authMiddleware.js) on the server:
    - Reads the token.
    - Verifies it using a secret key.
    - Grants or denies access based on role (client/freelancer).

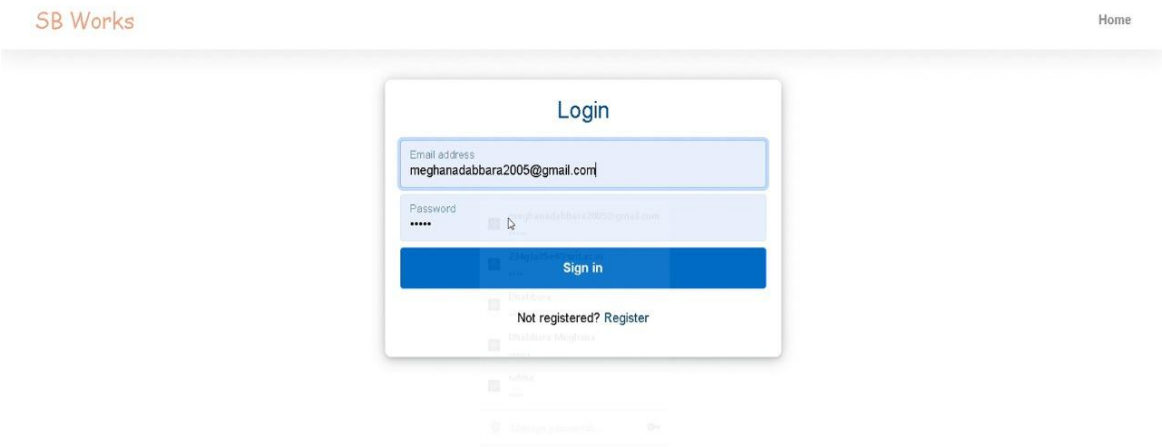
5. Role-based Authorization

- Only **clients** can:
    - Post projects
- Only **freelancers** can:
    - Apply to projects

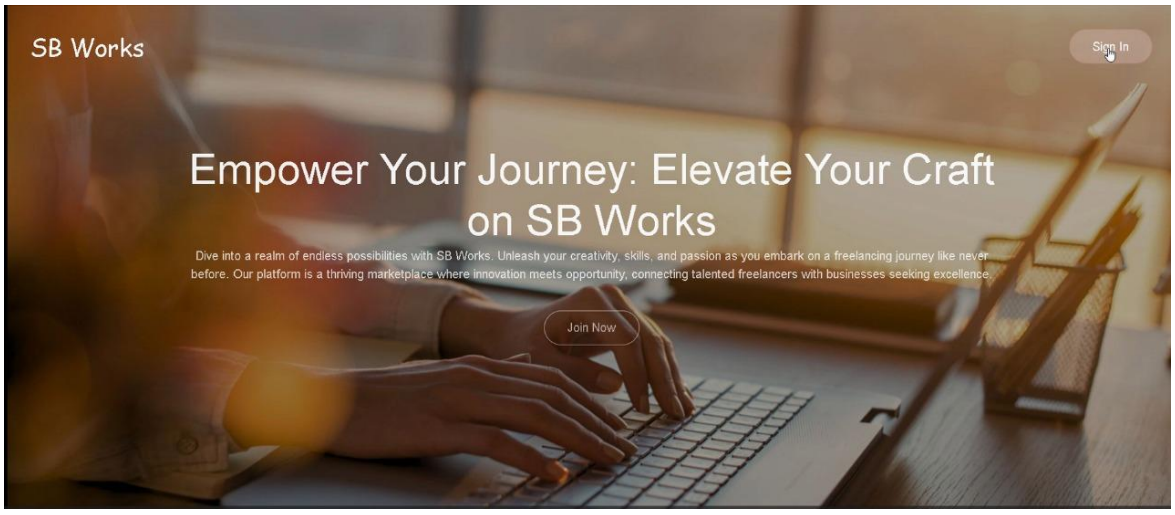
- Both can:
    - View projects

Technologies Used

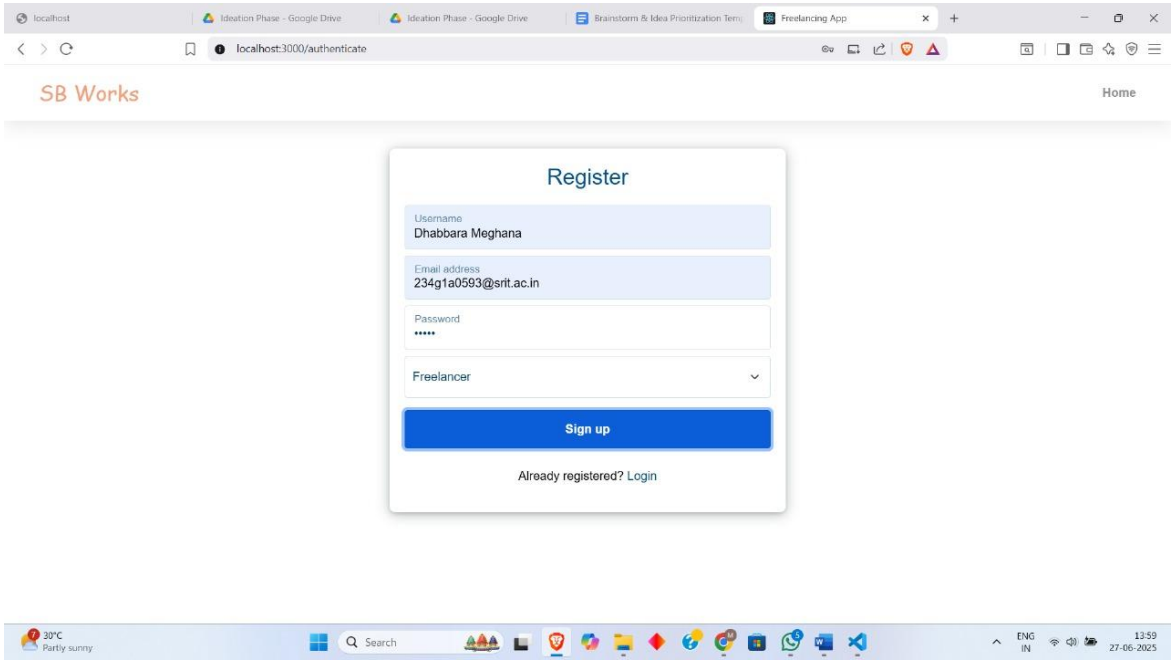
Purpose	Tool Used
Password Hashing	bcryptjs
Token Creation	jsonwebtoken
Middleware Logic	Express.js



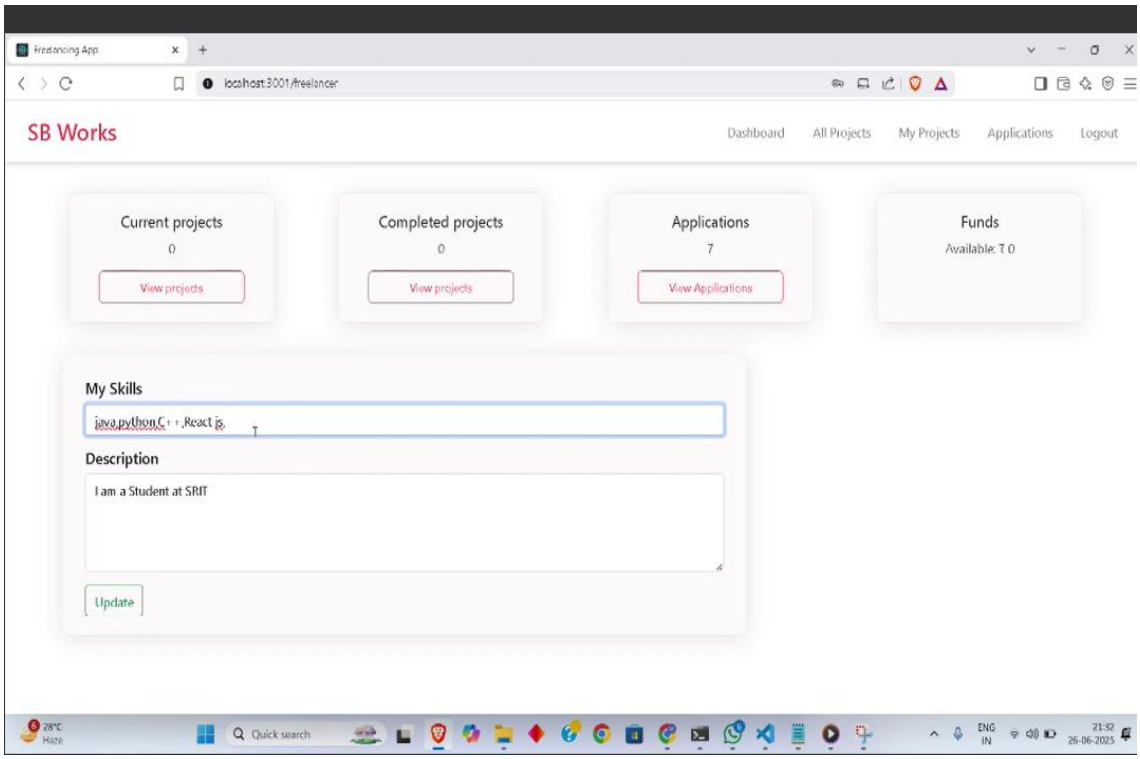
10.User Interface: Home Page:



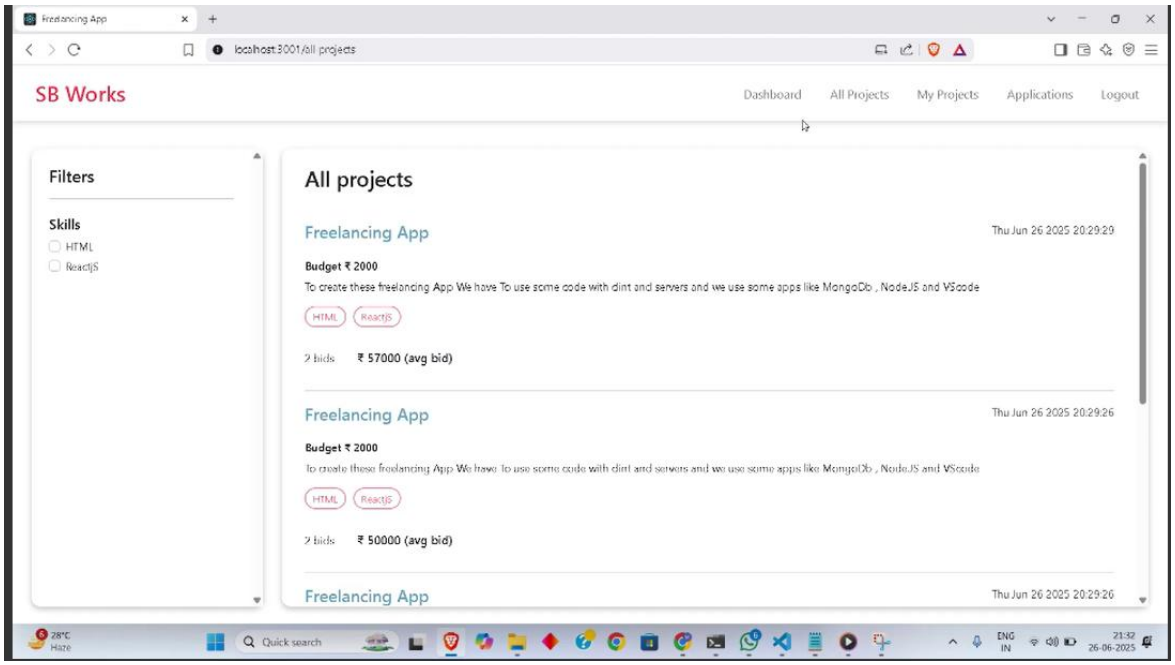
User Registration / Login:



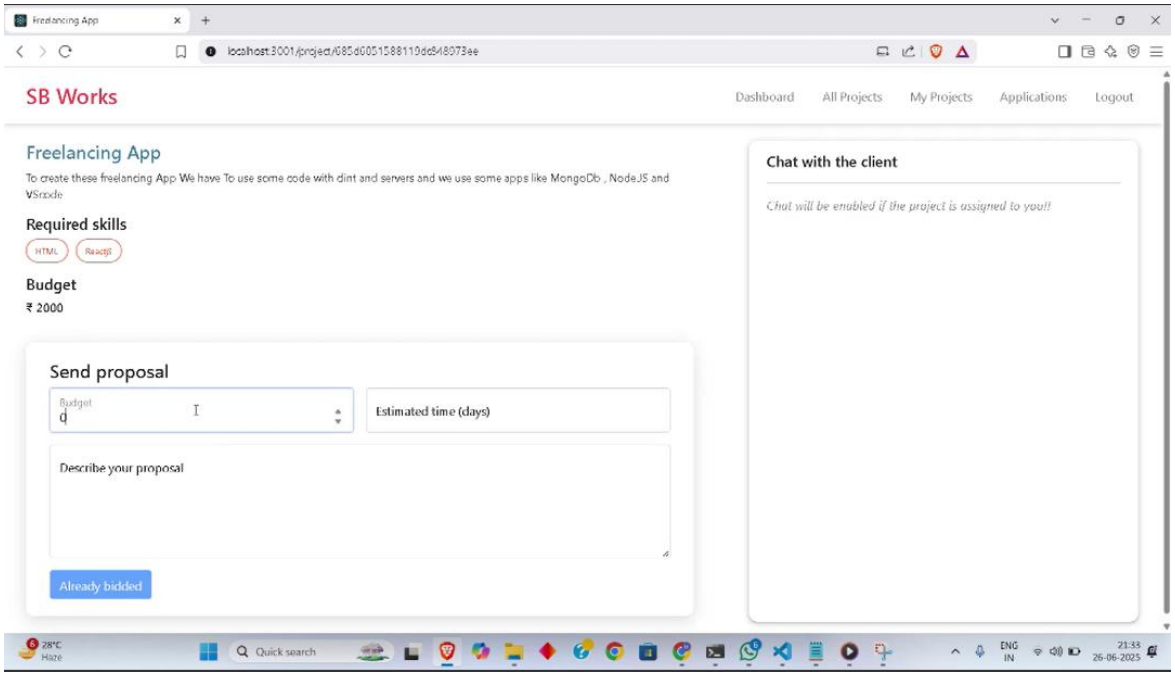
Client Dashboard:



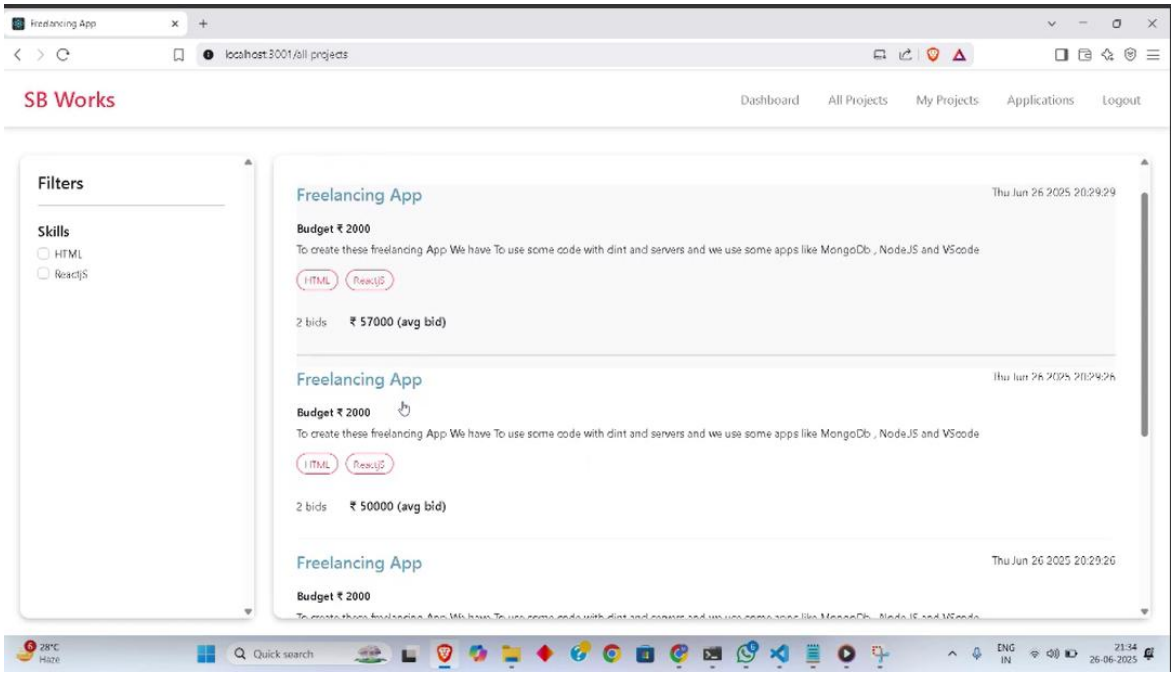
Freelancer Dashboard:



Project Details:



Responsive Design:



10 .Testing :

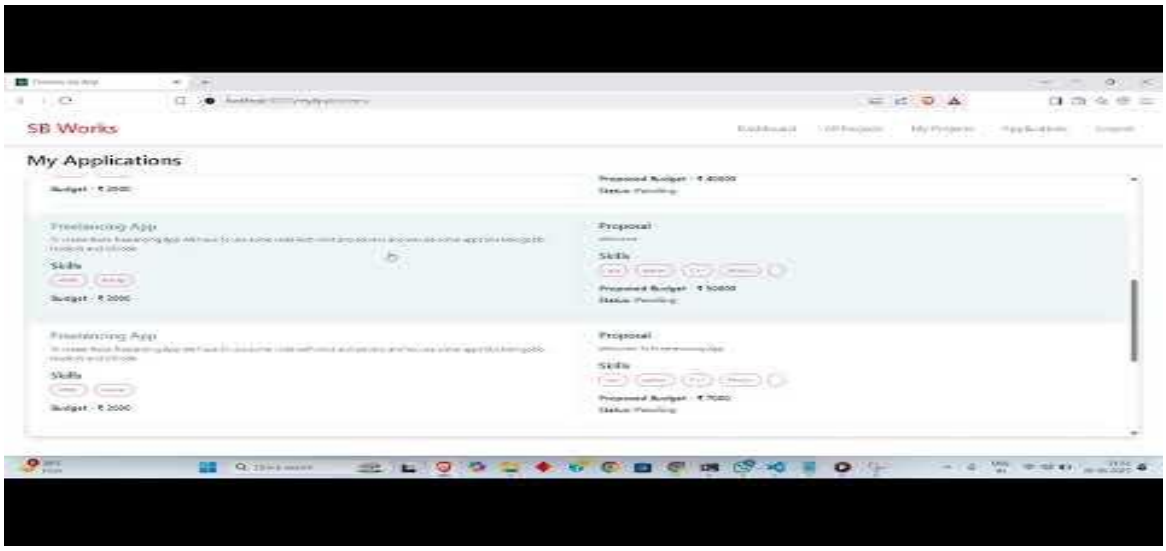
Frontend Testing (React)

- **Type:** Manual Testing
- **What was tested:**
    - Form inputs (registration, login, project posting)
    - Button clicks and page navigation
    - Conditional rendering based on user roles (client/freelancer)
- **Tool Used:**
    - React Developer Tools (browser extension)
    - Browser console logs and alerts

Backend Testing (Node.js/Express):

- **Type:** Basic Automated Testing (Optional) + Manual API Testing
- **Tools:**
    - **Postman** – for sending test requests to backend routes.
    - **MongoDB Compass** – to verify stored data.
- **What was tested:**
    - User registration/login endpoints
    - Token-based route protection
    - Project creation and retrieval
    - Application submission

11. Screenshots or Demo:



12. Known Issues:

Form Validation

- ❗ **Issue:** Forms do not always show clear error messages if required fields are left blank.
- 💡 **Fix Suggestion:** Add client-side validation using libraries like Formik or Yup.

Token Expiry Handling

- ❗ **Issue:** Expired JWT tokens are not always handled properly; users remain on the dashboard until a manual refresh.
- 💡 **Fix Suggestion:** Add automatic logout or token refresh mechanism on expiry.

No Role-Based UI Restriction

- ❗ **Issue:** UI does not always hide unauthorized buttons (e.g., freelancers might see "Post Project").
- 💡 **Fix Suggestion:** Add role checks on the frontend components.

No Password Reset Option

- ❗ **Issue:** There is no "Forgot Password" or reset functionality.
- 💡 **Fix Suggestion:** Implement password reset via email using NodeMailer or similar.

Limited Mobile Responsiveness

- ❗ **Issue:** Some pages may not display properly on smaller screens.
- 💡 **Fix Suggestion:** Improve mobile layout with responsive CSS or a framework like Bootstrap/Tailwind.

13. Future Enhancements:

1. Advanced Search & Filters

- Add filters for category, budget, experience level, and location to improve project and freelancer discovery.

2. Email Notifications

- Send automated emails for actions like application received, project accepted, or account registered.

3. Real-Time Chat

- Integrate a messaging system so clients and freelancers can communicate directly on the platform.

4. Mobile App

- Build a mobile version using **React Native** for better accessibility on phones and tablets.

5. Profile Enhancements

- Add profile pictures, skill tags, portfolio uploads, and ratings/reviews for freelancers and clients.

6. Payment Integration

- Implement payment gateways like **Stripe** or **Razorpay** for secure in-app payments between clients and freelancers.

7. Admin Dashboard

- Create an admin panel to manage users, projects, and monitor system usage.

8. Two-Factor Authentication (2FA)

- Improve account security with SMS/email-based 2FA during login.