Implementation Document

for

ConnVerse

Version 1.0

Prepared by Team MahaDevS

Group #3: **Group Name:** ***MahaDevS***

Aaditi Anil Agrawal	220006	aaditiaa22@iitk.ac.in
Arshit	220209	arshitsk22@iitk.ac.in
Chayan Kumawat	220309	chayank22@iitk.ac.in
Dobariya Jenil Bharatbhai	220385	dobariyajb22@iitk.ac.in
Harsh Agrawal	220425	harshag22@iitk.ac.in
Harshit	220436	harshit22@iitk.ac.in
Harshit Srivastava	220444	harshitsr22@iitk.ac.in
Naman Kumar Jaiswal	220687	namankj22@iitk.ac.in
Prem Kansagra	220816	premk22@iitk.ac.in
Priyanshu Singh	220830	spriyanshu22@iitk.ac.in

Course:	CS253
Mentor TA:	*Abhilash*
Date:	March 18, 2024

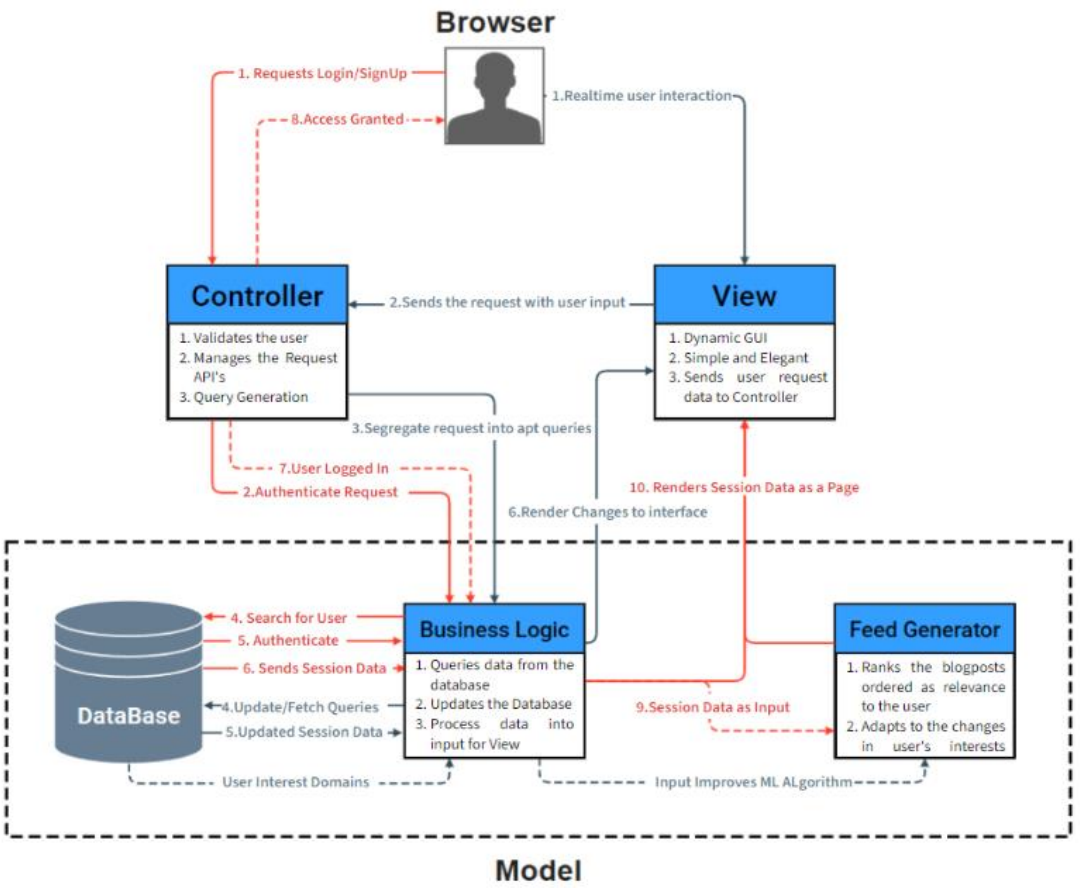
Table of Contents

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.1	Aaditi Anil Agrawal Arshit Chayan Kumawat Dobariya Jenil Bharatbhai Harsh Agrawal Harshit Harshit Srivastava Naman Kumar Jaiswal Prem Kansagra Priyanshu Singh	The First Draft of ConnVerse Implementation.	18/03/2024
1.2	MahaDevS	Second Draft including API endpoint images from POSTMAN Testing	19/03/2024

1 Implementation Details

ConnVerse Implements a Model View Controller Architecture for integrating the backend and frontend of the Application. This Architecture is essential in the building of this application as it allows us to make individual components which are streamlined to efficiently perform the specific tasks that they need and provide a clean code space hierarchy for us to navigate and work.


Browser
1. Requests Login/SignUp
8.Access Granted
1.Realtime user interaction
Controller
1. Validates the user
2. Manages the Request API's
3. Query Generation
2.Sends the request with user input
View
1. Dynamic GUI
2. Simple and Elegant
3. Sends user request data to Controller
3.Segregate request into apt queries
7.User Logged In
2.Authenticate Request
10. Renders Session Data as a Page
6.Render Changes to interface
4. Search for User
5. Authenticate
6. Sends Session Data
4.Update/Fetch Queries
5.Updated Session Data
DataBase
Business Logic
1. Queries data from the database
2. Updates the Database
3. Process data into input for View
9.Session Data as Input
Feed Generator
1. Ranks the blogposts ordered as relevance to the user
2. Adapts to the changes in user's interests
User Interest Domains
Input Improves ML ALgorithm
Model

Architectural Hierarchy:

1. **View (Frontend):** This is the User Interface which the user will interact with and acts as a layer between User (Browser) and Backend. We have implemented a React based web application frontend for this role.

2. **Controller (Frontend) – First level of processing of User interaction data**
   a. **User Authentication:** This logic authenticates any Login request from the user and generate a user session for a successful login. It also handles the cases of register/ alum Register differently. We are also using Crypto JS for the task of Authentication Encryption. We are using an Authentication algorithm in Go for this role.
   b. **User Interaction Handler:** This proactively detects any interaction of the User with the frontend and generate the necessary Model requests which will generate the required changes which have to be operated on the View.

3. **Model (Backend) – Combination of Business Logic Tier and Database Tier**

a. **Query Logic:** This is the part of the Business Logic which generates the necessary Queries to the MongoDB Database. This includes any CRUD Command (Create Read/Fetch Update Delete) for any user, blog, chat, or profile.
b. **Database:** This is key to our Software. The Database stores current users' data, their profile data, their blogs/comments, and even personalized messages. Most API call that is made to the server, involves the database.
c. **View Update:** This is the front-end handler which updates the exact React components for any interaction the user makes with the View. This is the component-based model of ReactJS.
d. **Feed Generator:** This ranks the feeds in the order of relevance to the user's profile and the interests he has selected as tags.

Code Implementation Sub-Codebases:

1. **Frontend:**
This directory contains all the front-end components that are used in developing the user interface of the application. We have primarily used **HTML**, **CSS**, and **JavaScript** for UI design. While HTML is the code that determines what the website will contain, CSS controls how it will look. JavaScript and its frameworks make the website interactive and responsive to a user's actions. HTML provides the structure while CSS makes the web page aesthetic and JavaScript makes it lively.
The front end is developed using **ReactJS** (a JavaScript framework used to make the content on a page dynamic). Why ReactJS was extensively used for frontend development?
   a. **Performance Optimization:** ReactJS features like memoization (optimize performance of functions by caching results of expensive function calls), PureComponent (base class that implements a shallow comparison of props and state to determine whether a component should re-render) and React.memo (higher-order component provided by React that memoizes the result of a functional component rendering) to optimize rendering performance and reduce unnecessary re-renders.
   b. **Virtual DOM:** In a state change of the application (State Diagram) only the necessary components of the Virtual DOM (in-memory representation of the actual DOM) get updated. This efficient reconciliation algorithm minimizes the performance overhead associated with updating the UI.
   c. **Component-Based Architecture:** React breaks down the UI elements into reusable modular components which enhances maintainability and scalability in large complex UIs.
   d. **Unidirectional Data Flow:** React promotes a unidirectional data flow from parent components to child components. This simplifies data management and makes it easier to reason about the state of the application while development phase of the software.

Some of the React UI components are picked from **MUI (Material UI)** and **ChakraUI** - popular open-source React component library that provides a set of advanced accessible and customizable UI components.
This helps in saving time in developing some of the react components from scratch and decrease the time to market so that we can start the Customer feedback loop and start working on what the customer wants.

2. **Backend (main-backend):**
   This directory contains all the necessary functions to react to all the API requests that are called off the User interactions with the interface and call necessary Database Query requests and View Updates.
   This backend is written in **Go**. **Gin**, a popular web framework in Go, is used to provide a route-based approach to defining HTTP endpoints and handling requests and responses.

   Why Go and Gin were chosen for writing a large chunk of Backend over staple meta-picks like Java or Python?
   a. **Concurrency:** Go was designed with concurrency in mind, making it easy to write efficient, concurrent programs. Goroutines (lightweight threads) and channels provide powerful abstractions for concurrent programming, allowing thousands of concurrent connections and tasks.
   b. **Speedy Performance and Memory Management:** Go compiles to native machine code, resulting in fast execution speed and low resource consumption. Go has an automatic memory management through garbage collection. This reduces the risk of memory leaks and segmentation faults common in languages with manual memory management, making backend code more robust and reliable. Go's runtime environment has a relatively small memory footprint compared to some other languages and runtimes.
   c. **Efficient Garbage Collection:** Go's garbage collector (GC) is optimized for low-latency and concurrent operation. It uses a concurrent, tri-color mark and sweep algorithm, which minimizes pauses and allows the program to continue running smoothly even during garbage collection cycles. This means that backend services built in Go experience fewer interruptions due to GC pauses, ensuring consistent performance even under heavy load.
   d. **Cross-platform Support:** Backed by Google, Go supports compilation to various platforms and architectures, making it easy to write backend services that can run on different operating systems and environments without modification.

3. **Backend (chat_system):**
   This directory contains all the necessary implementation of the chat system. This is written primarily in JavaScript on **NodeJS** runtime environment. This is a Micro Service Architecture we are using to reduce the load on the primary backend. **ExpressJS** is also as a side-by-side NodeJS as a fast, minimalist web framework which provides robust set of features for Server Management while remaining lightweight and flexible.

   Why did we choose NodeJS for Chat Implementation and not go or any other language?
   a. NodeJS has excellent ease of development and better community support. NodeJS runtime is event-driven and handles asynchronous non-blocking I/O operations extremely well. The chat system's requirements are well met by NodeJS runtime.
   b. Also deploying NodeJS web services are very easy, and they integrate seamlessly with the existing Model as a microservice architecture.

Database Management:

1. **MongoDb:** We are using MongoDb as the primary centralised database for storing all the data regarding users, their profile data, their blog entries, their comments as well as their personal messages. MongoDb is a very popular pick for database because:
    a. **Flexible Schema Design:** MongoDB is a document-oriented database that uses a flexible schema design. Unlike traditional relational databases, MongoDB does not require a predefined schema, allowing developers to store and manipulate data in a more flexible and dynamic manner.
    b. **Scalability:** MongoDB is designed to be scaled horizontally enabling it to handle large volumes of data and high traffic loads. If the software is tested successful, it can soon be brought to handle real-time load.
    c. **Cross-Platform Compatibility:** MongoDB is platform-independent and runs on various operating systems also providing official drivers and client libraries for various popular programming languages such as Go and JavaScript etc. This Enables developers to integrate MongoDB into their applications regardless of the technology stack.

2. **MongoDB Go Driver:** We are using MongoDB Go Driver to establish connection between Go runtime and MongoDB database. This is the official Go Driver, which is not only standardised but also secure, safe, and always kept up to standards by a Google Team. Not using the best as well as the most trustworthy driver for initialising database connection will be foolish.

3. **Mongoose:** A popular Object Data Modeling (ODM) library for MongoDB in NodeJS which provides a higher-level abstraction over the MongoDB NodeJS driver, allowing developers to interact with MongoDB databases using a more expressive and intuitive syntax. Mongoose supports built-in custom data validation rules that can be applied to schema fields. Mongoose also gives the freedom of Schema modelling which gives the back end engineer a lot of freedom and flexibility to work with.

Development and version control environment:

1. We have used **Git** as our version control system. It is the most used version control system that is used for software development and other version control tasks. It tracks the changes you make to files, so you have a record of what has been done and allows us to revert to specific versions whenever we need to. It also makes collaboration easier, allowing changes by multiple people to all to be merged into one source.
2. **GitHub**, a web-based Git repository hosting service was also used to manage our repositories and collaborate amongst ourselves. This online service currently stores our Software code and has made deployment and testing way easier subconsciously.

Multi Server Backend:

We have a single View connected to two servers, one being the main backend and the other being the micro service. Both servers are connected to the same database. The controller will decide which server to send the API request to and both the servers are free to fetch queries from the database.
Why is such a system better?

1. **Language Specialization:** Different languages have different strengths and weaknesses. Go has excellent capability for performing concurrent tasks, outstanding garbage collection, speedy execution and memory management. NodeJS has excellent ease of development and better community support. NodeJS runtime is event-driven and handles non-blocking I/O operations extremely well.
2. **Micro Performance Optimization:** Using both the languages for the tasks they are excellent in handling helps the micro handling of the application very well. Go can handle API requests very well while NodeJS event-driven architecture suits the chat implementation very well.
3. **Microservices Architecture:** The chat is implemented as a Web Micro Service the main backend that was written in Go. Microservice architecture breaks down a monolithic application into smaller, more manageable services that can be developed, deployed, and scaled independently.
4. **Multiple Servers:** Use of two servers at the same time ensures division of labour as well as on an average makes sure that the weight on each server is uniformly distributed. This is multi front performance optimization.

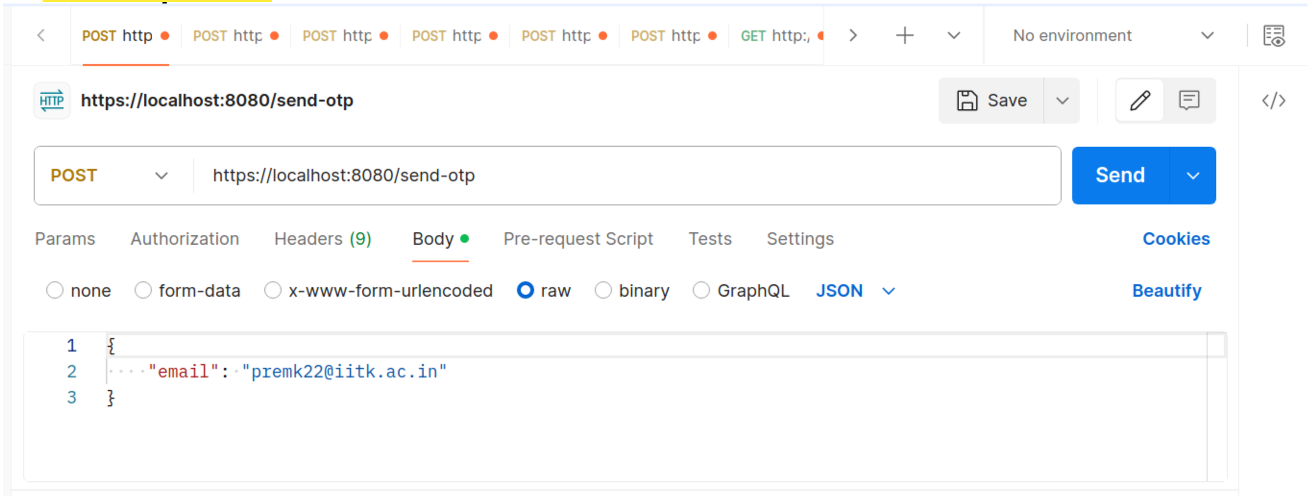
Authentication and Authorization:

1. **CryptoJS:** We are also using **CryptoJS** (a JavaScript library that provides cryptographic algorithms and functions) as an encryptor. This helps us in User Authentication (frontend) as well as in Data Authentication (backend). Hashing and Encrypting is essential for securing data from cases of data leaks. The user security is one of the prime concerns for a Connect and Converse App like ConnVerse.

2. **EmailJS:** While registering new users we are also inculcating email verification which is achieved by using EmailJS (a JavaScript library that simplifies the process of sending emails from client-side JavaScript code). EmailJS is the free, simple, easy to setup and has high cross-platform compatibility and the undoubted best option for simple emailing protocols.

3. **JWS (JSON Web Signature):** JWS is a compact, URL-safe means of representing signed content using JSON data structure. It is mandatory to digitally sign JSON data to ensure its integrity and authenticity whenever the data is returned after being processed from diverse sources. JWS is widely adopted and standardised method of digital signature. Given its compactness, ease-of-use, and security, deterring from it makes no sense.

API Endpoints:

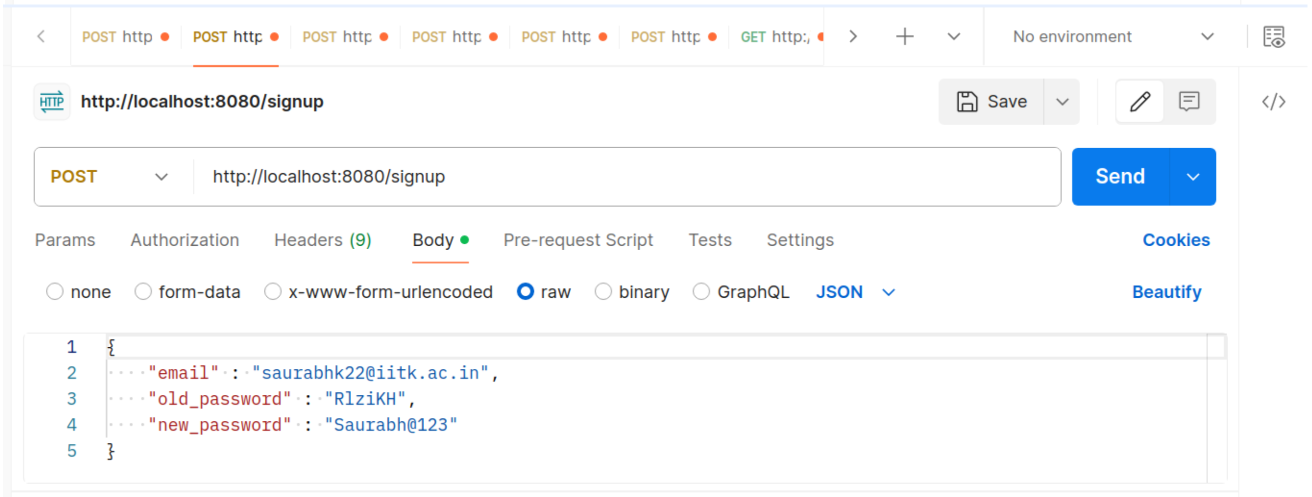


https://localhost:8080/send-otp

POST https://localhost:8080/send-otp

Body: raw, JSON

```json
{
    "email": "premk22@iitk.ac.in"
}
```

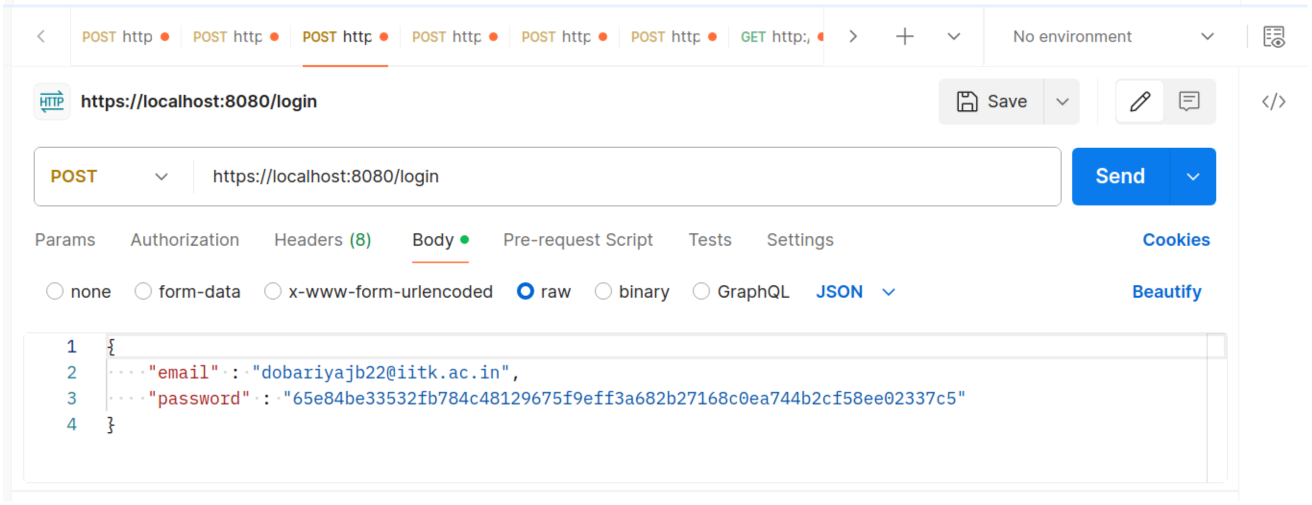


http://localhost:8080/signup

POST http://localhost:8080/signup

Body: raw, JSON

```json
{
    "email" : "saurabhk22@iitk.ac.in",
    "old_password" : "RlziKH",
    "new_password" : "Saurabh@123"
}
```

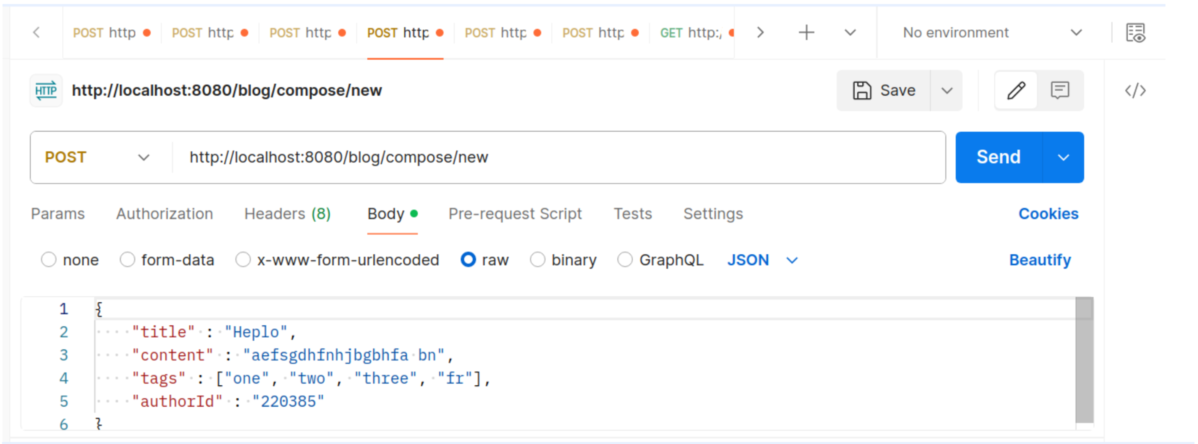


https://localhost:8080/login

POST https://localhost:8080/login

Body: raw, JSON

```json
{
    "email" : "dobariyajb22@iitk.ac.in",
    "password" : "65e84be33532fb784c48129675f9eff3a682b27168c0ea744b2cf58ee02337c5"
}
```

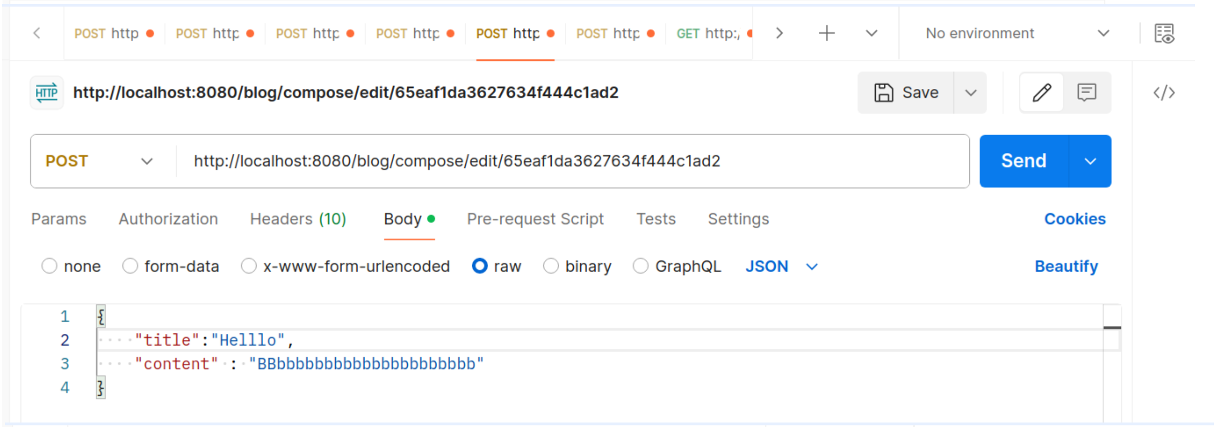


POST http://localhost:8080/blog/compose/new

Params | Authorization | Headers (8) | Body ● | Pre-request Script | Tests | Settings | Cookies

none | form-data | x-www-form-urlencoded | [✓ raw] | binary | GraphQL | JSON | Beautify

```
{
    "title" : "Heplo",
    "content" : "aefsgdhfnhjbgbhfa bn",
    "tags" : ["one", "two", "three", "fr"],
    "authorId" : "220385"
}
```

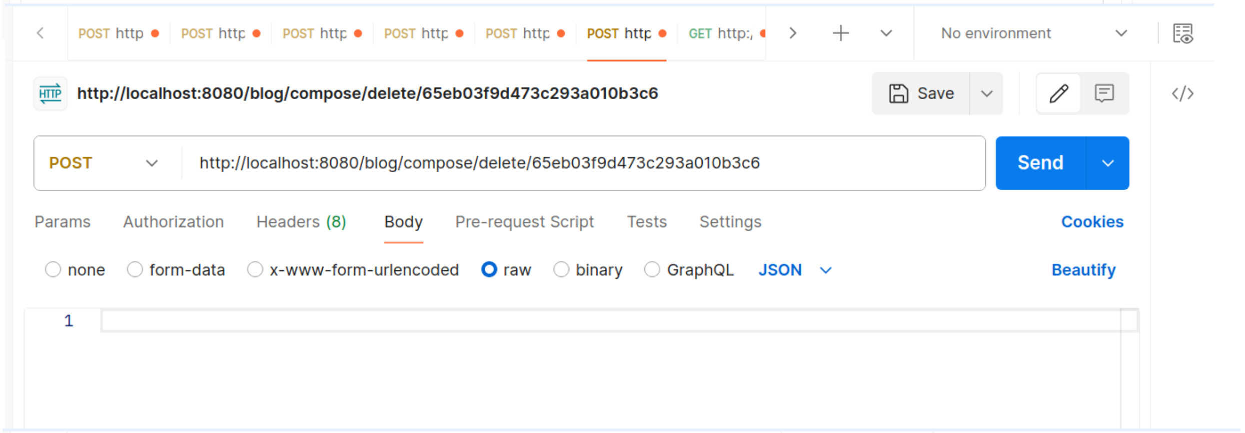


POST http://localhost:8080/blog/compose/edit/65eaf1da3627634f444c1ad2

Params | Authorization | Headers (10) | Body ● | Pre-request Script | Tests | Settings | Cookies

none | form-data | x-www-form-urlencoded | [✓ raw] | binary | GraphQL | JSON | Beautify

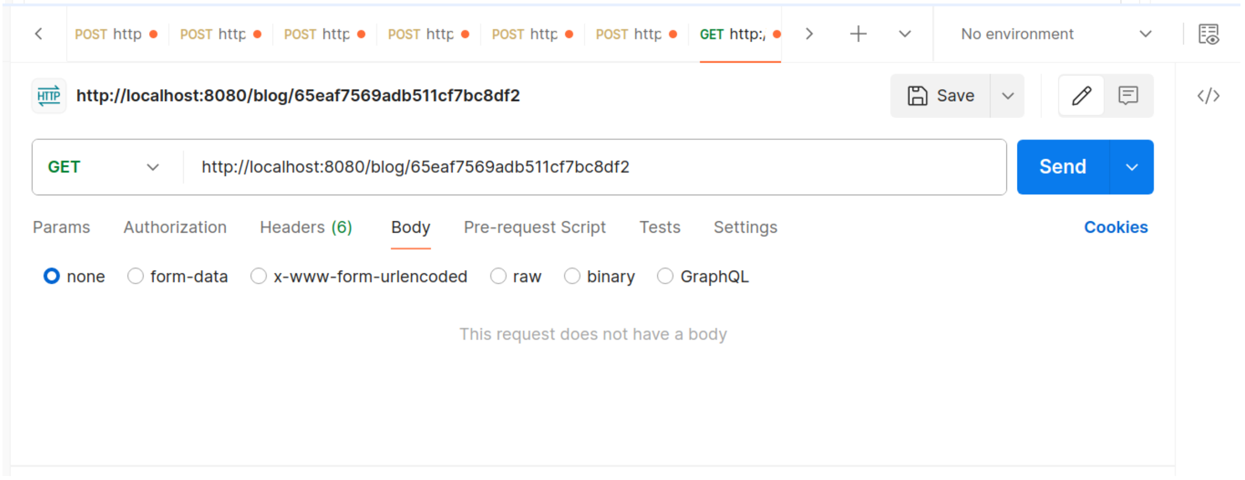
```
{
    "title":"Helllo",
    "content" : "BBbbbbbbbbbbbbbbbbbbbbb"
}
```



POST http://localhost:8080/blog/compose/delete/65eb03f9d473c293a010b3c6

Params | Authorization | Headers (8) | Body | Pre-request Script | Tests | Settings | Cookies

none | form-data | x-www-form-urlencoded | [✓ raw] | binary | GraphQL | JSON | Beautify

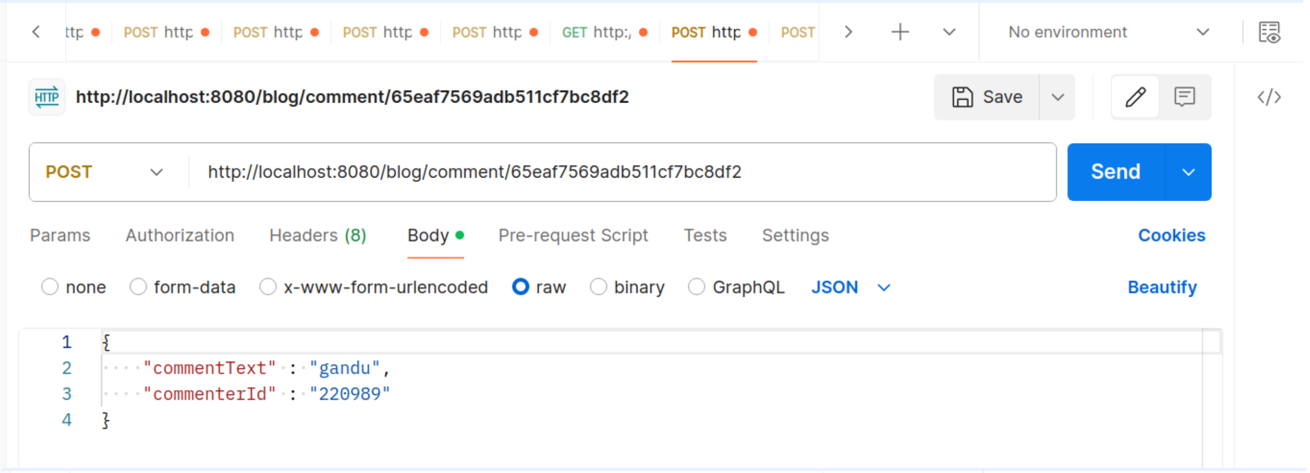


GET http://localhost:8080/blog/65eaf7569adb511cf7bc8df2

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

[✓ none] | form-data | x-www-form-urlencoded | raw | binary | GraphQL

This request does not have a body

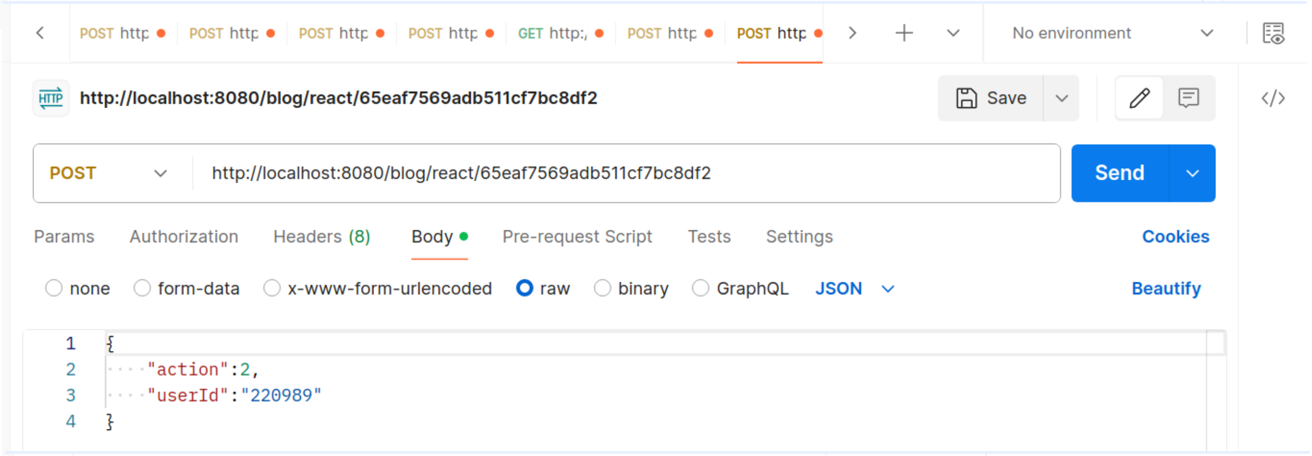


http://localhost:8080/blog/comment/65eaf7569adb511cf7bc8df2

POST http://localhost:8080/blog/comment/65eaf7569adb511cf7bc8df2

none form-data x-www-form-urlencoded [✓ raw] binary GraphQL JSON

```
{
    "commentText" : "gandu",
    "commenterId" : "220989"
}
```

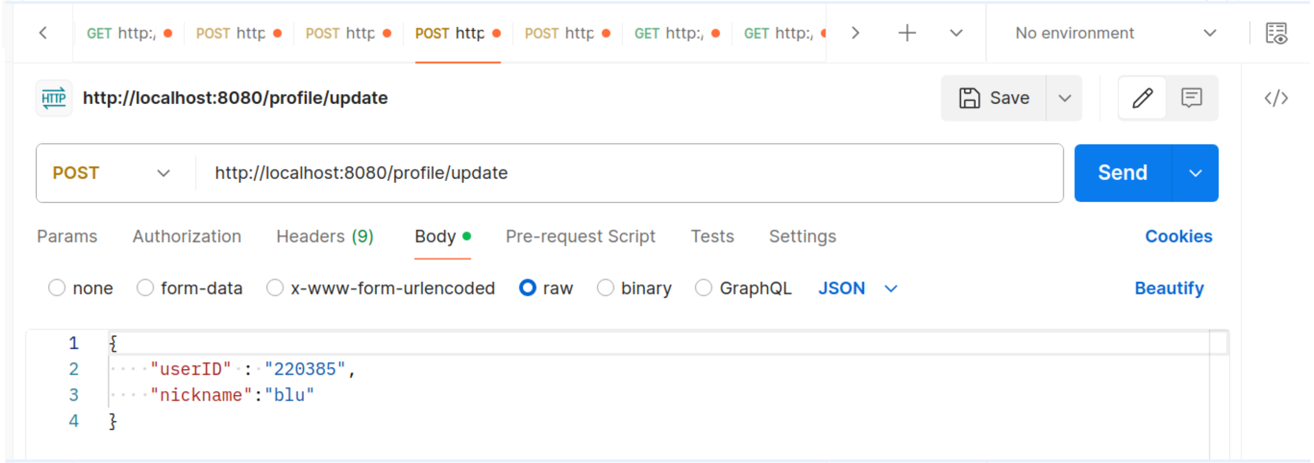


http://localhost:8080/blog/react/65eaf7569adb511cf7bc8df2

POST http://localhost:8080/blog/react/65eaf7569adb511cf7bc8df2

none form-data x-www-form-urlencoded [✓ raw] binary GraphQL JSON

```
{
    "action":2,
    "userId":"220989"
}
```

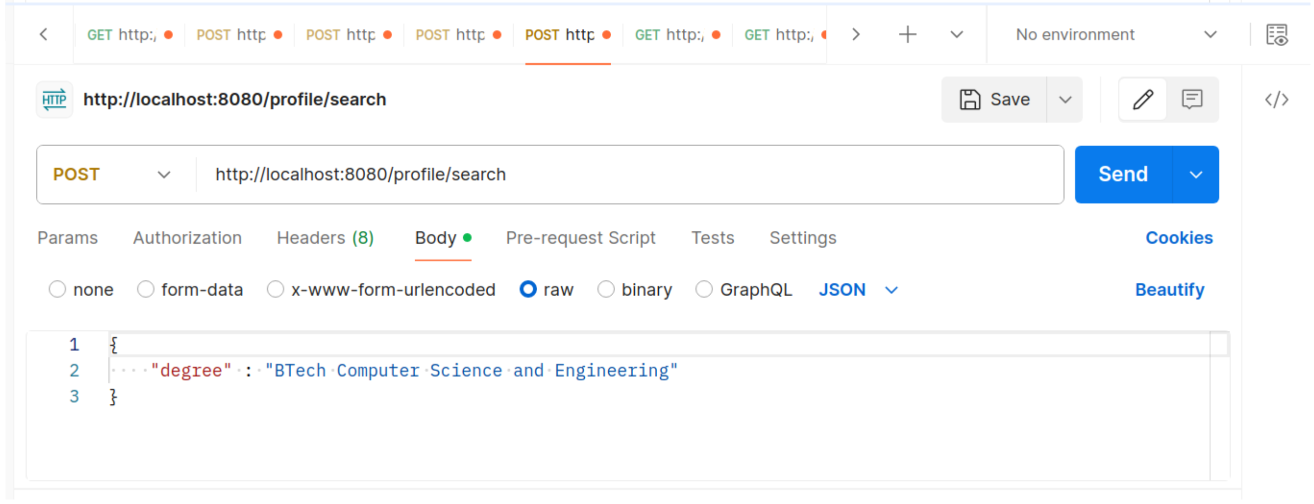


http://localhost:8080/profile/update

POST http://localhost:8080/profile/update

none form-data x-www-form-urlencoded [✓ raw] binary GraphQL JSON

```
{
    "userID" : "220385",
    "nickname":"blu"
}
```

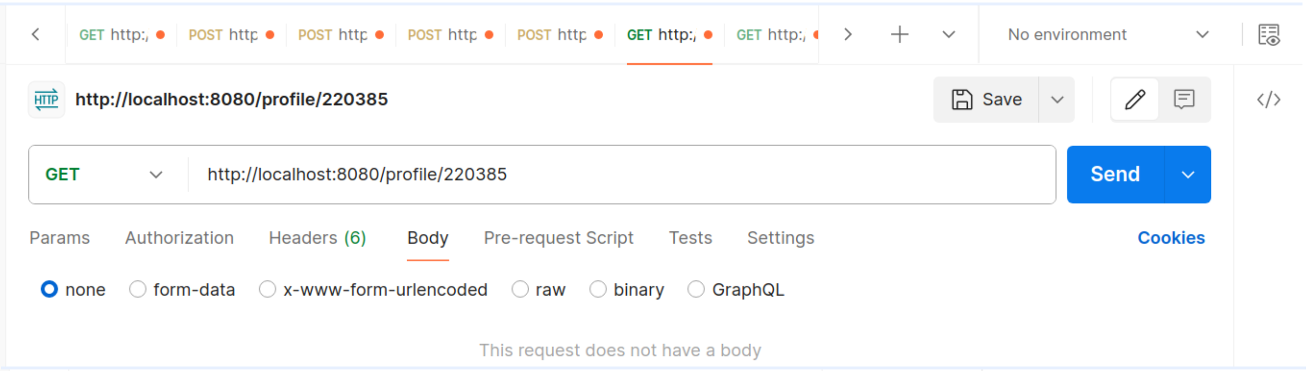


http://localhost:8080/profile/search

POST http://localhost:8080/profile/search

none form-data x-www-form-urlencoded [✓ raw] binary GraphQL JSON

```
{
    "degree" : "BTech Computer Science and Engineering"
}
```


GET http:// POST http POST http POST http POST http GET http:// GET http:// | No environment

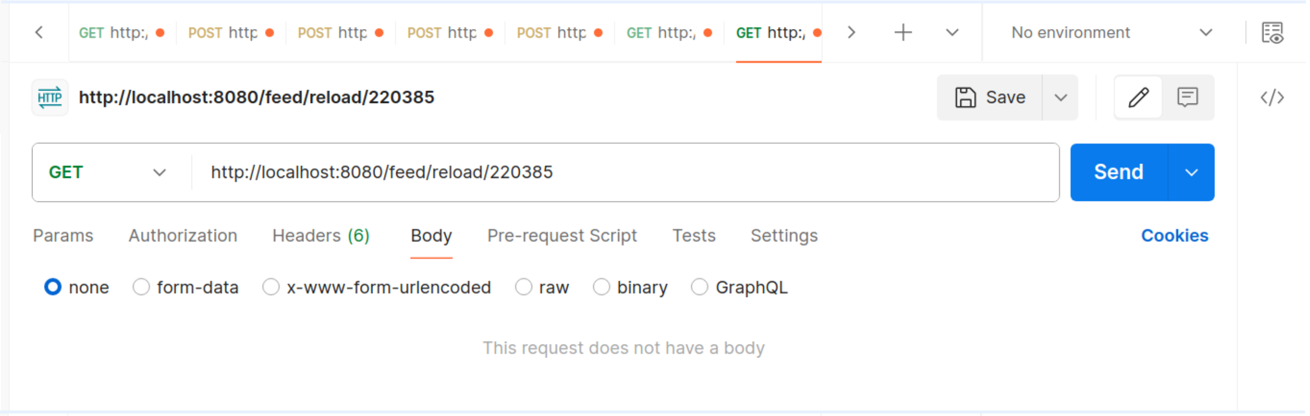
http://localhost:8080/profile/220385 | Save

GET | http://localhost:8080/profile/220385 | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

[✓ none] form-data x-www-form-urlencoded raw binary GraphQL

This request does not have a body


GET http:// POST http POST http POST http POST http GET http:// GET http:// | No environment

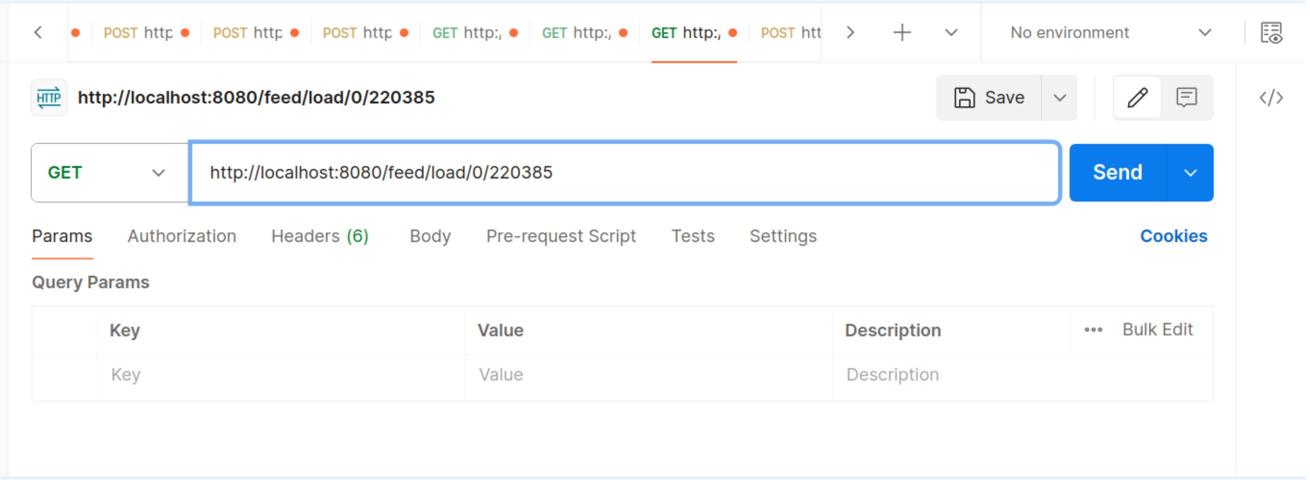
http://localhost:8080/feed/reload/220385 | Save

GET | http://localhost:8080/feed/reload/220385 | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

[✓ none] form-data x-www-form-urlencoded raw binary GraphQL

This request does not have a body


POST http POST http POST http GET http:// GET http:// GET http:// POST htt | No environment

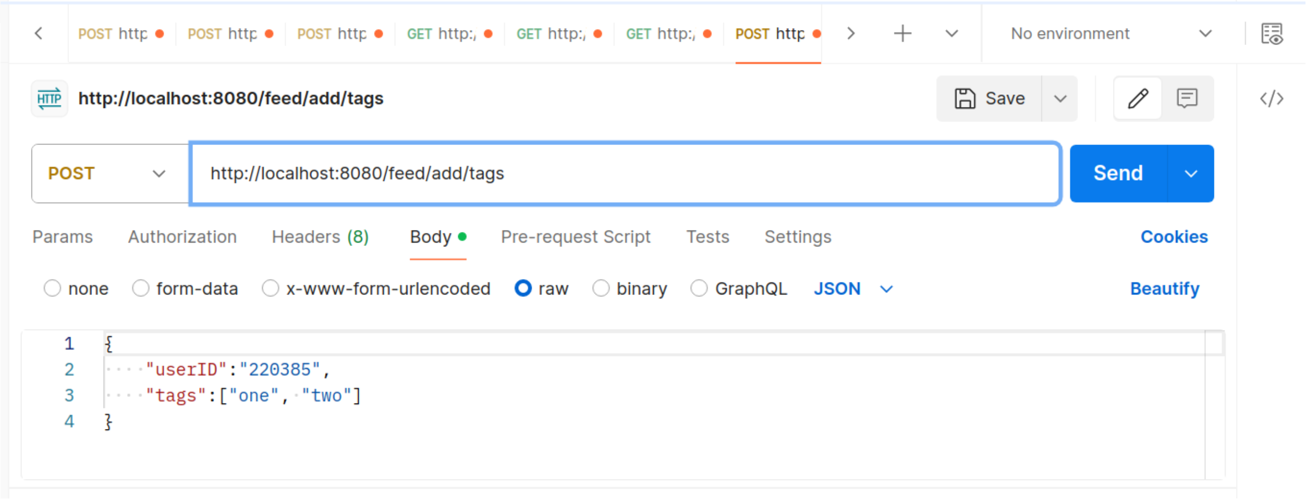
http://localhost:8080/feed/load/0/220385 | Save

GET | http://localhost:8080/feed/load/0/220385 | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

Query Params

Key	Value	Description
Key	Value	Description


POST http POST http POST http GET http:// GET http:// GET http:// POST http | No environment

http://localhost:8080/feed/add/tags | Save

POST | http://localhost:8080/feed/add/tags | Send

Params | Authorization | Headers (8) | Body | Pre-request Script | Tests | Settings | Cookies

none form-data x-www-form-urlencoded [✓ raw] binary GraphQL JSON | Beautify

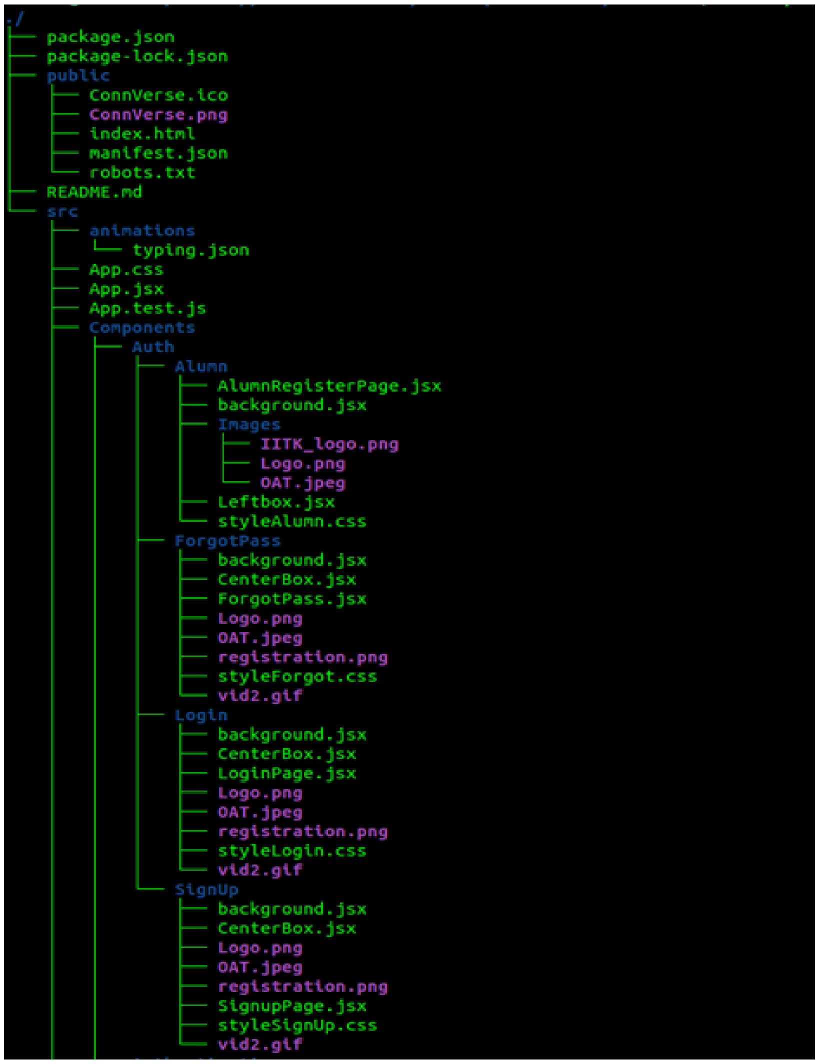
```json
{
    "userID":"220385",
    "tags":["one", "two"]
}
```

2 Codebase

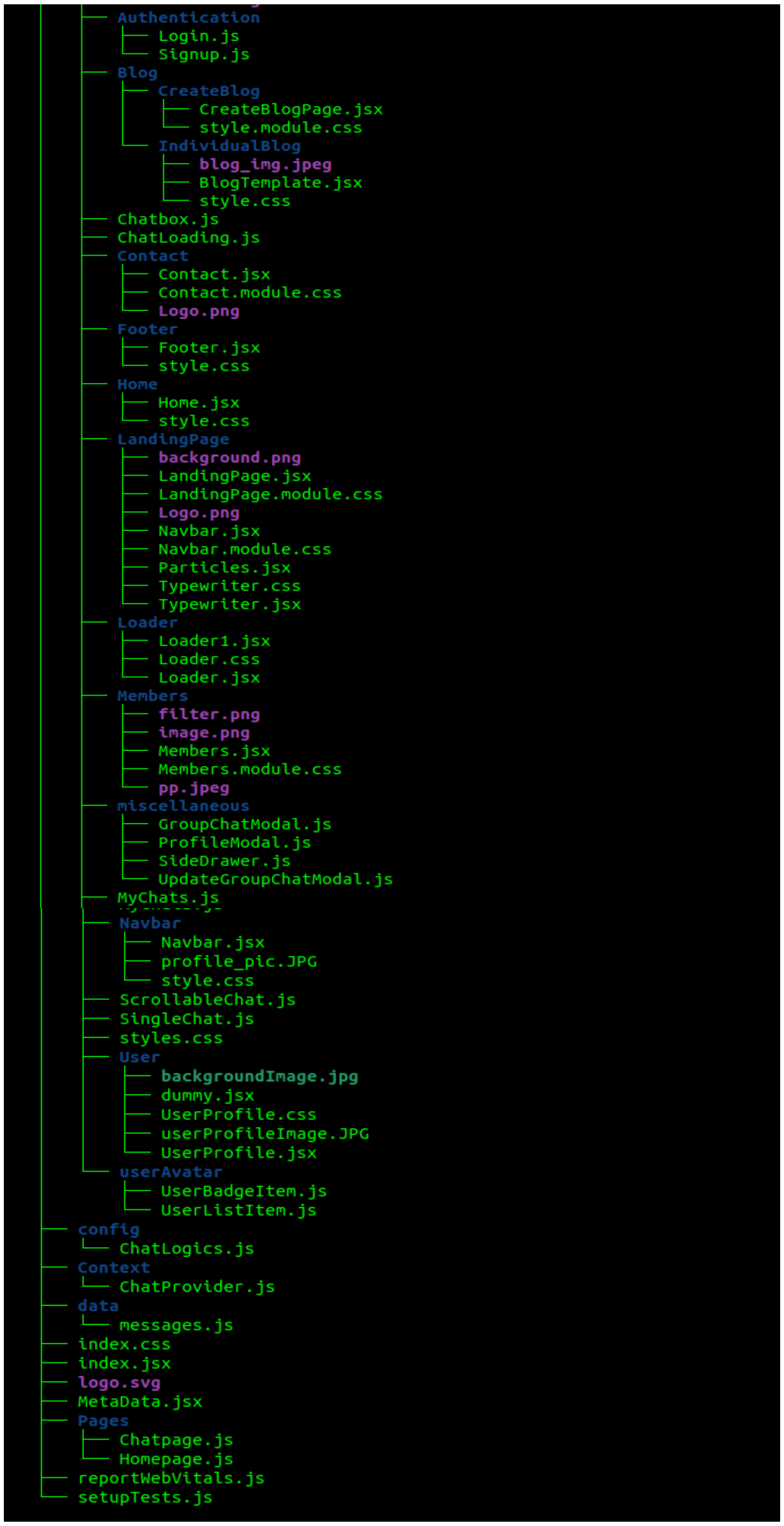
GitHub link of code implementation: https://github.com/Naman-K-Jaiswal/ConnVerse.git

We have built a single repository which contains both the backends as well as the react front-end. We have segregated the Code Implementation from the Documentation into different directories and divided the Code Implementation into three portions – frontend, backend, and chat system.

1. **Frontend:**



```
./
├── package.json
├── package-lock.json
├── public
│   ├── ConnVerse.ico
│   ├── ConnVerse.png
│   ├── index.html
│   ├── manifest.json
│   └── robots.txt
├── README.md
└── src
    ├── animations
    │   └── typing.json
    ├── App.css
    ├── App.jsx
    ├── App.test.js
    ├── Components
    │   ├── Auth
    │   │   ├── Alumn
    │   │   │   ├── AlumnRegisterPage.jsx
    │   │   │   ├── background.jsx
    │   │   │   ├── Images
    │   │   │   │   ├── IITK_logo.png
    │   │   │   │   ├── Logo.png
    │   │   │   │   └── OAT.jpeg
    │   │   │   ├── Leftbox.jsx
    │   │   │   └── styleAlumn.css
    │   │   ├── ForgotPass
    │   │   │   ├── background.jsx
    │   │   │   ├── CenterBox.jsx
    │   │   │   ├── ForgotPass.jsx
    │   │   │   ├── Logo.png
    │   │   │   ├── OAT.jpeg
    │   │   │   ├── registration.png
    │   │   │   ├── styleForgot.css
    │   │   │   └── vid2.gif
    │   │   ├── Login
    │   │   │   ├── background.jsx
    │   │   │   ├── CenterBox.jsx
    │   │   │   ├── LoginPage.jsx
    │   │   │   ├── Logo.png
    │   │   │   ├── OAT.jpeg
    │   │   │   ├── registration.png
    │   │   │   ├── styleLogin.css
    │   │   │   └── vid2.gif
    │   │   └── SignUp
    │   │       ├── background.jsx
    │   │       ├── CenterBox.jsx
    │   │       ├── Logo.png
    │   │       ├── OAT.jpeg
    │   │       ├── registration.png
    │   │       ├── SignupPage.jsx
    │   │       ├── styleSignUp.css
    │   │       └── vid2.gif
```

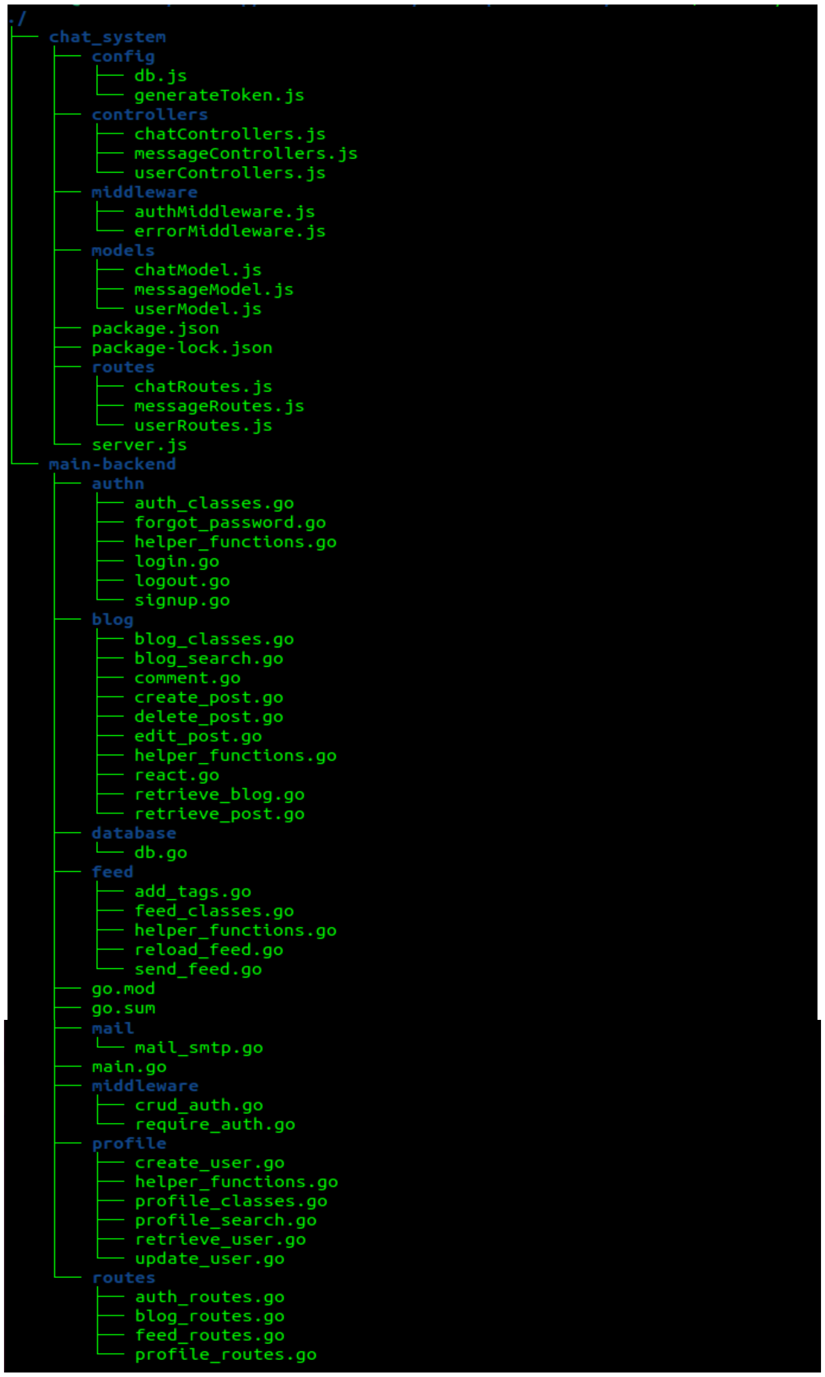


```
│   ├── Authentication
│   │   ├── Login.js
│   │   └── Signup.js
│   ├── Blog
│   │   ├── CreateBlog
│   │   │   ├── CreateBlogPage.jsx
│   │   │   └── style.module.css
│   │   └── IndividualBlog
│   │       ├── blog_img.jpeg
│   │       ├── BlogTemplate.jsx
│   │       └── style.css
│   ├── Chatbox.js
│   ├── ChatLoading.js
│   ├── Contact
│   │   ├── Contact.jsx
│   │   ├── Contact.module.css
│   │   └── Logo.png
│   ├── Footer
│   │   ├── Footer.jsx
│   │   └── style.css
│   ├── Home
│   │   ├── Home.jsx
│   │   └── style.css
│   ├── LandingPage
│   │   ├── background.png
│   │   ├── LandingPage.jsx
│   │   ├── LandingPage.module.css
│   │   ├── Logo.png
│   │   ├── Navbar.jsx
│   │   ├── Navbar.module.css
│   │   ├── Particles.jsx
│   │   ├── Typewriter.css
│   │   └── Typewriter.jsx
│   ├── Loader
│   │   ├── Loader1.jsx
│   │   ├── Loader.css
│   │   └── Loader.jsx
│   ├── Members
│   │   ├── filter.png
│   │   ├── image.png
│   │   ├── Members.jsx
│   │   ├── Members.module.css
│   │   └── pp.jpeg
│   ├── miscellaneous
│   │   ├── GroupChatModal.js
│   │   ├── ProfileModal.js
│   │   ├── SideDrawer.js
│   │   └── UpdateGroupChatModal.js
│   ├── MyChats.js
│   ├── Navbar
│   │   ├── Navbar.jsx
│   │   ├── profile_pic.JPG
│   │   └── style.css
│   ├── ScrollableChat.js
│   ├── SingleChat.js
│   ├── styles.css
│   ├── User
│   │   ├── backgroundImage.jpg
│   │   ├── dummy.jsx
│   │   ├── UserProfile.css
│   │   ├── userProfileImage.JPG
│   │   └── UserProfile.jsx
│   └── userAvatar
│       ├── UserBadgeItem.js
│       └── UserListItem.js
├── config
│   └── ChatLogics.js
├── Context
│   └── ChatProvider.js
├── data
│   └── messages.js
├── index.css
├── index.jsx
├── logo.svg
├── MetaData.jsx
├── Pages
│   ├── Chatpage.js
│   └── Homepage.js
├── reportWebVitals.js
└── setupTests.js
```

We have 105 files over 28 directories:

a. **package.json** - Contains all the necessary dependencies that need to be installed before running the application.
b. **README.md** - Contains step by step instructions on how to boot the server.
c. **public/manifest.json** - Contains human readable meta-data about the Project.
d. **public/index.html** - This is the primary web page that gets loaded onto the view and react components are loaded onto it.
e. **public –** Contains all the static assets that need to be present on the View.
f. **src/components** - Contains all the react components that are used while the app in in use.

2. Backend:



```
./
├── chat_system
│   ├── config
│   │   ├── db.js
│   │   └── generateToken.js
│   ├── controllers
│   │   ├── chatControllers.js
│   │   ├── messageControllers.js
│   │   └── userControllers.js
│   ├── middleware
│   │   ├── authMiddleware.js
│   │   └── errorMiddleware.js
│   ├── models
│   │   ├── chatModel.js
│   │   ├── messageModel.js
│   │   └── userModel.js
│   ├── package.json
│   ├── package-lock.json
│   ├── routes
│   │   ├── chatRoutes.js
│   │   ├── messageRoutes.js
│   │   └── userRoutes.js
│   └── server.js
└── main-backend
    ├── authn
    │   ├── auth_classes.go
    │   ├── forgot_password.go
    │   ├── helper_functions.go
    │   ├── login.go
    │   ├── logout.go
    │   └── signup.go
    ├── blog
    │   ├── blog_classes.go
    │   ├── blog_search.go
    │   ├── comment.go
    │   ├── create_post.go
    │   ├── delete_post.go
    │   ├── edit_post.go
    │   ├── helper_functions.go
    │   ├── react.go
    │   ├── retrieve_blog.go
    │   └── retrieve_post.go
    ├── database
    │   └── db.go
    ├── feed
    │   ├── add_tags.go
    │   ├── feed_classes.go
    │   ├── helper_functions.go
    │   ├── reload_feed.go
    │   └── send_feed.go
    ├── go.mod
    ├── go.sum
    ├── mail
    │   └── mail_smtp.go
    ├── main.go
    ├── middleware
    │   ├── crud_auth.go
    │   └── require_auth.go
    ├── profile
    │   ├── create_user.go
    │   ├── helper_functions.go
    │   ├── profile_classes.go
    │   ├── profile_search.go
    │   ├── retrieve_user.go
    │   └── update_user.go
    └── routes
        ├── auth_routes.go
        ├── blog_routes.go
        ├── feed_routes.go
        └── profile_routes.go
```

We have 54 files over 15 directories:

a. **main-backend/go.sum -** Contains all the expected cryptographic checksums of the content of specific module versions used in the project. It ensures that the downloaded dependencies match the expected checksums to prevent tampering or unexpected changes.
b. **main-backend/go.mod** - Defines the module path and contains all the module's dependencies along with their versions.
c. **main-backend/main.go** - The main package's entry point file in the application. The essential file for the server to boot in.
d. **main-backend/build.sh** - Contains the script for building the backend of the application.
e. **main-backend/authn** - Contains all functionalities of authentication a login attempt or registering a new use (or alum). Defines all the environment variables.
f. **main-backend/database** - Initialise the connection with the database.
g. **main-backend/mail** - Implementing mailing for the purpose of registration.
h. **main-backend/routes** - Contains the route handlers and routing logic for different endpoints of the application.
i. **main-backend/profile** - Contains the functionalities that any user will be able to enjoy after logging in.
j. **main-backend/blog** - Contains the functionalities that enables any user to write new blogs, edit old one, delete old ones.
k. **main-backend/feed** - Contains the feed generator for the user which ranks the blogs user might be interested in, in terms of relevance.
l. **main-backend/routes** - Contains the route handlers and routing logic for different endpoints of the application.
m. **chat_system/package.json -** Contains the human readable metadata about the Chat Micro Service that is written in NodeJS. It also tracks the dependencies that is required to deploy the micro service.
n. **chat_system/routes** - Contains modules or files that define the routes and route handlers for various parts of the Micro Service.
o. **chat_system/config -** Contains configuration files (scripts) that establish connection with the database.
p. **chat_system/server.js**- Serves as the entry point for the server. It is responsible for creating and configuring the Chat application, setting up middleware, defining routes, and starting the server to listen for incoming HTTP requests.

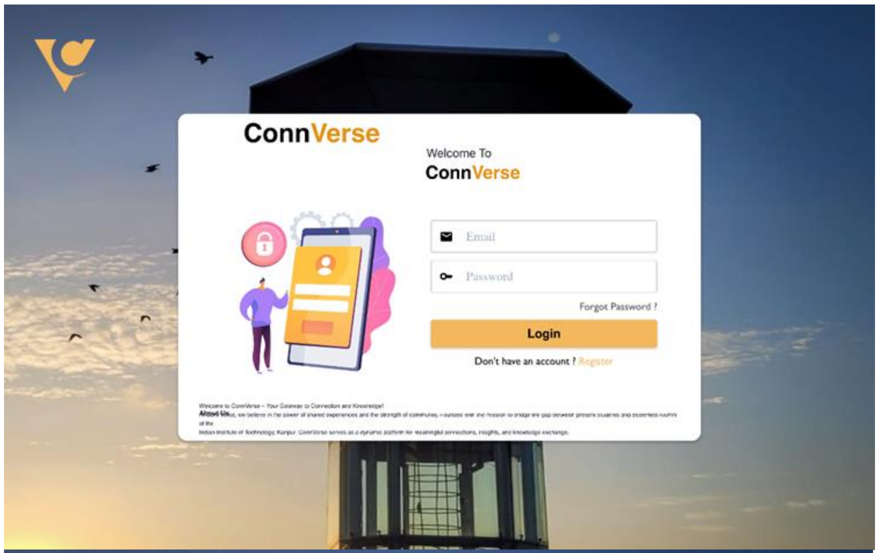
3 Completeness

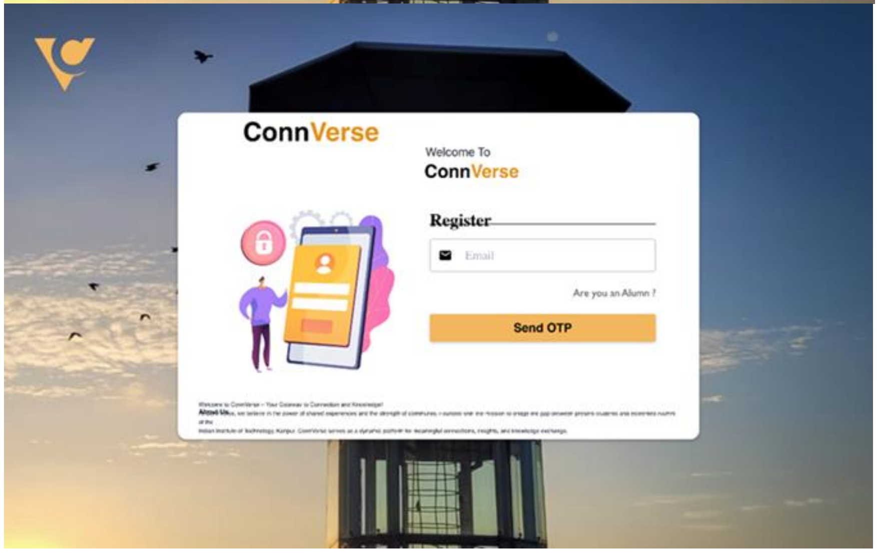
The “Section 3: Specific Requirements” of Software Requirements Specification Document lists all the desired product functionality. Let us go over them one at a time.

External Interface Requirements:

1. User Interfaces:

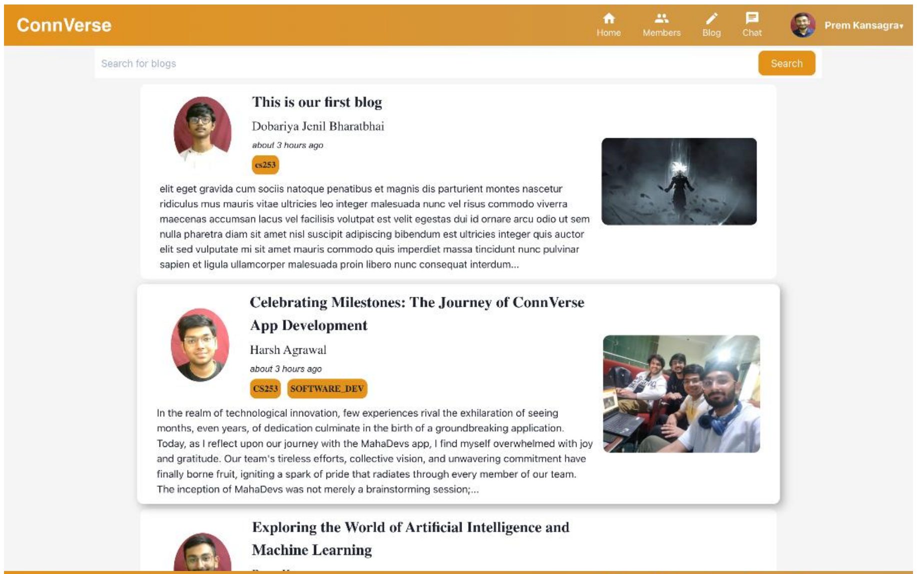
- **Login Page and Sign-Up Page:**





This is the login / Sign Up page where the user will land after the landing page and enter their credentials

- **Homepage:**



This is our first blog

Dobariya Jenil Bharatbhai

about 3 hours ago

cs253

elit eget gravida cum sociis natoque penatibus et magnis dis parturient montes nascetur ridiculus mus mauris vitae ultricies leo integer malesuada nunc vel risus commodo viverra maecenas accumsan lacus vel facilisis volutpat est velit egestas dui id ornare arcu odio ut sem nulla pharetra diam sit amet nisl suscipit adipiscing bibendum est ultricies integer quis auctor elit sed vulputate mi sit amet mauris commodo quis imperdiet massa tincidunt nunc pulvinar sapien et ligula ullamcorper malesuada proin libero nunc consequat interdum...

Celebrating Milestones: The Journey of ConnVerse App Development

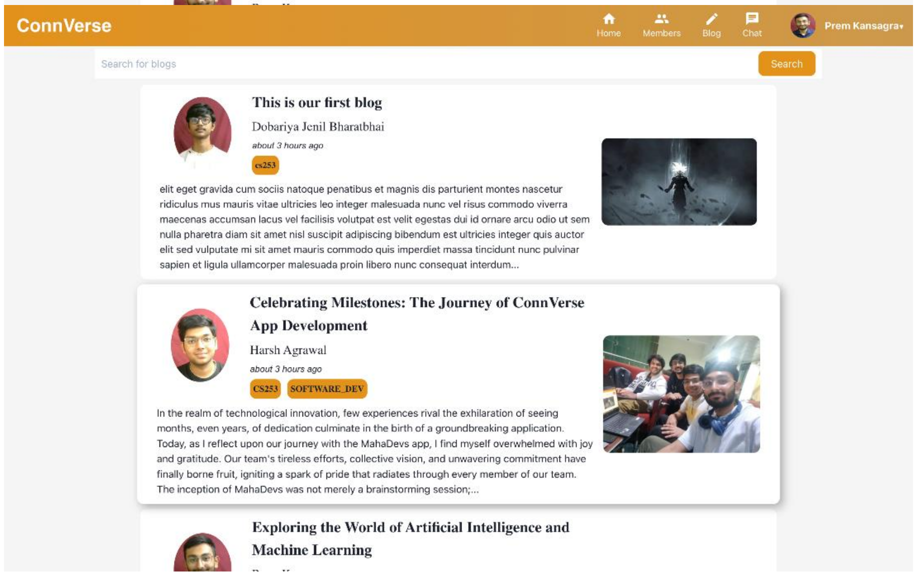
Harsh Agrawal

about 3 hours ago

CS253 SOFTWARE_DEV

In the realm of technological innovation, few experiences rival the exhilaration of seeing months, even years, of dedication culminate in the birth of a groundbreaking application. Today, as I reflect upon our journey with the MahaDevs app, I find myself overwhelmed with joy and gratitude. Our team's tireless efforts, collective vision, and unwavering commitment have finally borne fruit, igniting a spark of pride that radiates through every member of our team. The inception of MahaDevs was not merely a brainstorming session;...

Exploring the World of Artificial Intelligence and Machine Learning


ConnVerse
Home
Members
Blog
Chat
Prem Kansagra
Search for blogs
Search

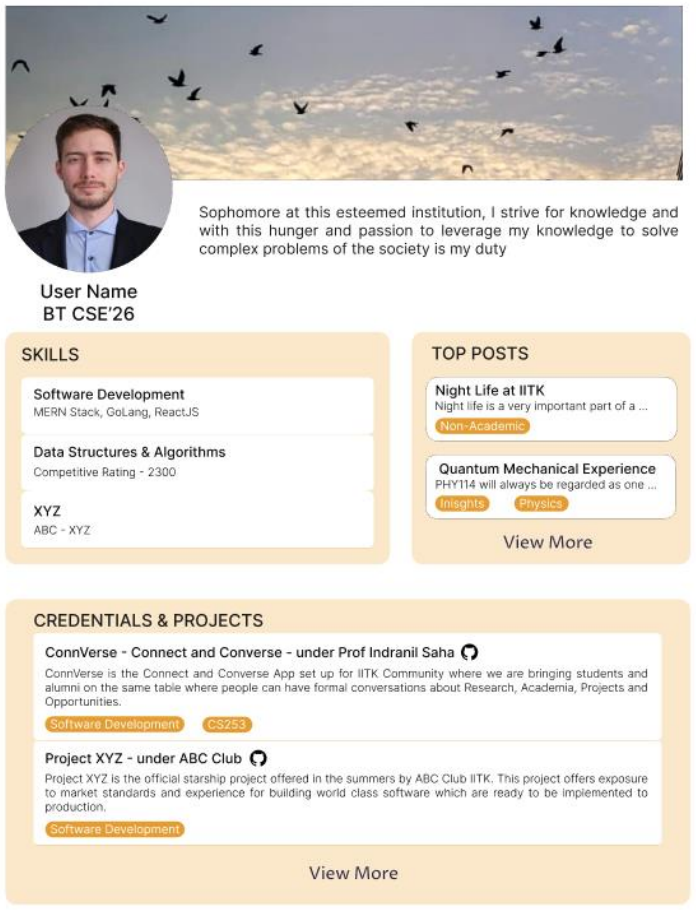
This is our first blog
Dobariya Jenil Bharatbhai
about 3 hours ago
cs253
elit eget gravida cum sociis natoque penatibus et magnis dis parturient montes nascetur ridiculus mus mauris vitae ultricies leo integer malesuada nunc vel risus commodo viverra maecenas accumsan lacus vel facilisis volutpat est velit egestas dui id ornare arcu odio ut sem nulla pharetra diam sit amet nisl suscipit adipiscing bibendum est ultricies integer quis auctor elit sed vulputate mi sit amet mauris commodo quis imperdiet massa tincidunt nunc pulvinar sapien et ligula ullamcorper malesuada proin libero nunc consequat interdum...

Celebrating Milestones: The Journey of ConnVerse App Development
Harsh Agrawal
about 3 hours ago
CS253 SOFTWARE_DEV
In the realm of technological innovation, few experiences rival the exhilaration of seeing months, even years, of dedication culminate in the birth of a groundbreaking application. Today, as I reflect upon our journey with the MahaDevs app, I find myself overwhelmed with joy and gratitude. Our team's tireless efforts, collective vision, and unwavering commitment have finally borne fruit, igniting a spark of pride that radiates through every member of our team. The inception of MahaDevs was not merely a brainstorming session;...

Exploring the World of Artificial Intelligence and Machine Learning

This is the page which will be the default when the user is already signed in with a loaded session data.

- **User Profile:**



Sophomore at this esteemed institution, I strive for knowledge and with this hunger and passion to leverage my knowledge to solve complex problems of the society is my duty

User Name
BT CSE'26

SKILLS

Software Development
MERN Stack, GoLang, ReactJS

Data Structures & Algorithms
Competitive Rating - 2300

XYZ
ABC - XYZ

TOP POSTS

Night Life at IITK
Night life is a very important part of a ...
Non-Academic

Quantum Mechanical Experience
PHY114 will always be regarded as one ...
Inisghts Physics

View More

CREDENTIALS & PROJECTS

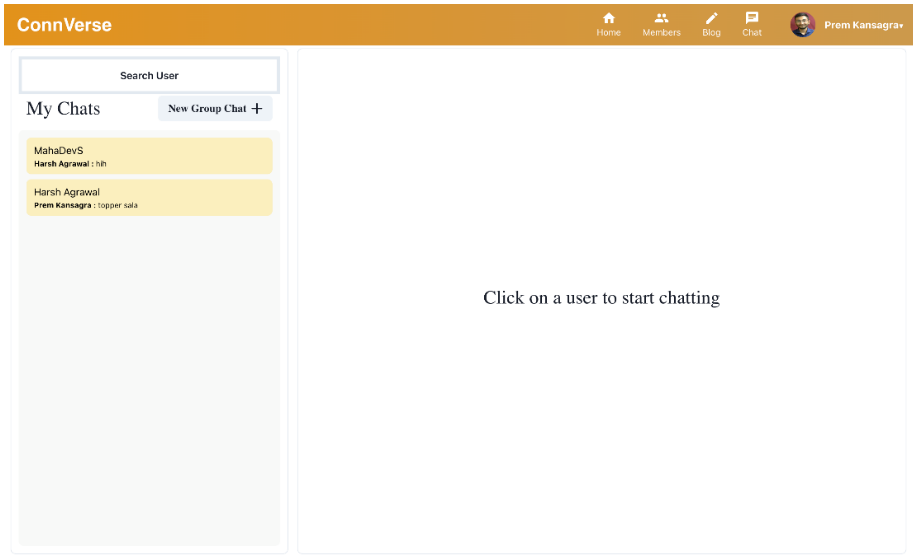
ConnVerse - Connect and Converse - under Prof Indranil Saha
ConnVerse is the Connect and Converse App set up for IITK Community where we are bringing students and alumni on the same table where people can have formal conversations about Research, Academia, Projects and Opportunities.
Software Development CS253

Project XYZ - under ABC Club
Project XYZ is the official starship project offered in the summers by ABC Club IITK. This project offers exposure to market standards and experience for building world class software which are ready to be implemented to production.
Software Development

View More

This is the page which will showcase your User Profile which will be visible to any other user. On a profile page you can browse the number of blogs published by user, contribution metric, a detailed list of user's skills, achievements, credentials, achievements, completed coursework and projects undertaken. There is a search bar at the top which enables you to search other users.

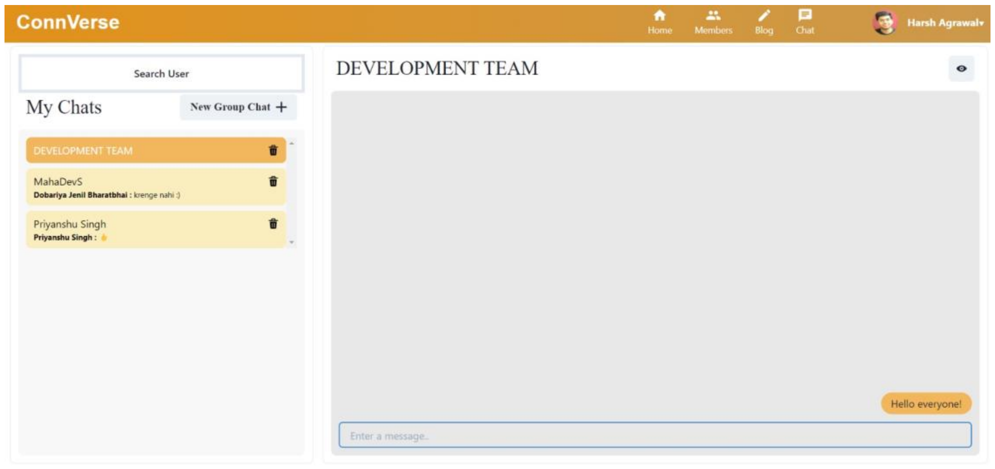
- **Chat:**



Harsh Agrawal : hih

Prem Kansagra : topper sala

This is the chat page when you open messaging. You can select any user and start conversation with them.

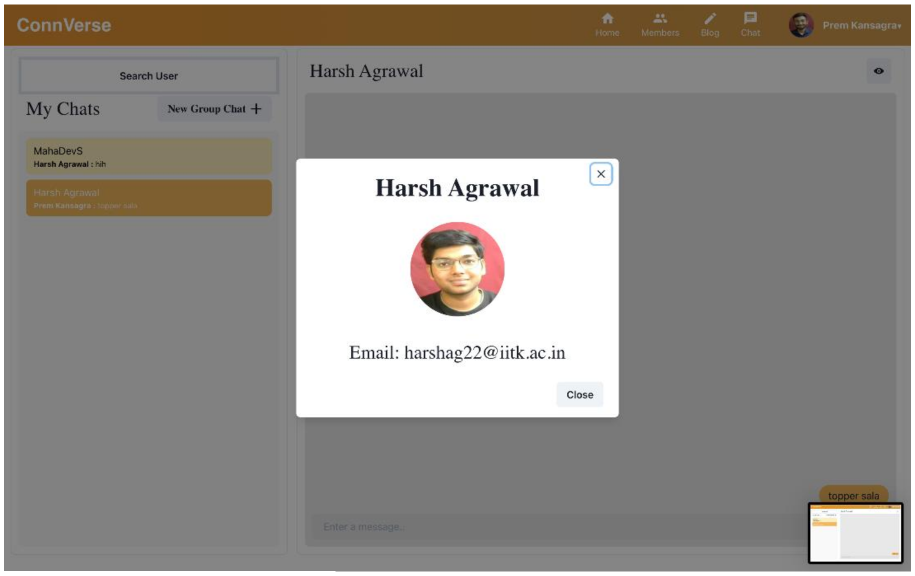


Dobariya Jenil Bharatbhai : krenge nahi :)

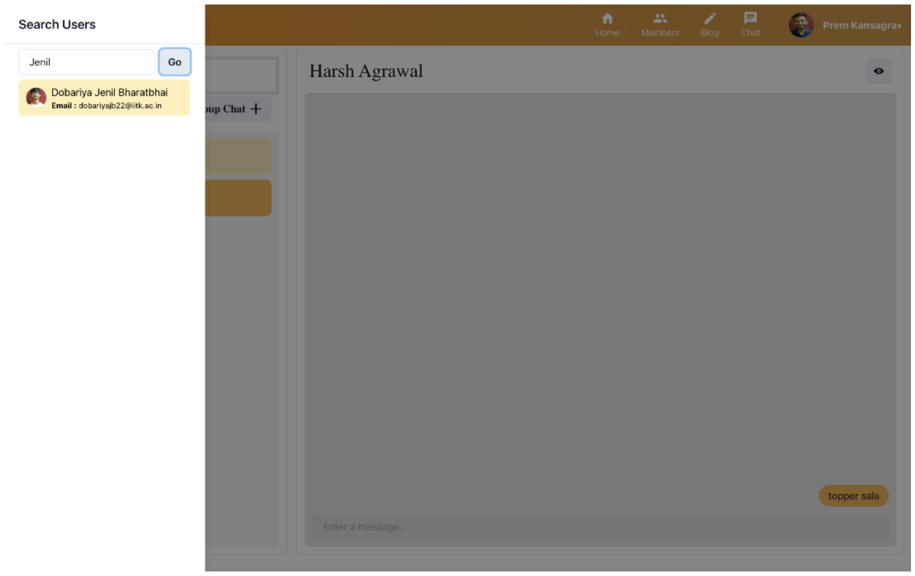
Priyanshu Singh : 👋

Hello everyone!

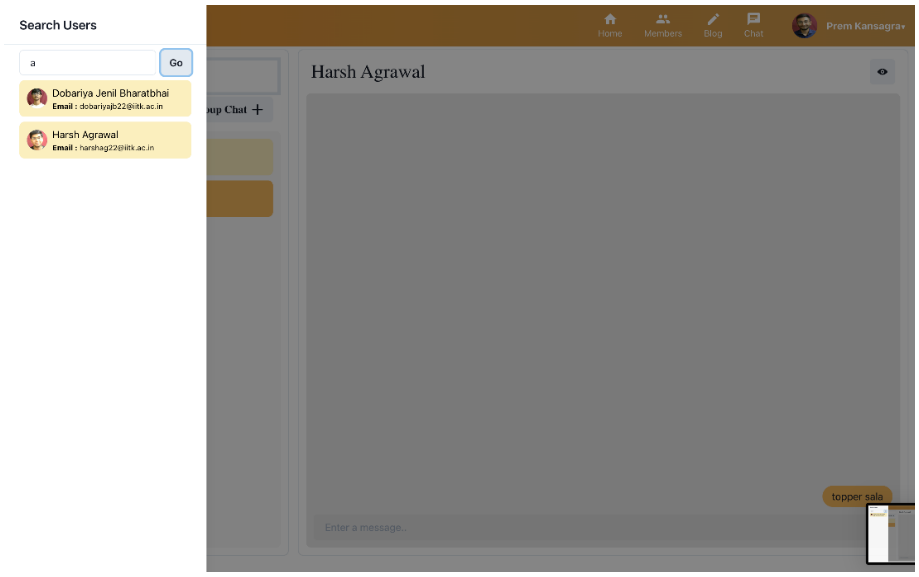
This is a specific chat opened.



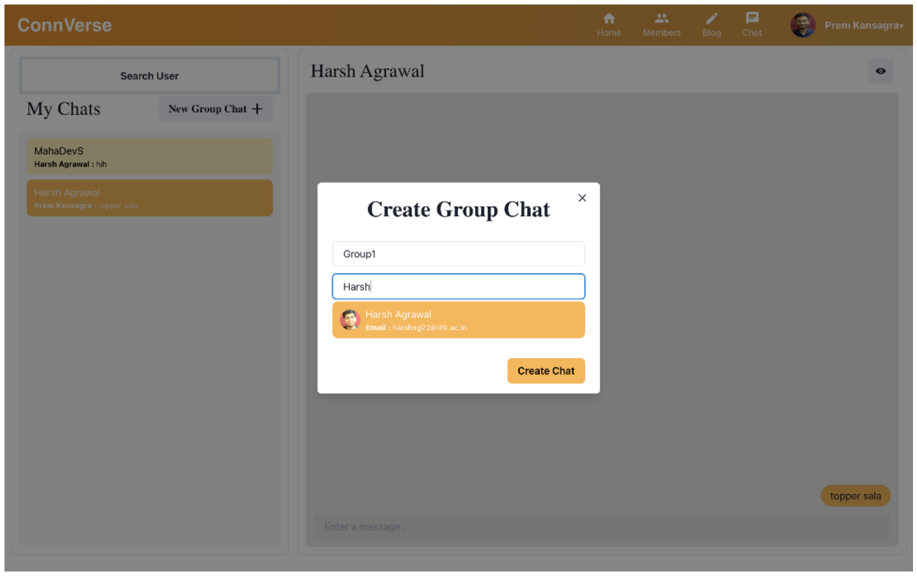
User profile inside a chat.



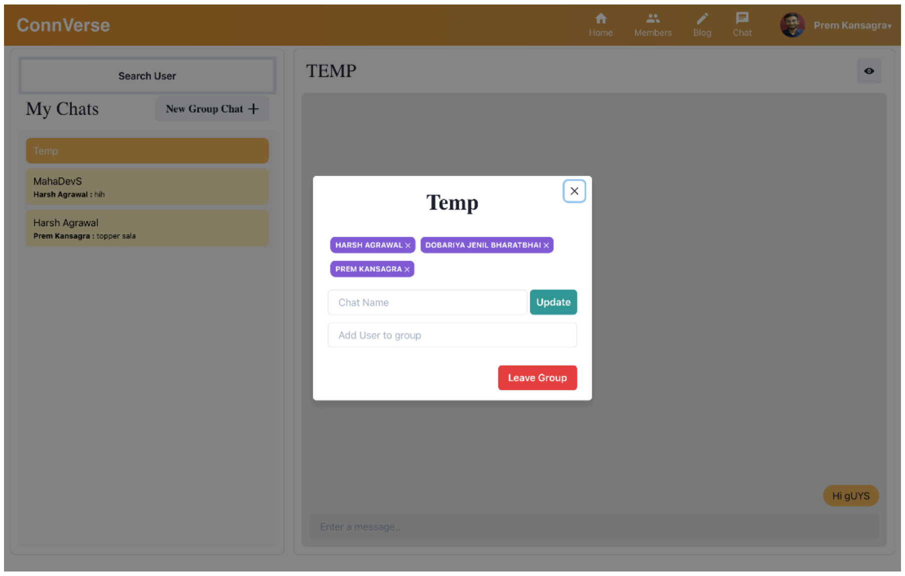
User Search by Name



This is a user search with the help of which you can start new chats.



The users can also enjoy the feature of group chat.



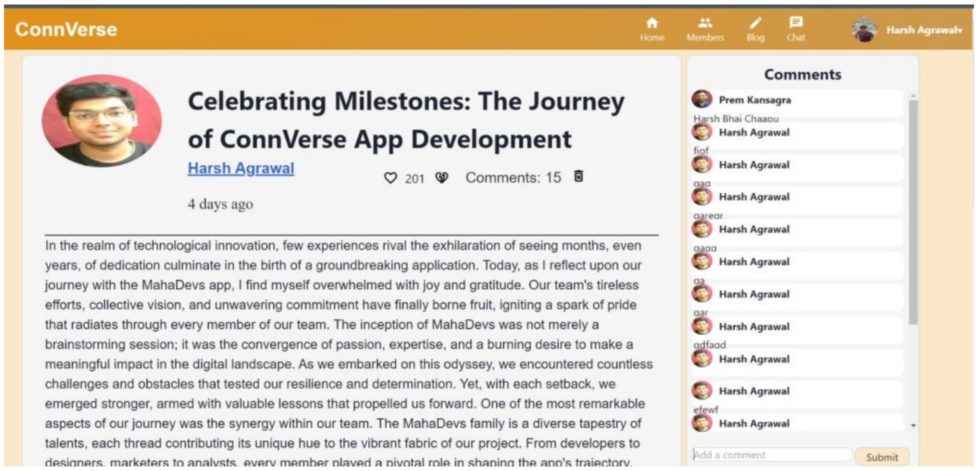
Temp

MahaDevS
Harsh Agrawal : hih

Harsh Agrawal
Prem Kansagra : topper sala

Hi gUYS

- **Blog:**



Celebrating Milestones: The Journey of ConnVerse App Development

Harsh Agrawal

201 Comments: 15

4 days ago

In the realm of technological innovation, few experiences rival the exhilaration of seeing months, even years, of dedication culminate in the birth of a groundbreaking application. Today, as I reflect upon our journey with the MahaDevs app, I find myself overwhelmed with joy and gratitude. Our team's tireless efforts, collective vision, and unwavering commitment have finally borne fruit, igniting a spark of pride that radiates through every member of our team. The inception of MahaDevs was not merely a brainstorming session; it was the convergence of passion, expertise, and a burning desire to make a meaningful impact in the digital landscape. As we embarked on this odyssey, we encountered countless challenges and obstacles that tested our resilience and determination. Yet, with each setback, we emerged stronger, armed with valuable lessons that propelled us forward. One of the most remarkable aspects of our journey was the synergy within our team. The MahaDevs family is a diverse tapestry of talents, each thread contributing its unique hue to the vibrant fabric of our project. From developers to designers, marketers to analysts, every member played a pivotal role in shaping the app's trajectory.

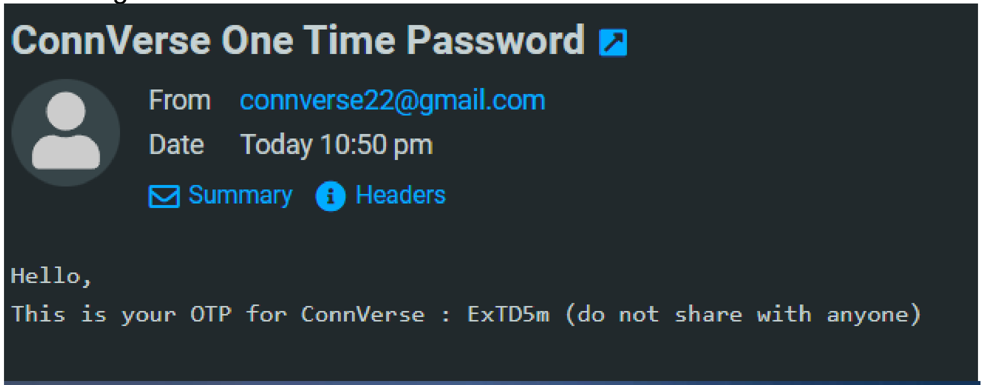
Prem Kansagra
Harsh Bhai Chaapu
Harsh Agrawal
fiof
Harsh Agrawal
gag
Harsh Agrawal
garear
Harsh Agrawal
gaga
Harsh Agrawal
ga
Harsh Agrawal
gar
Harsh Agrawal
adfaad
Harsh Agrawal
Harsh Agrawal
efewf
Harsh Agrawal

This is a blog written by a user posted on his profile.

Functional Requirements:

All of these have been implemented in CodeImplementation/main-backend and CodeImplementation/chat_system:

- User Registration



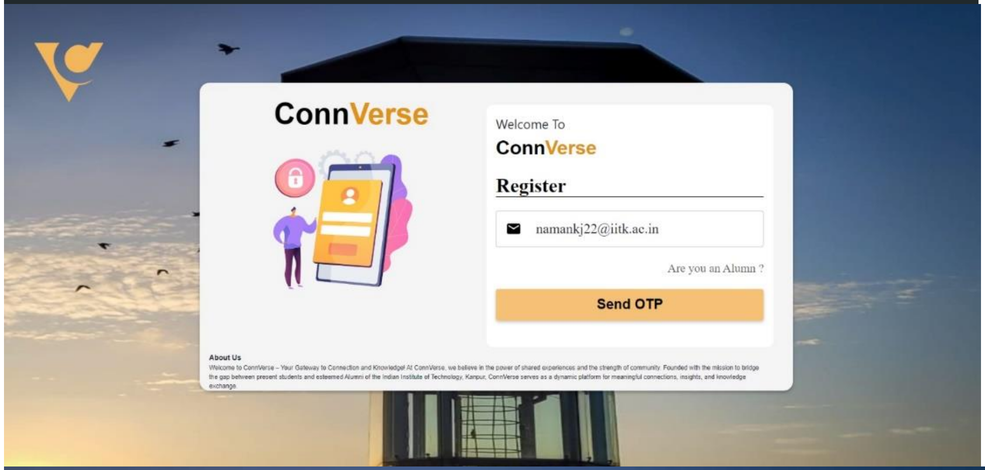
ConnVerse One Time Password

From connverse22@gmail.com

Date Today 10:50 pm

Hello,

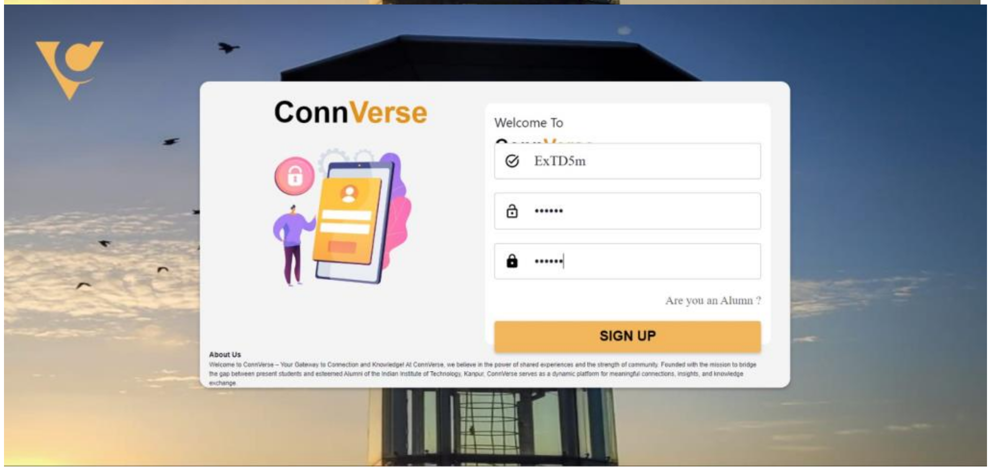
This is your OTP for ConnVerse : ExTD5m (do not share with anyone)



namankj22@iitk.ac.in

About Us

Welcome to ConnVerse – Your Gateway to Connection and Knowledge! At ConnVerse, we believe in the power of shared experiences and the strength of community. Founded with the mission to bridge the gap between present students and esteemed Alumni of the Indian Institute of Technology, Kanpur, ConnVerse serves as a dynamic platform for meaningful connections, insights, and knowledge exchange.



ExTD5m

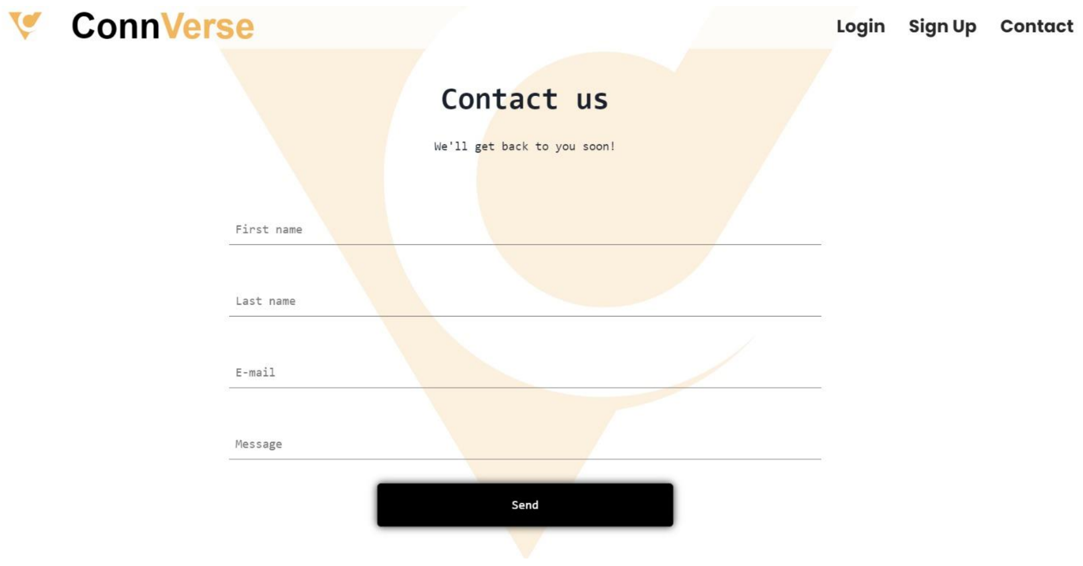
••••••

••••••

About Us

Welcome to ConnVerse – Your Gateway to Connection and Knowledge! At ConnVerse, we believe in the power of shared experiences and the strength of community. Founded with the mission to bridge the gap between present students and esteemed Alumni of the Indian Institute of Technology, Kanpur, ConnVerse serves as a dynamic platform for meaningful connections, insights, and knowledge exchange.

- Manual Registration for Alumni



Contact us

We'll get back to you soon!

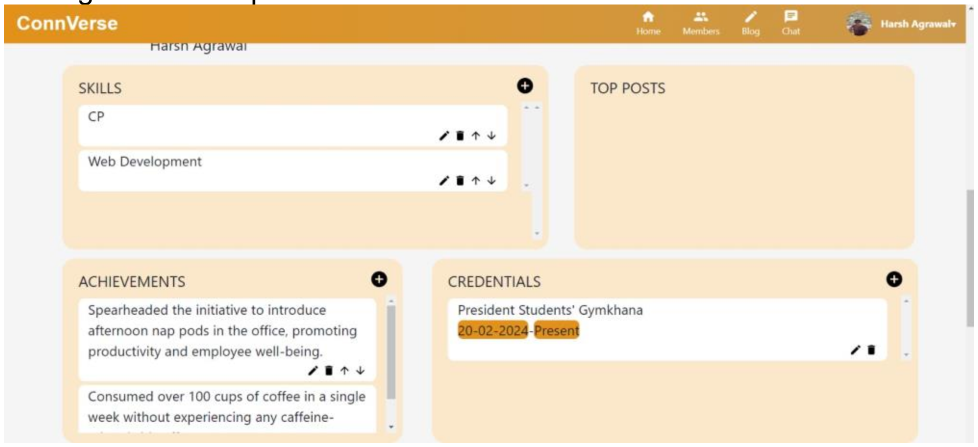
First name

Last name

E-mail

Message

- Editing user's own personal details



SKILLS

CP

Web Development

TOP POSTS

ACHIEVEMENTS

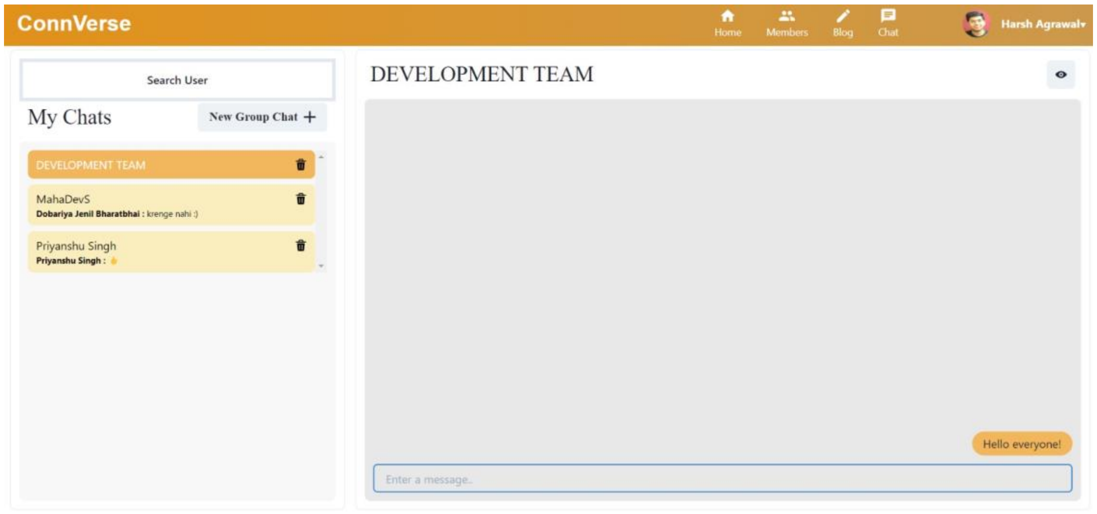
Spearheaded the initiative to introduce afternoon nap pods in the office, promoting productivity and employee well-being.

Consumed over 100 cups of coffee in a single week without experiencing any caffeine-

CREDENTIALS

President Students' Gymkhana
20-02-2024-Present

- Chat with other users



My Chats

DEVELOPMENT TEAM

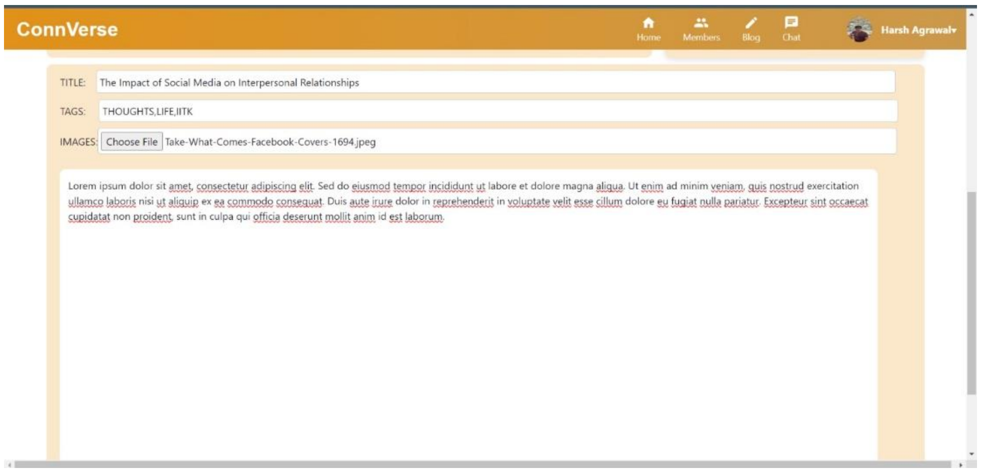
MahaDevS
Dobariya Jenil Bharatbhai : krenge nahi :)

Priyanshu Singh
Priyanshu Singh : 👋

DEVELOPMENT TEAM

Hello everyone!

- Composing Blogs



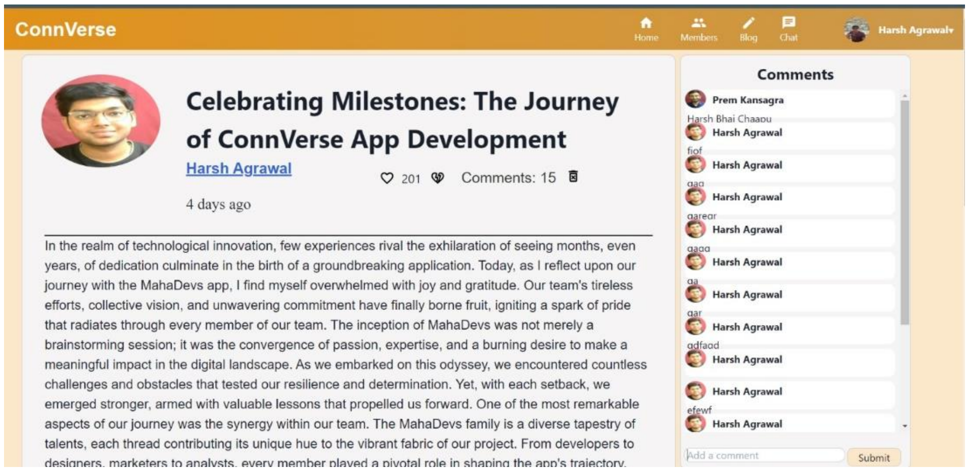
TITLE: The Impact of Social Media on Interpersonal Relationships

TAGS: THOUGHTS,LIFE,IITK

IMAGES: Take-What-Comes-Facebook-Covers-1694.jpeg

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

- Comment, Upvote or Downvote in Blogs



Celebrating Milestones: The Journey of ConnVerse App Development

Harsh Agrawal

♡ 201 Comments: 15

4 days ago

In the realm of technological innovation, few experiences rival the exhilaration of seeing months, even years, of dedication culminate in the birth of a groundbreaking application. Today, as I reflect upon our journey with the MahaDevs app, I find myself overwhelmed with joy and gratitude. Our team's tireless efforts, collective vision, and unwavering commitment have finally borne fruit, igniting a spark of pride that radiates through every member of our team. The inception of MahaDevs was not merely a brainstorming session; it was the convergence of passion, expertise, and a burning desire to make a meaningful impact in the digital landscape. As we embarked on this odyssey, we encountered countless challenges and obstacles that tested our resilience and determination. Yet, with each setback, we emerged stronger, armed with valuable lessons that propelled us forward. One of the most remarkable aspects of our journey was the synergy within our team. The MahaDevs family is a diverse tapestry of talents, each thread contributing its unique hue to the vibrant fabric of our project. From developers to designers, marketers to analysts, every member played a pivotal role in shaping the app's trajectory.

Comments

Prem Kansagra
Harsh Bhai Chaapu

Harsh Agrawal
fiof

Harsh Agrawal
gag

Harsh Agrawal
garegr

Harsh Agrawal
gaga

Harsh Agrawal
ga

Harsh Agrawal
gar

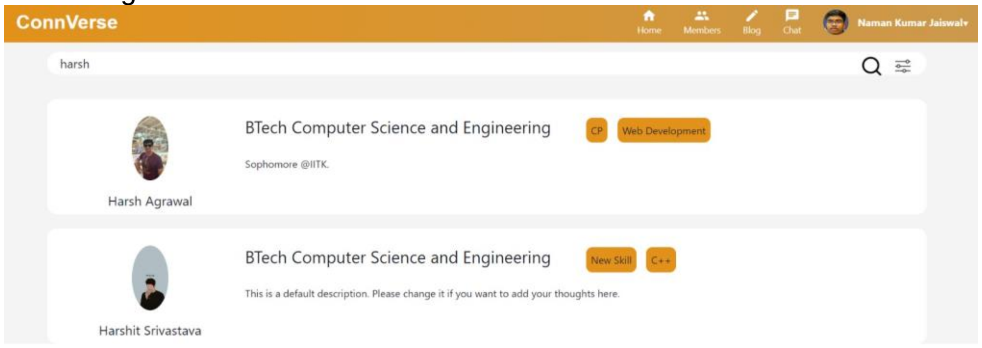
Harsh Agrawal
gdfagd

Harsh Agrawal

Harsh Agrawal
efewf

Harsh Agrawal

- Searching Users



Harsh Agrawal
BTech Computer Science and Engineering
CP Web Development
Sophomore @IITK.

Harshit Srivastava
BTech Computer Science and Engineering
New Skill C++
This is a default description. Please change it if you want to add your thoughts here.

Future Development:

- **Feed Generator:** Currently there is a fixed algorithm which ranks the blogs in terms of relevance to the user. We can improve upon it and build a ML model which does the ranking which also trains itself to give better results the longer is it run.
- **Edit Blogs:** The functionality of editing blogs is still not implemented. We can improve upon our code and open this option to the users in the next versions.

Appendix A - Group Log

Team A	Jenil, Harshit Srivastava, Harsh, Priyanshu, Aaditi	Feed Development and Profile
Team B	Chayan, Harshit Chikara, Arshit, Naman, Prem	Chat System

Date	Team	Summary of the Meeting	Duration	Location
10th Feb' 24	All	Divided the team into two halves for feed and chat system	45 min	KD Library
11th Feb' 24	All	Allocated frontend and backend work to each member of the group.	60 min	RM building
13th Feb' 24	A	Discussion regarding the workflow of feed development	90 min	RM building
15th Feb'24	B	Discussion regarding the workflow of chat system	75 min	CCD
25th Feb' 24	All	Updates regarding the work progress from both teams	30 min	Online
29th Feb' 24	A	Clarification regarding the external features of feed development, such as the blog page and homepage.	75 min	KD Library
3rd Mar' 24	B	Discussion regarding backend development of chat system	60 min	RM building
7th Mar' 24	All	Updates regarding the work progress from both teams	45 min	RM building
10th Mar' 24	A	Discussion regarding the changes in some functionalities of the feed development	90 min	KD Library

12th Mar' 24	B	Clarification regarding some changes in the functionalities	120 min	RM building
15th Mar' 24	All	Integration of frontend and backend	240 min	RM building
16th Mar' 24	All	Clearing bugs and fixing the problems in the system	420 min	RM building
18th Mar' 24	All	Implemented the last adjustments to the documentation.	180 min	RM building