

INTERNSHIP REPORT

“CHATVIBE-A SOCIAL MEDIA WEBSITE”

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(6th Semester Internship Report)



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DECLARATION

I hereby declare that the work which is being presented in the Project “ChatVibe-a social media website”, in partial fulfillment of the requirements for Internship project is an authentic record of my own work carried for the evaluation of the Sixth semester of B.Tech. Electronics & Communication Engineering, National Institute of Technology, under the guidance of Dr. Shweta Meena, Assistant Professor, Dept. of Electronics and communication. The matter presented in this internship report has not been submitted for the award of any other degree elsewhere.

Krishan
(11915055)

It is certified that the above statement made by the student is correct to the best of our knowledge and belief.

Dr. Shweta Meena
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ACKNOWLEDGEMENT

With the successful completion of the project under the stipulated time, I would like to take this opportunity to present my wholehearted compliments, with higher regards and warm thanks to all, which played an integral role and acted as sinews of this project. I would like to grab this opportunity to express my gratitude to all the individuals for their keen devotion without whom this endeavor wouldn't have been a success.

I would like to pay my boundless thanks to my colleagues for extending help and guidance during the period. They have played an integral role in the successful completion of the project. We also do not like to miss the opportunity to acknowledge the contribution of all instructors who are available on YouTube, Google and Stack overflow.

I extend my deep sense of gratitude to Dr. Shweta Meena, Assistant Professor, Dept of ECE, NIT Kurukshetra, mentor of the project. I sincerely thank her for imparting practical as well as theoretical knowledge. She played a keen role in making this effort a success through necessary steering whenever it was essential.

Last but not the least; I would like to express our deep sense of gratitude and earnest thanks giving to our dear parents for their moral support and heartfelt cooperation during the project.

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ABSTRACT

Social Media platforms are becoming popular day by day in this new technical era. These platforms have millions of users. Among the most popular platforms are Facebook, Instagram, Twitter, WhatsApp etc. With advent of time, new technologies and frameworks are coming that enhances the performance and add new, exciting features to these apps.

My Project – Chatvibe is also a social media platform where User can create account with username, email and password as their credentials, can create their profile page that contains their username, email, followers, followings,

A beautiful Profile picture and posted Photos. They can create post with caption and Image that appear in Homepage of website where other user can like the post, comment on the post. Other user can follow you by searching your profile in search bar.

Chatvibe is a small scale social media application built with MongoDB, React, Node.js and Express.js (in short MERN stack) framework. Backend API is built with Node.js and Express.js and Frontend is built with React for easy development. MongoDB is used for storing the user credentials and Cloudinary is used for storing Posted Images of Users. User password is encrypted with bcrypt that make it safe for use.

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1. INTRODUCTION

1.1 Overview and Motivation

In covid-19 pandemic, with billions of people around the world spending more time at home, social distancing, and trying to come up with ways to stay in touch despite lockdowns, all leading social media platforms seemed to thrive and monthly active usage growth spontaneously.

Socializing with friends and family virtually is very common among all age groups. This is also the main reason of growth of all social media platforms. After the tremendous success of Instagram as a Photo Sharing app since its launch in 2010, it was evident that coming time saw an huge increase in these types of apps. Some short video apps like TikTok gain billions of users in very short span of time because people are spending more and more time on these platforms.

Fascinated with growth of these social media platforms especially from some couple of years, I decided to make a small scale social media platform that contain basic features like creating posts, adding profile pictures, like and comment feature, follow and unfollow users. Here user post photo that can be viewed by other authenticated user and interact with them through comment section.

1.2 Basic Features

1. User authentication with JSON Web Token and Node.js
2. Securing password with bcrypt.
3. Creating Post with caption and image.
4. Profile Page UI with Follow and Unfollow button.
5. Search User with account on chatvibe.
6. Edit profile and delete account buttons.
7. User can delete comments that are commented on its post. User can also delete the post that he/she created.
8. Simple and smooth UI for Login and Signup. Forgot Password button to reset password anytime and store in Database in hashed form.

1.3 Scope and Advantages

1. The scope of social media has spread to almost every corner of the world. It has become the 10th largest economy and also has the 2nd largest population in the world.
2. In fact, social media have become an important tool of marketing in true sense of customer orientation.
3. Since everything is going digital today, social media plays the most important role in it. People prefer online platforms more than physically disturbing themselves.
4. It will be growing more and with increase in Data & Mobile penetration in India more users from Tier 2 and Tier 3 cities are using Social Media.
5. Social media is composed of mainly internet and mobile phone based tools for sharing and discussing information and for entertainment. It combines technology, telecommunications, and social interaction and contributes a stage to communicate through words, image, video, and music.

2. Software and Requirement Analysis

2.1 Software Requirement

VISUAL STUDIO:

Microsoft Visual Studio [1] is an integrated development atmosphere (IDE) from Microsoft. It was used to develop laptop and pc programs, moreover as websites, net services, web apps, and mobile apps. Visual Studio uses Microsoft code development platforms like Windows Forms, API, Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both managed as well as native code.

Visual Studio includes a code editor supporting code refactoring moreover as IntelliSense (the code completion component). The included debugger works both as a machine-level debugger as well as supply-level debugger. Other built-in tools include a forms designer for building graphical user interface applications, code profiler, web designer, and database schema designer.

It additionally accepts plug-ins that decorate the capability at almost every stage—which includes adding aid for supply manipulate systems (like Git) and adding new toolsets like editors, extensions and visible designers for domain-precise languages, toolsets for different components of the software program improvement lifecycle (just like the crew foundation Server client: Team Explorer).

It supports 30+ totally different programming languages and permits the code editor, extensions and program to support (to varied degrees) nearly any programming language, provided a language-specific service exists. Built-in languages include JavaScript, CSS, HTML and etc. The foremost basic edition of Visual Studio is accessible freed from charge.

WEB BROWSER:

A Web Browser (typically called a browser) is a software utility for gaining access to facts on the arena huge net. Every individual internet web page, photo, and video is diagnosed by using a wonderful Uniform useful resource Locator (URL), permitting browsers to retrieve those sources from an internet server and display them at the consumer's device. A browser is not the identical thing as a search engine, though the 2 are regularly burdened. For a user, a search engine is only a website, consisting of google.com, that stores searchable facts approximately different websites. However, to connect with a website's server and show its internet pages, a user desires to have an internet browser set up on their tool. The most popular browsers are Chrome, Firefox, Safari, Explorer, and edge.

2.2 Language and Framework Requirements

HTML:

Hypertext Markup Language (HTML) [2] is the standard markup language for documents designed to be displayed in a web browser.

With Cascading style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the arena wide net. Web Browsers obtain HTML documents from an internet server or from local storage and render the documents into multimedia internet pages. HTML describes the structure of a web 14 page semantically and originally included cues for the arrival of the document. HTML elements are the constructing blocks of HTML pages. With HTML constructs, photos and other gadgets such as interactive forms can be embedded into the rendered web page. HTML offers a method to create structured files via denoting structural semantics for text which includes headings, paragraphs, lists, links, charges and different items. HTML elements are delineated by tags, written the usage of angle brackets. Tags including and at once introduce content into the web page. Different tags inclusive of surround and offer statistics about report text and can include other tags as sub-elements. Browsers do no longer show the HTML tags, however use them to interpret the content material of

the page.

HTML can embed packages written in a scripting language including JavaScript, which affects the behavior and content material of net pages. Inclusion of CSS defines the look and format of content. The sector wide web Consortium (W3C), maintainer of both the HTML and the CSS requirements, has advocated using CSS over specific presentational HTML considering that 1997. HTML code guarantees the proper formatting of text and photographs in order that your net browser may also display them as they may be supposed to look. Without HTML, a browser might no longer recognize a way to show text as factors or load photographs or other factors. HTML also gives a simple structure of the page, upon which Cascading style Sheets are overlaid to trade its look. One ought to think about HTML because the bones (structure) of an internet web page, and CSS as its skin (look) and JavaScript as its brain.

CSS (Cascading Style Sheets):

Cascading style Sheets [2], fondly called CSS, is a easy design language meant to simplify the manner of creating internet pages presentable. CSS handles the appearance and sense part of an internet web page. the use of CSS, you can manage the color of the text, the fashion of fonts, the spacing between paragraphs, how columns are sized and laid out, what background pictures or colorings are used, format designs, versions in show for distinctive gadgets and display sizes in addition to a spread of other consequences.

CSS is easy to study and apprehend but it affords powerful manipulate over the presentation of an HTML document. most generally, CSS is blended with the markup languages HTML or XHTML.

Advantage Of CSS:

- **CSS saves time** – you may write CSS once after which reuse identical sheet in more than one HTML pages. you may outline a fashion for each HTML element and apply it to as many internet pages as you want.
- **Pages load faster** – In case you are the use of CSS, you do now not need to write down HTML tag attributes on every occasion. simply write one CSS rule of a tag and use it on all of the occurrences of that tag. So, much less code loads quicker.
- **Easy maintenance** – To make a global change, simply exchange the style via defined variable, and all elements in all of the internet pages could be up to date automatically.

Advanced styles than HTML – CSS have a mile's wider array of attributes than HTML, so that you can deliver a far better look in your HTML web page in comparison to HTML attributes. Multiple tool Compatibility – style sheets allow content to be optimized for more than one type of device and browsers, via the use of the identical HTML record, different variations of a website can be provided for hand-held gadgets such as PDAs and cell phones or for printing.

Worldwide web standards – Now HTML attributes are being deprecated and it is being advocated to use CSS. So, it's an excellent idea to start the usage of CSS in all the HTML pages to make them well matched to future browsers.

JAVA SCRIPT (JS):

JavaScript, frequently abbreviated as JS [2], is a high-level, interpreted programming language that conforms to the ECMAScript specification. it is a programming 16 language that is characterized as dynamic, weakly typed, prototype-based and multi-paradigm. alongside HTML and CSS, JavaScript is one of the core technologies of the sector wide web. JavaScript enables interactive internet pages and is a critical a part of net programs. The extensive majority of websites use it, and most important web browsers have a devoted JavaScript engine to execute it.

As a multi-paradigm language, JavaScript helps occasion-driven, purposeful, and vital (inclusive of object-orientated and prototype-based) programming styles. It has APIs for operating with text, arrays, dates, ordinary expressions, and the DOM, however the language itself does not encompass any I/O, such as networking, storage, or portraits facilities. It relies upon the host surroundings in which it's far embedded to offer those features. initially only implemented client-side in web browsers, JavaScript engines are now embedded in lots of different kinds of host software program, consisting of server-aspect in internet servers and databases, and in non-internet programs which include word processors and PDF software, and in runtime environments that make JavaScript to be had for writing mobile and

computer packages, inclusive of computing device widgets.

EXPRESS JS:

Express [3] is a Node.js framework. in preference to writing the code using Node.js and growing masses of Node modules, express makes it less complicated and simpler to put in writing the back-end code. express facilitates in designing tremendous web applications and APIs. Express helps many middleware which makes the code shorter and simpler to put in writing.

ADVANTAGES OF EXPRESS JS:

1. Asynchronous and Single-threaded.
2. Efficient, fast & scalable.
3. Has the biggest community for Node.js
4. Express promotes code reusability with its built-in router.
5. Robust API
6. Create a new folder to start your express project and type below command in the command prompt to initialize a package. Json file. Accept the default setting and continue.

REACT JS:

ReactJS [4] is JavaScript library used for building and constructing reusable UI components. In line with React official documentation, following is the definition -

It encourages the introduction of reusable UI additives, which present facts that changes over time. Plenty of people use React as the V in MVC. React abstracts away the DOM from you, imparting a simpler programming version and better performance.

React can also render at the server the usage of Node, and it may power local apps the usage of React local. React implements one-way reactive information flow, which reduces the boilerplate and is simpler to motive about than conventional data binding.

Other frameworks like Next.js, Angular and Vue can also be used in place of React.

React Features:

1. **JSX** – JSX is JavaScript syntax extension. It isn't always essential to use JSX in React development, but it is endorsed.
2. **Components** – React is all approximately components. You need to think of everything as an element. This could assist you preserve the code when running on larger scale projects.
3. **Unidirectional records go with the flow and Flux** – React implements one-manner information flow which makes it easy to reason about your app. Flux is a pattern that enables maintaining your data unidirectional.
4. **License** – React is licensed beneath the Facebook Inc. Documentation is licensed below CC by 4.0.

React Advantages:

1. Uses virtual DOM that's a JavaScript object. This will enhance apps performance, because JavaScript virtual DOM is faster than the ordinary DOM.

2. Can be used on consumer and server facet in addition to with other frameworks.
3. Component and data styles improve clarity, which enables or helps to preserve larger apps.

React Limitations:

1. Covers only the view layer of the app, hence you still need to choose other technologies to get a complete tooling set for development.
2. Uses inline templating and JSX, which might seem awkward to some developers.

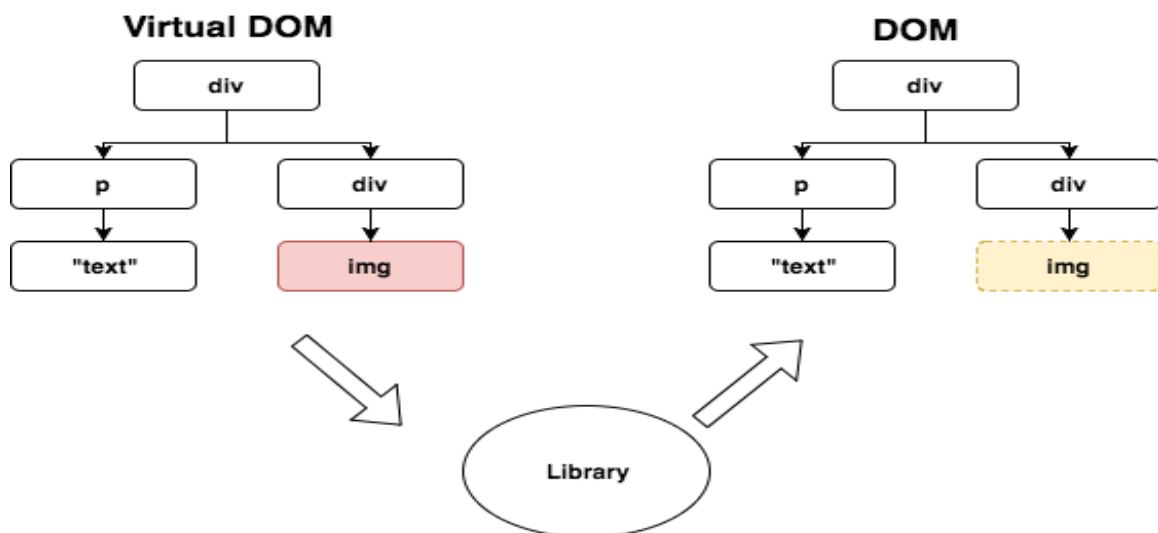


Fig 1: Virtual Document Object Model of React

MATERIAL UI:

Material-UI [5] is a simple and customizable element library to make faster, beautiful, and a lot of accessible React applications. Follow your own style system, or begin with Material style.

Material style was created by Google in 2014, primarily based partially on the card-based layout used in Google Now. The nod to paper-based design designs differentiated it from the flat design vogue that was wide used at the time.

Like most design systems, Material Design was created to bring a unified user expertise across numerous devices, platforms, and input methods. like the method that Apple enforced flat style principles as their standard, Google used Material style to confirm that, notwithstanding however users were accessing their products, they'd have an identical user expertise.

FONT AWESOME:

Font awesome [6] is a font and icon toolkit that supports CSS and LESS. It had been created by Dave Gandy to be used with Twitter Bootstrap, and later was incorporated into the Bootstrap CDN.

Font awesome contains a 20% market share among those websites that use third-party Font Scripts on their platform, ranking it second place after Google Fonts. Font awesome five was free on Dec 7, 2017 with 1,278 icons.

Version 5 comes in with 2 packages: Font awesome Free and also the proprietary Font awesome professional (available for a fee). The free versions (all releases up to four and also the free version for 5) are out there below SIL Open Font License 1.1, artistic Commons Attribution 4.0, and MIT License.

MONGO DB:

MongoDB [7], the most famous NoSQL database, is an open-source file-orientated database. The term 'NoSQL' compares 'non-relational'. It means that MongoDB isn't based at the table-like relational database structure however affords an altogether one-of-a-kind mechanism for garage and retrieval of facts. This layout of storage is known as JSON layout.

SQL databases keep facts in tabular layout. This fact is saved in a predefined facts version which isn't very lots bendy for today's real-international tremendously developing programs. Modern programs are greater networked, social and interactive than ever. Applications are storing an increasing number of facts and are gaining access to it at better rates.

Advantages of MongoDB:

1. **Schema less** – MongoDB is a file database wherein one series holds distinctive files.
2. **Flexible Size** - Number of fields, content material and length of the file can range from one file to another.
3. **Structure** of a single item is clear.
4. **No complicated joins.**
5. **Deep query-ability** - MongoDB helps dynamic queries on files using a file-

based question language that's almost as effective as SQL. Tuning.

6. **Ease of scale-out** – MongoDB is simple to scale.
7. **Conversion/mapping** of software items to database items now no longer needed.
8. Uses **inner memory** for storing the (windowed) running set, allowing quicker access of fact.

NODE JS:

- Node.js [8] is an open-source and cross-platform JavaScript runtime environment. It is a popular tool for almost any kind of project!
- Node.js runs the V8 JavaScript engine, the core of Google Chrome, outside of the browser. This allows Node.js to be very performant.
- A Node.js app runs in a single process, without creating a new thread for every request. Node.js provides a set of asynchronous I/O primitives in its standard library that prevent JavaScript code from blocking and generally, libraries in Node.js are written using non-blocking paradigms, making blocking behavior the exception rather than the norm.
- When Node.js performs an I/O operation, like reading from the network, accessing a database or the file system, instead of blocking the thread and wasting CPU cycles waiting, Node.js will resume the operations when the response comes back.

Materialize CSS:

Materialize CSS [9] is a UI component library which is created with CSS, JavaScript and HTML. It is created and designed by Google. Materialize CSS is also known as Material Design. It is a design language which combines the classic principles of successful design along with innovation and technology. Google's goal is to develop a system of design that allows for a unified user experience across all their products on any platform.

Features of Materialize CSS:

- It is a standard CSS with minimal footprint.
- In-built Responsive Design
- It is free to use and requires jQuery JavaScript library to function properly.
- It is cross-browser, compatible, and can be used to create reusable web components.
- It contains enhanced and specialized features such as cards, tabs, navigation bars, toasts etc.
- It provides new versions of common user interface controls such as buttons, checkboxes, and text fields adapted to follow Material Design concepts.

REACT CONTEXT :

Context provides a way to pass data through the component tree without having to pass props down manually at every level.

Context is designed to share data that can be considered “global” for a tree of React components, such as the current authenticated user, theme, or preferred language.

Whenever you want a store to keep your states or variables in and use them elsewhere in your program, use Context. Generally, when we have two or more levels(height) in our component tree, it is viable to use a store instead of passing props and then lifting the state as this will create confusion and unnecessary lengthy code.

Redux is also used in place of React Context but context is relatively easier for small scale state

management and Redux is mostly in used in case of complicated global state management system for bigger projects.

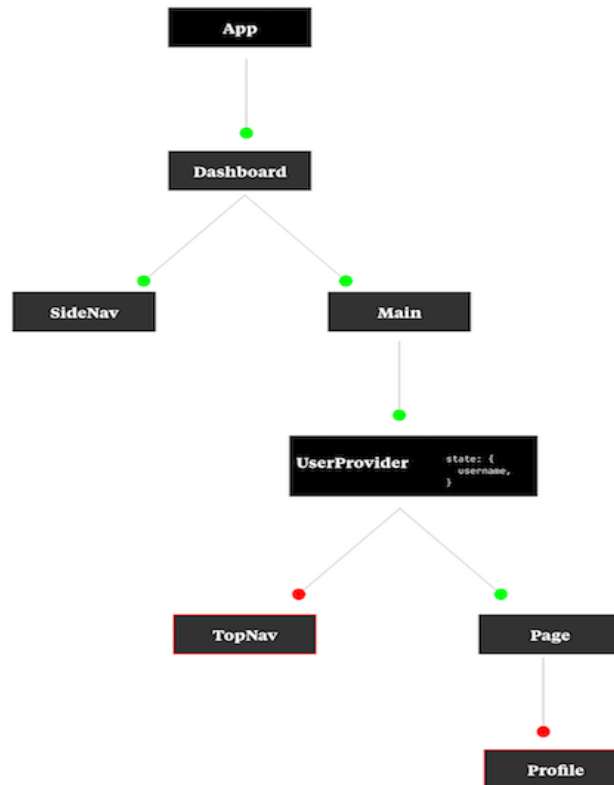


Fig 2: React Context for handling components' state

HEROKU:

Heroku, a Salesforce company and trade pioneer in platform as a service (PaaS), allows developers to make and run applications entirely within the cloud, while not the necessity to get or maintain any servers or software.

Over five million apps, together with ones from Macy's, Product Hunt and Citrix run on Heroku. With support for the foremost popular languages like Ruby and Node.js, high-scale information services including Postgres, Kafka and Redis, and an add-ons system that includes over one hundred eighty cloud application services, Heroku provides corporations from startups to Fortune five hundred enterprises with a quicker and simpler thanks to create, deploy and manage apps.

Why we decide Heroku?

Heroku apps have ability to simply integrate with Salesforce deployments at scale. this is often done by having a seamless knowledge synchronization between Heroku, Postgres databases and Salesforce organizations.

CLOUDINARY:

Cloudinary is an end-to-end image and video management solution for all kind of websites and mobile apps, covering everything from image and video upload, storage, manipulation, optimization to delivery. Additionally, Cloudinary offers comprehensive APIs and administration capabilities, which you can easily integrate with your web and mobile apps. I use Cloudinary to store profile images and posted images uploaded by users on my website. It is a fast and convenient tool for image storage.

3. HARDWARE AND SOFTWARE REQUIREMENT

Following are the hardware and the software requirements for our project:

Hardware:

1. Laptop/Desktop
2. 1.8 GHz or faster processor. Quad-core or better recommended
3. 4 GB of RAM
4. Hard disk space: Minimum of 800MB up to 210GB of available space
5. Video card that supports a minimum display resolution of 720p (1280 by 720)
6. Good Internet connection.

Software:

1. Windows 8.1 and above
2. Visual Studio
3. Web Browser
4. Material UI and Materialize CSS
5. Postman for testing http requests
6. Node js for hosting server on localhost
And React for Frontend development.

4. Use Case Diagram

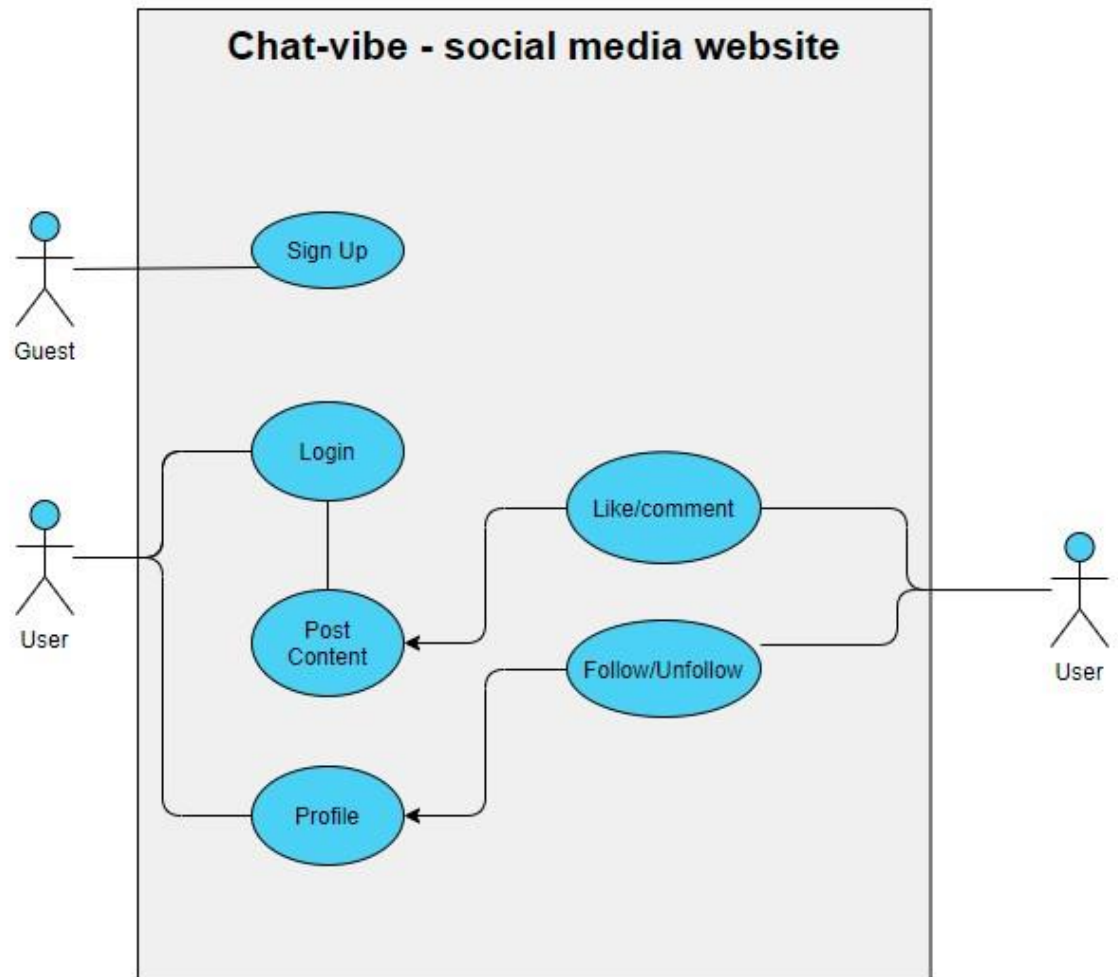
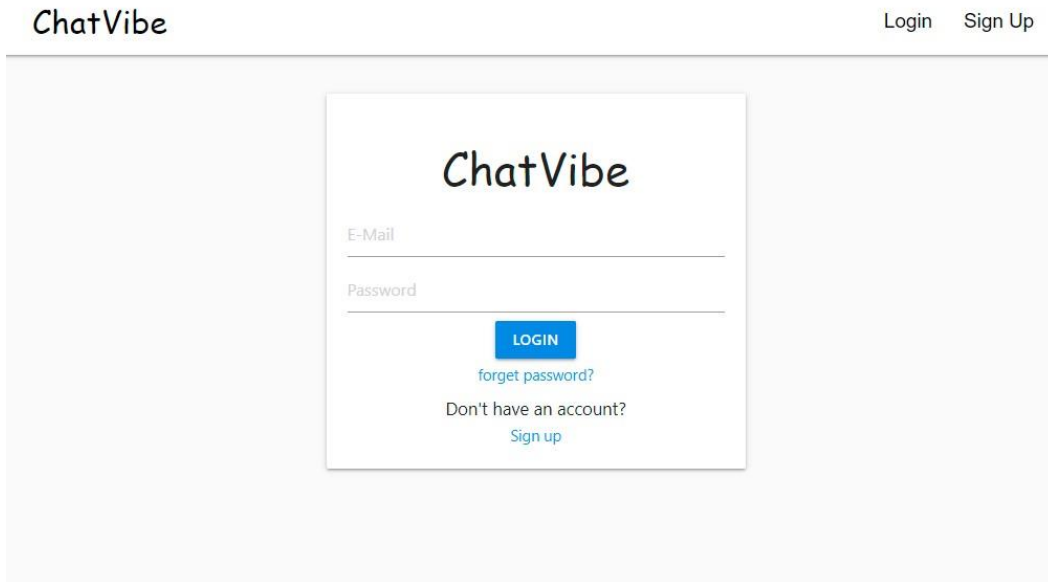


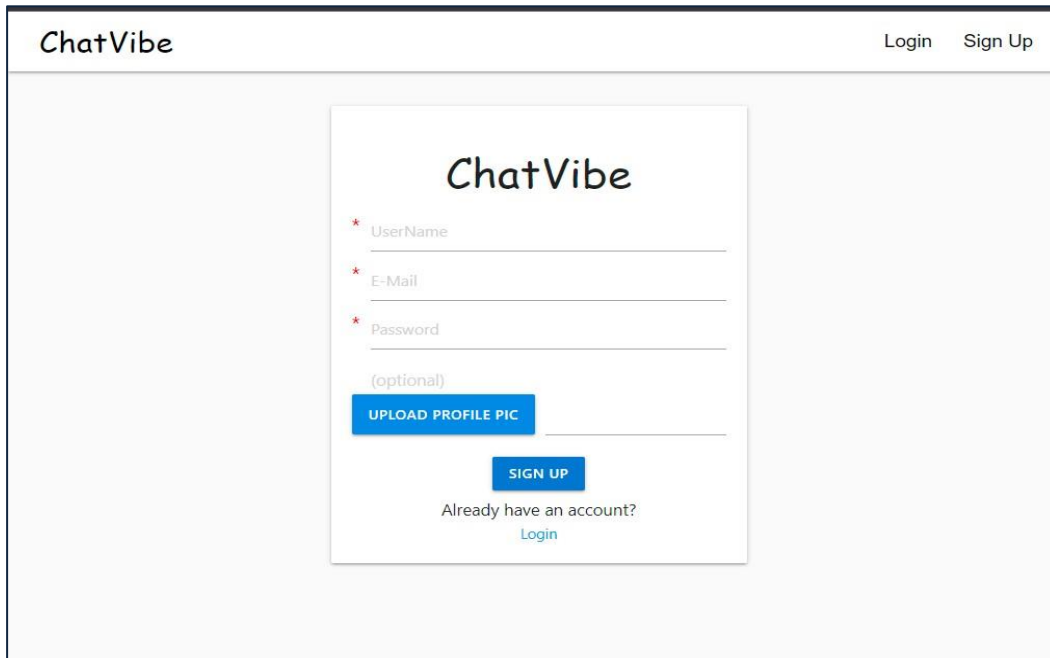
Fig 4.1 Use Case diagram

5. IMPLEMENTATION AND USER INTERFACE



The image shows the login page of the ChatVibe application. At the top left is the "ChatVibe" logo, and at the top right are links for "Login" and "Sign Up". The main content area features a white login card with the "ChatVibe" logo at the top. Below the logo are two input fields: "E-Mail" and "Password". A blue "LOGIN" button is positioned below the password field. Underneath the button are two links: "forget password?" and "Don't have an account? Sign up".

Fig 5.1 Login Page with forgot password and SignUp link



The image shows the sign-up page of the ChatVibe application. At the top left is the "ChatVibe" logo, and at the top right are links for "Login" and "Sign Up". The main content area features a white sign-up card with the "ChatVibe" logo at the top. Below the logo are three input fields: "UserName", "E-Mail", and "Password", each preceded by a red asterisk indicating a required field. Below these fields is an optional field labeled "(optional)" with a blue "UPLOAD PROFILE PIC" button. A blue "SIGN UP" button is located below the optional field. At the bottom of the card is the text "Already have an account?" followed by a "Login" link.

Fig 5.2 Sign-up page for User

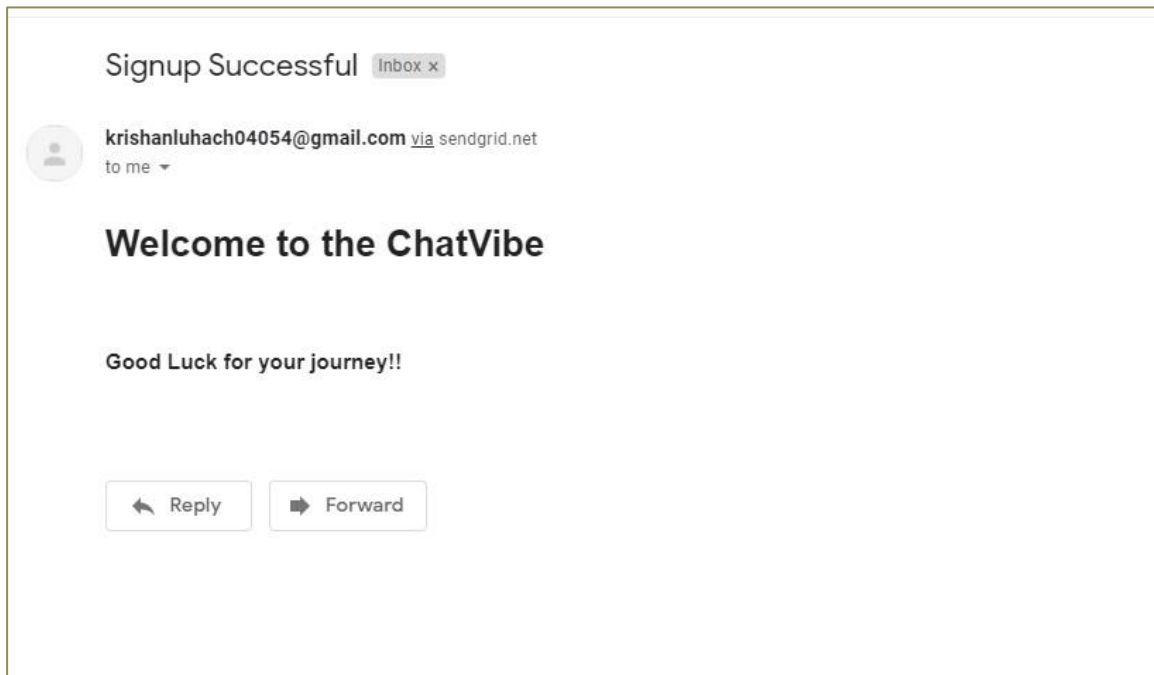


Fig 5.3 User receiver a welcome email when he/she Signup.

5.1 Profile Page

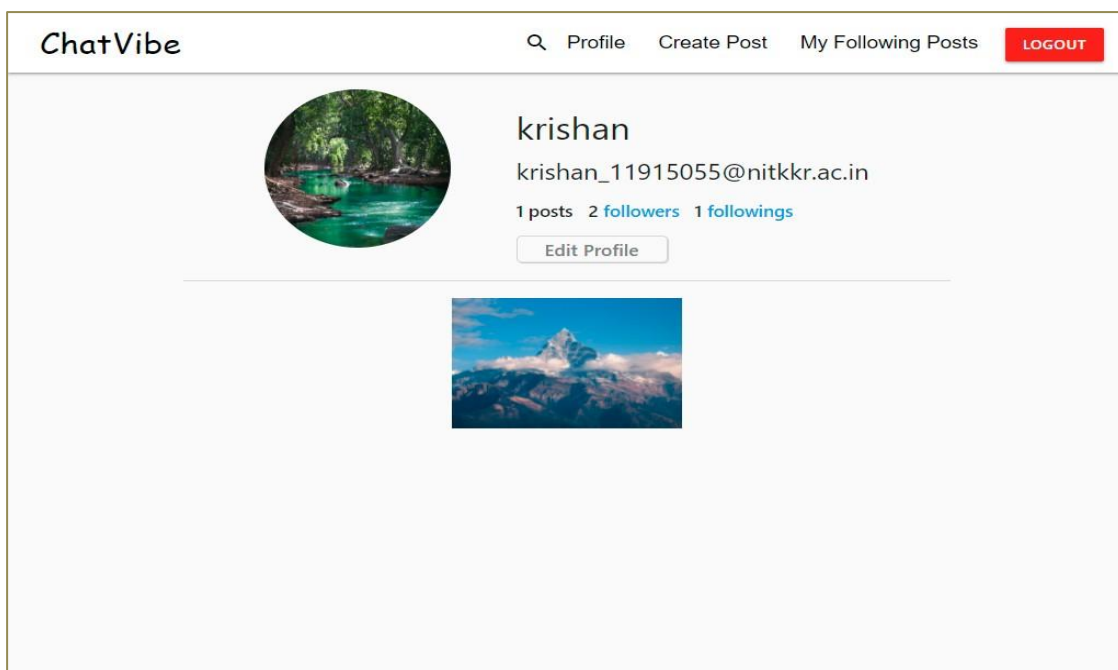


Fig 5.1.1 Profile Page with User details and Posted Pics with Edit Profile Button to redirect to Edit profile section

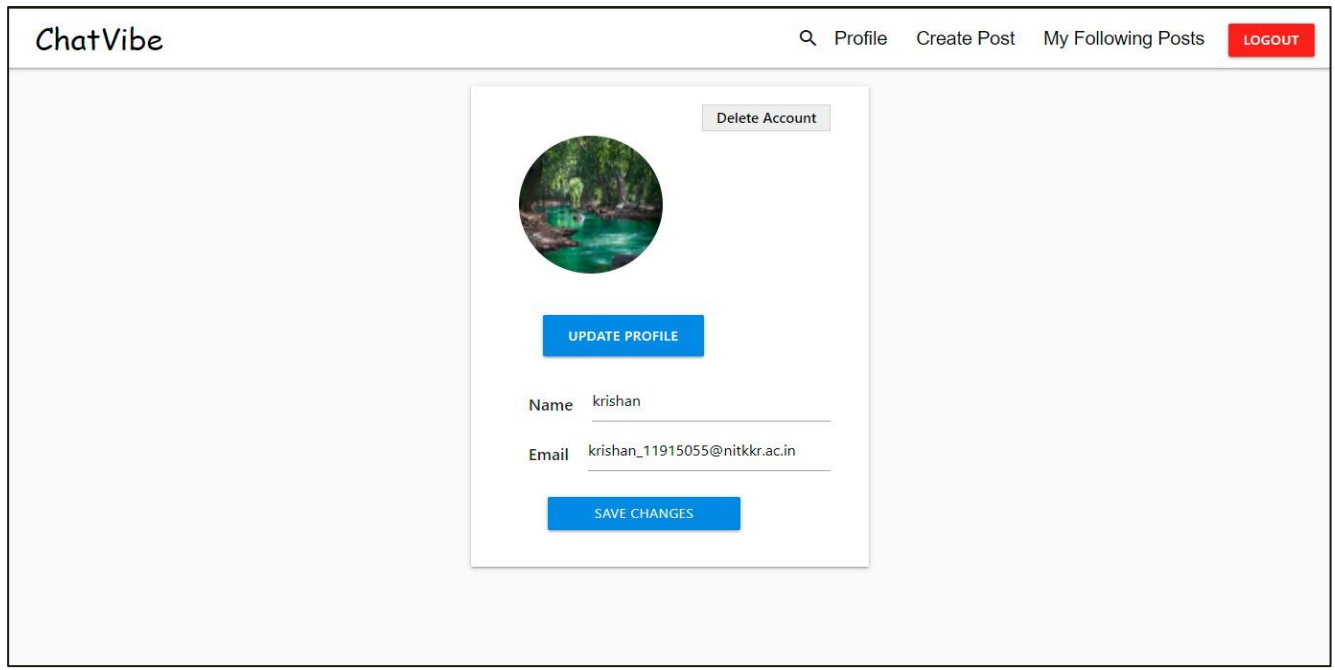


Fig 5.1.2 UI for Editing Profile Details

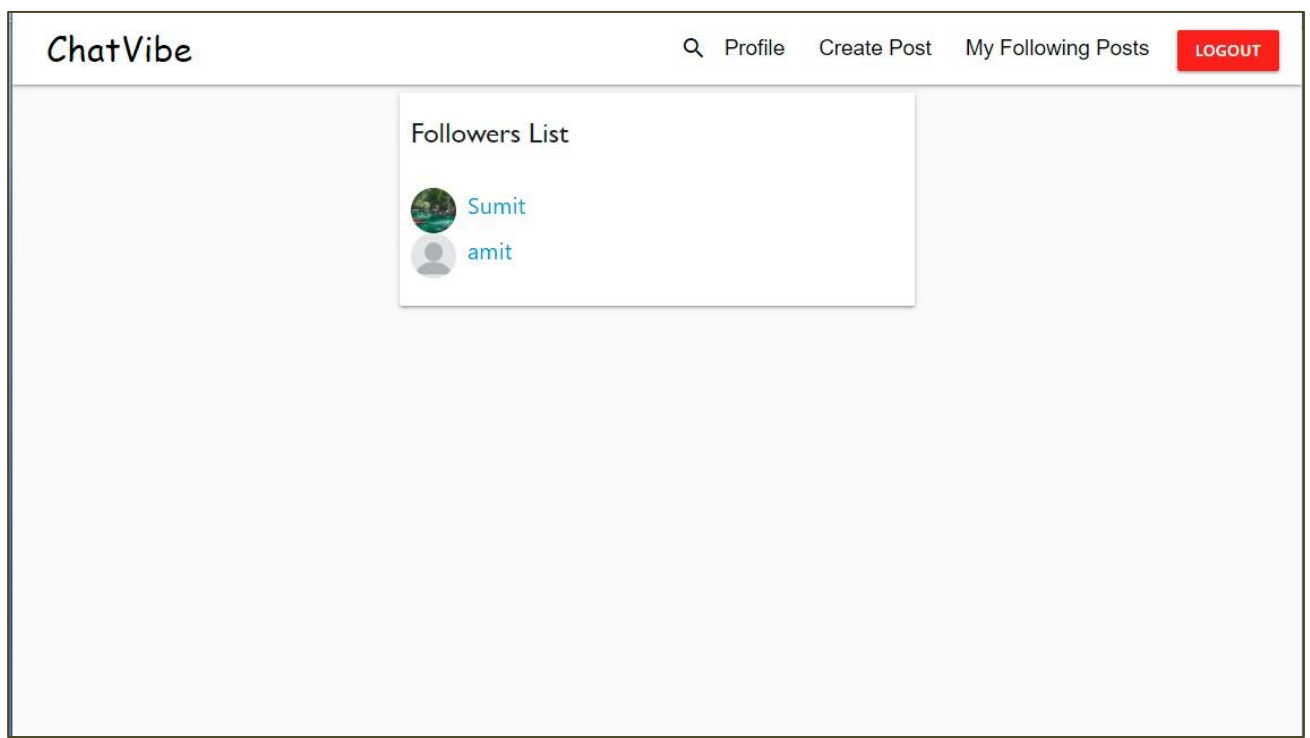


Fig 5.1.3 Followers list of User

5.2 Home Page

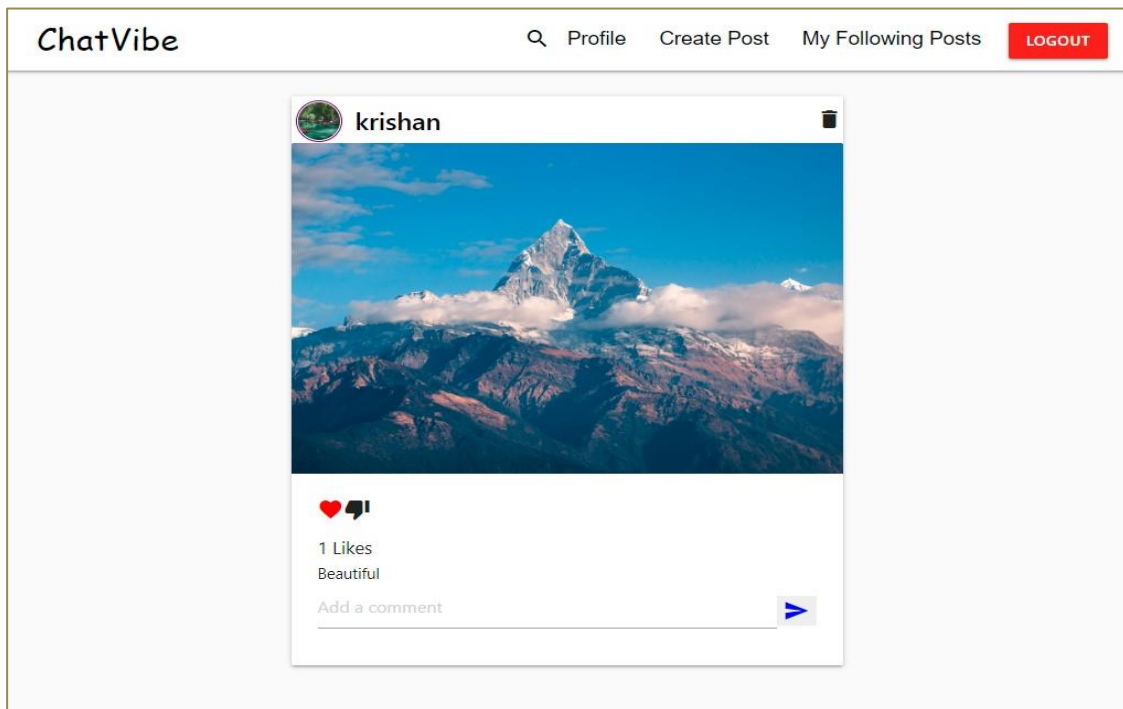


Fig 5.2.1 Home Page with User created Posts with Like and comment feature on Post. User who posted the picture can directly delete from Homepage with delete Icon.

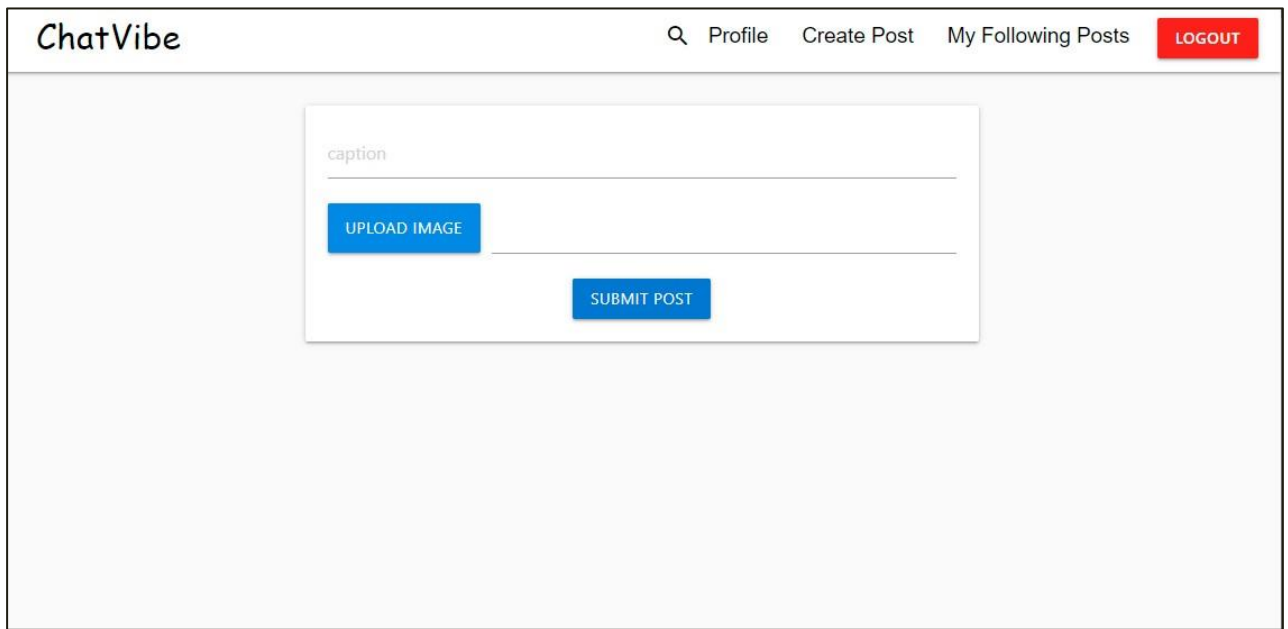
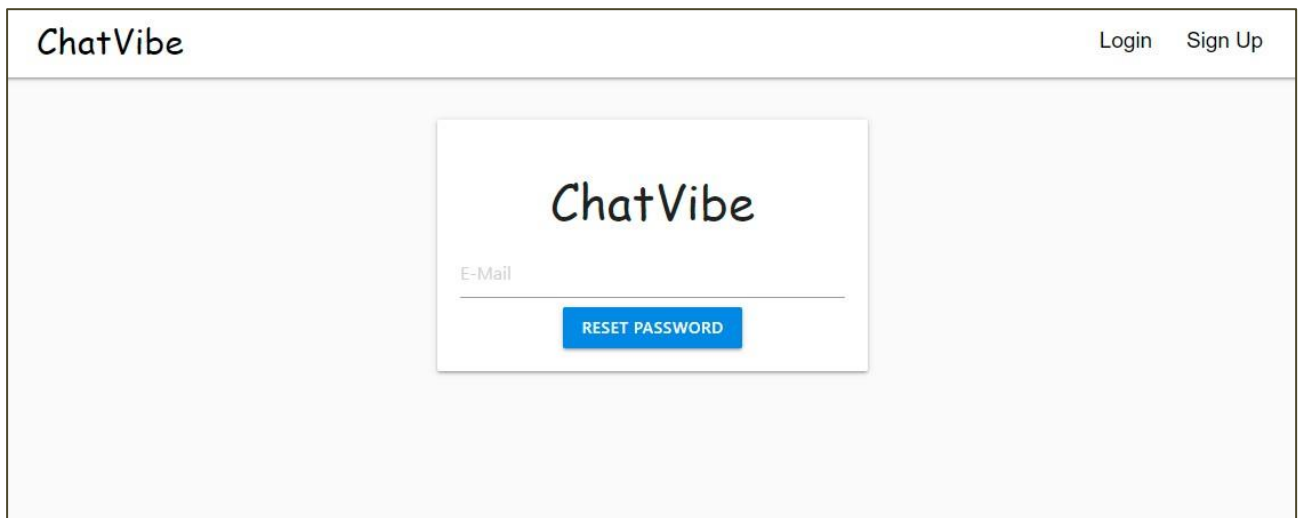


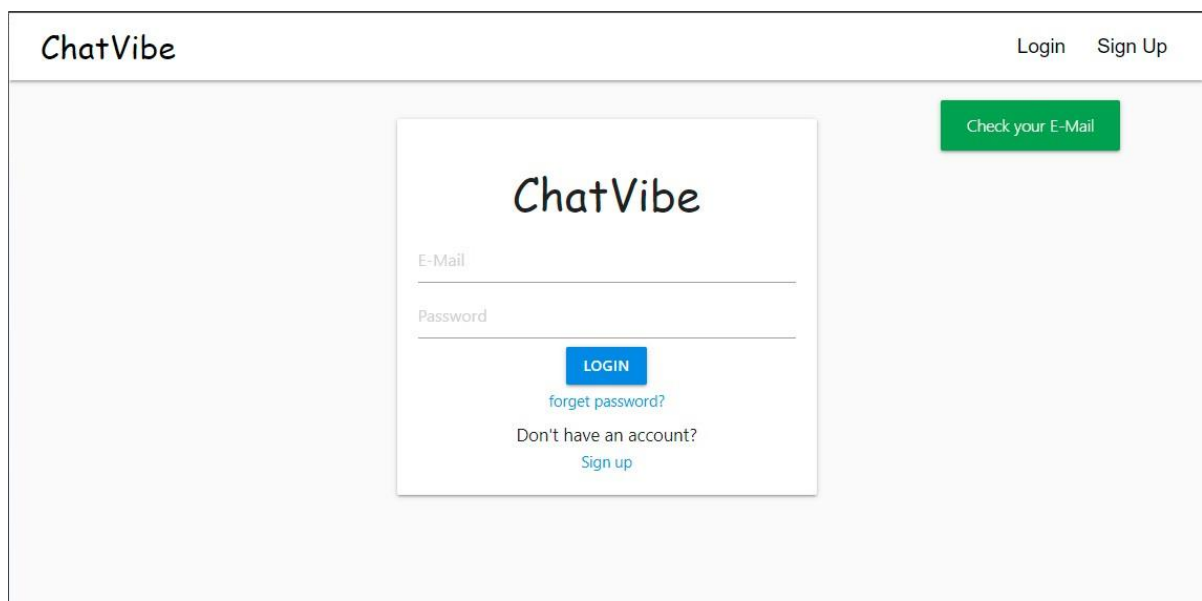
Fig 5.2.2 Create Post Page

5.3 Forgot Password



The screenshot shows the ChatVibe website header with the logo on the left and 'Login' and 'Sign Up' links on the right. The main content area features a white card with the ChatVibe logo at the top. Below the logo is an 'E-Mail' input field. At the bottom of the card is a blue button labeled 'RESET PASSWORD'.

Fig 5.3.1 Clicking on Forgot Password Redirect User to Enter email where reset password link is sent.



The screenshot shows the ChatVibe website header with the logo on the left and 'Login' and 'Sign Up' links on the right. The main content area features a white card with the ChatVibe logo at the top. Below the logo are two input fields: 'E-Mail' and 'Password'. Below these fields is a blue button labeled 'LOGIN'. Under the 'LOGIN' button are two links: 'forget password?' and 'Don't have an account? Sign up'. To the right of the card, there is a green button labeled 'Check your E-Mail'.

Fig 5.3.2 After Clicking on Reset Password

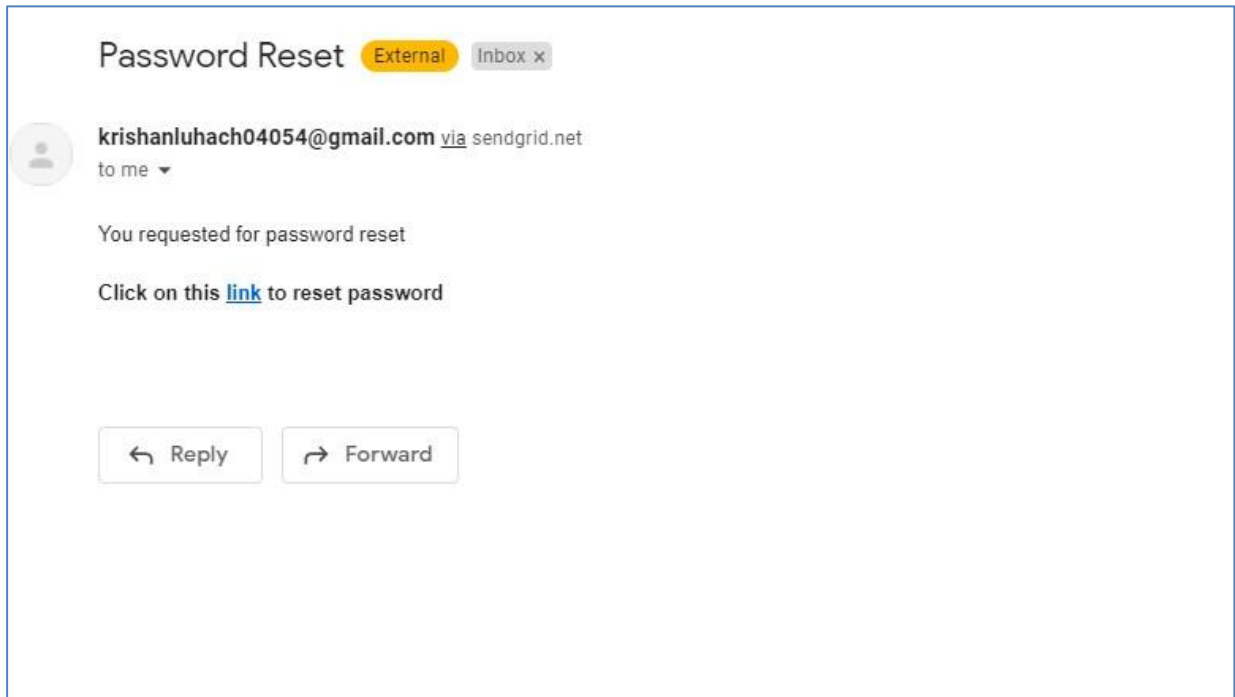


Fig 5.3.3 Link for password reset

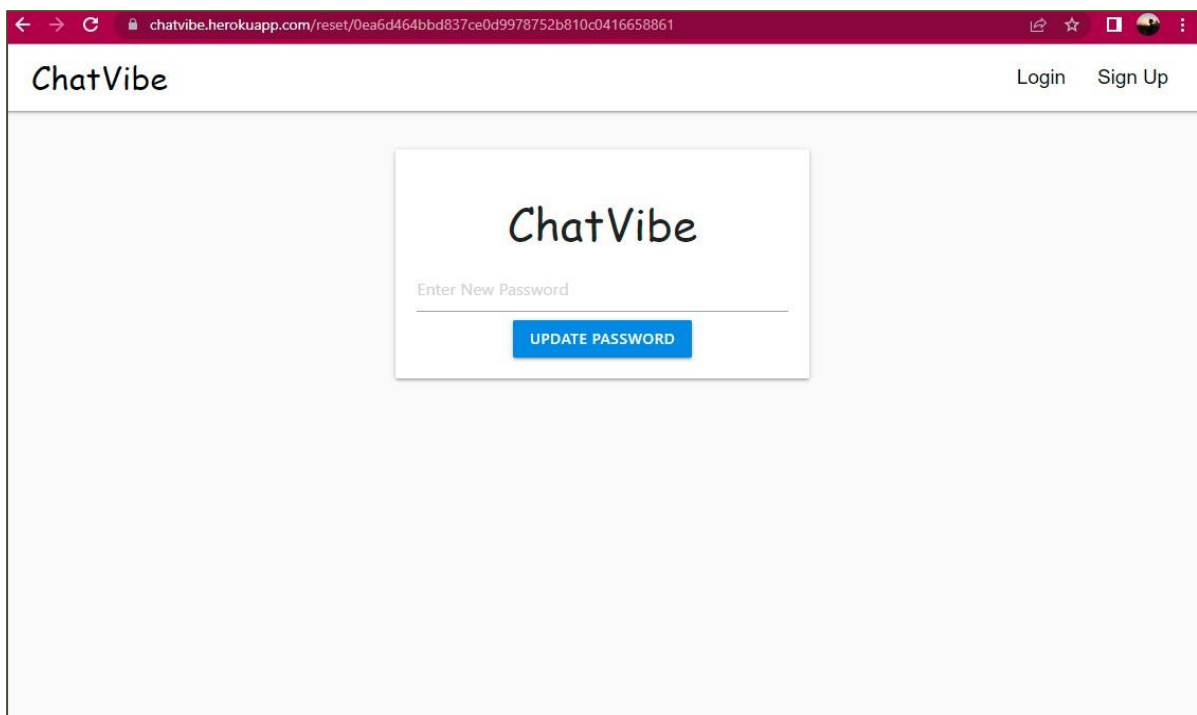


Fig 5.3.4 Update password window on Clicking on link sent on Mail

5.4 Search User

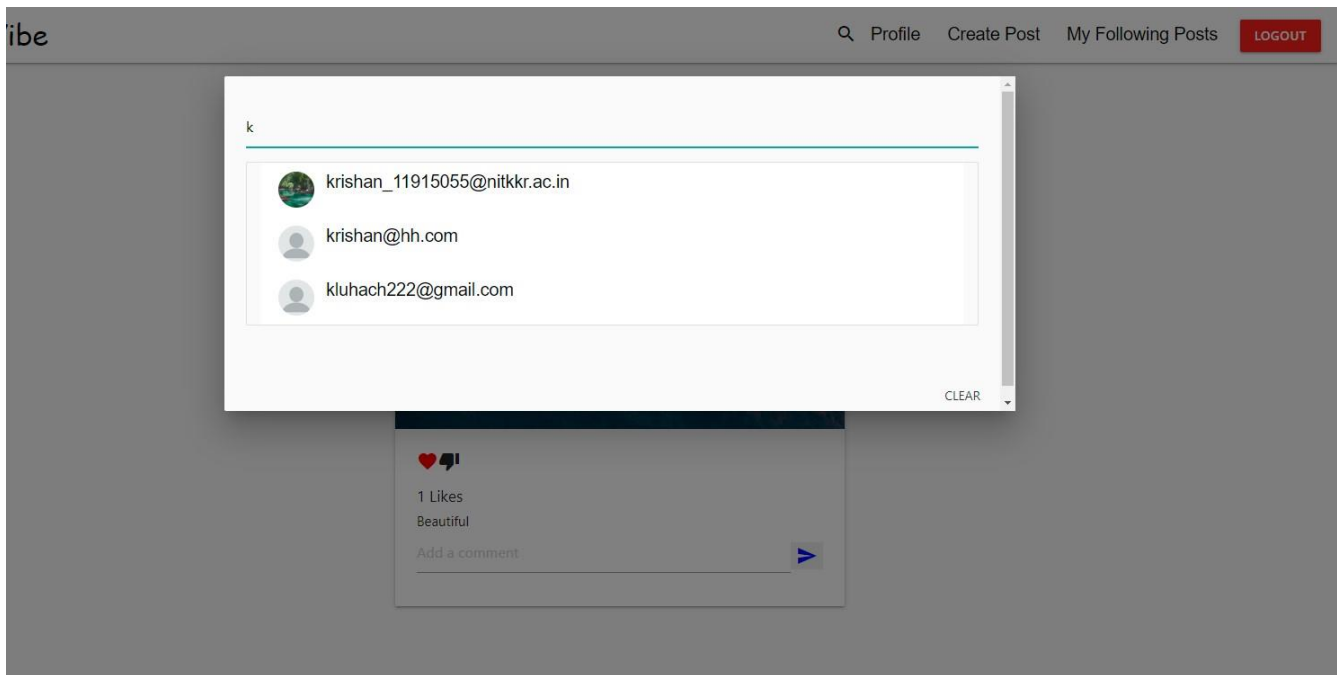


Fig 5.4.1 User can search another user with their email and Go to their profile

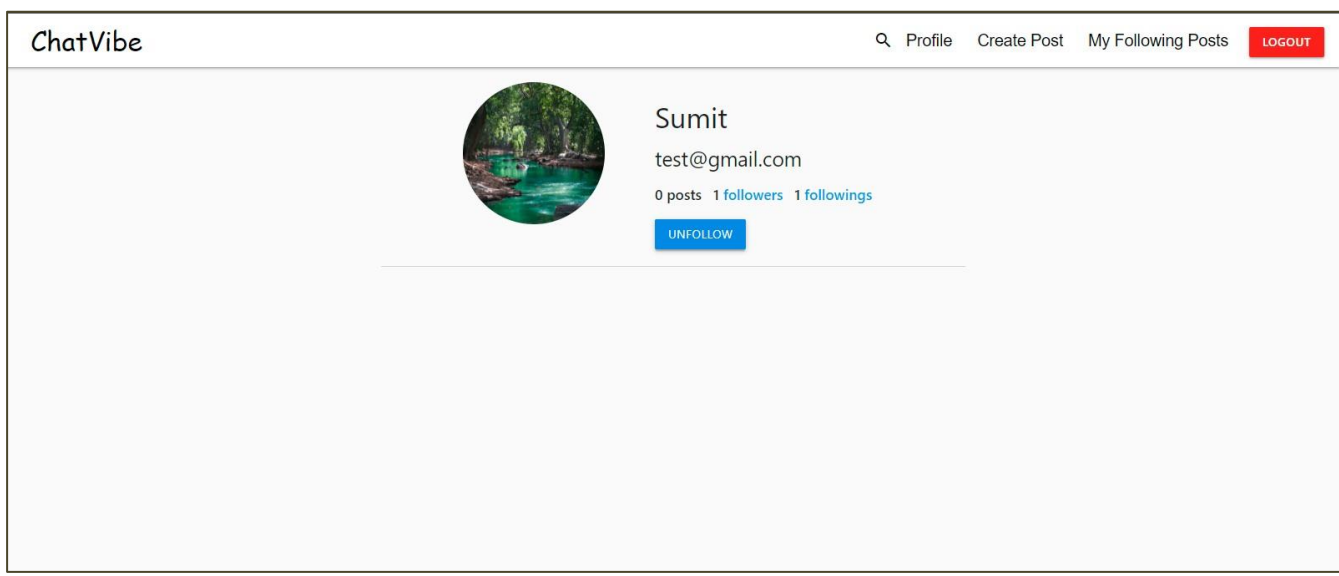


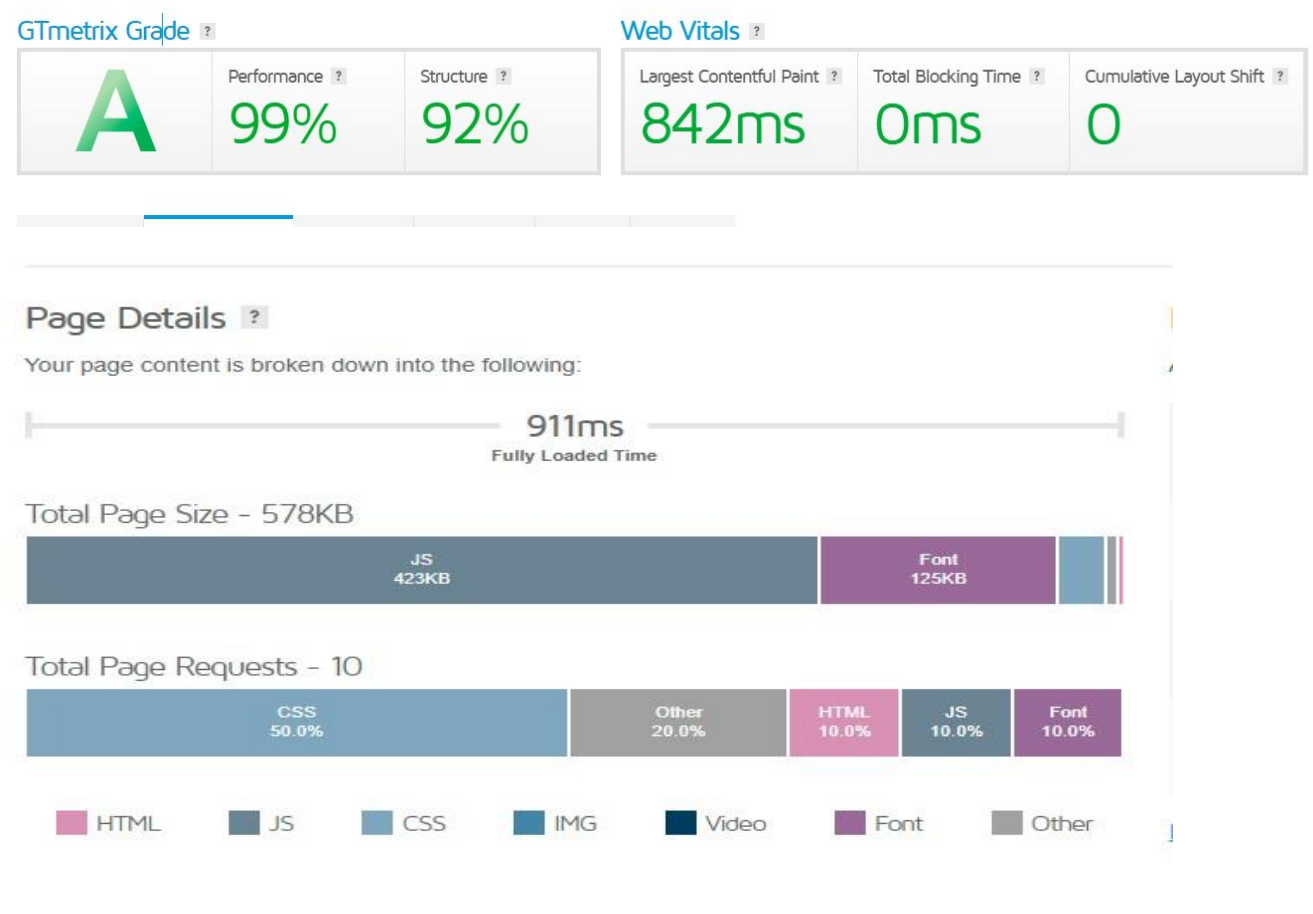
Fig 5.4.2 Other User Profile After Searching the User whom we can follow/unfollow

6. TESTING

The software developed in the project is integrated with the hardware testing environment and the system was tested. Integration tests were carried out in two phases, Client test scenarios written in the first phase were executed and Mongo DB test scenarios. The success rate in the first phase was determined as 92%.

Test Environment:

The errors that appeared in the first phase were corrected and the second phase was passed. In the second phase, a re-test was performed to check whether the errors in the first phase were removed. Website is tested in GTMatrixGrade platform and the success rate of the tests was determined as 92% and performance 99%.



7. Conclusions

It will be a wonderful learning experience for us while working on this project. We decided to work on this project because we want to promote quality learning experience with our application.

During the development of this project, we have learned different skills like

1. How to work under pressure.
2. How to work with time and manage our work.
3. Knowledge of new technologies like react, NodeJS, MongoDB etc.
4. We have made a good interactive User Interface so that the user will not face any difficulty while using our application.

Our project is completed but we will continuously try to make it more reliable, secure and add more features.

8. References

1. VS Code: <https://code.visualstudio.com/>
2. W3 School: <https://www.w3schools.com/>
3. Express: <https://expressjs.com/>
4. React: <https://reactjs.org/docs/getting-started.html>
5. Material UI - <https://material-ui.com/>
6. Font Awesome: <https://fontawesome.com/>
7. MongoDB: <https://docs.mongodb.com/manual/>
8. NodeJS: <https://nodejs.org/en/docs/>
9. Materialize CSS - <https://materializecss.com/>
10. A Complete Web Development Bootcamp by Angela Yu.
11. Stack Overflow: <https://stackoverflow.com/>