MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Project Report

on

Student Corner

Submitted By:

Vaibhav Yadav

0901CS191133

Zeeshan Ahmad

0901CS191143

Faculty Mentor:

Dr. Anjula Mehto

Assistant Professor CSE, MITS

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
GWALIOR - 474005 (MP) est. 1957
MAY-JUNE 2022

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A project report submitted in partial fulfilment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

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CERTIFICATE

This is certified that **Vaibhav Yadav** (0901CS19133) has submitted the project report titled **MERN Chat** under the mentorship of **Dr. Anjula Mehto**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

Dr. Anjula Mehto
Faculty Mentor
Assistant Professor
Computer Science and Engineering

Dr. Manish Dixit
Professor and Head,
Computer Science and Engineering

Dr. Manish Dixit
Professor & HOD
Department of CSE
M.I.T.S. Gwalior

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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CERTIFICATE

This is certified that **Zeeshan Ahmad** (0901CS19143) has submitted the project report titled **MERN Chat** under the mentorship of **Dr. Anjula Mehto**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

Dr. Anjula Mehto
Faculty Mentor
Assistant Professor
Computer Science and Engineering

Dr. Manish Dixit
Professor and Head,
Computer Science and Engineering

Dr. Manish Dixit
Professor & HOD
Department of CSE
M.I.T.S. Gwalior

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Dr. Anjula Mehto, Assistant Professor**, Department of Computer Science and Engineering.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

Vaibhav Yadav
0901CS191133

09/2022

Zeeshan Ahmad
0901CS191143

Third Year,
Computer Science and Engineering

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

ACKNOWLEDGEMENT

The full semester project has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary project as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering, for allowing** me to explore this project. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. Anjula Mehto**, Assistant Professor, Department of Computer Science and Engineering, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Vaibhav Yadav
0901CS191133

09/2022

Zeeshan Ahmad
0901CS191143

Third Year,
Computer Science and Engineering

ABSTRACT

The latest development of the Internet has brought the world into our hands. Everything happens through internet from passing information to purchasing something. Internet made the world as small circle. This project is also based on internet. Chat application is a feature or a program on the Internet to communicate directly among Internet users who are online or who are equally using the internet. Chat applications allow users to communicate even though from a great distance.

Therefore, this chat application must be real-time and multi platform to be used by many users and for it's wider reach. The development of information and communication technologies rapidly is one of the reason to develop this chat application. It is important to develop this chat application as it'll help people at local level to communicate better and college students to run a less chaotic web application.

This chat application in the manufacture begins with the collection of relevant data that will be displayed in the web and mobile versions. The programming language used to build server is Node.js with express framework and MongoDB database. The user's details are maintained confidential because it maintains a separate account for each user. An id and password are provided for each user.

Keyword: Online chat web application, communication, login, register, MERN(MongoDB, Express.js,s, Node.js), internet, confidential.

सार:

इंटरनेट के नवीनतम विकास ने दुनिया को हमारे हाथों में ला दिया है। सूचना प्रसारित करने से लेकर कुछ खरीदने तक सब कुछ इंटरनेट के माध्यम से होता है। इंटरनेट ने दुनिया को छोटा-सा घेरा बना दिया है। यह प्रोजेक्ट भी इंटरनेट पर आधारित है। चैट एप्लिकेशन इंटरनेट पर एक सुविधा या प्रोग्राम है जो इंटरनेट उपयोगकर्ताओं के बीच सीधे संवाद करने के लिए है जो ऑनलाइन हैं या जो समान रूप से इंटरनेट का उपयोग कर रहे हैं। चैट एप्लिकेशन उपयोगकर्ताओं को बड़ी दूरी से भी संवाद करने की अनुमति देते हैं।

इसलिए, यह चैट एप्लिकेशन कई उपयोगकर्ताओं द्वारा उपयोग किए जाने और इसकी व्यापक पहुंच के लिए वास्तविक समय और बहु मंच होना चाहिए। सूचना और संचार प्रौद्योगिकियों का तेजी से विकास इस चैट एप्लिकेशन को विकसित करने का एक कारण है। इस चैट एप्लिकेशन को विकसित करना महत्वपूर्ण है क्योंकि यह स्थानीय स्तर पर लोगों को बेहतर संवाद करने और कॉलेज के छात्रों को कम अराजक वेब एप्लिकेशन चलाने में मदद करेगा।

निर्माण में यह चैट एप्लिकेशन प्रासंगिक डेटा के संग्रह से शुरू होता है जिसे वेब और मोबाइल संस्करणों में प्रदर्शित किया जाएगा। सर्वर बनाने के लिए उपयोग की जाने वाली प्रोग्रामिंग भाषा नोड.जेएस है जिसमें एक्सप्रेस फ्रेमवर्क और मोंगोडीबी डेटाबेस है। उपयोगकर्ता का विवरण गोपनीय रखा जाता है क्योंकि यह प्रत्येक उपयोगकर्ता के लिए एक अलग खाता रखता है। प्रत्येक उपयोगकर्ता के लिए एक आईडी और पासवर्ड प्रदान किया जाता है।

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1: PROJECT OVERVIEW

1.1 Introduction:

The “Student Corner” application has huge impact on day to day life. There are numerous interaction website available in this world. Each application has different additional features varying from other applications. These application organizations compete with each other and add some competing features during each release.

They have reached people much and have an impact on people’s life. People find a better application from an available internet application which they feel much reliable and secure. Some of the available chatting applications that are available in these days are Facebook, Instagram, LinkedIN, etc. The above mentioned applications have billion users all over the world. Those companies are one of the top companies in the world. They have higher revenue per year and have many employees for their organizations developing additional features to compete with other organizations during their each release. These applications have different features and follows different ways to ensure security of their user data.

Today a data theft is the major crime and most people are involved in it. There are many cases being filed these days about personal data loss. So the organizations have to ensure the security from data loss by the third party data crisis. The basic chatting system should involve both sending and receiving processes simultaneously. In this application both sending and receiving messages simultaneously happens through MERN concept. The application is reduced as much as possible to avoid errors while entering the data It also provides error messages while entering invalid data. No formal knowledge is needed for the user to use this system. This software is supported to eliminate and in some cases reduce the hardships faced by this existing system.

1.2 Objectives and Scope:

1.2.1 Objectives:

Our goal is to build a web app that holds an intention to bring students close. Any user can connect to it from an open window/tab, is able to upload an image to use as avatar during the chat, each connected user will see instantly any message sent, and new connected users will see the last 10 messages sent. Each user can get themselves updated from the notice board and every user will be able to share their location in the chatting app. MongoDB makes use of records which are made up of documents that contain a data structure composed of field and value pairs. Documents are the basic unit of data in Mongo DB.Express does is that it enables

you to easily create web applications by providing a slightly simpler interface for creating your request endpoints, handling cookies, etc. than vanilla Node.React is an open-source, component-based JavaScript library used to create quick and interactive interfaces or UI components for users for web and mobile-based applications. It is a declarative and highly accurate library that provides reusable code, which enhances the efficiency and flexibility of single-page applications.Node.js is an open-source and cross-platform JavaScript runtime environment. Node.js with Express.js can also be used to create classic web applications on the server-side.

1.2.2 Scope:

The scope of the project should be broken-down and the system should be declared before advancing further.

The scope are as follows:

1. The design and construction of this application is aimed at building a web-based application and mobile application.
2. This system is developed using Socket.io and Node.js.
3. The database of this system is implemented using MongoDB.
4. Broadcasting chat server application is going to be a text communication software, it will be able to communicate between two computers using point to point communication.
5. The easy usability breaks the complexity syndrome.

1.3 Project Features:

- User accounts to control the access and maintain security
- Easy and fast retrieval of information
- Decrease the load of the person involved in existing manual system
- Easy Order Placement
- Easy to update information
- Better UI for both admin and user
- Robust database and backend

1.4 Feasibility:

After doing the project Online chat application system, studying and analyzing all the existing or required functionalities of the system, the next task is to do the feasibility study for the project. All projects are feasible given unlimited resources and infinite time.

Feasibility study includes consideration of all the possible ways to provide a solution to the given problem. The proposed solution should satisfy all the user requirements and should be flexible enough so that future changes can be easily done based on the future upcoming requirements.

1.4.1: Economical Feasibility

This is a very important aspect to be considered while developing a project. We decided the technology based on the minimum possible cost factor.

- All hardware and software cost has to be borne by the organization.
- Overall we have estimated that the benefits the organization is going to receive from the proposed system will surely overcome the initial costs and the later on running cost for the system.

1.4.2: Technical Feasibility

This included the study of function, performance and constraints that may affect the ability to achieve an acceptable system. For this feasibility study, we studied complete functionality to be provided in the system, as described in the System Requirement Specification (SRS), and checked if everything was possible using different types of frontend and backend platforms.

1.4.3: Operational Feasibility

No doubt the proposed system is fully GUI based and is very user friendly and all inputs to be taken are all self-explanatory even to a layman. Besides, proper training has been conducted to let the users know the essence of the system so that they feel comfortable with the new system.

1.5 System Requirement

The system requirements to build chat application :

1.5.1: Hardware Requirements

- Microsoft Windows 7/8/10 (32- or 64- bit)
- 4 GB RAM minimum, 8 GB RAM recommended.
- 2 GB of available disk space minimum, 4 GB Recommended
- 1280 * 800 minimum screen resolution

1.5.2: Software Requirements

- An Operating System
- Text Editor
- GUI for Backend

CHAPTER 2: LITERATURE REVIEW

With the development and enhancement in internet, more and more people have been choosing network chatting tools for communication. Applications such as these facilitates communication over great distances. Therefore, this application must both be real-time and multi-platform to be used by many users. The web-based real-time chatting application does not need any additional third-party client program, and the visual communication could be established conveniently. The programming tools used in building this application is Express.js[1], Node.js with express framework and Mongo DB database. The text communication is transferred through and from servers and the data transmission is facilitated through point to point connection between servers. Due to the usage of react framework, virtual space concept is implemented which enhances the performance over existing applications developed using PHP by a factor of approximately 6 times[2].

This paper is aimed at developing an Online College Management System that is of importance to the educational institute or college. This system is made using MERN stack. This system may be used to monitor college students and their various activities. This application is being developed for an engineering college to maintain and facilitate ease of access to information. For this the users must be registered with the system. MERN Chat is an Internet based application that aims at providing information to all levels of management within an organization. This system is used as an information management system for the college. For a given student and staff (technical and non technical) can access the system to either upload and access some information from the database[3].

Chat applications have become one of the most important and popular applications on smartphones. It has the capability of exchange text messages, images and files which it cost free for the users to communicate with each other. All messages must be protected. The aim of the paper is to propose chat application that provides End-to-End security that let safely exchange private information with each other without worrying about data[4]. In addition to the protection of storage. A list of requirements to make secure chat application is presented in this paper and based on these requirements, the application was designed. The proposed chat application was compared with other popular applications based on those requirements as well as it has been tested as a proof for providing End-to-End security[5].

In this application, we have developed a website where users can sign up and login and be able to share their thoughts and events at their colleges or companies and experience at interviews or etc and also like, comment on respective posts, and also user can able to follow or unfollow a user to get updates from different users[6]. We feel very difficult to find blood donors at difficult times, this

website provides a list of blood donors with their details such that it will be very helpful in finding blood donors. It is very helpful to people who require blood urgently. There is a good number of donors but we find it difficult to find them. This website solves this issue.

We can create chat rooms or join chat rooms and discuss things with people around the world in this application.

Chatting applications are very popular among Internet users and Smartphone's owners. Hundred millions of smartphone owners use chat applications on monthly basis. These chat applications offer the communication free of charge and majority of them are free to install which makes it very appealing for the potential customers. These chat applications offer different services and built-in features to their users while in majority of the cases, they neglect security aspects of their usages and messages[7].

The latest development of the Internet has brought the world into our hands. Everything happens through internet from passing information to purchasing something. Internet made the world as small circle. This project is also based on internet. This paper shows the importance of chat application in day today life and its impact in technological world. This project is to develop a chat system based on Java multithreading and network concept[8]. The application allows people to transfer messages both in private and public way .It also enables the feature of sharing resources like files, images, videos, etc.This online system is developed to interact or chat with one another on the Internet. It is much more reliable and secure than other traditional systems available. Java, multi threading and client-server concept were used to develop the web based chat application. This application is developed with proper architecture for future enhancement. It can be deployed in all private organizations like Colleges, IT parks, etc.

This research paper is about the modelling and construction of Management Information System with the help of MERN stack. The MERN stack consist of MongoDB, Express.js, React and Node.js[9]. This MIS (Management Information System) is specially designed for IMOs and the Govt. of India. The schema modelling is flexible and it can be used by almost every loan providing govt. agency. For deploying the application, the database used is MongoDB and the server used is Heroku. The entire system can be integrated with Docker to reduce the development setup time. The application comes with built in feature that allows the admin to send messages to the loan-bearing group[10].

CHAPTER 3: PRELIMINARY DESIGN

The first step in the system development life cycle is the preliminary investigation to determine the feasibility of the system. The purpose of the preliminary investigation is to evaluate project requests. It is not a design study nor does it include the collection of details to describe the business system in all respects. Rather, it is the collecting of information that helps committee members to evaluate the merits of the project request and make an informed judgment about the feasibility of the proposed project.

3.1: Software Development Lifecycle Model

Rapid Application Development (RAD) Model used to develop this food ordering system is RAD which focuses mainly on dividing the project into different modules that is the Customer Module and Admin Module. In the RAD model, the functional modules are developed in parallel as prototypes and are integrated to make the complete product for faster product delivery. Since there is no detailed preplanning, it makes it easier to incorporate the changes within the development process. The RAD model distributes the analysis, design, build and test phases into a series of short, iterative development cycles.

3.2: Requirement Analysis

3.2.1: Functional Requirements:

- Registration: : This aspect of the login menu will ask the user for the client's name, username, and password. The system will check if the username is available or not. It will close if the username is already taken and will go back to the main login menu.
- Login: The user login to the system by entering valid user id and password for chatting etc.
- Location Sharing : Users can share their location while chatting.
- Search Option: Users can search for other users using the search option.
- One on One Chat: Users will be able to communicate one on one. No one can see their chat.
- Different Browsers: The user can open the application with different browsers. Even opening in different browsers, users won't get logged out.
- Public & Private Host: We will make it in Public Host as well as Private Host.
- Logout: After chatting privately or publicly, creating groups etc, customer can logout of the application.

3.2.2: Non-Functional Requirements:

- Portability: System running on the platform can easily be converted to run on another platform.
- Reliability: The ability of the system to behave consistently in an acceptable manner when operating within the environment for which the system was intended for.
- Availability: the system should be available at all times, meaning the user can access it using a web browser, only restricted by the down time of the server on which the system runs.
- Maintainability: A commercial database is used for maintaining the database and the application server takes care of the site.
- Security: Secure access of the confidential data (customer information).
- User Friendly: System is easily accessible by the customer.
- Performance: Performance should be fast.
- Efficient: System should be efficient that it won't lag due to heavy traffic when large no. of users are chatting.
- Privacy: Personal data of the system should not be disclosed to anyone.

3.3: Use Case Diagram

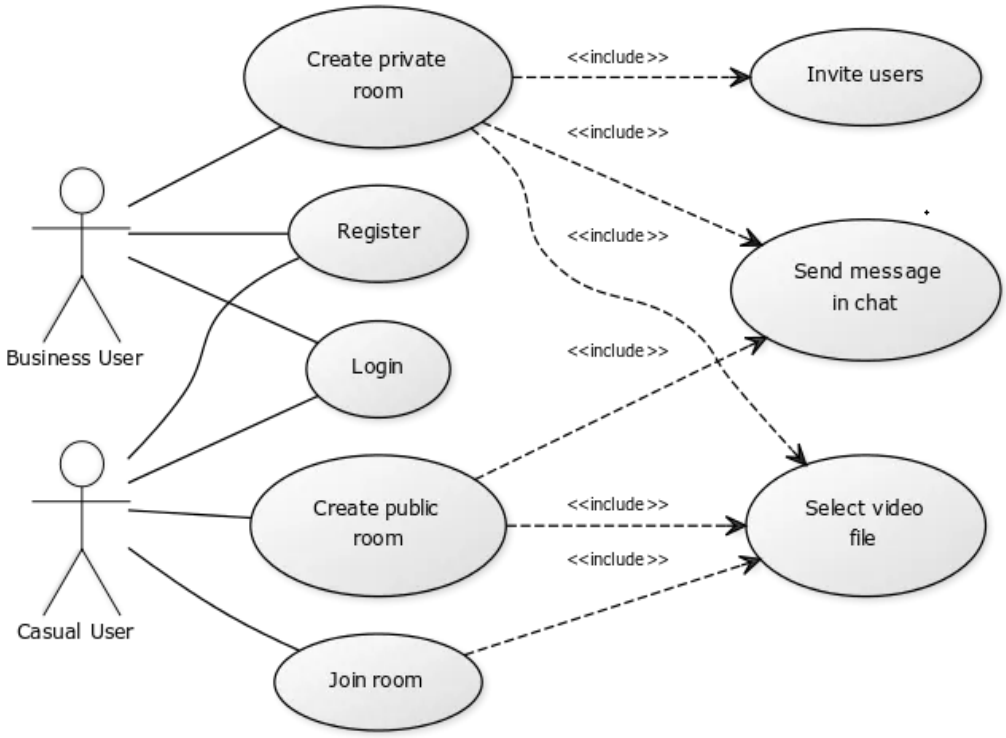

Fig. 3.1 - Use Case Diagram

3.4: Class Diagram

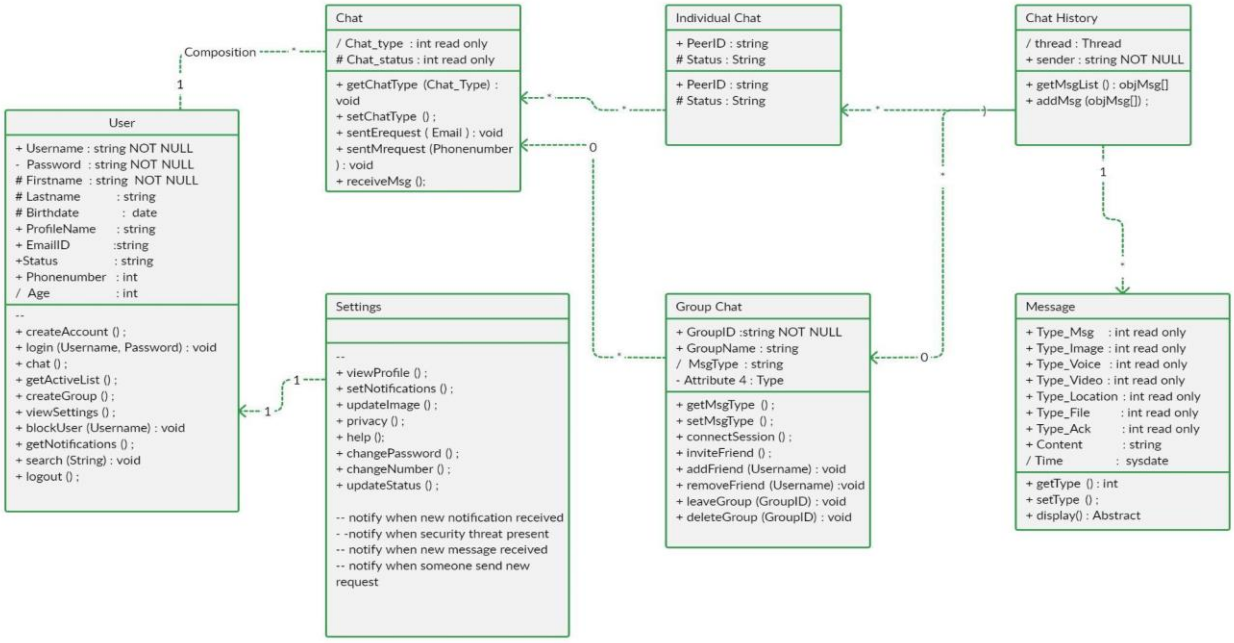

Fig. 3.2 - Class Diagram

3.5: Sequence Diagram

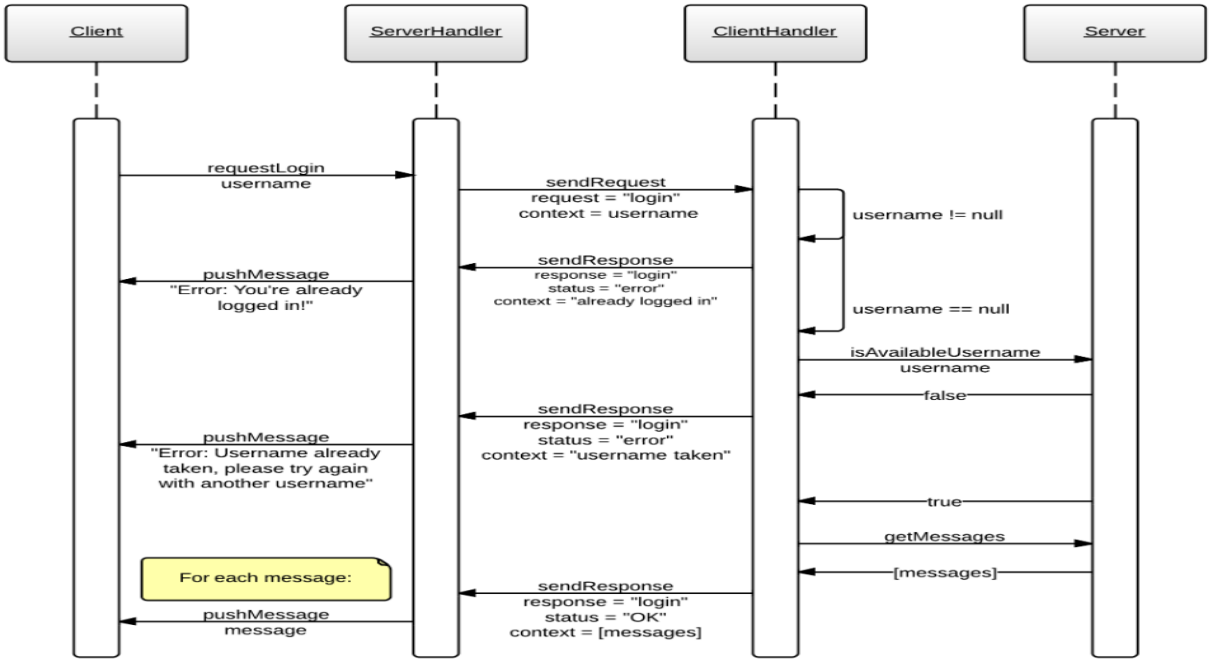

Fig. 3.3 - Sequence Diagram

3.6: E-R Diagram

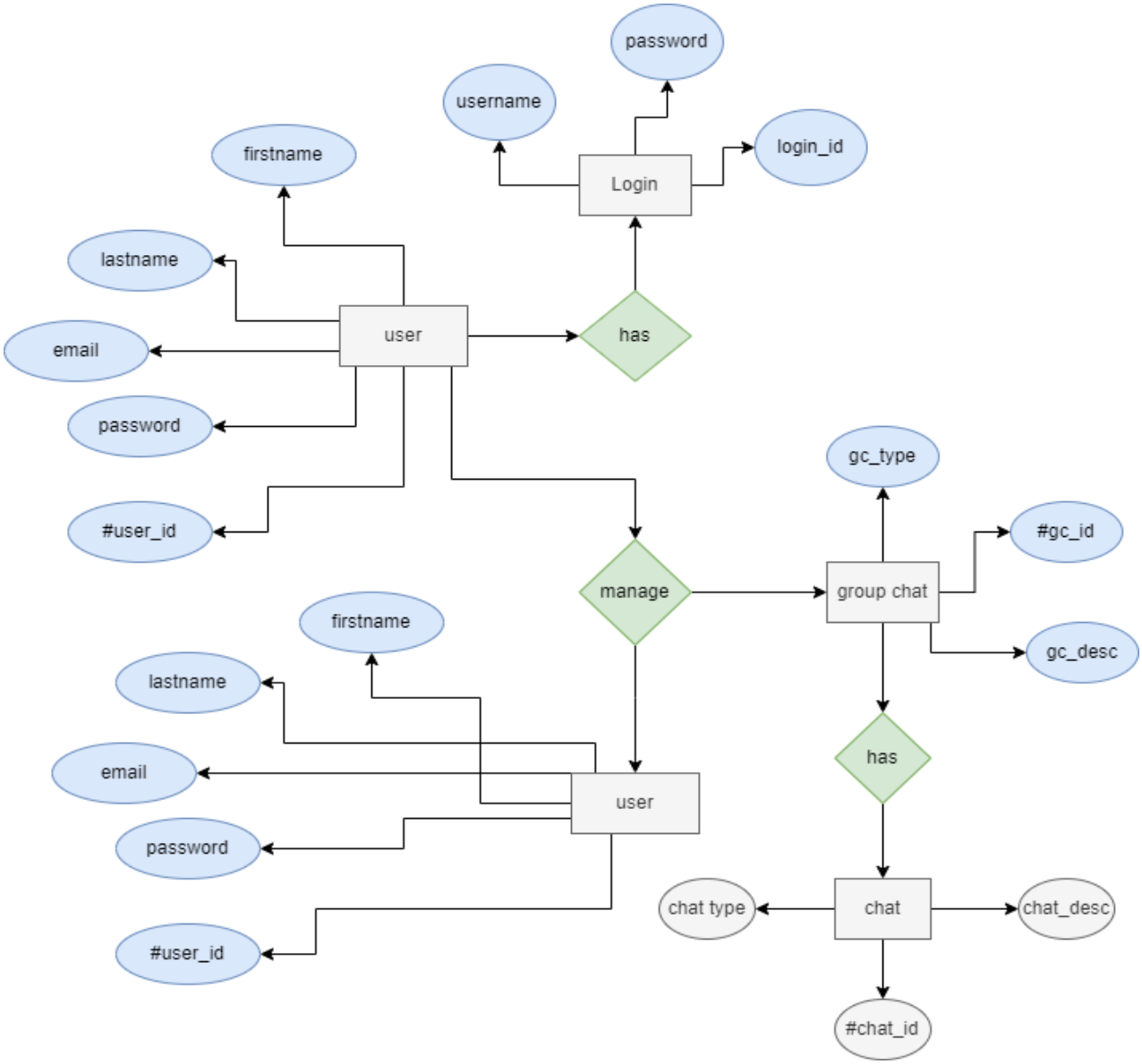

Fig. 3.4 - E-R Diagram

CHAPTER 4: FINAL ANALYSIS AND DESIGN

4.1: Results

4.1.1: SignIn/ SignUp page:

User can login into the user dashboard with help of login id and password. User also has the access to various functionalities such as adding photo, putting email, password and confirm password to create his/her account. Once the user has successfully registered, he/she can login for chat. Already registered user can directly login into his/her account.

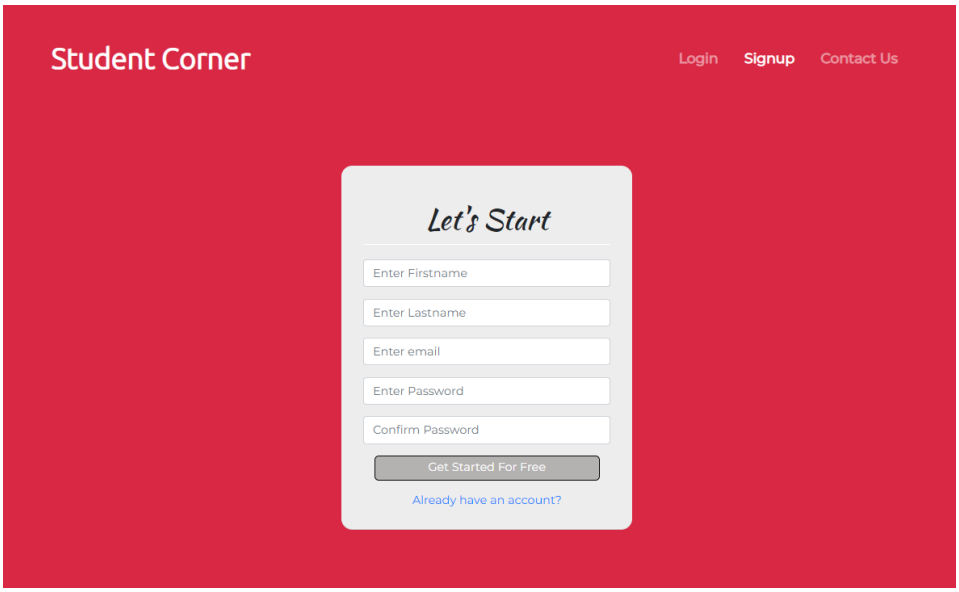

Fig. 4.1 - SignUp Page

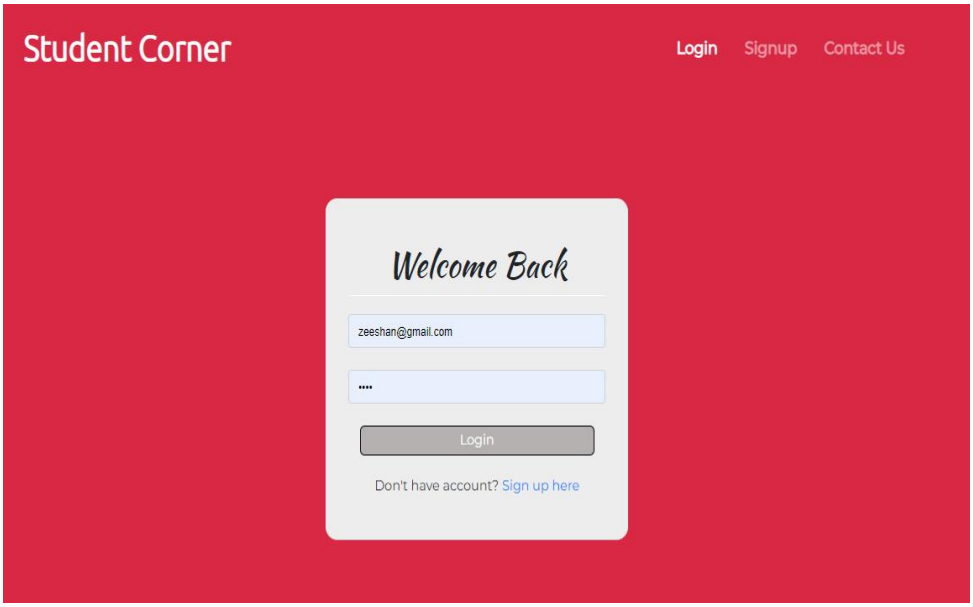

Fig. 4.2 – Sign In Page

4.1.2: Welcome Page:

The user will be redirected to this page after he/she successfully clicks on the website.

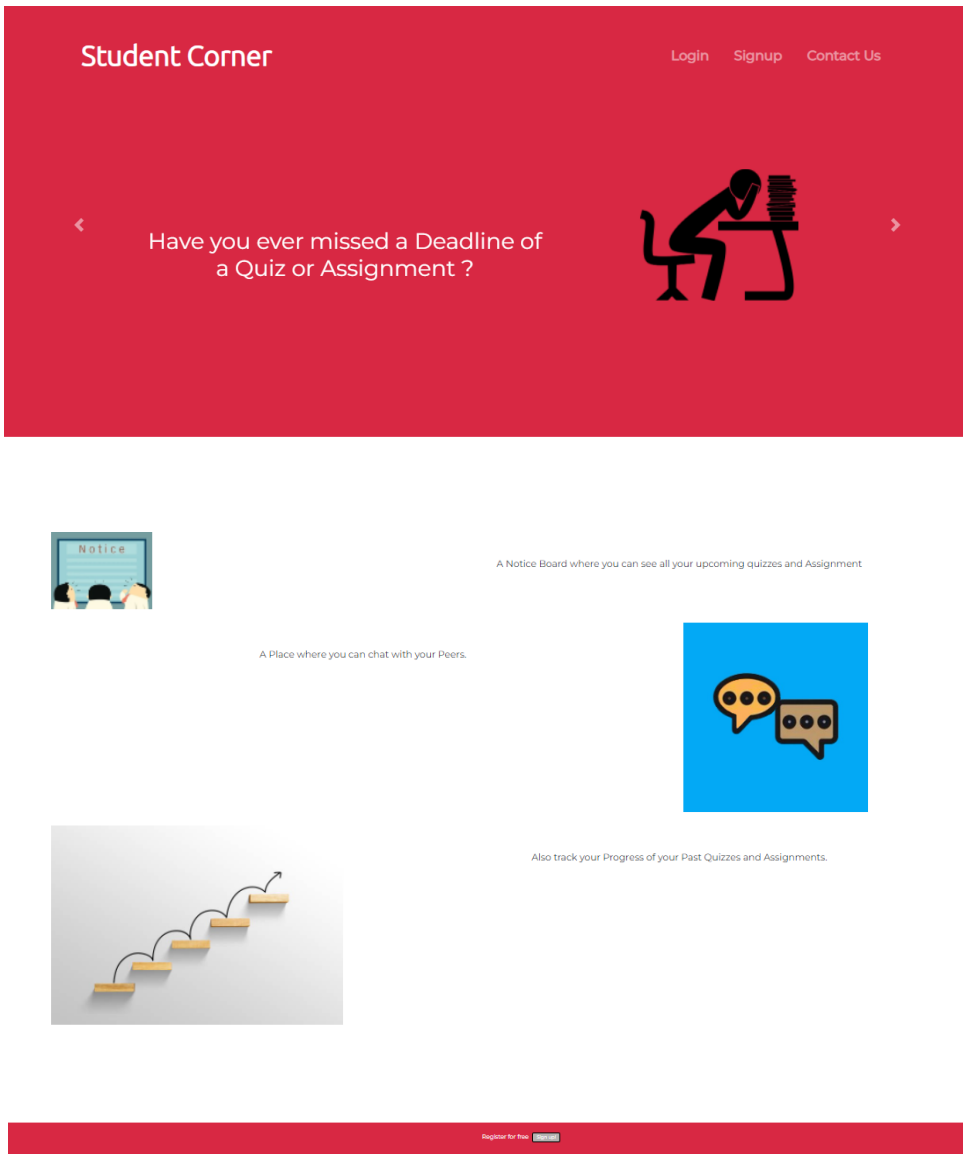

Fig. 4.3 - Welcome Page

4.1.3: Chat Page:

The Main chat page will be displayed here

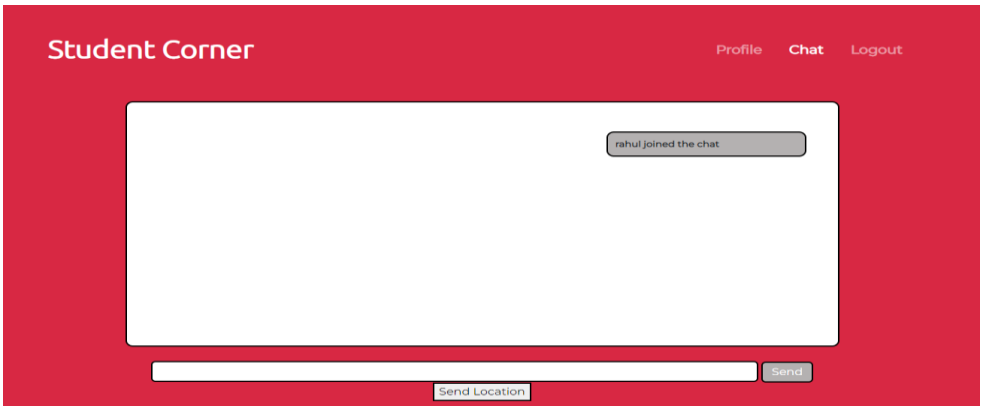

Fig. 4.4 - Chat Page

4.1.4: Notice Board

This is the Notice board {Under development}

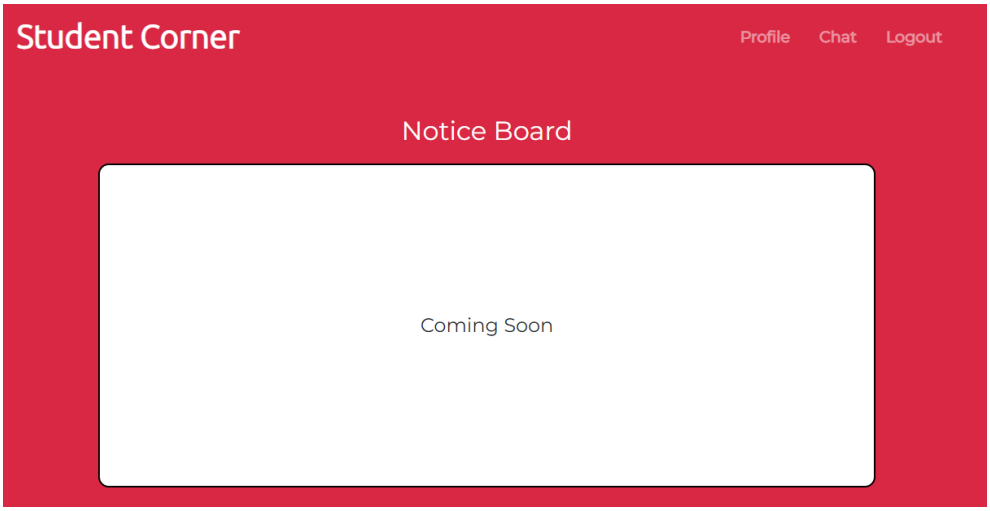

Fig. 4.5 – Notice Board Page

4.2 Result Analysis:

Results Analysis is to evaluate ongoing unfinished activities, in projects during the period-end.

- Email Verification.
- Payment gateway.
- Adding more responsivity.
- Implementing different signing options.
- Making the website compatible with all devices.
- Fixing minor bugs.

4.3 Application:

- Avoiding long queues while having different chats.
- Decreasing traffic and less chaotic application.
- Ease of reminders.
- Real time notification of new messages.
- Different type of rooms for user.

4.4 Problem Faced:

- Real Time updation new messages.
- Authenticating user
- Implementing search bar.

- Storing and updating images.
- UI related problems.
- Server side request while using different modules.
- Implementation of different modules.

4.5 Limitations:

- Due to competition in this field we would eventually face a lot of problems as it would be difficult to gain customers for our product **.**
- Less scalability
- Testing of the product on a large scale is difficult.
- Limited storage as storage is expensive.
- Performance issues.
- Only registered users can use the system.
- Internet must be available to use the application.
- There must be minimum of two users per time for interactive chatting.

CHAPTER 5: CONCLUSION AND FUTURE SCOPE

5.1 Conclusion :

This Interaction website provides a better and flexible system for chatting and getting themselves updated. It is developed with recent advanced technologies in a way to provide a reliable system. Main advantages of the system are instant messaging, real-world connectivity, adding security, group chat, Notice board, Location Sharing , etc.

This application can find better need in the market for most of the organizations aim at having private applications for them. Additional features will also be included in the system based on the public need which includes conference call, video chat. location share, etc. based on the need.

5.2 Future Scope :

- Video calls will be added.
- Voice recording can be added.
- Enhancing different text style and font size.
- Introduction of animations.
- Instant document attachment.
- Tracking Progress
- Auto updating of notice board
- Notice Board

REFERENCES

[1] Malhotra, A., Sharma, V., Gandhi, P., & Purohit, N. (2010). UDP based chat application. 2010 2nd International Conference on Computer Engineering and Technology, 6, V6-374-V6-377.

[2] Bamane, A., Bhoyar, P., Dugar, A., & Antony, L. (2012). Enhanced Chat Application.

[3] Singh, A., & Haahr, M. (2006). A Peer-to-Peer Reference Architecture. 2006 1st International Conference on Communication Systems Software & Middleware, 1-10.

[4] Aberer, K., Alima, L.O., Ghodsi, A., Girdzijauskas, S., Haridi, S., & Hauswirth, M. (2005). The essence of P2P: a reference architecture for overlay networks. Fifth IEEE International Conference on Peer-to-Peer Computing (P2P'05), 11-20.

[5] Junio, O. M., & Chavez, E. P. (2018). Development of Offline Chat Application: Framework for Resilient Disaster Management. 2018 IEEE International Conference of Safety Produce Informatization (IICSPI), Chongqing, China, 2018, pp. 510-514.

[6] Daen, I., (2020) "Composition vs inheritance - react." https://facebook.github.io/react/ docs/composition-vs-inheritance.html. Accessed: 2016-12-18. 10.

[7] D. T. Andrew Hunt, The Pragmatic Programmer: From Journeyman to Master. Addison-Wesley Professional, first ed., october 1999.

[8] Faryn, F., (2020) "Mongodb manual 3.4." https://docs.mongodb.com/manual/reference/ limits/. Accessed: 2017-08-30.

[9] Chen, H., Wen, J., & Yang, C. (2014). A Secure End-to-End Mobile Chat Scheme. 2014 Ninth International Conference on Broadband and Wireless Computing, Communication and Applications, 472-477.

[10] Bremler-Barr, A., Dekel, O., Goldschmidt, R., & Levy, H. (2011). Controlling P2P Applications via Address Harvesting: The Skype Story. 2011 IEEE International Symposium on Parallel and Distributed Processing Workshops and Phd Forum, Shanghai, 2011, pp. 1579-1586.