Full Stack Project Report

on

WhatsApp Clone by using ReactJS

Under the guidance of

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Declaration

We hereby declare that the work which is being presented in the B.Tech. Project **"Whatsapp clone"**, in partial fulfillment of the requirements for the award of the **Bachelor of Technology** in Computer Science and Engineering and submitted to the Department of Computer Engineering and Applications of GLA University, Mathura, is an authentic record of our own work carried under the supervision of **Mr. Pankaj Kapoor.** The contents of this project report, in full or in parts, have not been submitted to any other Institute or University for the award of any degree.

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Certificate

This is to certify that the above statements made by the candidate are correct to the best of my/our knowledge and belief.

_____

Supervisor
Mr. Pankaj Kapoor
Assistant Professor

Acknowledgement

We take this opportunity to express our profound gratitude and deep regards to our guide **Mr. Pankaj Kapoor** for this exemplary guidance, monitoring and constant encouragement thought-out the course of this project. The blessing, help and guidance given by him, time to time shall carry us a long way in the journey of life. We wish to acknowledge the encouragement received from friends for initiating my interest in this topic and also for their unparalleled help and motivation round the clock to carry out my project work. Lastly, we would like to thank all professors for their help, moral support and wishes. We would also like to thank GLA University for providing us the opportunity to work on this project and assigning us a mentor like **Mr. Pankaj Kapoor**.

Abstract

WhatsApp is a social media messaging app which allows millions of users to interact and share text & voice messages, voice calls, video calls, images and much more. With exceptional cross-platform functionalities and user-friendly interface, WhatsApp achieved a tremendous growth in the world. As a matter of fact, WhatsApp upholds more than 5 billion users which is the highest number for a messaging app and shines as the primary means of communication for most of the countries all over the world. Being a popular social media app, WhatsApp provides several features, which are- individual and group chats, audio calls, video calls, status, and share media. So, we thought that we would also make a similar type of room based application which would have the same type of functionalities as this application has, with the help of react and firebase.

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Introduction

Title of the project: WhatsApp Clone by using ReactJS

GitHub link having project files:

https://github.com/saurabhkhare123/fullstack-2

The problem statement:

Our team wants to utilize this time in learning new skills and cutting-edge technologies in the web development field. So, we come up with an idea to develop the web application by using react JS, through which we will learn and amplify our knowledge and experience in web development. So, we decide to create the WhatsApp clone by using react js, and then we will deploy our web application on the Firebase platform.

Objective of the project:

The main objective behind this project is to learn new skills and cutting-edge technologies in the web development field. In this project, we have used the concepts like react router, react context API, google authentication, firebase firestore real-time database, and we have deployed this web application on the Firebase platform.

Methodology:

In this project, we will create a similar type of room based application which would have the same type of functionalities as the real WhatsApp application provides to the real world, with the help of react, and then we will deploy this application on the firebase. The goal of this project is learning new skills and cutting-edge technologies in web development field. Our room-based web application will have various features like we can add or delete rooms, we can update the user profile: name, and photo, we can also search the rooms and messages of different persons. This project is developed by using various technologies like react, react router, firebase real-time database, material UI, google authentication and deploy this web app by using Firebase.

Technologies Used

Technologies Used in this project:

- React
- React Context API
- React Router
- JavaScript
- Firebase Real-time database
- Material UI
- Google Authentication
- Deploy using Firebase

React:

React.js is an open-source JavaScript library that is used for building user interfaces. It is used for handling the view layer for web and mobile apps and also allows us to create reusable UI components so that the developers can create large web applications that can change data, without reloading the page. In React, instead of using regular JavaScript for templating, it uses JSX which has a simple JavaScript that allows HTML quoting and uses these HTML tag syntax to render subcomponents.

React Context API:

React Context provides a way to pass data through the component tree without having to pass props down manually at every level. The Context API allows us to have a central store where the data resides.

React Router:

It is the process through which the user is navigated to different pages on a website. It uses the component structure to call components, which display the appropriate information. It plays an important role to display multiple views in a single page application. It is also used to show the different pages to the user.

JavaScript:

JavaScript is used for client-side scripting which can help in using validation on the website and many more other functions. It is a scripting or programming language that allows you to implement complex features on web pages, every time a web page does more than just sit there and display static information for you to look at displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc. you can bet that JavaScript is probably involved.

Material-UI:

Material-UI is a simple and customizable component library to build faster, beautiful, and more accessible React applications.

Firebase:

It is a platform launched in 2011 by Firebase inc, and acquired by Google in 2014. It is categorized as a NoSQL database program, which stores data in JSON-like documents. It provides various key features like authentication, real-time database and hosting of web applications.

Firebase Authentication:

It is a Google Authentication feature which allows us to use pre-built or create custom UI for user-authentication, and login users via custom credentials, emails, or social media accounts.

Firebase Real-time Database:

It is essentially a NoSQL cloud-storage that can be connected with the application to provide real time access to the data across different platforms. One of the advantages is that the database can work offline, caching the data in device memory, and after reconnecting to the internet, synchronizing it. It stores data in a JSON tree and can be queried by users. In terms of security, it provides permission-based data access which can be done with the help of Firebase Authentication.

Software Used

Operating System:

The programming work was carried out on the systems having Windows 10 and Ubuntu operating system (which is an open source operating system) and the Front-end website was tested on various types of browsers like IE, Chrome and Firefox.

Visual Studio Code (VS Code):

Microsoft Visual Studio is an integrated development environment (IDE)from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps. Visual Studio uses Microsoft's software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code. Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring. The integrated debugger works both as a source-level debugger and a machine-level debugger. Other built-in tools include a code profiler, forms designer for building GUI applications, web designer, class designer, and database schema designer.

Git:

Git is a distributed version-control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files. Its goals include speed, data integrity, and support for distributed, non-linear workflows. To upload the site on the real world we have used the GitHub. By the help of git command we had uploaded our websites on GitHub.

Git basic commands:-

- git init. This is used to initialize the repository.
- git add This is used to add files in the repository..
- git commit. This is used to write the messages and commit the work.
- git status. This is used to tell if any files are uncommitted or not.

Web Browser:

A web browser is a software application for accessing information on the World Wide Web. Each individual web page, image, and video is identified by a distinct Uniform Resource Locator (URL), enabling browsers to retrieve these resources from a web server and display them on the user's device. A web browser is not the same thing as a search engine, though the two are often confused. For a user, a search engine is just a website, such as google.com, that stores searchable data about other websites. But to connect to a website's server and display its web pages, a user needs to have a web browser installed on their device. The most popular browsers are Chrome, Firefox, Safari, Internet Explorer and Edge.

The Browser we used in our project was Chrome:

Chrome:

Google Chrome is a cross-platform web browser developed by Google. It was first released in 2008. It was later ported to Linux, macOS, iOS, and Android where it is the default browser built into the OS. It serves as the platform for web applications. Google Chrome stands out as one of the world's most widely used browsers for the web surfing, searching and also for real-time web applications. Chrome has more than 58% of the market share, according to the latest estimates. Created for the open web, Google Chrome helps professionals and developers to design websites that are specifically optimized for the next version of the digital world. With Google Chrome, you can also test cutting-edge APIs for web-based platforms in real-time.

Implementation and User Interface

This is the interface of our room based web application.

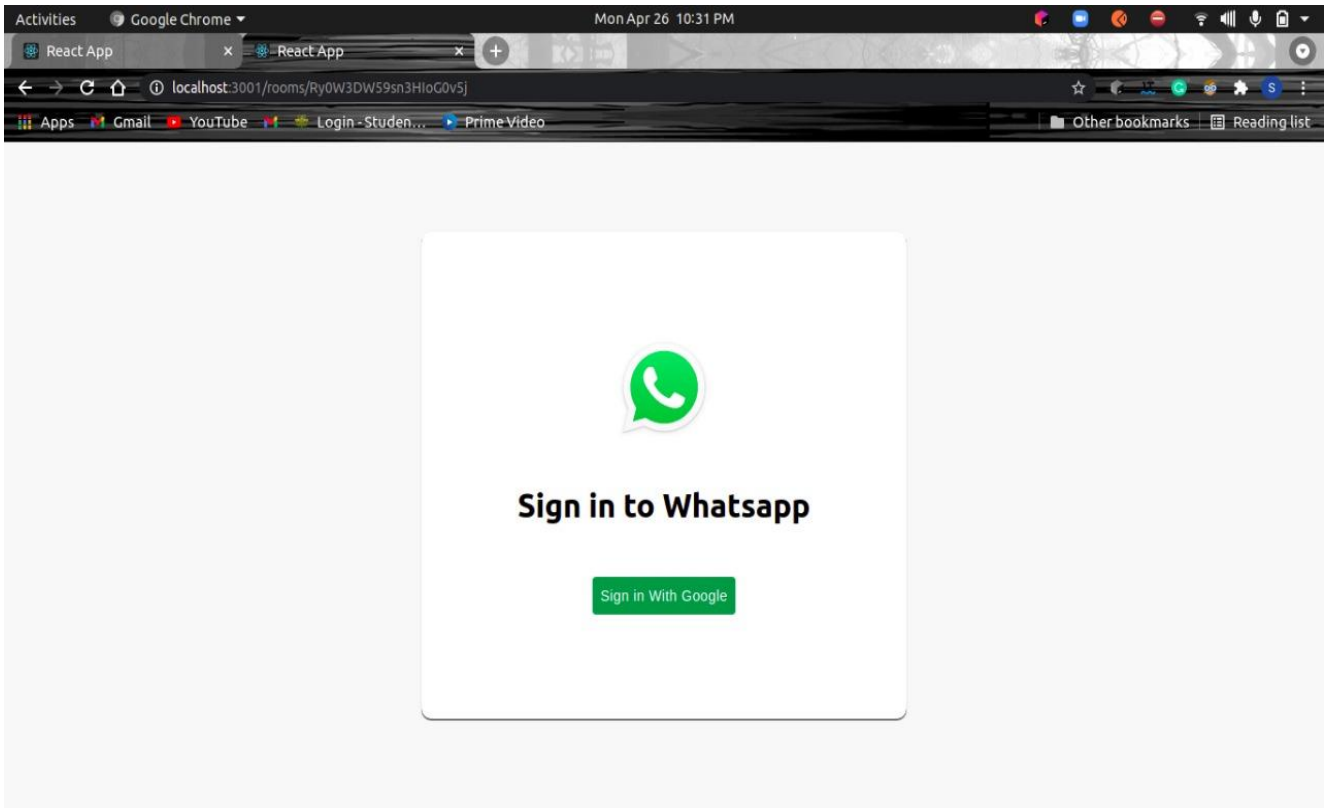

Fig:1

Here, we can log in into the application by using any Gmail account.

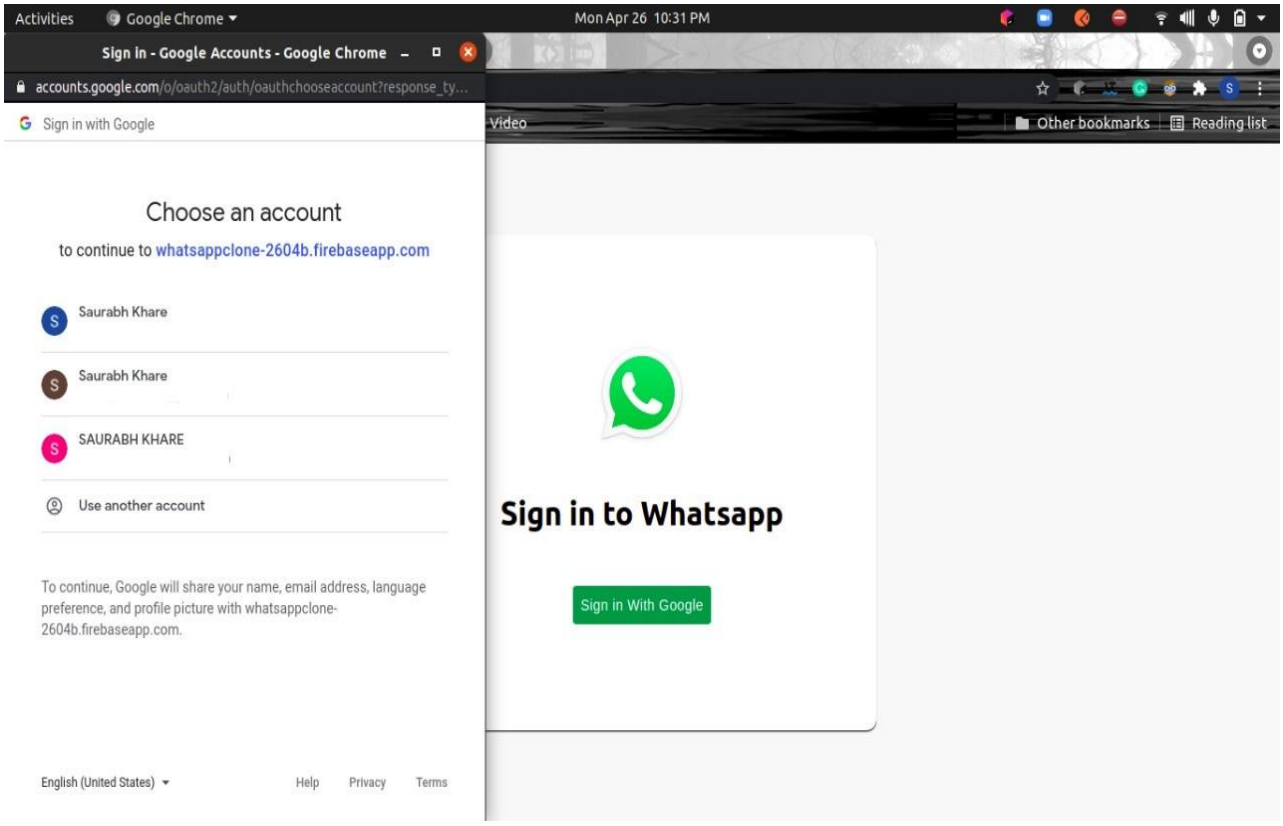

Fig:2

Here, we can create the room in the application so that we can do the conversation with our loved ones, friends, family and relatives as well.

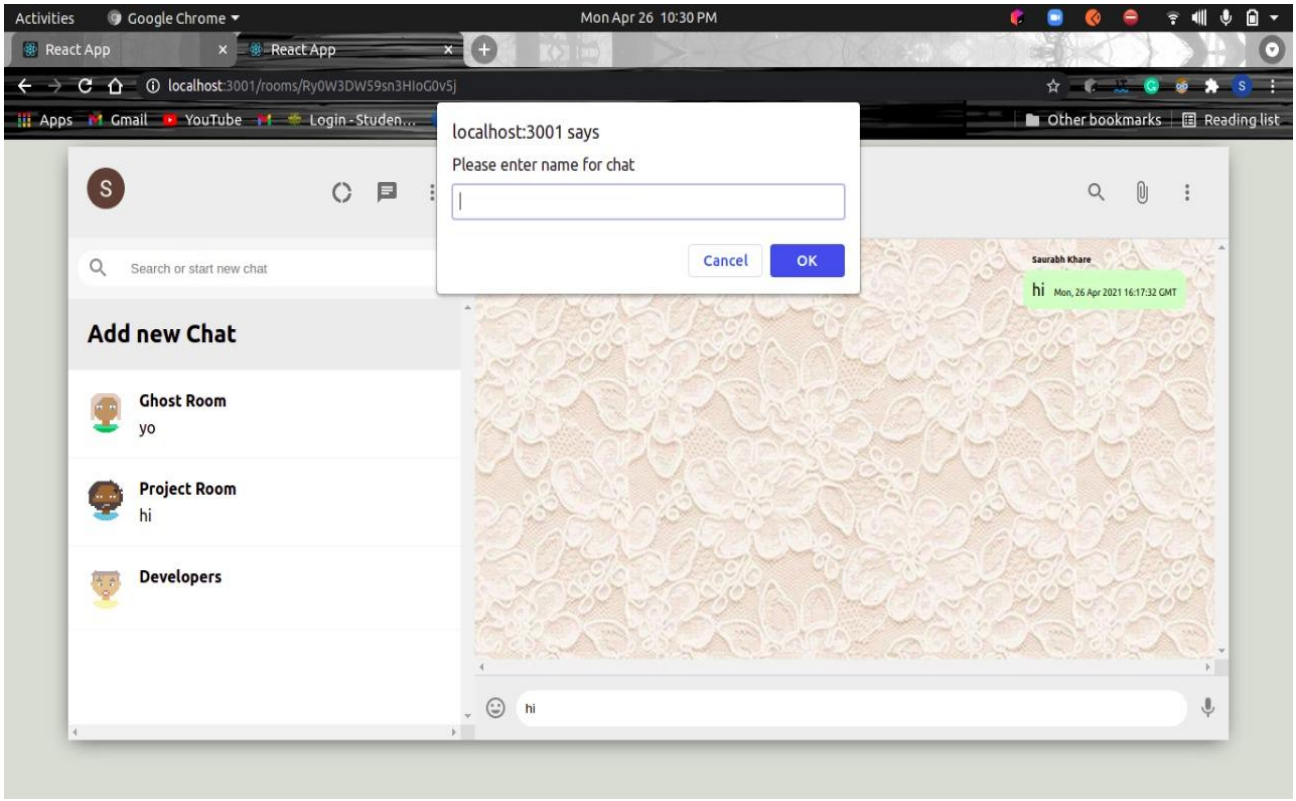

Fig:3

Now, after creating the room, we will be able to send the messages to family members and friends.

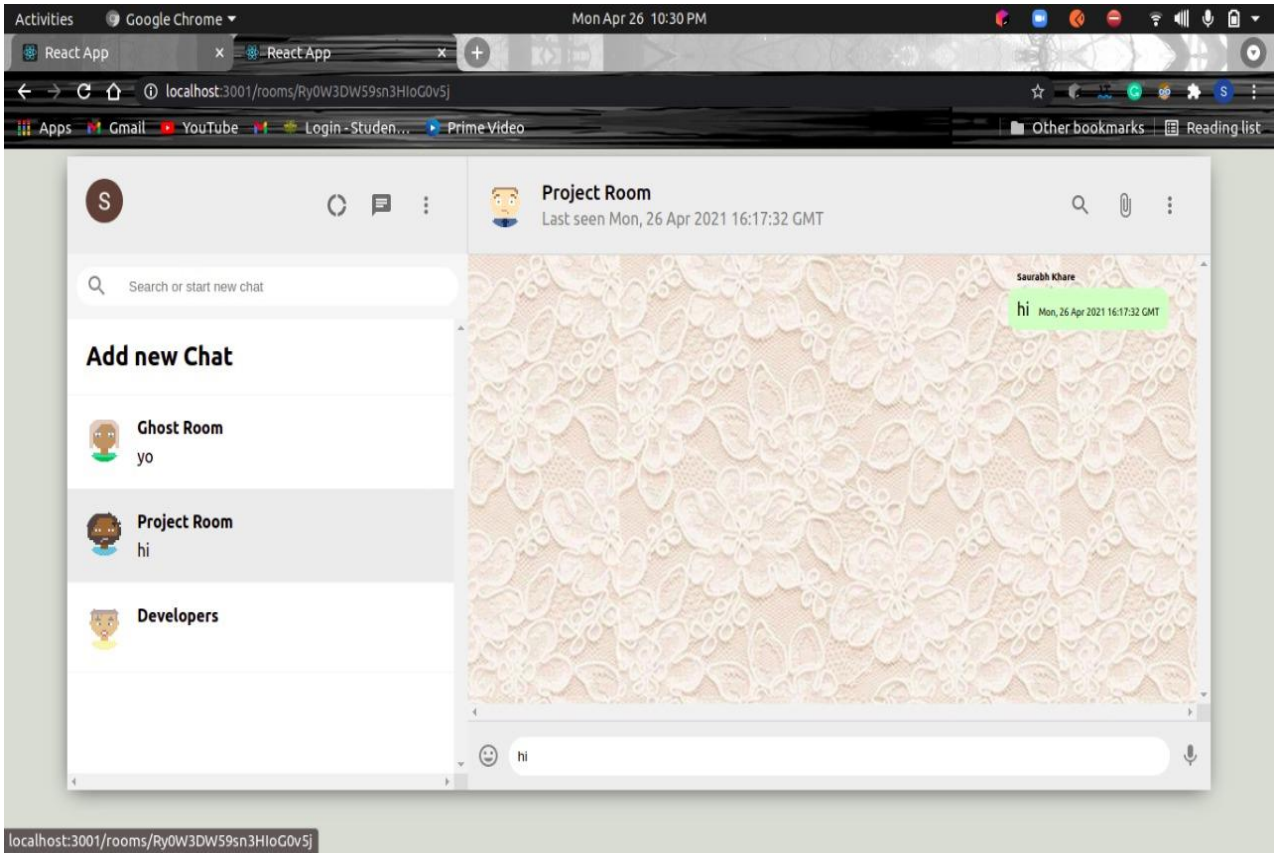

Fig:4

Here, the other person can also send the messages to us for further conversation.

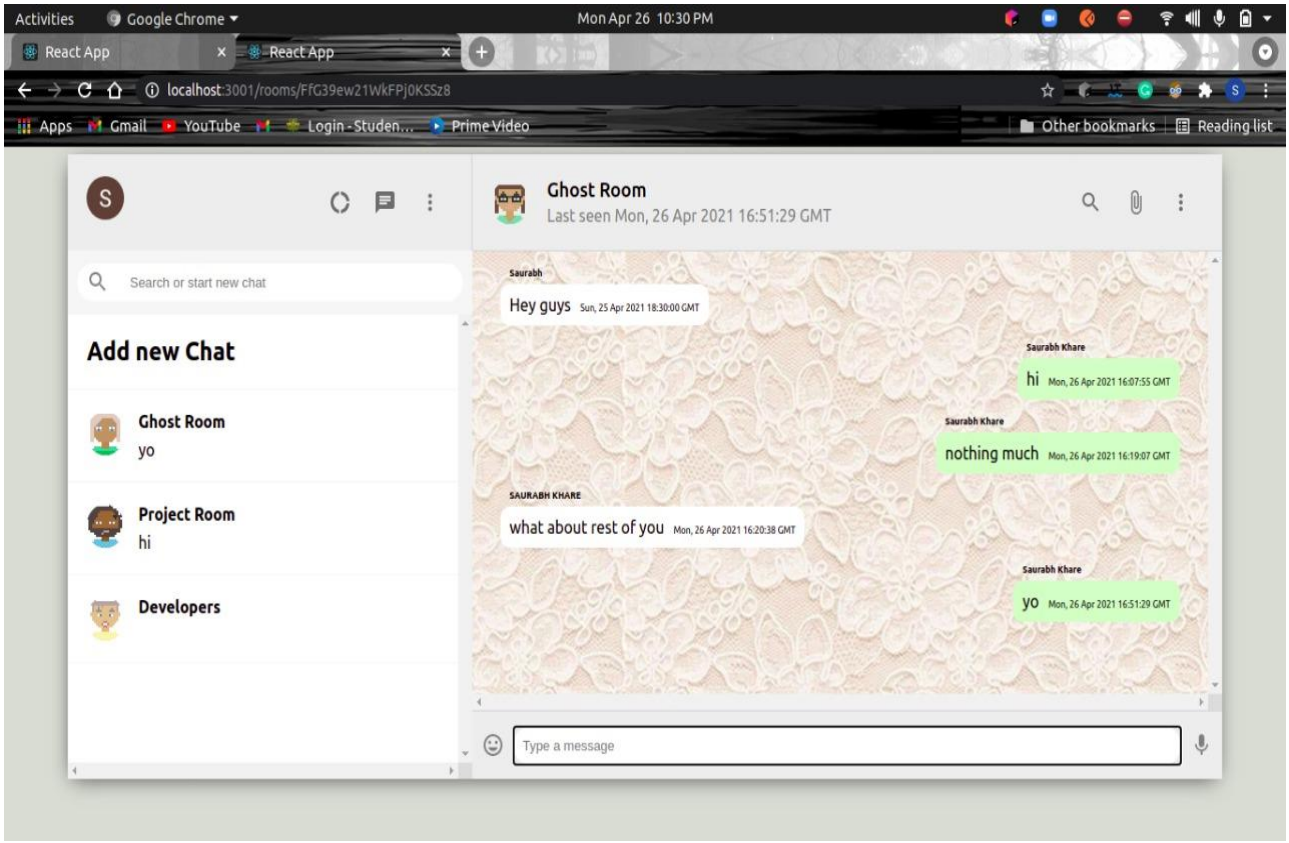

Fig:5

Below screenshot shows the chat section of the user account.

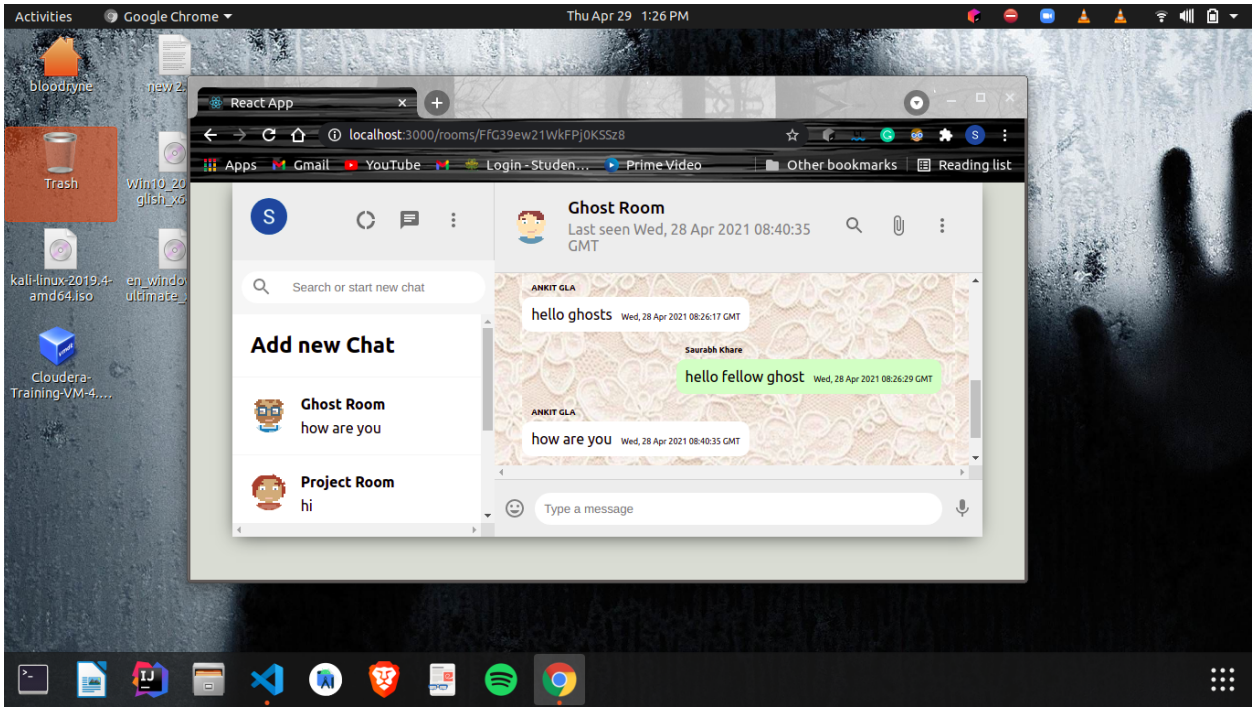

Fig:6

This screenshot shows that our application is compatible with any size of the browser used by the user.

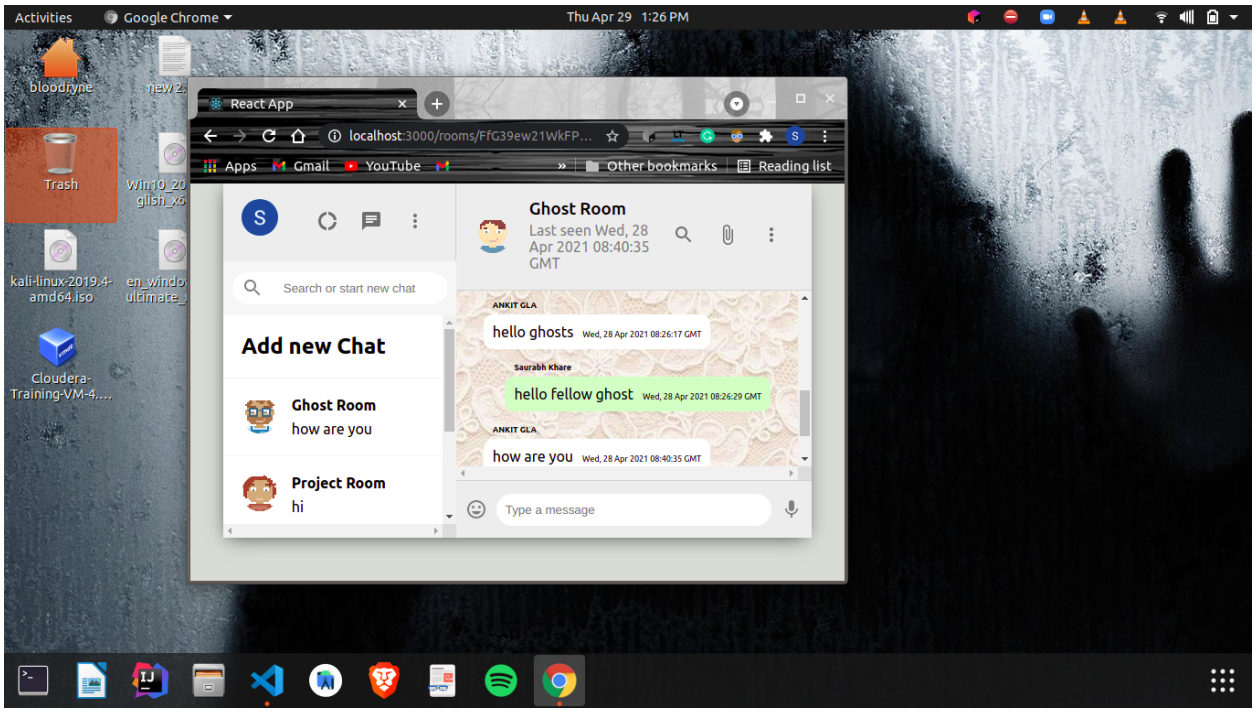

Fig:7

It shows the database our room-based web application which stores all the messages of the user in the firebase account.

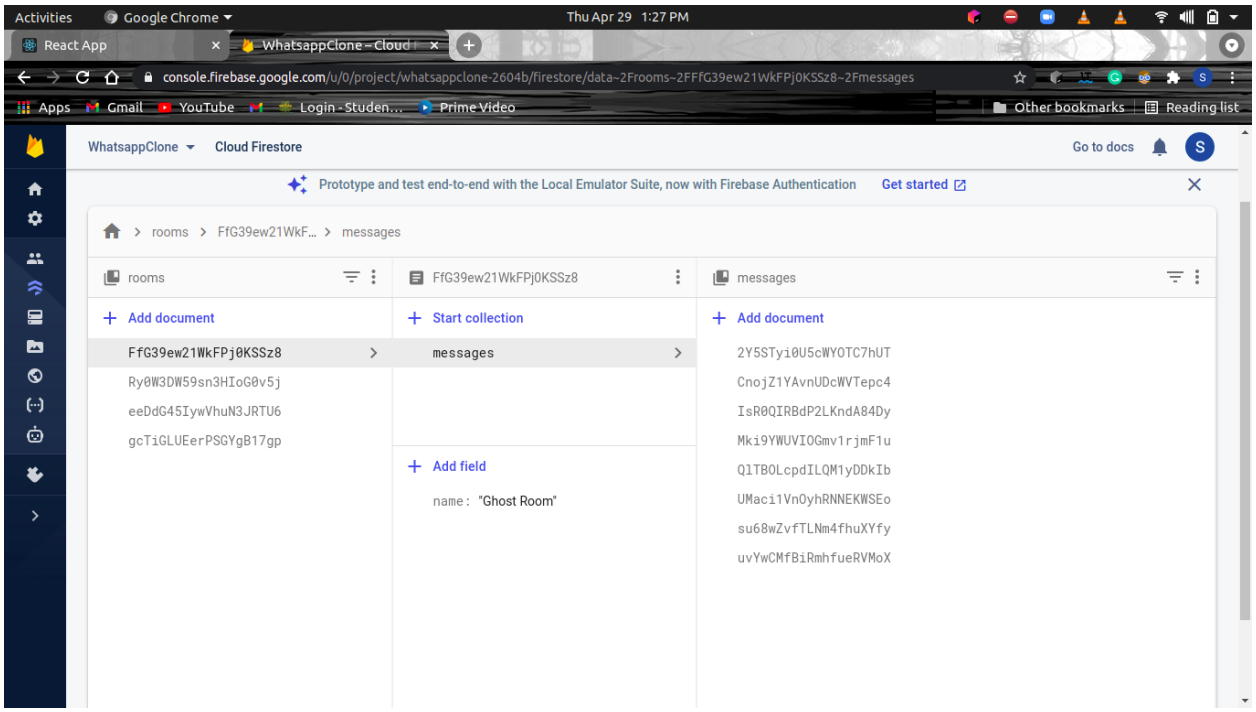

Fig:8

It shows the rooms that the user had created in our web application and all the information related to the rooms is stored in the firebase account.

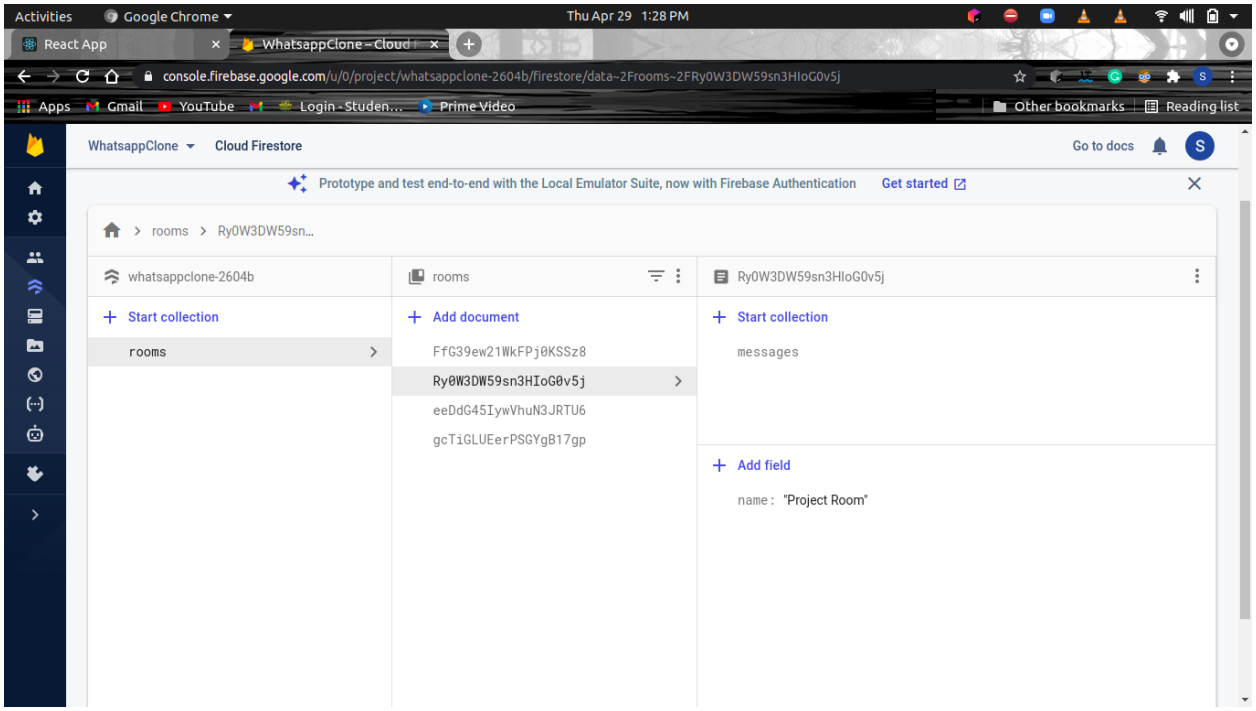

Fig:9

Conclusion

Working on a project is never too easy, it teaches us lots of things though. When we think of some idea to work on we think about including many features to make the app as appealing and as good as possible but in the end there are always few things to get left because of one reason or another. When we decided to work on this project, we thought of adding a calling section as well where we can call to any loved one, family or a friend all around the world but due to lack of time, we are unable to add that section in our room-based web application, but we are planning to include it in the future. We will also want to add much more emoji, stickers and GIFs to make this web application look more beautiful and user-friendly. The overall working on this project was a good experience for our team.

Summary

In this project, we will create a similar type of room based application which would have the same type of functionalities as the real WhatsApp application provides to the real world, with the help of react, and then we will deploy this application on the firebase. The goal of this project is learning new skills and cutting-edge technologies in web development field. Our room-based web application will have various features like we can add or delete rooms, we can update the user profile: name, and photo, we can also search the rooms and messages of different persons. This project is developed by using various technologies like react, react router, react context API, firebase real-time database, material UI, google authentication, and we have deployed this web application on the Firebase platform. The summary of this project is to learn new skills and cutting-edge technologies in the web development field.

Requirements

1. Technologies Used in this project:

- React
- React Context API
- React Router
- JavaScript
- Firebase Real-time database
- Material UI
- Google Authentication
- Deploy using Firebase

2. Hardware Requirements (minimum):

- 4 GB RAM
- Processor i3 (7th Gen)
- 20 GB HDD
- 1024 x 768 Display
- Keyboard
- Mouse

3. Software Requirements:

- **System Software:**
  - Operating System like Windows 10 or Ubuntu
- **Application software:**
  - Visual Studio Code
  - GitHub

References:

- **https://www.beta-labs.in/p/reactjs.html**
- **https://www.javatpoint.com/react-router**
- **https://firebase.google.com/?hl=pt-br**
- **https://www.youtube.com/**
- **https://www.w3schools.com/react/**