PROJECT

ON

"Realtime Chatting Application"

Submitted to

G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR

(AUTONOMOUS)

In the Partial Fulfillment of

B.Com. (Computer Application) Final Year

Submitted by

Vaishnavi S. Nadagoud**a**

Vikas M. Choudhary

Under the Guidance of

Pravin J. Yadao

G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR

(AUTONOMOUS)

2020-2021

G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR
(AUTONOMOUS)

CERTIFICATE

(2020 - 2021)

This is to certify that Mr. /Miss Vaishnavi S. Nadagouda & Vikas M.

Choudhary   has completed their project on the topic of Realtime Chatting Application

prescribed by G. S. College of Commerce & Economics, Nagpur (Autonomous) for B.Com.

(Computer Application) – Semester-VI.

 Date:

 Place: Nagpur

                                        Pravin J. Yadao

                                           Project Guide

ACKNOWLEDGEMENT

We take this opportunity to express our deep gratitude and whole hearted thanks to project guide Prof. Pravin Yadao, Coordinator for his guidance throughout this work. We are very much thankful to him for his constant encouragement, support and kindness.

We are also grateful to our teachers Prof. Rahul Tiwari, Prof. Sushma Gawande, Prof. Preeti Rangari, Prof. Prajkta Deshpande and Prof. Haresh Naringe for their encouragement, help and support from time to time.

We also wish to express our sincere thanks to Principal Dr. N. Y. Khandait for providing us wide range of opportunities, facilities and inspiration to gather professional knowledge and material without which this project could not have been completed.

Vaishnavi & VIkas

Student Names & Signature

Date:

Place: Nagpur

DECLARATION

We **(student names)** hereby honestly declare that the work entitled **"PROJECT NAME"** submitted by us at G.S. College of Commerce & Economics, Nagpur (Autonomous) in partial fulfillment of requirement for the award of B.Com. (Computer Application) degree by Rashtrasant Tukadoji Maharaj, Nagpur University, Nagpur has not been submitted elsewhere for the award of any degree, during the academic session 2020-2021.

The project has been developed and completed by us independently under the supervision of the subject teacher and project guide.

Vaishnavi & Vikas

Student Name & Signature

Date:

Place: Nagpur

A

PROJECT SYNOPSIS

ON

"Realtime Chatting Application"

Submitted to

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In the Partial Fulfillment of

B.Com. (Computer Application) Final Year

Synopsis Submitted by

Vaishnavi S Nadagouda

Vikas M Choudhary

Under the Guidance of Pravin J. Yadao

G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR

AUTONOMOUS

2020-2021

1. Introduction: (Write 4 to 5 lines)

Communication is a mean for people to exchange messages. Messaging **apps** (a.k.a. social messaging or **chat applications**) are **apps** and platforms that enable instant messaging. According to the survey the group of users prefer WhatsApp and like to communicate using Emoji. 51% of the group uses the chat applications on an average of 1-2 hours a day. Messaging apps now have more global users than traditional social network which means they will play an increasingly important role in the distribution of digital journalism in the future.

2. Objectives of the project: (Write only 5 points)

1. Allows users to communicate with each other personally and within a group

2. Group Chatting – anyone can enter into group chat by their name.

3. Voice recognition – can type messages by recognizing user's choice.

4. Includes languages like Hindi, English and Marathi.

5. includes a pdf reader to avoid downloading separate app>

3. **Project Category:** Visual Studio Code & Google Chrome

4. **Tools/ Platform/ Languages to be used:** Java Script, HTML, CSS (Visual Studio Code) Run in Google Chrome

5. Scope of future application: (Write 4 to 5 points)

1. Group Massaging anyone can enter into a Group chatting.

2. Needs name for enter into a chat block.

3. User can chat easily in their common language.

4. Voice recognition makes chatting simpler and easier.

5. Includes a pdf reader for reading and showing all types of pdfs shared.

Submitted by   **Approved by,**

Vaishnavi S Nadagouda & Vikas M Choudhary

Name and Signature of the student   **Prof. Pravin Yadao**

Project Guide

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INTRODUCTION

Our project is related to a new way of chatting with people. Chatting and communicating with people through internet is becoming common to people and is connecting people all over the world. Mainly, chatting apps in today's world mainly focus on connecting people, providing users with more features like GIFs, stickers etc. But this app, is different from them.

This chatting application includes chatting through internet using IP address. It mainly focuses on chatting and connects people all around the world. Mostly, chatting applications like WhatsApp requires mobile no. of the person and then we can chat and connect with the person. But here, the person only has to login with the system, and then he can connect with the people which he wants with.

The iDiscuss Chat app is an open - source chatting app. It means people all over the world can join the chat between people easily. We can check and see the people joining and leaving the chat group.

For using the app, firstly we have to register our name in the application. After registration, the person will be given a particular IP address, which is only used by that person, so that people will same name can be differentiated easily. The IP address can only be seen by the person which is registered under that name. Once, the registration of the person is done, he can join the chat room.

The chatting between 2 people can be easily converted into group, as the people chatting easily know if there is another person, who wants to join the chat between them.

If we have to chat with a specific person, then we just have to know the name of the person and its IP address. It's different from the present chatting applications, as it includes the personal information of the person, which gets accessed by the person which is following him or is friends with the person. This can save the person from sharing his personal stuff to strangers, without his consent.

One of the features of this application is that, if a new person connects with them while chatting in person or in group, then the app shows the people the person is connecting or joining them while being in the group. Not only group chatting, but personal chatting between people also takes place.

Only during group chatting, people can enter the chat room. While personal chatting, the chat and talk between people is kept encrypted between them. In simple words, the chat between them cannot be read by other people, not even by the app.

One of the important features of this app, is related to group chatting. If for example, there are 2 groups in which there are 15 – 20 people. If more than 5 people are common in both the groups, and an important message or file is shared in one of the groups, then the person which shared the information is asked whether the same information is to be shared in the other group. If yes, then the information will be sent to the other group directly, without any human interference.

OBJECTIVES

Objectives

- ➢ Easy login – in this app, we only need to add our name and then the system will provide us an IP address, which will be used only by the user under whose name it is registered.

- ➢ Open source – people which are interested to talk about a topic which they like and people which are interested in it, can join and communicate with others easily, as the chat is open sourced; which means people can join and easily leave the chat room.

- ➢ Connects people globally – as the application runs through help of internet, it helps in connecting people easily. Not only from a particular country, but it can connect people all over the world.

- ➢ Different from normal chatting apps – iDiscuss chat app being bit different from normal chatting applications, can attract people easily. Not only because it takes less logging time, but also because it has some features which are not available in current chatting applications.

➤ Use of IP address – IP address is provided to the user, after logging into the application. IP address provided to the user is unique, as they can only be used by the user, which is assigned to it. This saves duplication of information of user, which may have same name.

PRELIMINARY SYSTEM ANALYSIS

PRELIMINARY SYSTEM ANALYSIS

Preliminary system analysis is a process of collecting factual data, understand the processes involved, identifying problems and recommending feasible suggestions for improving the system functioning. This involves studying the business processor. Gathering operational data, understand the information flow, finding out bottlenecks and evolving solutions for overcoming the weakness of the system so as to achieve the organizational goals. System analysis also includes subdividing of complex process involving the entire system, identification of data source and annual processes.

1) Preliminary investigation:

In this process, the development team visits the customer and studies their system they investigate the need of the possible software automation in the given system by the end of preliminary investigation, the team furnishes a document that holds a different specific recommendation for the candidate system. It also includes personal assignment cost, project schedule, target dates. Main task of the preliminary investigation phase is:

1. Investigation the present system and identify the function to be perform.
2. Identify the objectives of new system in the general, an information system benefits a business increasing efficiency, improving effectiveness, or providing a competitive advantage.
3. Identify problems and suggests a few solutions, thus every system has a common thing and that is:
4. It is organized combination of different components.
5. They are independent and inter-related.

2) Present System in use:

The current system in use has been designed in a way so as to make desired changes as per the user requirements and according to dynamic environment changes. The flaws in the current system will be removed in the ensured version of the current system. The system has been prevailing is not lacking in the amount of 10 data that the user actually needs but also it is outdated and the changes to be done in the present system by launching the ensured ones are must.

This system does not contain a database which has a lot of content and higher security. Hence, there is a need of the system which has a stronger database in content as well as security.

But the feature that the software is free of cost is to provide the admission facility to even those who do not have access to. Although in future, making this software online will not enhance the cost of the software by a greater degree.

This system which is an e-admission app gives the user facility to do his/her admission digitally which reduces paper work and makes the system more digital which is indirectly a step towards cashless economy.

Facilities which are not there in the current system as follows:

• Currently the admissions to be done are mostly offline. These efforts will be made to bring the process online for the student in near future.

• The amount of the facilities available is though less but it has been kept in the bucket list of the project to provide the students with more facilities and ease to do their process for admission.

• The effort will be made to provide more security to this project. So that the users account is not hacked and misused or corrupted.

- This application is currently a window application but in near future the efforts will be done to make it android, IOS and website as well.

- The data available is only useful for the students who are just studying in single college/institution. But the efforts will be made to add various colleges/institution for those who want to enroll at many places at single time.

- The interface will be designed more user-friendly and the queries asked by the user will be replied instantly with the help of application assistant.

- The application will be made to run on any platform. In simple terms, it will be made platform independent.

- The application will be distributed to a large group of users free of cost. 11

3) Flaws in present system:

According to the users, types are made and all records are maintained in the file, so it requires different types of users. It has to maintain in separate files. Storing and maintaining these files is the biggest

problem as it involves lots of paper work done by humans.

1. Time Consuming: Various system includes time consuming process in their application.
2. Possibilities of Errors: Major difficulties in the present system is large possibilities of errors.
3. Difficulties: Sometime student has to face difficulties for the time given for specific function/process.
4. Data is not provided: Required data is not provided on the time and specifications are necessary.
5. Execution: Sometimes various applications are not executed in proper manner.
6. Quick Retrieval: Quick retrieval of the data is not possible just on the finger tips.
7. Manual Work: Work and all the process has to be done manually which consumes more time and manpower.
8. Paper Work: Present system includes bundles of lengthy paper work.
9. Accuracy: System now available lacks in the accuracy of the data on time and generates manual errors.

4) Needs of new system:

This system will help colleges/institutions in saving their time and money which they invest in the terms of manpower to do the process done by this application. Manual system does not provide high security so this loophole will be overcome in the new application.

There is need of new system because of the following problems: 12

- Accessible: The system needs to accessible not only in the remote area but also globally.

- Accurate and fair: The present system lacks accuracy which is one of the biggest lacunas of the present system.

- Modifications are allowed: Any modification can be done with the user profile and corrections can be done anytime which is very lengthy and time consuming in the present system.

- Reduces paper work: The need of a new system is to reduce the paperwork and make society paperless.

- Help to Administration: This system would help to the administration department to the educational institutions.

5) Feasibility Study:

Feasibility study is the preliminary study undertaken before the real work of the project starts to ascertain the like hood of the project success. It analyses the possible solutions to a problem and a recommendation on the best solutions to use. It involves the evaluation that how the solution will fit into the corporation. A Feasibility study is defined as a evolution or analysis of the potential impacts of a proposed project or system.

A feasibility study is conducted to assist decision makers in determining whether or not to implement a particular project or system. On the basis of result of the initial study, feasibility study takes place. The feasibility study is basically the proposed system in the lights of its workability, meeting user requirements, and effective use of resources and of course, cost effectiveness. The main goal of feasibility study is not to solve the problem but to achieve this scope. In the process of feasibility study, the cost and benefits are estimated with the greater accuracy. It evaluates the benefits of the new system. The feasibility study will contain the extensive data related to

financial and operational impact and will include advantage and disadvantages of both current situation and plan.

The aim of feasibility study is to see whether it is possible to develop a reasonable cost. At the end of feasibility study a decision is taken whether or proceed or not.

Feasibility study is to determine various solution of the problem and then picking up one of the best solutions. It is the measure of how beneficial the development of 13 information system will be to an organization. The study also shows the sensitivity of business to change in the basic assumption.

Economic Feasibility

For any system if the expected benefits equal or exceed the expected costs, the system can be judged to be economically feasible. In economic feasibility, cost benefit analysis is done in which expected costs and benefits are evaluated. Economic analysis is used for evaluating the effectiveness of the proposed system. In this type of feasibility study, the most important is cost and benefit analysis. As the name suggests, it is as analysis of the costs to be incurred in the system and benefits derivable out of the system.

Technical Feasibility

In technical feasibility the following issues are taken into consideration.

- Whether the required technology is available or not.

- Whether the required resources are available like manpower, programmers, testers and debuggers, software and hardware.

Social feasibility

The affect that a proposed system may have on the social system in the project environment is addressed in the social feasibility. It may happen that particular category of employees may be short or not available as a result of ambient structure. The influence on the social status of the participants by the project should be evaluated on order to guarantee compatibility. It must be identified that the employees in the particular industries may have specific status symbols within the society.

Behavioral feasibility

It includes how strong the reaction of staff will be towards the development of new system that involves computer's use in their

daily work. So resistant to change is identified. It considers human issue. All system development projects introduce change, and people generally resist change. Over resistance from employees may take the form of subrogating the new system (e.g., entering data incorrectly) or 14 deriding the new system to anyone who will listen. Convert resistance typically occurs when employees simply do their jobs using their old methods.

Behavioral feasibility is concerned with assessing the skills and the training needed to use the new is. In some organizations, a proposed system may require mathematical or linguistic skills beyond what the workforce currently processes. In other words, a workforce may simply need to improve their skills. Behavioral feasibility is as much about "can they use it" as it is about "will they use it".

After the feasibility analysis, a "Go/No-Go" decision is reached. The project sponsor and project manager sign off on the decision. If it is a no-go decision, the project is put on the shelf until condition are favorable. Or the project is discarded of the decision is "go", then the system development project proceeds.

PROJECT CATEGORY

Project Category

In this project, software which have been used for frontend and backend are as follows:

Used (Front End): Visual Studio Code [Index.html] (Version: 1.57.1 (user setup): -

Visual Studio Code is a source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. Users can change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality.

Microsoft has released most of Visual Studio Code's source code on the Microsoft/VScode repository of GitHub using the "Code – OSS" name, under the permissive MIT License, while the releases by Microsoft are proprietary freeware.

In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents reporting that they use it.

Visual Studio Code was first announced on April 29, 2015, by Microsoft at the 2015 Build conference. A Preview build was released shortly thereafter.

On November 18, 2015, Visual Studio Code was released under the MIT License, having its source code available on GitHub. Extension support was also announced. On April 14, 2016, Visual Studio Code graduated from the public preview stage and was released to the Web.

Database Used (Back End): Socket.io (Server [Client Server & Node / Chat Server])

Socket.IO is a JavaScript library for real time web applications. It enables real time, bi-directional communication between web clients and servers. It has two parts: a client-side library that runs in the browser, and a server-side library for Node.js. Both components have a nearly identical API. Like Node.js, it is event-driven.

Socket.IO primarily uses the WebSocket protocol with polling as a fallback option,[3][4] while providing the same interface. Although it can be used as simply a wrapper for WebSocket, it provides many

more features, including broadcasting to multiple sockets, storing data associated with each client, and asynchronous I/O.

It can be installed with the NPM tool.

In this project, "iDiscuss Chat App" uses Visual Studio as front end and as back end.

HARDWARE AND SOFTWARE REQUIREMENT

Software and Hardware Requirement

Software

Each and every application needs a software in which it has to be executed and a hardware the application is going to perform its function. Some applications require specific software and hardware for operation. Applications in Visual basic is supported by Windows, as no one can easily access information and the code remains safe. So, hardware and software used in creation of this application are mentioned below.

Hardware

Hardware is a term which refers to all the physical parts that make up a computer. Various devices which are essential to form a hardware are called components.

Following are the hardware specifications which were required to develop this project:

Components include: Computer, mouse, 2 gm of RAM for smooth functioning of application.

Pendrive of 100 GB or more.

Internet connection and server connectivity.

Software

Software can be termed as the group of instruction or command used by the computer to accomplish the given task. It can be said as a set of instructions or programs instructing a computer to do specific task. Software, in general term is used to describe the computer programs.

Following are the software specifications that is required to develop this project is as follows:

Operating System: Microsoft Windows 10 or above versions.
Language Used (Front End): Visual Studio Code [Index.html] (Version: 1.57.1 (user setup)

Commit: 507ce72a4466fbb27b715c3722558bb15afa9f48

Electron: 12.0.7

Chrome: 89.0.4389.128

Node.js: 14.16.0

V8: 8.9.255.25-electron.0

OS: Windows_NT x64 10.0.17134).

Database Used (Back End): Socket.io (Server [Client Server & Node / Chat Server])

PLANNING

TO DO:

[+] Create NPM project

[+] Create Index, Css, Js files

[+] Install dependancies. express, nodemon(dev dep.)

[+] Create a express server (server.js)

[+] do frontend part

[+] Install socket.io, Setup socket.io in server.js and client client.js

[+] Client send message logic in client.js

[+] Recieve message on server and broadcast to all clients

[+] Recieve message on client and display it. scrollToBottom etc...

DETAILED SYSTEM ANALYSIS

DETAILED SYSTEM ANALYSIS

DATA FLOW DAIGRAM

WEB SOCKET

ONE END   **SECOND END**
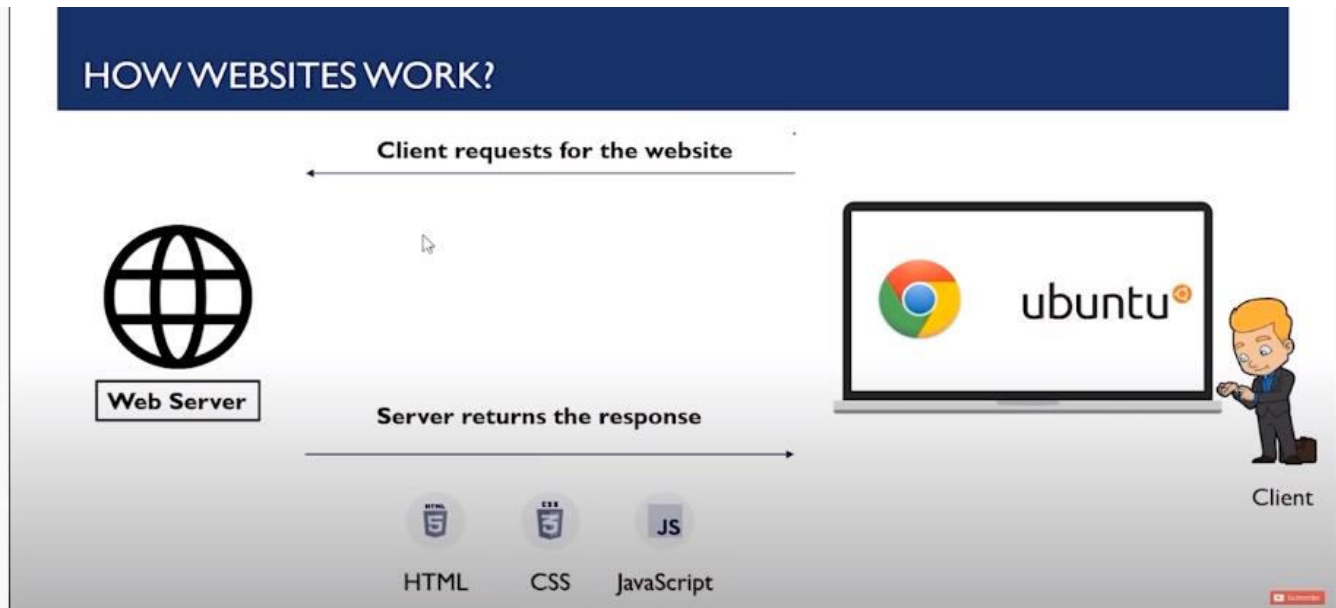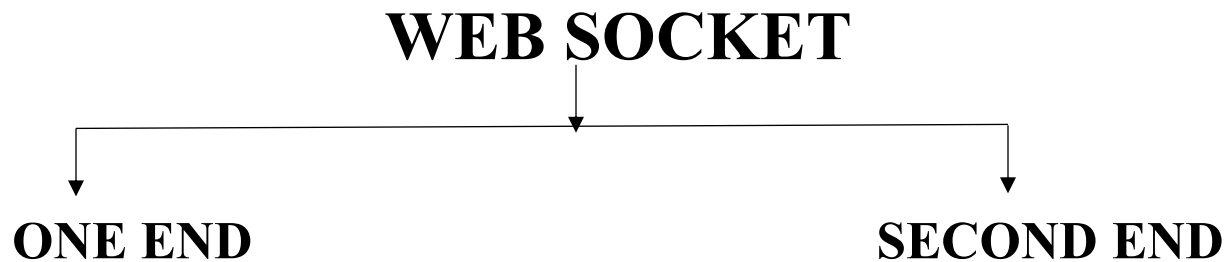
TWO WAY CONNECTION

CLIENT   SERVER

Request

Response

Client   Server
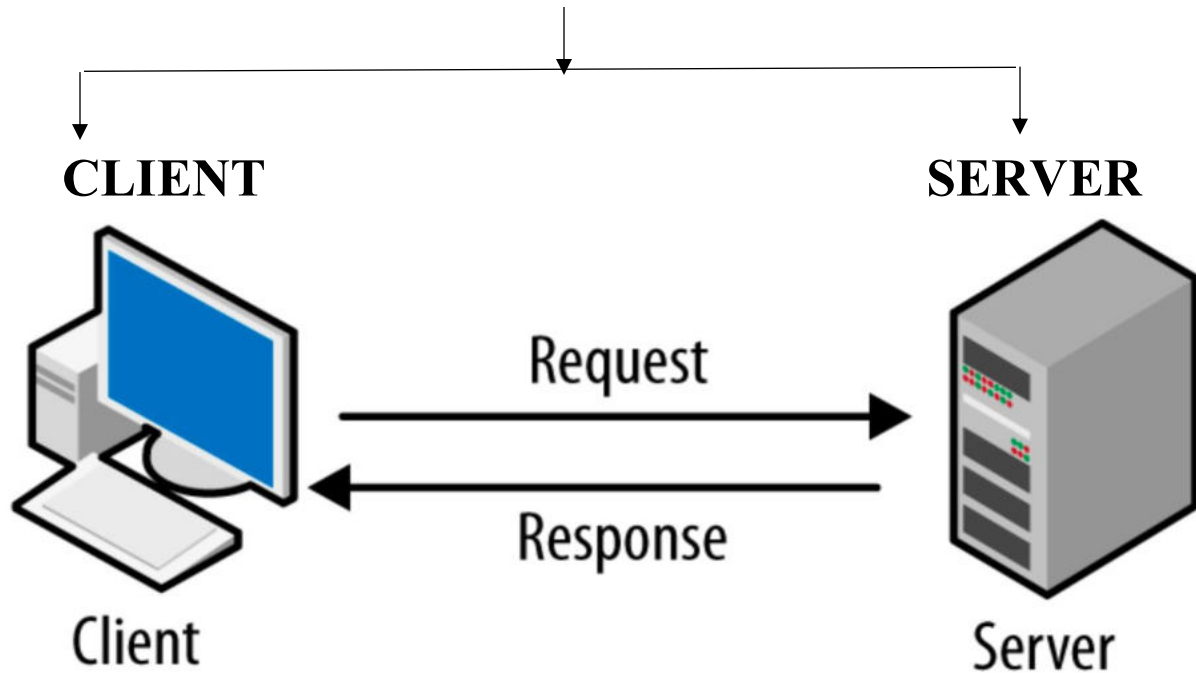
LOGIN

SHOW MASSAGE TO EVERYONE IN GROUP

CHATTING

SYSTEM DESIGN

LOGIN :-
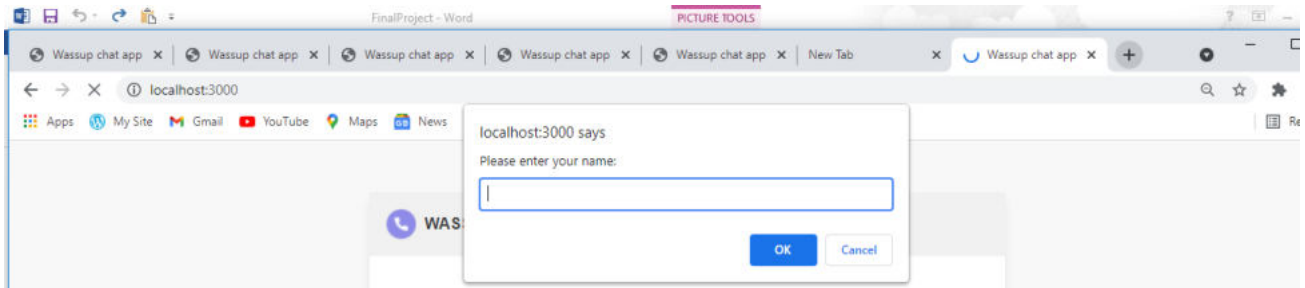
DESKTOP CHAT ROOM :-
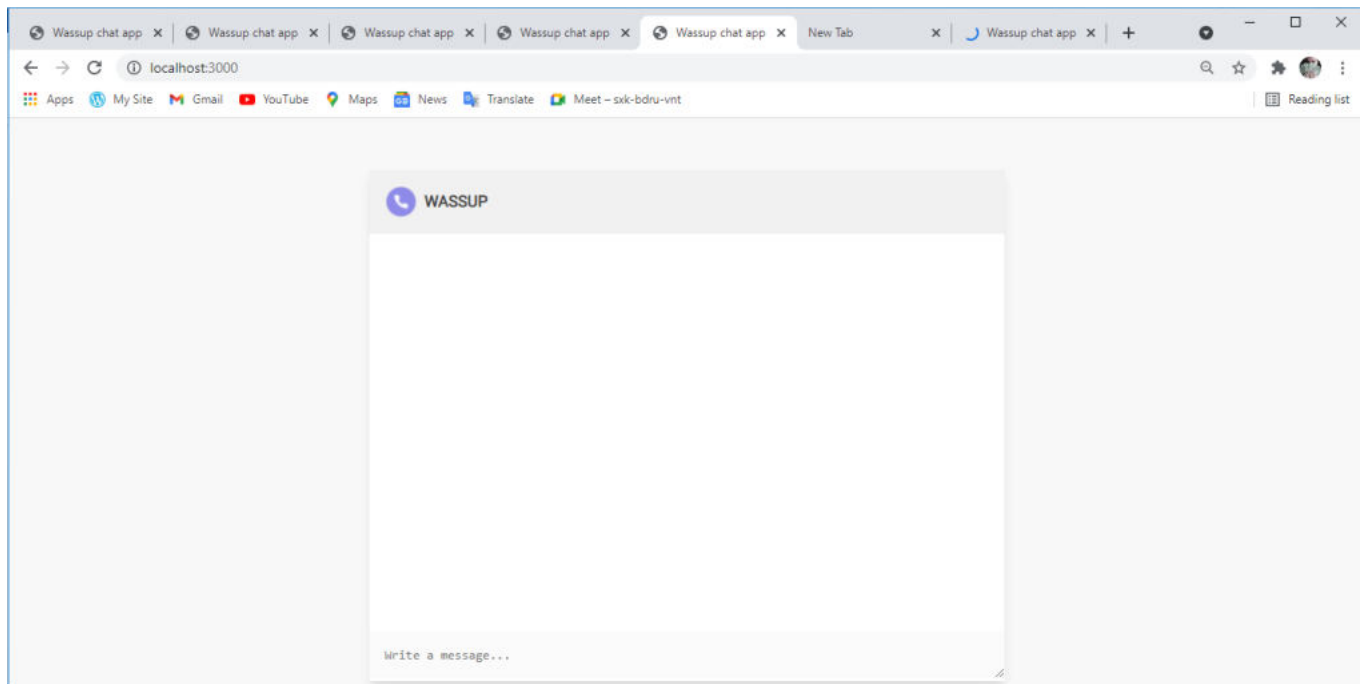
PHONE CHAT ROOM :-
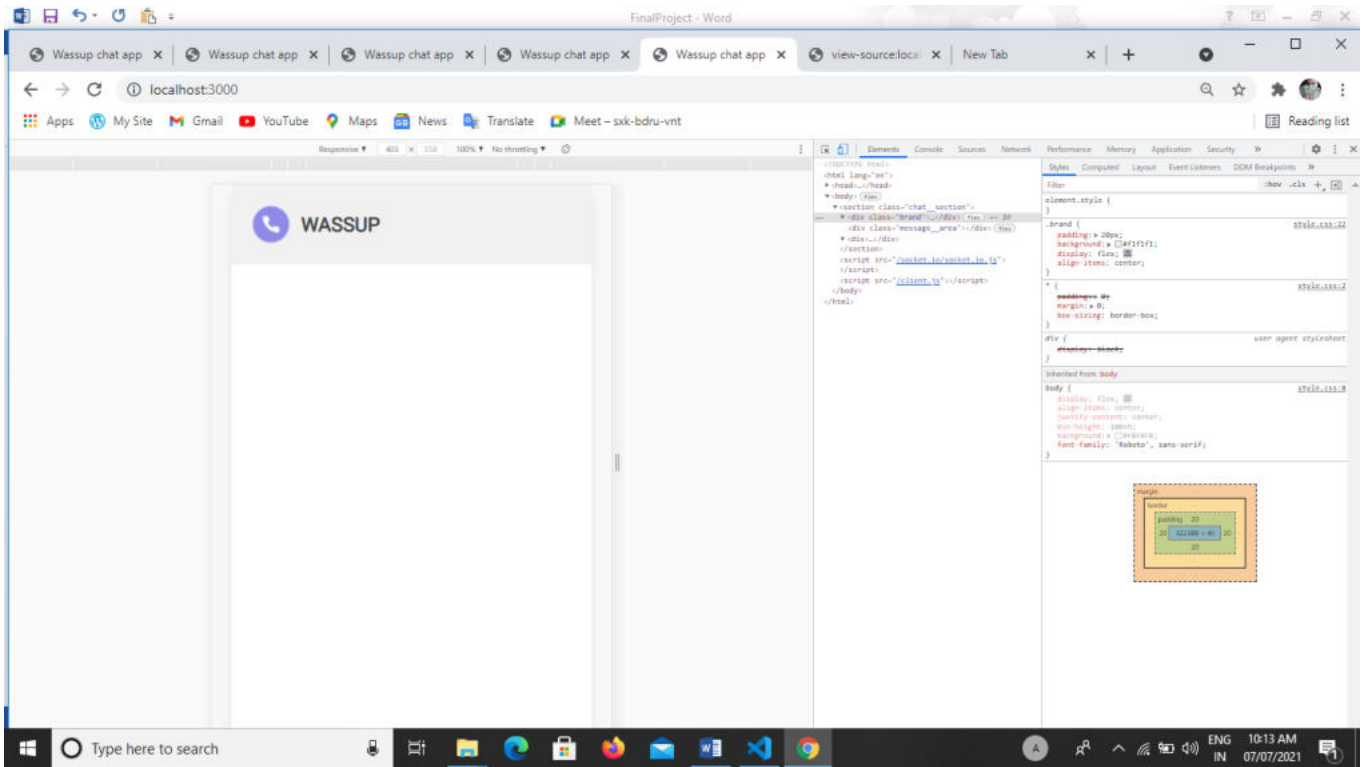
SOURCE CODE

LOGIN FORM:-

Index.html :-

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Wassup chat app</title>
    <link rel="stylesheet" href="/style.css">
</head>

<body>
```

```html
<section class="chat__section">
    <div class="brand">
        <img height="40" src="/wassup.png" alt="">
        <h1>Wassup</h1>
    </div>
    <div class="message__area"></div>
    <div>
        <textarea id="textarea" cols="30" rows="1" placeholder="Write a message..."></textarea>
    </div>
</section>
<script src="/socket.io/socket.io.js"></script>
<script src="/client.js"></script>
</body>
</html>
```

style.css :-

```css
@import url('https://fonts.googleapis.com/css2?family=Roboto&display=swap');
* {
    padding: 0;
    margin: 0;
    box-sizing: border-box;
}

body {
    display: flex;
    align-items: center;
    justify-content: center;
    min-height: 100vh;
    background: #F8F8F8;
    font-family: 'Roboto', sans-serif;
}
```

```css
section.chat__section {
    width: 800px;
    max-width: 90%;
    background: #fff;
    box-shadow: 0 10px 15px -
3px rgba(0, 0, 0, 0.1), 0 4px 6px -
2px rgba(0, 0, 0, 0.05);
}
.brand {
    padding: 20px;
    background: #f1f1f1;
    display: flex;
    align-items: center;
}
.brand h1 {
    text-transform: uppercase;
    font-size: 20px;
```

```css
    color: #444;
    margin-left: 10px;
}
.message__area{
    height: 500px;
    padding: 16px;
    display: flex;
    flex-direction: column;
    overflow-y: auto;
    padding-top: 40px;
}
textarea {
    width: 100%;
    border: none;
    padding: 20px;
    font-size: 16px;
```

```css
    outline: none;
    background: #FBFBFB;
}


.message {
    padding: 20px;
    border-radius: 4px;
    margin-bottom: 40px;
    max-width: 300px;
    position: relative;
}
.incoming {
    background: #8F8BE8;
    color: #fff;
}
.outgoing {
```

```css
    background: #e9eafd;
    color: #787986;
    margin-left: auto;
}
.message h4 {
    position: absolute;
    top: -20px;
    left: 0;
    color: #333;
    font-size: 14px;
}
```

Client.js :-

```javascript
const socket = io()
let name;
let textarea = document.querySelector('#textarea')
let messageArea = document.querySelector('.message__area')
do {
    name = prompt('Please enter your name: ')
} while(!name)

textarea.addEventListener('keyup', (e) => {
    if(e.key === 'Enter') {
        sendMessage(e.target.value)
    }
})
```

```javascript
function sendMessage(message) {
    let msg = {
        user: name,
        message: message.trim()
    }
    // Append
    appendMessage(msg, 'outgoing')
    textarea.value = ''
    scrollToBottom()

    // Send to server
    socket.emit('message', msg)


}

function appendMessage(msg, type) {
```

```javascript
  let mainDiv = document.createElement('div')
  let className = type
  mainDiv.classList.add(className, 'message')

  let markup = `
    <h4>${msg.user}</h4>
    <p>${msg.message}</p>
  `

  mainDiv.innerHTML = markup
  messageArea.appendChild(mainDiv)
}

// Recieve messages
socket.on('message', (msg) => {
  appendMessage(msg, 'incoming')
  scrollToBottom()
```

```
})

function scrollToBottom() {
    messageArea.scrollTop = messageArea.scrollHeight
}
```

server.js :-

```javascript
const express = require('express')
const app = express()
const http = require('http').createServer(app)

const PORT = process.env.PORT || 3000

http.listen(PORT, () => {
    console.log(`Listening on port ${PORT}`)
})

app.use(express.static(__dirname + '/public'))

app.get('/', (req, res) => {
    res.sendFile(__dirname + '/index.html')
})
```

```javascript
// Socket
const io = require('socket.io')(http)

io.on('connection', (socket) => {
    console.log('Connected...')
    socket.on('message', (msg) => {
        socket.broadcast.emit('message', msg)
    })

})
```

Package.json :-

```json
{
  "name": "wassup",
  "version": "1.0.0",
  "description": "Realtime chat app using socket.io and vanilla JavaScript",
  "main": "index.js",
  "scripts": {
    "dev": "nodemon server",
    "serve": "node server",
    "start": "node server.js"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "dependencies": {
    "express": "^4.17.1",
```

```json
    "socket.io": "^2.3.0"
  },
  "devDependencies": {
    "nodemon": "^2.0.9"
  },
  "repository": {
    "type": "git",
    "url": "git+https://github.com/codersgyan/realtime-chat-app.git"
  },
  "bugs": {
    "url": "https://github.com/codersgyan/realtime-chat-app/issues"
  },
  "homepage": "https://github.com/codersgyan/realtime-chat-app#readme"
}
```

INPUT AND OUTPUT SCREEN :-
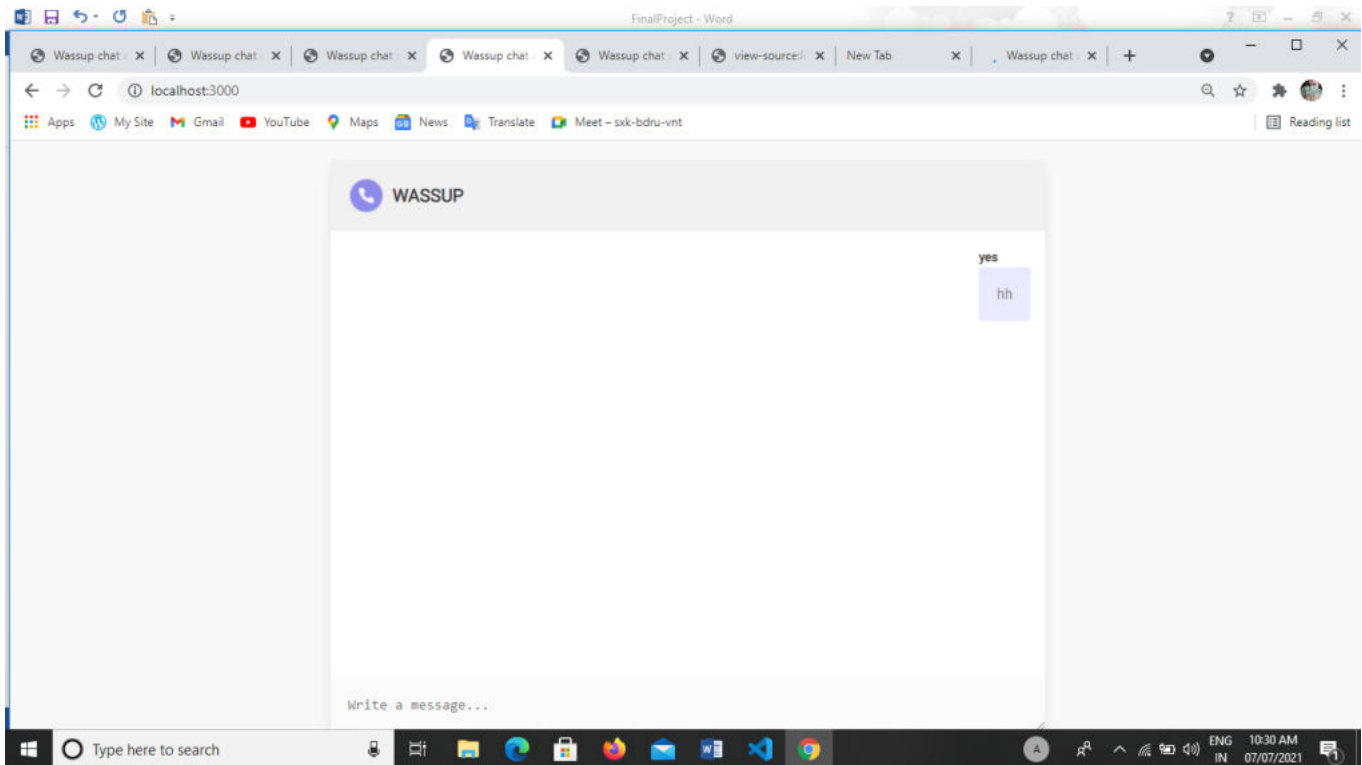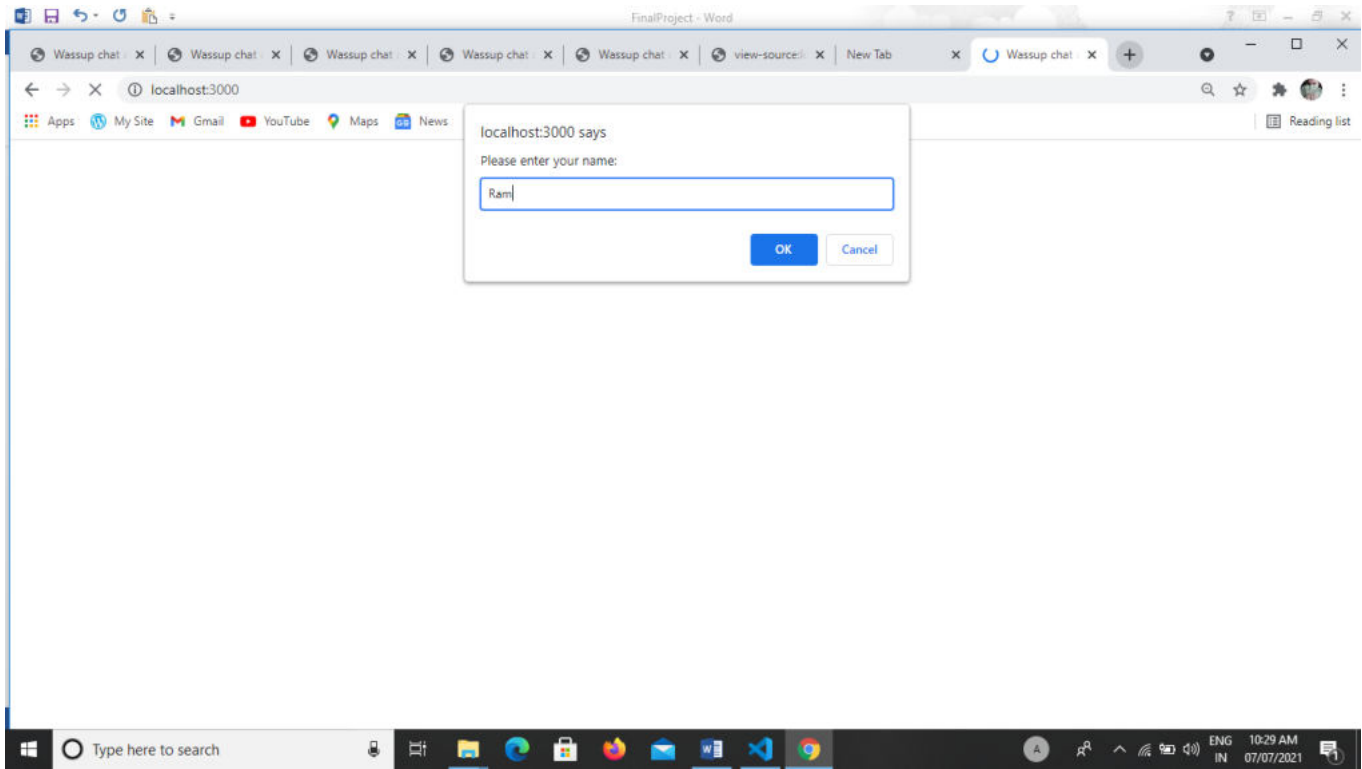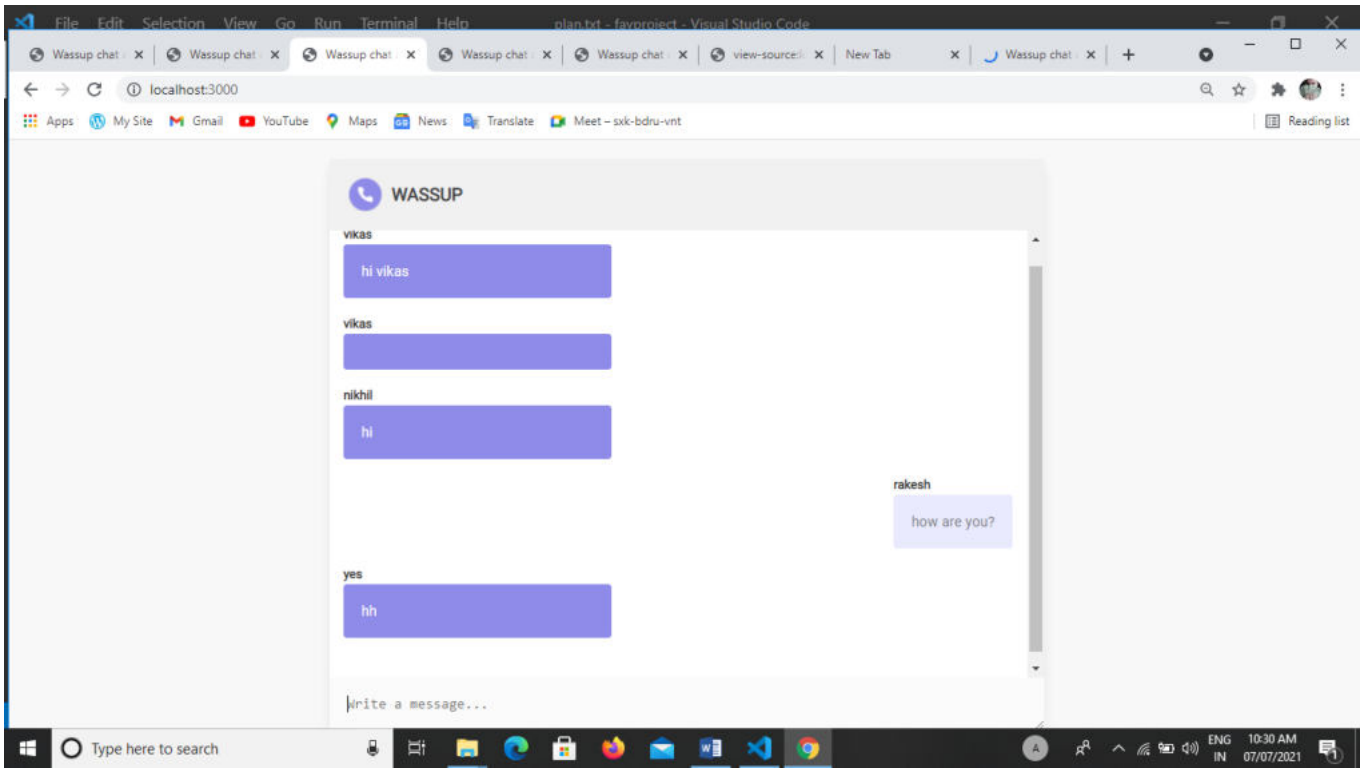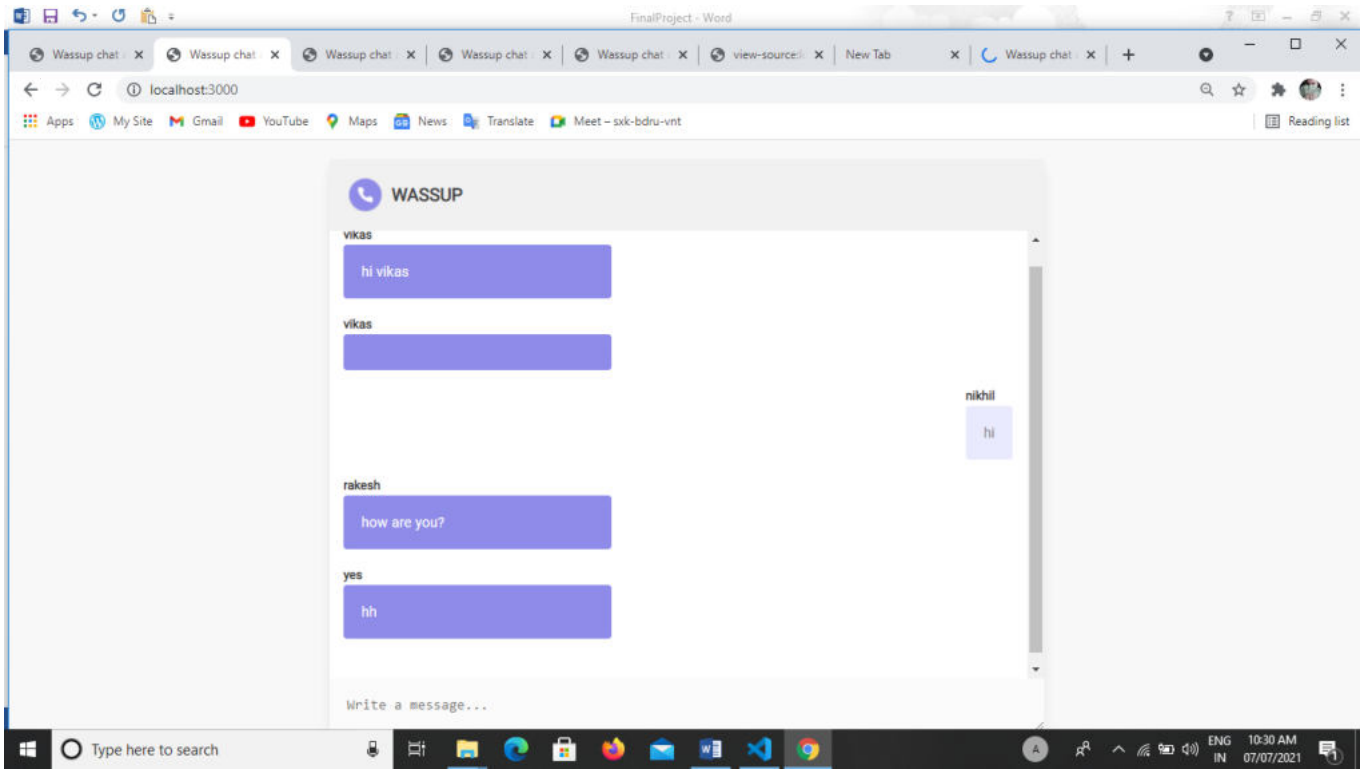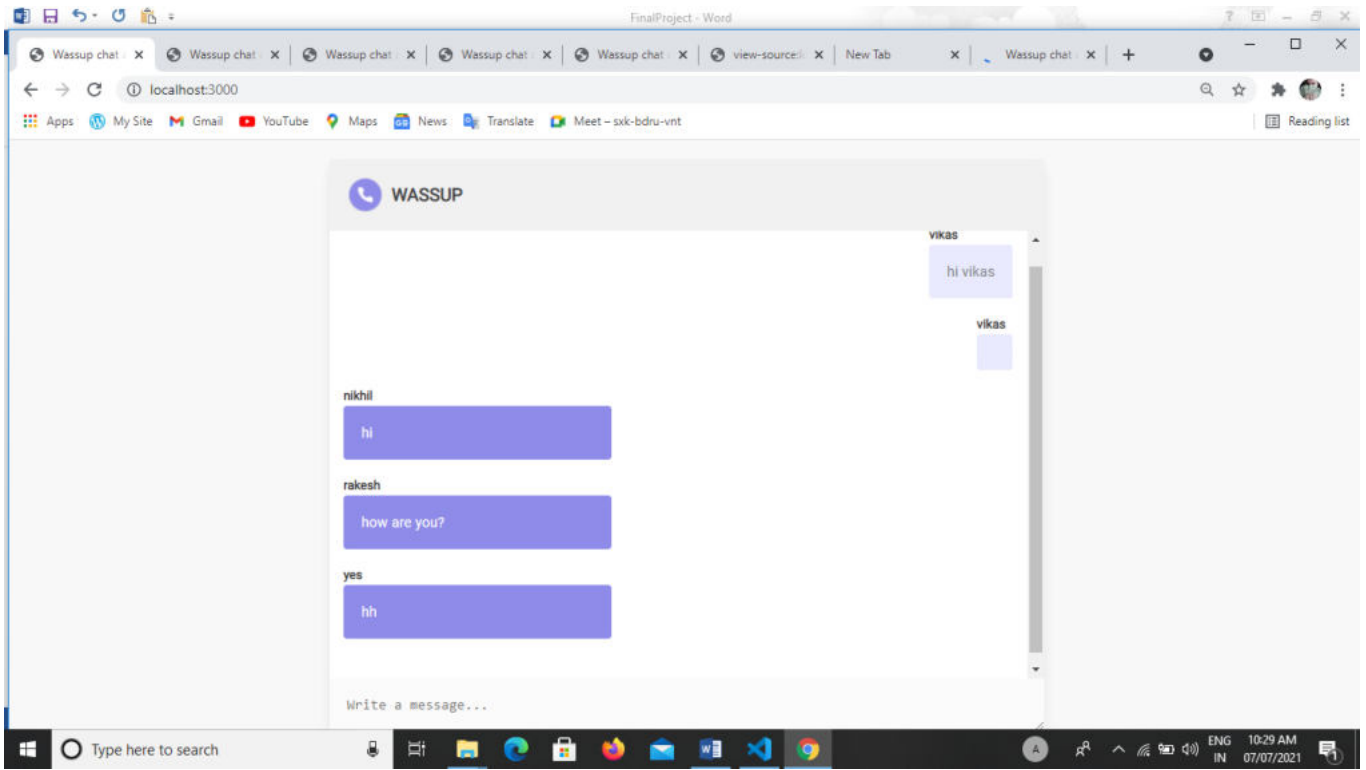
MAINTENANCE

Maintenance

Maintenance is a very crucial part for the success of an application. Proper maintenance and updation of the application make it smooth for working and usage, and it also keeps the users satisfied. Maintenance is done mainly for 2 reasons; first, to correct some software errors which may occur making changes in the application or when the user is facing some problems and other is to enhance the software capabilities according to user needs and requirements.

Maintenance always comes after the application has been successfully implemented and launched. At the start, the maintenance takes time as it has to be updated and changed time to time, but after a certain point of time, it becomes manageable. The starting maintenance process mostly lets us know where errors may mostly occur, which are then corrected. Maintenance is one of the important stages of SDLC. It is basically done for estimation, controlling and making modification to implemented system.

CONCLUSION

Conclusion

By working on this project, we came to know a lot about programming and knowledge about various languages which we have worked on.

Being students from programming background, we shad a huge challenge in front of us, but the technology helped us pave our way through it.

We learned how to apply logic at the correct point, at correct time. Where do we have to mainly focus and at what point we have to receive help of technology. Many concepts regarding programming and languages were cleared, and how does it apply while coding, could be known. With the help of our teachers, technology and our base of programming helped us to complete our project on time successfully.

In today's world, the person has to think deep, quick and be focused to the goal which is to be achieved. But it should also include the future result of its decision. Teamwork is important in each and every task which is to be completed, with the help of our team members.

Thanks to all the members for their full cooperation during the project, till the end.

At last, we want to thank our teachers and HOD sir, for the success of this project. This could not be a success without their guidance, support and practical teaching, which has helped us a lot in this project, and for surely will guide us in the future.

BIBILOGRAPHY

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While developing this project internet was the eternal support. Following are the websites referred by me which helped me developing my project:

- www.realtimechatroom.com

- http://chatroom.org

- Visual Studio code (Nodejs)