Chatroom Using .NET Framework

A

Project Report

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Technology in Computer Science& Engineering *By*

Kritika Sharma (161294)

Under the supervision of

Dr. Aman Sharma

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Candidate's Declaration

I hereby declare that the work presented in this report entitled **"Chatroom using .NET Framework"** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Computer Science &Engineering** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat, Solan is an original record of work of my own carried out between a period From June 2020 - July 2020 under the guidance of

Dr. Aman Sharma (Assistant Professor, Department of CSE & IT).

The matter incorporated in the report has not been submitted for the reception of any other degree or diploma.

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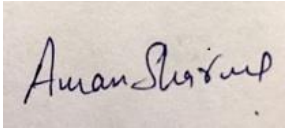

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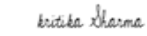
Assistant Professor Department of Computer Science& Engineering

Dated: ...../July/2020

Acknowledgement

The satisfaction that accompanies the successful completion of any task would be incomplete without the mention of people whose effortless cooperation made it possible, whose constant guidance and encouragement awards all the efforts with the definite success. I am grateful to my project guide **Dr. Aman Sharma** for the guidance, inspiration and constructive remarks that guided me in the completion of the project.



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ABSTRACT

Chatting/Teleconferencing is actually a way of communication by using the technology to the people who are distant to us. It has been there for years but gained popularity in the recent past. This project is actually an effort to understand the technology and put it into some use by making a simple Chatroom App. The Web App is made by making use of .net framework and it's recently added feature SignalR which gives real time chatting functionality to the app. The output of this effort is an internal chatting system that enables multiple people to connect and Chat in the Chatroom.

CHAPTER 1

INTRODUCTION

Exchange of messages is the basis of basic human Communication. It has been there since the creation of the Human species. Distant Communication took place in early 1800's with the invention of television, telegraph and later telephones. Telephone stands out as the fastest growing means of communication even today. The emergence of computer technology and telecommunication has the same objective to serve as the fast means of communication. Chatting is one of the methods of technology to communicate to bring people together from distant places.

This technology has been there for years but the acceptance has been quite recent. This project is an example of a Chat Room Server. It is a web application which was made on .net framework.

With the use of SignalR feature of .net framework the communication can happen in real time and will be quite seamless. The building of project will require the good knowledge of the Object-oriented-programming with c# and the framework used here is .NET. Also we should be familiar with the new added feature – SignalR.

Problem Statement

This Project is about creating a simple Chat Room Web Application with the help of the .NET framework using one of its latest features SignalR. SignalR is One of the very useful features that can be used for the purpose of real time Chatting. Web App should be very easy to use and should be an instant messaging technique so that users are able to interact seamlessly.

Objective

The main objective of my project is basically to develop the Web app which is going to be a chat room – Group chatting App.

1. Application should be lightweight and enabled to send as well as receive messages instantly.
2. A backup of the chat history should be there if the device crashes.
3. Messages shared in the Application should be able to maintain the privacy.

Use case Table

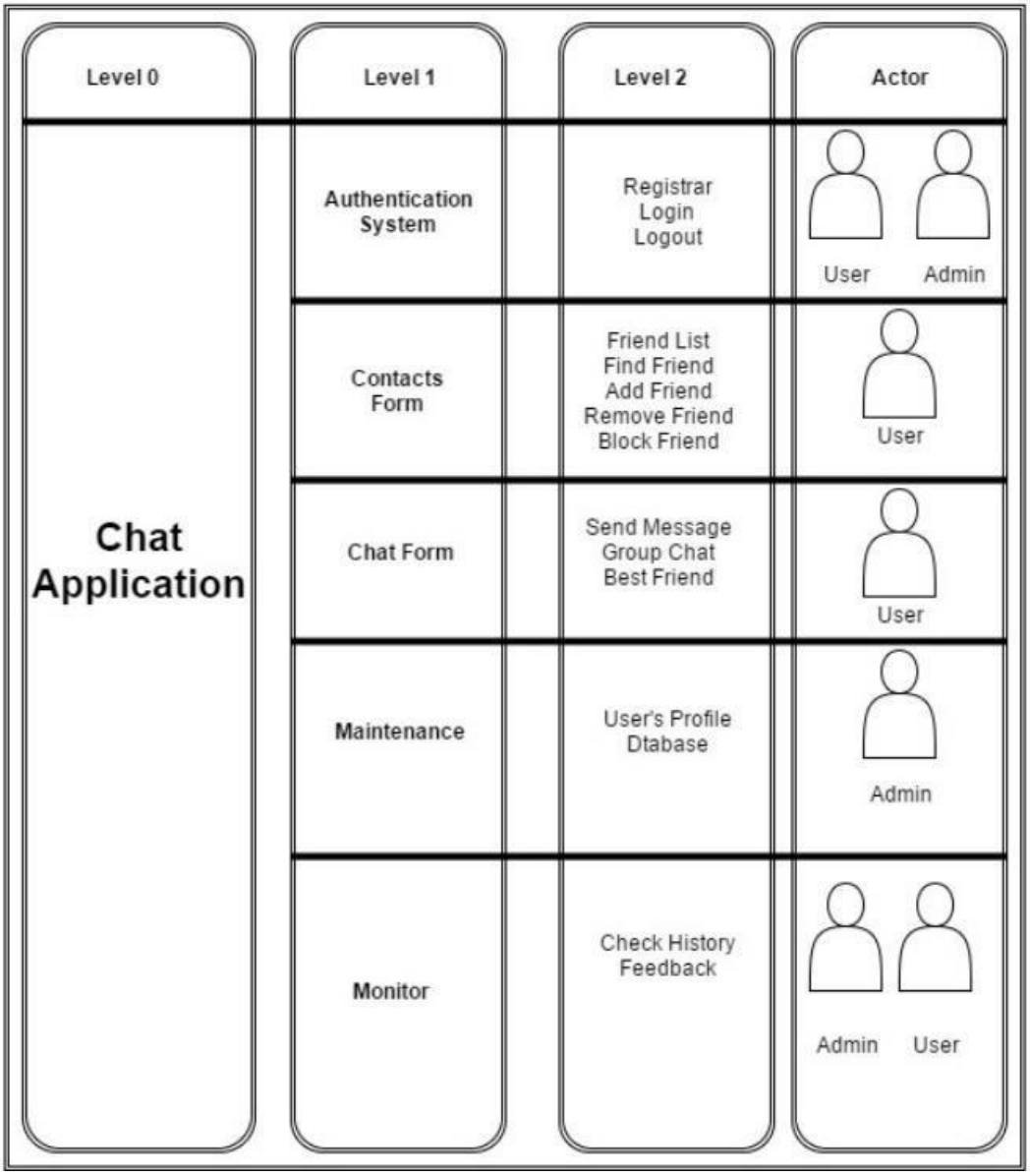

Fig.1 Use Case Table

Scope of the project

1. This SignalR based Chat Room App will be a text based form of communication.
2. This App does no support audio based communication but provides with a really fast way of communication in real time.
3. Web app uses internal network setup making it very secure.

CHAPTER 2

Literature Review

Internet communication is growing and is becoming more popular day by day among the public. In addition to use Telephone or automobile and sending mail, people can henceforth communicate with each other via chat Tech. Chat is a kind of internet technology that supports human-to-human communication.

For example, IC is one of the latest chats. Over the recent past two years, with the advent of sophisticated technology, the way of using IC for communication has been increasing. With IC, users can send chats, messages, files and URLs.

[2] Yahoo Chat is a free of cost chat room which is online service specially provided only for Yahoo. Users and first launched on the date January 7, 1997. It may be used by Yahoo! Was called a feature in the first release of the pager. The first public version was released on the date 9 March 1998. Yahoo Chat lets its users to make chat rooms that are public, send users the text messages and use the newly added emoticons.

[2] Skype is an instant easy to use text-messaging app. It offers text messaging that is online and the video chatting services. Users can send the text messages and the video messages and allow the interchange of the digital documents. Skype also includes video conferencing calls.

The Chat app makes it possible to connect to any part of the world, anytime. There are many apps that offer chat services, the most popular of which are WhatsApp, Facebook Messenger, Yahoo IM, and Email and so on.

The IC application originates from another application that sends messages. The latest IChat applications include a variety of file transfer, video chat, and group chat features. A common disadvantage is that these applications limit the amount of files that can be transferred. In this way we have enabled chat with unlimited data transfer with no limitations on the IC.

The three quite important features of IChat App are:

1. Easy and quick communication.

2. Unlimited data transfer without the size restriction.

3. Group chat

CHAPTER 3

Software Tools

Dot NET

ASP.NET is a platform used for development of web services that provides a variety of user services, as well as mobile devices, to build a unique programming Model, software infrastructure that is comprehensive and robust web applications for PCs.

ASP.NET operates on the protocol that is HTTP and uses its commands and procedures to fix browser command-to-server bilateral communication & collaboration.

ASP.nET is Microsoft's the Part Of the Net Platform. ASP.nET applications are usually compiled code written using components that are quite extensible and reusable or objects in the .NET framework. These codes of .Net can be used for the entire hierarchy of classes in the .NET framework.

We can use the following Languages to code the ASP.NET application:

1. c#
2. Visual Basic Net
3. Java Script
4. J#

ASP.NET is used in producing interactive as well as web applications that are data-driven over the Internet. It contains the huge number of texts boxes, labels and buttons for the purpose of coding, configuration and converting code to make the HTML pages.

ASP.net component Model

It provides for various building component that helps in building ASP.NET pages.

ASP.NET is a kind of technology that mainly works with a .NET framework that includes all web related functions. The .NET Framework focuses on the object oriented hierarchy. ASP.nET

is made up of web application page. When an ASP.NET page is requested by the user, it refers to the processing of the IIS page to the ASP.NET runtime system.

Component of the .net Framework:

1. CLR-Common Language Runtime
2. .net Framework - Class Library
3. Common Language Specification
4. Metadata and Assemblies
5. Common Type System
6. Windows forms
7. ADO.nET
8. ASP.nET AJAX
9. Windows Workflow Foundation

ASP.NET MVC

It is a web Framework that is used to build web applications as well as websites on the ASP.nET framework using HTML, Css and JavaScript. It is framework which is based on Mode-View-Controller: (MVC) architecture.

MVC Architecture

It differentiates the application into the mainly three components namely –

1. Model

2. View

3. Controller.

Model: It shows the data's shape. C# class represents model and models the objects keep data derived from the concerned database.

View: It represents the User Interface. View shows the model data to the user and also gives them control to alter it.

Controller: It looks for the user's request. Normally User makes use of View and raises the HTTP request that is dealt with the help of Controller.

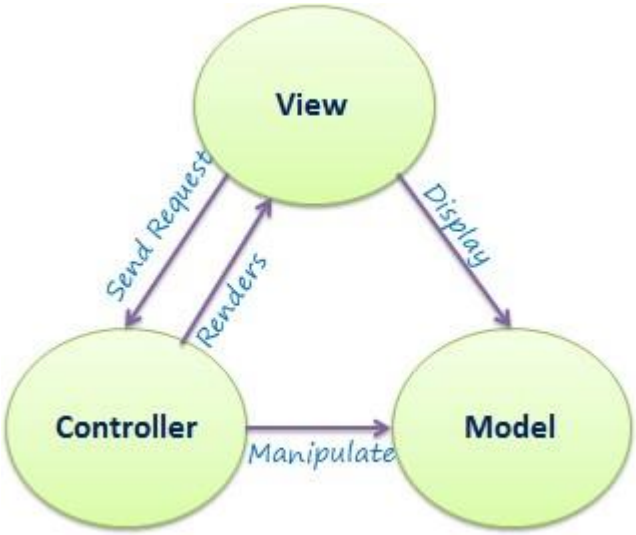

Fig.2 MVC Architecture

When a URL is entered by the user in the browser it directly goes to the web server and afterwards routed to the controller.

Routing in the MVC:

ASP.NET Web Form Application requires each URL to match with an .aspx file. Routing was introduced to minimize work of matching each and every URL with the present physical file. Routing helps us determine URL pattern that maps up to the handler Request Handler and this request handler can either be a file or a Class.

In case of ASP.net webform Application .aspx file is the request handler & in case of MVC it is the Controller Class and action method.

Route – It defines the URL Pattern and handles the information.

All the routes of the Application that are configured are stored in RouterTable and therefore used by the Routing engine in determining the proper handler class/file for a request that is incoming.

The process illustrated in next page is the Routing process.

Fig.3 Request Flow in MVC Architecture

Configure a Route- At least one route Configured by an MVC application is definitely a must that is being configured by the MVC framework by default. A route can be registered in Route Config class.

Register a route- Next step after configuring routes is registering, that is done in Application Start () event in Global.asax. Therefore all our routes are included into RouteTable.

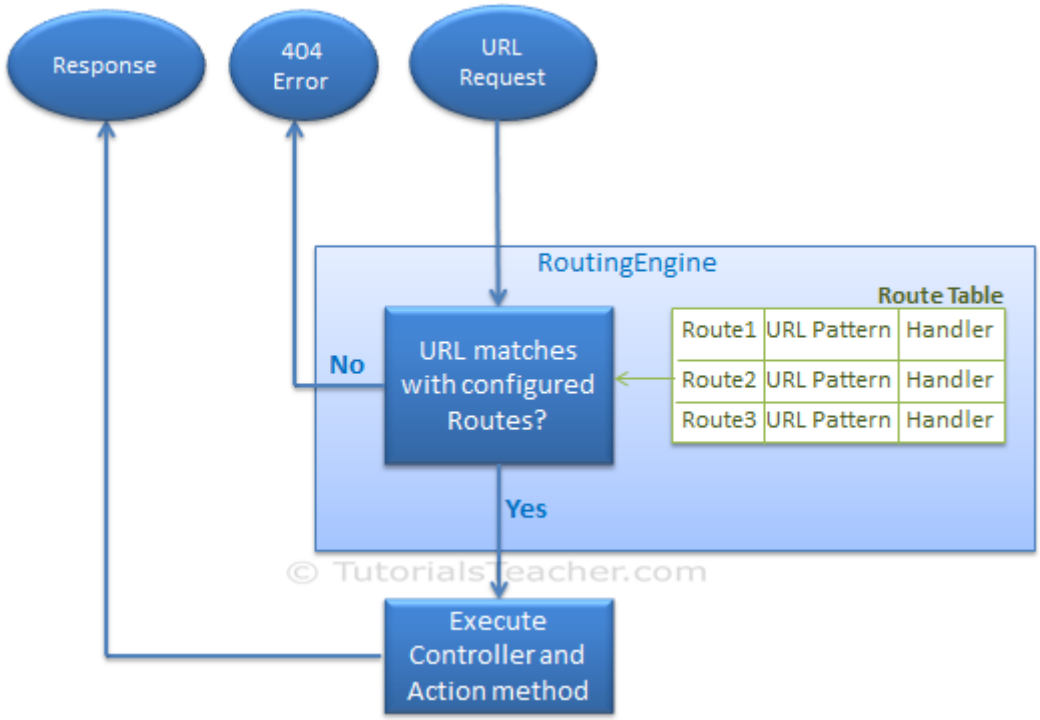

Fig.4 Routing In MVC

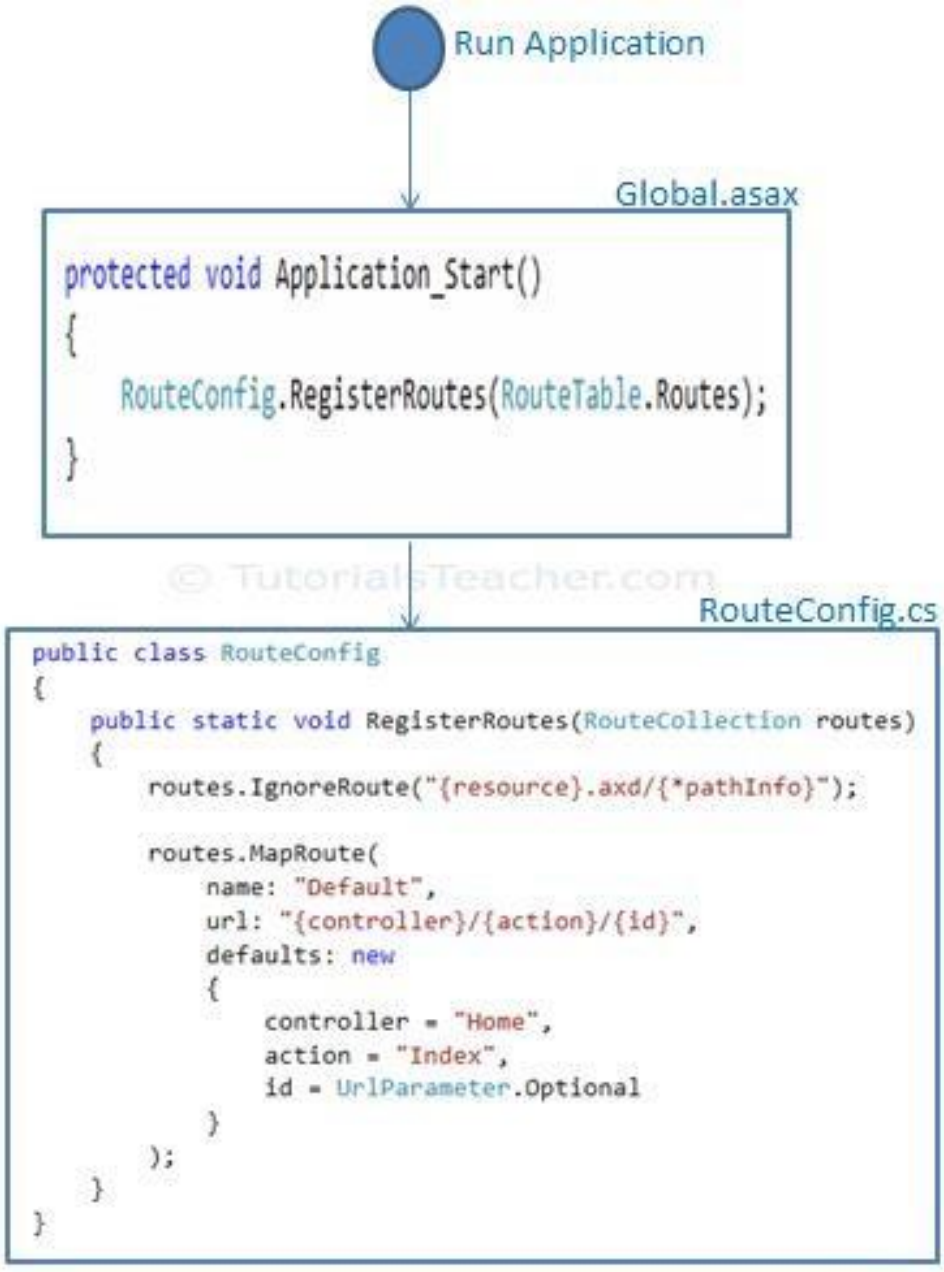

Fig.5 Register Route

SignalR

Introduction

SignalR is Asynch Library that web applications can be developed from. These applications provide services that run asynchronously. It is used to create Real Time applications. In general, Real Time means some even that actually happens at a particular time. In terms of web application it means “Immediate response sent by Server on the Client’s request”.

Working of SignalR

In HTTP request response model each time the user sends new request in order to communicate with the server but SignalR is better as it provides persistent connection between client and server. SignalR uses web socket technology in order to send data. SignalR does its business of transferring data with the help of JSON text or in the plain text.

Two Modes of Communication

1. Persistent Communication

   Provide straight access to communication protocol that is low-level. This Model is used in place where working with a messaging and dispatching is required.

2. Hubs

   Provide High level API for the client as well a server to call each other’s methods. One should make use of hub if they want to send multiple messages between a server and a client. It is easier to implement application using Hubs.

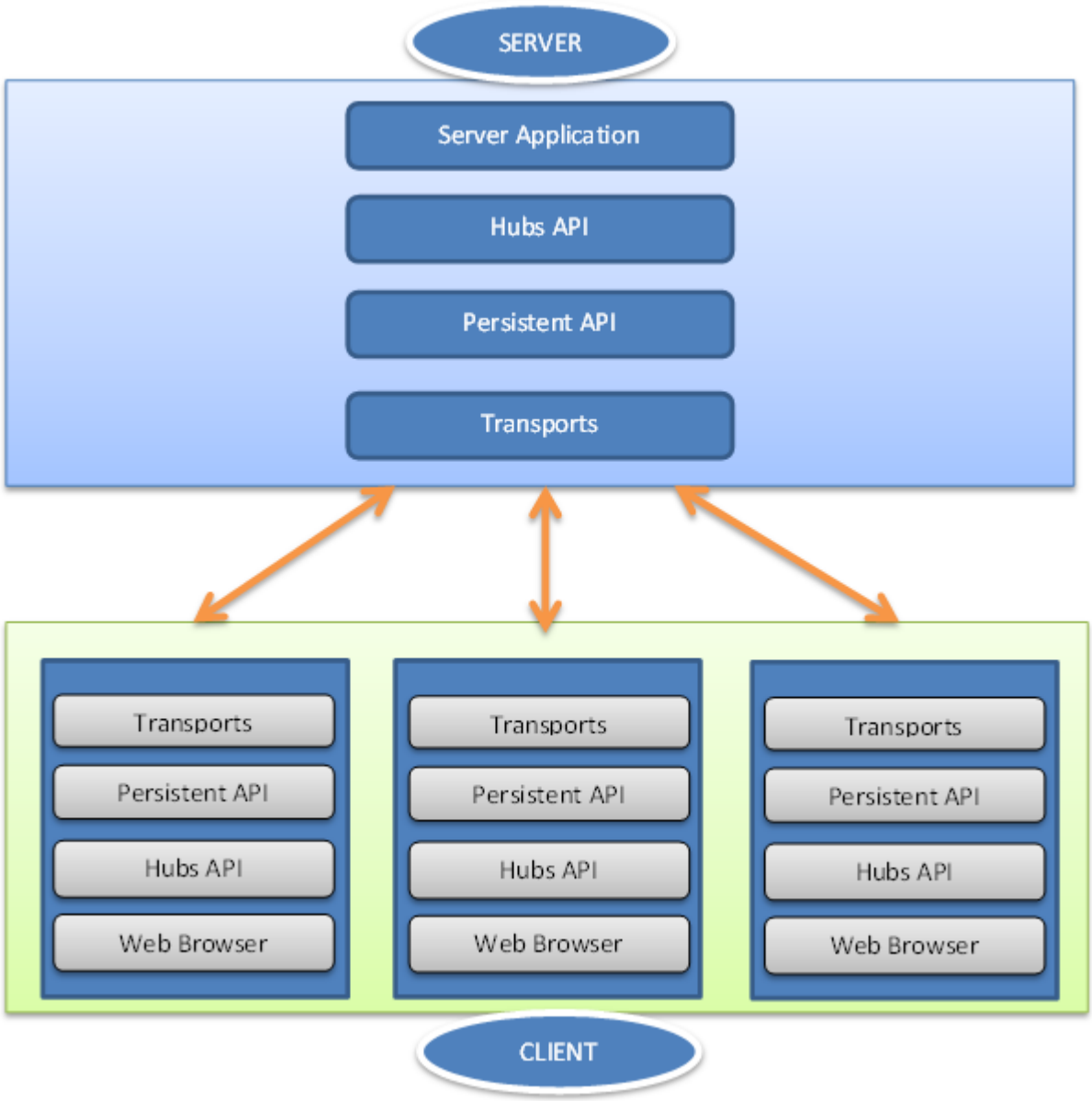

Fig.6 Hubs

Where SignalR is used:

1. Notification: In order to notify one or all client we use SignalR. It can be like alert, a reminder, feedback or comment and so on.
2. Chart: application could be one-to-one or can be a group chat.
3. Gaming: Requires frequently pushing from a server.

How to use SignalR:

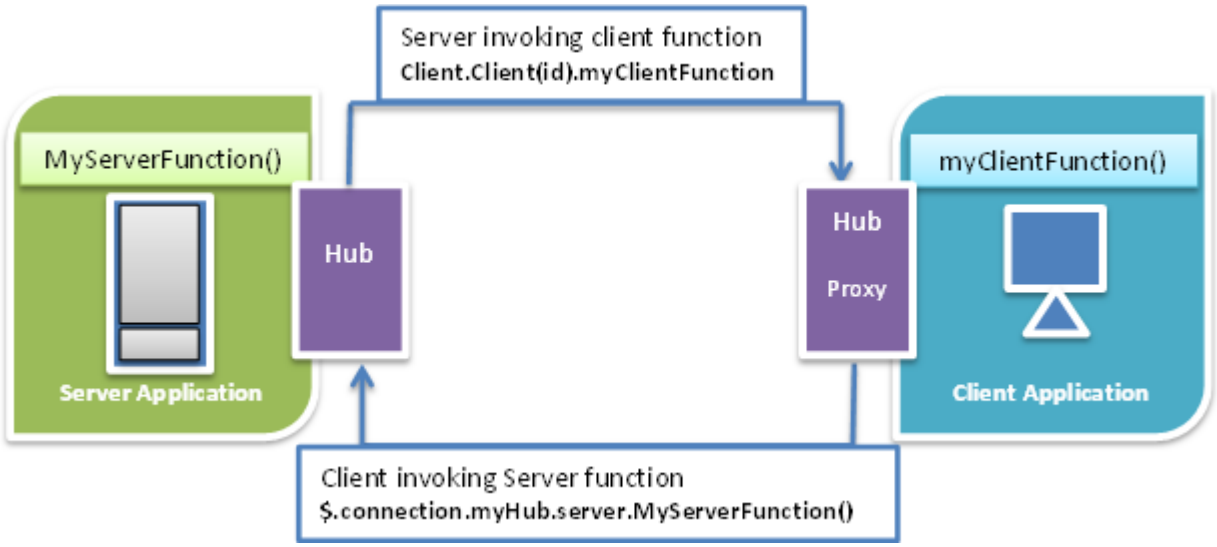

Fig.7 Using SignalR

CHAPTER 4

Implementation and Code

The Under mentioned features that have been implemented in the Chat Room Web application:

Text Messaging

This Chat Room App lets us:

1. Make and Account and choose the Username of choice if it is available
2. Once we are in our home page, We can make chat room and add people available on the chat room App
3. We can send emoticons as well as pictures t the chat board.
4. Clear chat history
5. Remove people from chat room
6. Send Messages to user even if they are offline

Requirements:

1. Software Requirement: Visual Studio , MySql server
2. Other Requirements: Knowledge of C#, HTML, Sql.

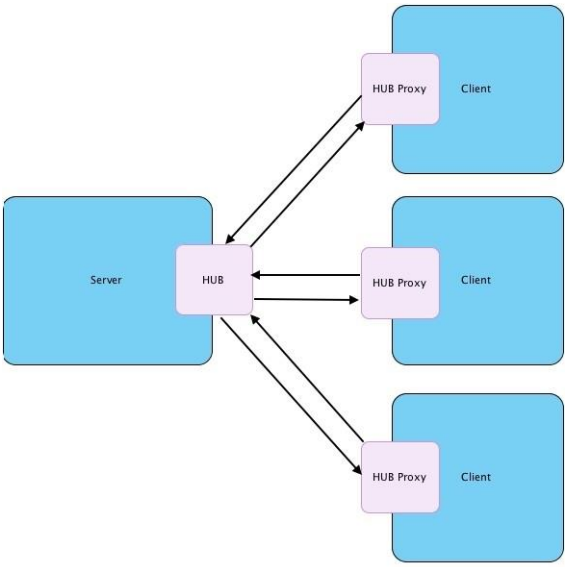

Fig.8 Architecture

The Entry page to app is the Typical Login page which also has an option of creating the account if we don't have the Account already.

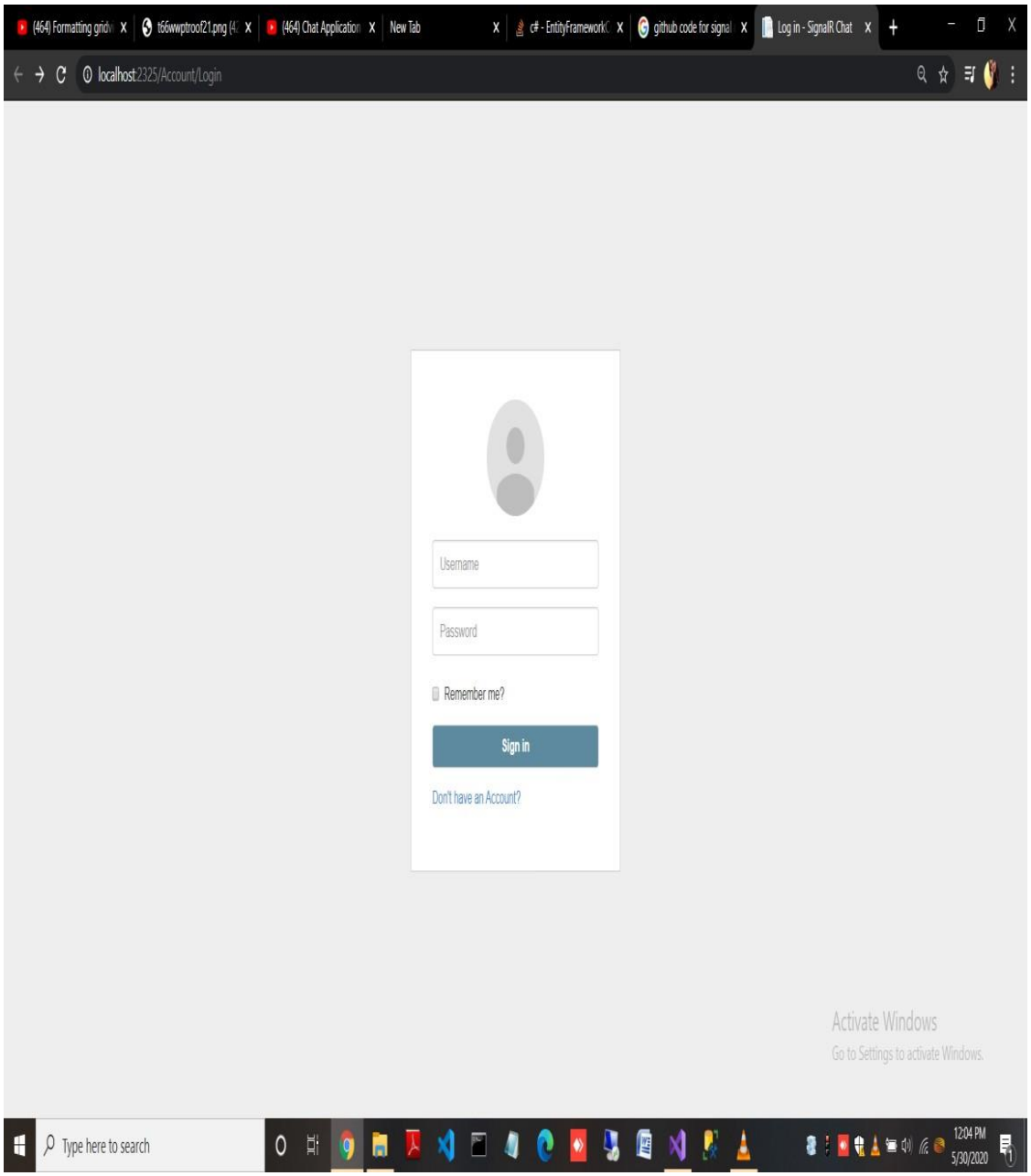

Fig.9 Snapshot of Web App-Login page

The page that opens up when we want to create an account:

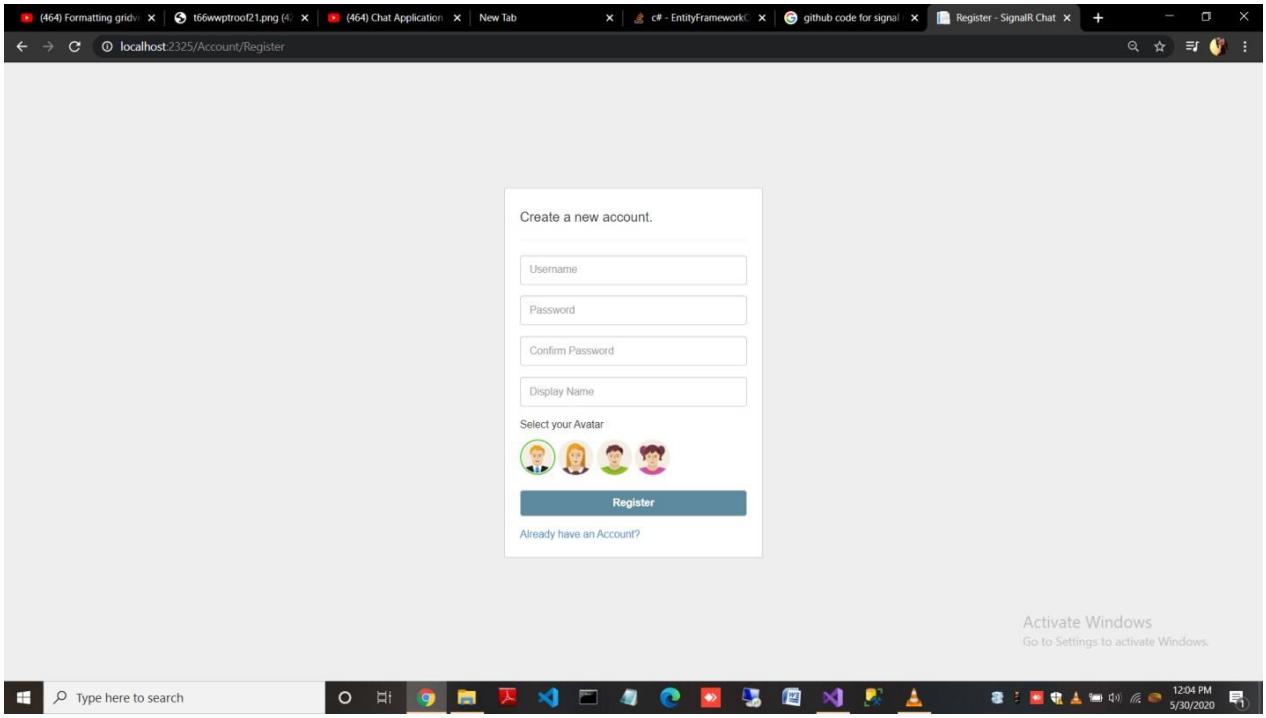

Fig.10 Snapshot of Web App-Creating New Account

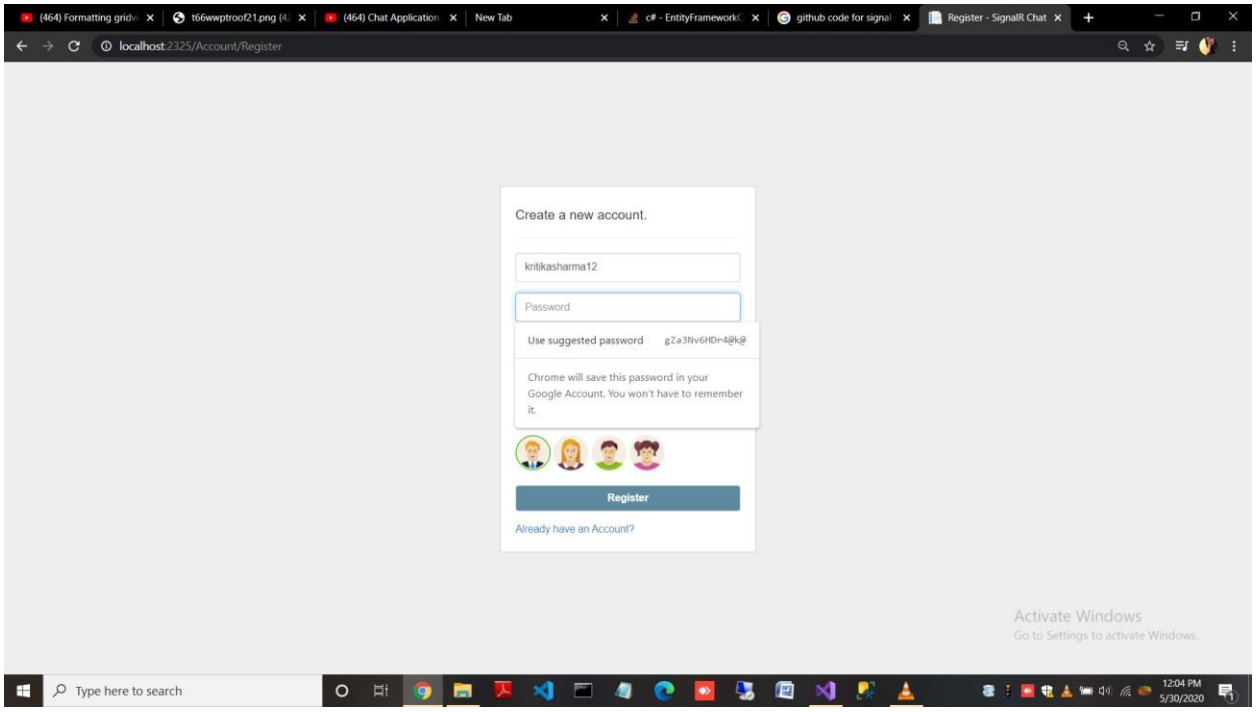

Fig.11 Snapshot of Web App- Password Setting

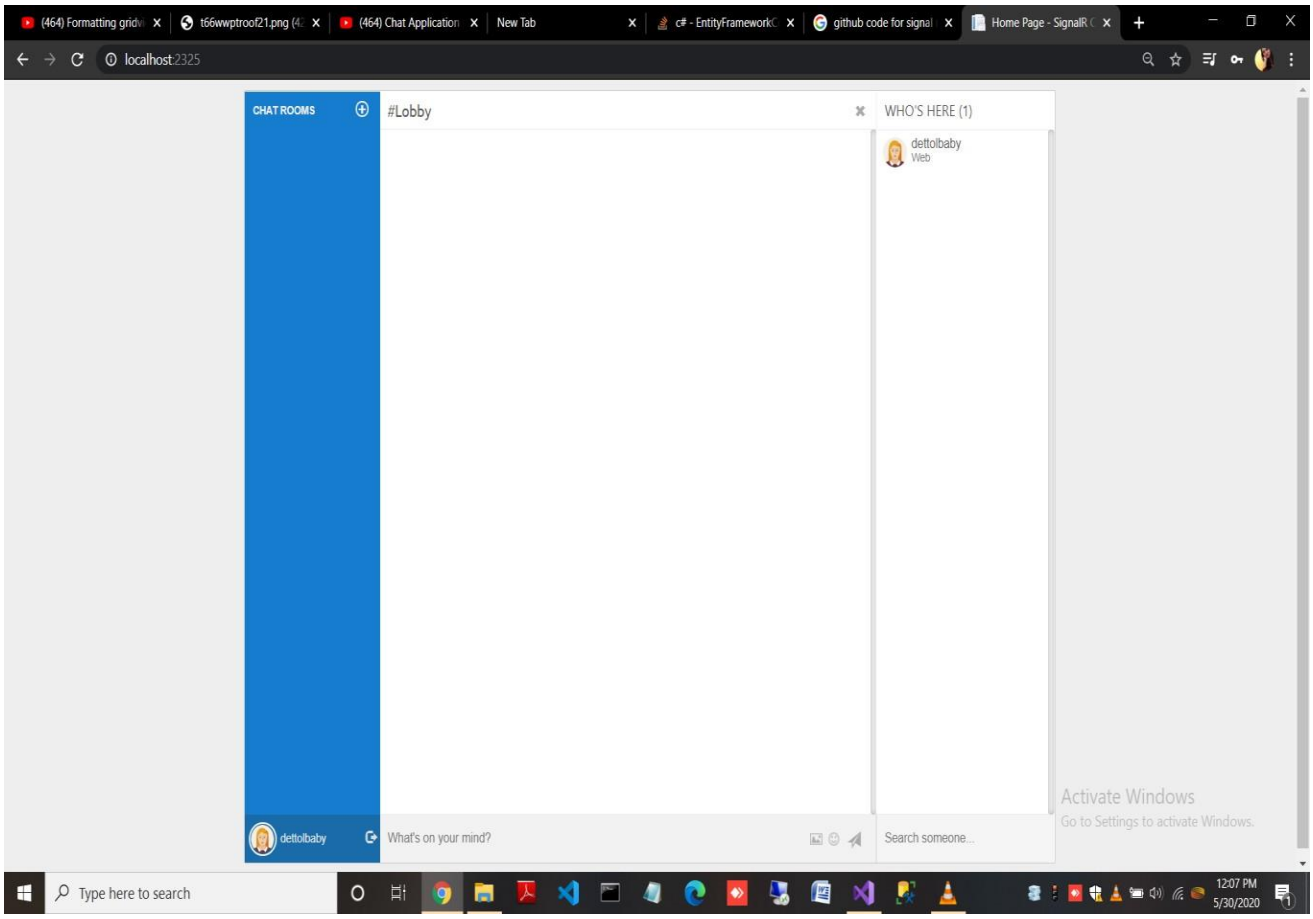

Fig.12 Snapshot of Web App-Home page

Features of this Homepage:

1. There is Chatroom panel lets us add as many Chatroom as we want.
2. There is lobby where the messages will be shown.
3. Then there is another panel that shows all the people who have joined the chat room.
4. There is search bar that lets us search anyone who is having their account on this chat app.
5. We can send pictures and emoticons on the lobby too.

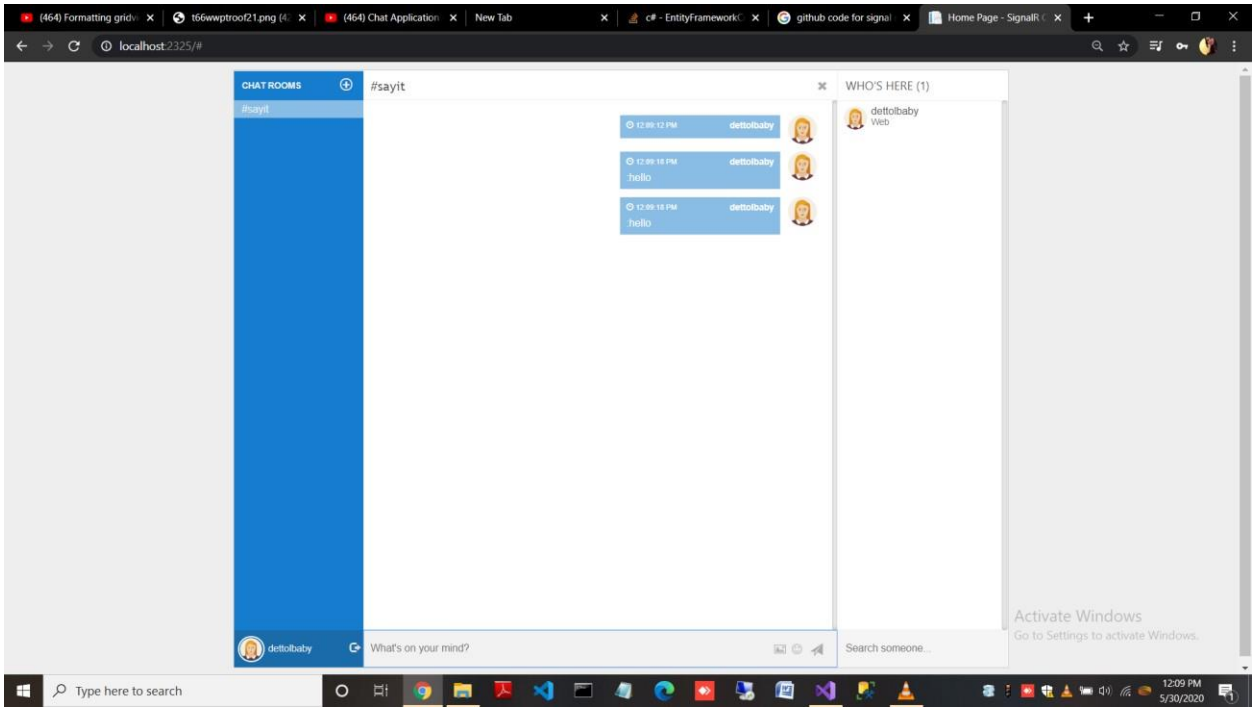

Fig13. Snapshot of Web App-how the chat lobby works

CONCLUSION

The main objective of building this Web App was to develop a Chatroom app that lets multiple users to chat simultaneously.

Portability of this web app has been achieved with the help of .NET Framework using its latest features such as SignalR that helps in attaining real time feature in chat app. I had to learn how to operate ASP.net framework as well as working with all of its libraries.

Future Scope

With the help of knowledge that I gained by developing this app, I am confident that in the future I will be able to make the app more efficient by adding these kinds of services.

1. Extending it to Voice Chat
2. Database maintenance for the bigger scenario.

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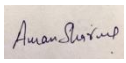

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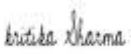

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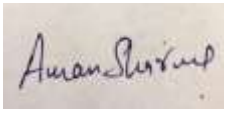

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