MYCHAT

A

Mini Project Report

Submitted in partial fulfillment of the

Requirements for the award of the Degree of

BACHELOR OF ENGINEERING

IN

INFORMATION TECHNOLOGY

By

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Vasavi College of Engineering (Autonomous)

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2020

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DECLARATION BY THE CANDIDATE

We, **K. KRISHNA and BACHU.RAHUL,** bearing hall ticket number, **1602 - 19 - 737 - 077 and 1602 - 19 - 737 - 087 respectively**, hereby declare that the project report entitled **MYCHAT** Department of Information Technology, Vasavi College of Engineering, Hyderabad, is submitted in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering** in **Information Technology**

This is a record of bonafide work carried out by me and the results embodied in this project report have not been submitted to any other university or institute for the award of any other degree or diploma.

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(Faculty In-Charge)   (Head,Dept of IT)

ACKNOWLEDGEMENT

If words are considered as a symbol of approval and token of appreciation then let the words play the heralding role expressing my gratitude.

The satisfaction that accompanies that the successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success. We are grateful to our project guide Ms. DRL. Prasanna and Respective Dr. Kovvur Ram Mohan Rao - Professor & Head, Department of Information Technology for the guidance, inspiration and constructive suggestions that helped us in the preparation of this project. We also thank our colleagues who have helped in successful completion of the project.

K.Krishna

Bachu Rahul

ABSTRACT

The most important thing people need to heal, succeed, and thrive is "Human Connection". The Purpose of MyChat Software/Application is to help people from any part of the world to connect. This Application uses Client-Server Technology/Socket Programming due to which you can communicate with people seamlessly.

The two main parts of this application are the server who provides the connectivity/network and the client/user. MyChat provides the feature of sending and receiving data and are totally Encrypted while transfer. Provides flexibility on changing the personal data such as changes password, manuals for unknown things. People can start a conversation in two different ways i.e., Personal and Group Conversation in which Personal conversation.

Team No.: 15

Roll No(s): 077 & 087

Name(s): K.Krishna & Bachu Rahul

Section: IT-B

TABLE OF CONTENTS

INTRODUCTION

The application **MYCHAT** using C and Socket Programming in C aims at developing a a reliable and secure network programming (Client-Server chat model) which can perform a multithreaded server-client chat application based on Java socket programming using Transport Control Protocol (TCP) that could be easy for users and which could teach a new user how to involve in fluent chat and get well equipped with Chat server.The main goal of our application is communication. It allows all the registered users to establish good relations with all types of people involved in the internet on this platform.

Problem Domain

There many such Client-Server application available in internet, but they provides either only server/client and also either personal/group conversation or provide only data transfer protocols. Which makes user to go through various different applications. Next comes the main functionality/property comes on multiple client connection which is mostly based on different technology like Select or Fork which are easy to access but hard to understand. There after another thing comes another implementing the applications in various languages such as JAVA, Python can be easier to use, but the core concepts oh handling the applications functionality comes from the very basic programming language C which is inculcated by almost all the system users.

Objective

MYCHAT application resolves all the problems which are mentioned. Since this application is based on C Programming Language which helps normal system user to understand the behaviour of this application. In order to over come the multiple client-server connection this applications uses the basic way to connect I.e, it uses Threads concept to handle multiple connections.

The users can develop their communication skills. It also helps in gathering information's about different peoples. It also helps in understanding the culture of different peoples involved in the Internet. And helps to share the data as required.

The other attraction of our site is that you could easily change the mode of the application according to the user's choice. This application is not restricted to any one any one who has registered as a valid user could access this package and it is absolutely free. Even though the application is very much secured after fulfilling the security criteria one would find it very interesting and easy.

The users can easily have Personal Chat (one-to-one) and Group Chat and enjoy seamless conversation for longer period. Also includes the functionality to transfer read/writable text data files (.txt, .c, .java files). The interesting thing is that, it assigns the current data-time as file name to current received text file. One of the reliant feature it provides is you don't have to be concerned about the new things you encounter while using this application, I.e., provides clear and brief instruction on the things using a user manual.

LIST OF FEATURES

1) Easy and simple to use.

2) Fast and Robust.

3) Flexibility in switching from server mode to client mode and vice-versa.

4) Group and Personal conversation.

5) Data is encrypted while transferring.

6) Instructions for every process is provided.

TECHNOLOGY

Software Requirements

- Minimum supported client : Windows 8.1, Windows Vista
- Minimum supported server : Windows Server 2003
- Intel/Ryzen Processor
- GCC Compiler
- Libraries and Headers : ws2_32.lib and winsock2.h, ws2tcpip.h, pthread.h

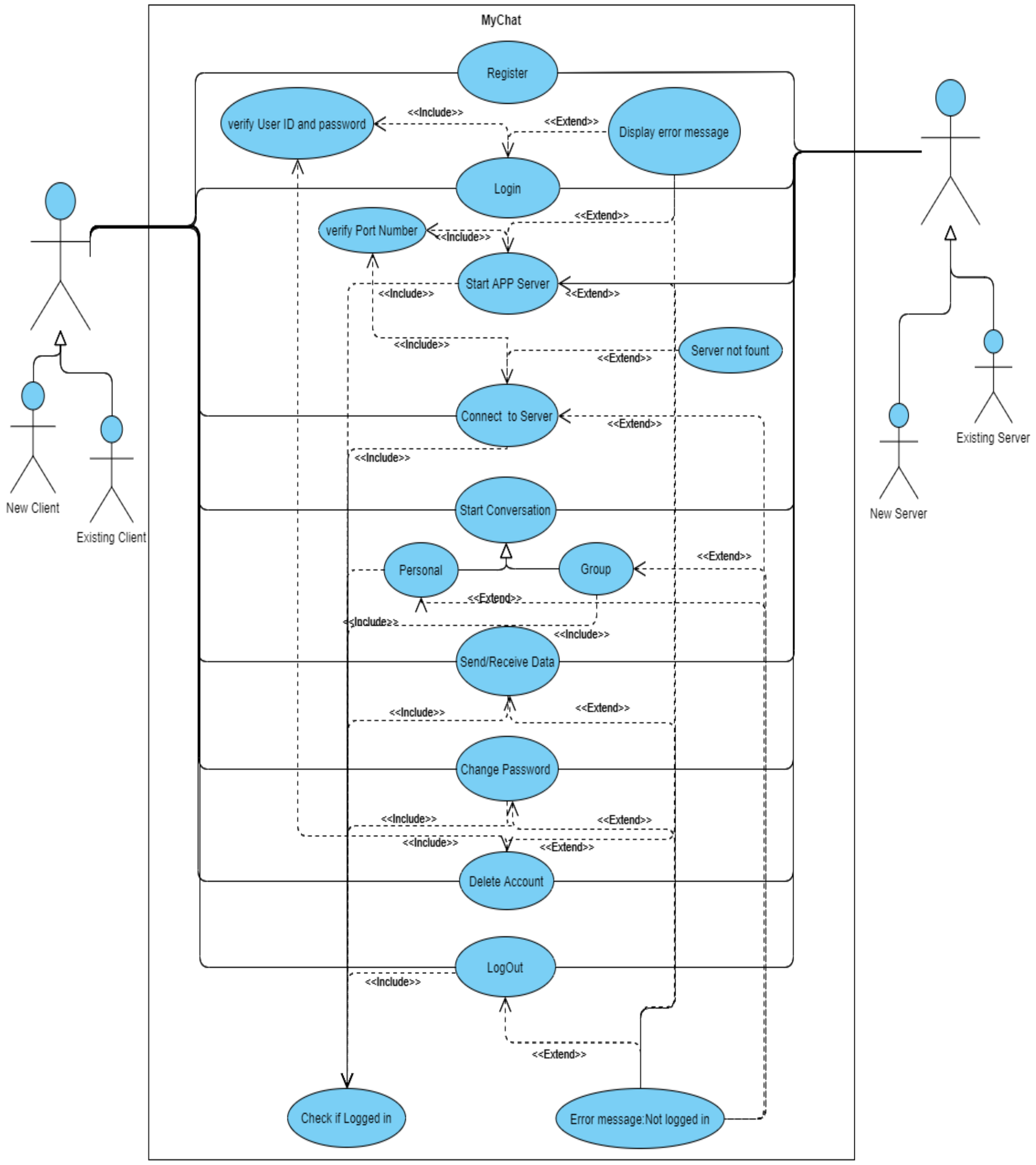
Hardware Requirements

- 250-833 MHz of Processor Speed
- 200MB of Minimum Space
- System Type : 32-bit or More
- 128MB RAM
- Standard QWERTY serial or PS/2 keyboard.
- Compatible Standard Mouse

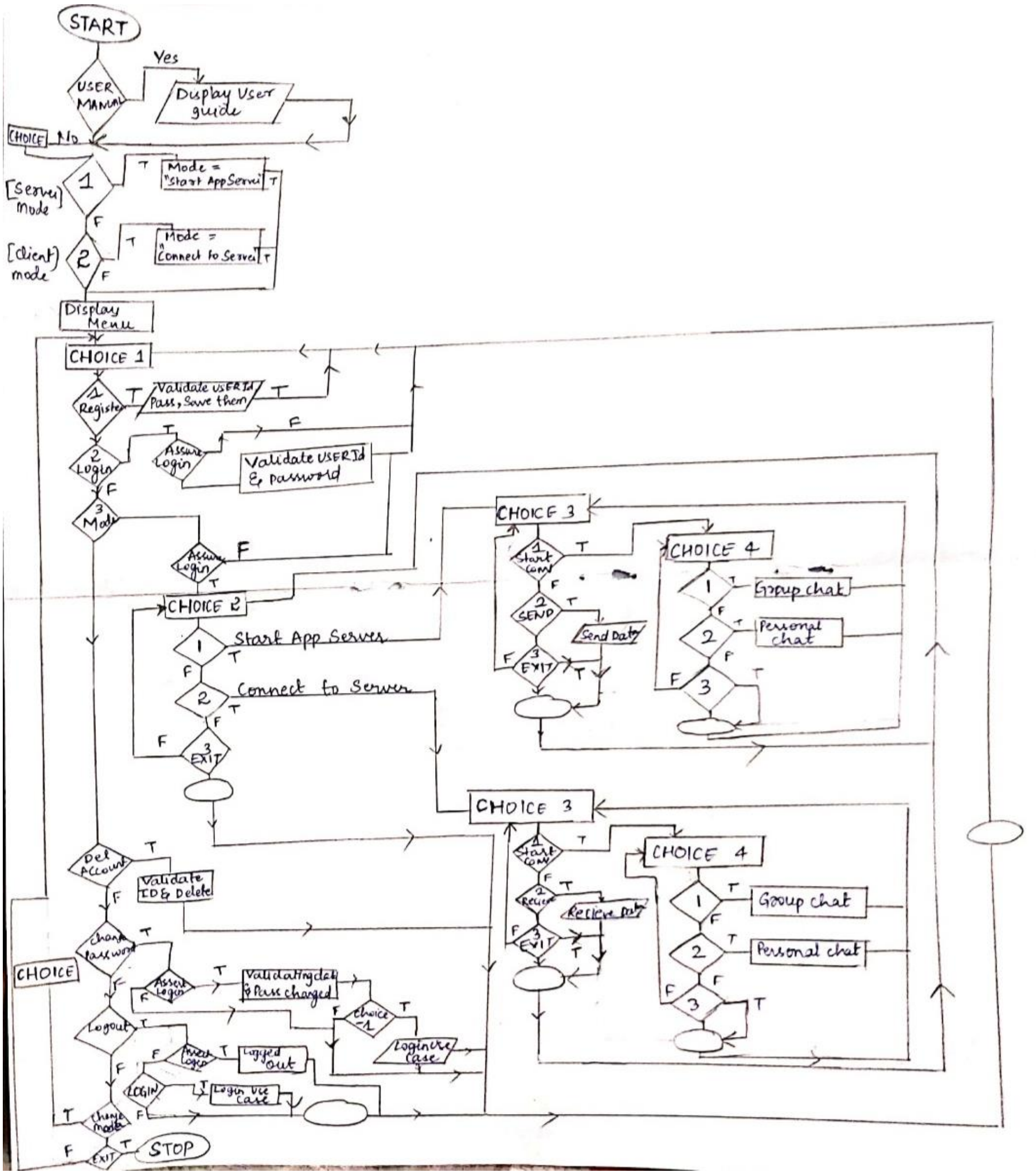
PROPOSED WORK

DESIGN

Use Case Diagram

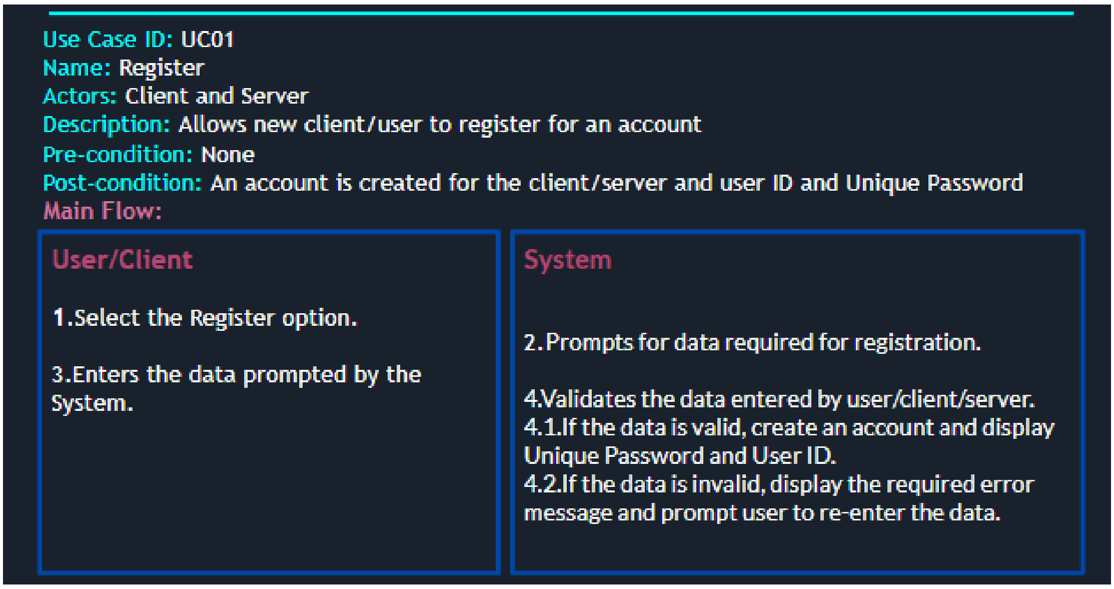


Flow Chart


START
USER MANUAL
Yes
Display User guide
CHOICE
No
T
Mode = "Start AppServer
T
[Server] mode
1
F
T
Mode = "Connect to Server
T
[client] mode
2
F
Display Menu
CHOICE 1
1 Register
T
Validate USERId Pass, Save them
T
2 Login
T
Assure Login
F
Validate USERId & password
F
3 Mode
Assure Login
F
T
CHOICE 2
1
Start App Server
T
F
2
Connect to Server
T
F
F
3 EXIT
CHOICE 3
1 Start conn
T
F
2 SEND
T
Send Data
F
3 EXIT
T
CHOICE 4
1
T
Group chat
F
2
T
Personal chat
F
F
3
T
CHOICE 3
1 Start conn
T
F
2 Recieve
T
Recieve Data
F
3 EXIT
T
CHOICE 4
1
T
Group chat
F
2
T
Personal chat
F
F
3
T
Del Account
T
Validate ID & Delete
F
Change Password
T
Assert Login
T
Validating data & Pass changed
F
choice -1
F
T
Logincase case
CHOICE
F
Logout
T
F
Assert Login
T
Logged out
F
LOGIN
T
Login Use Case
T
Change mode
F
F
EXIT
T
STOP

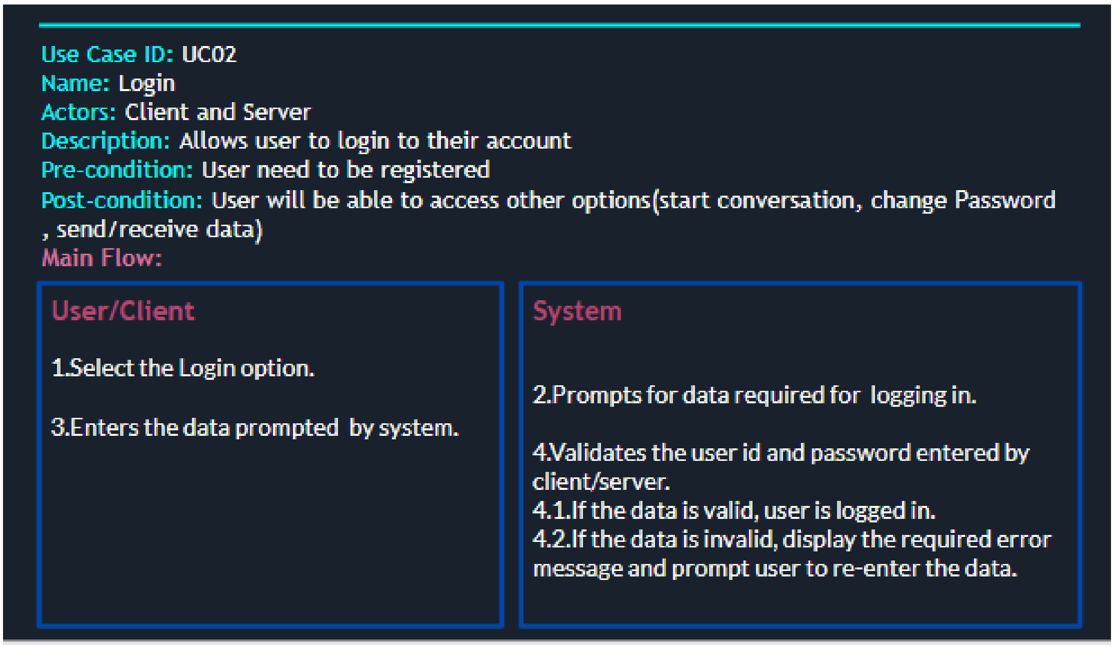
IMPLEMENTATION

Description of Main Modules



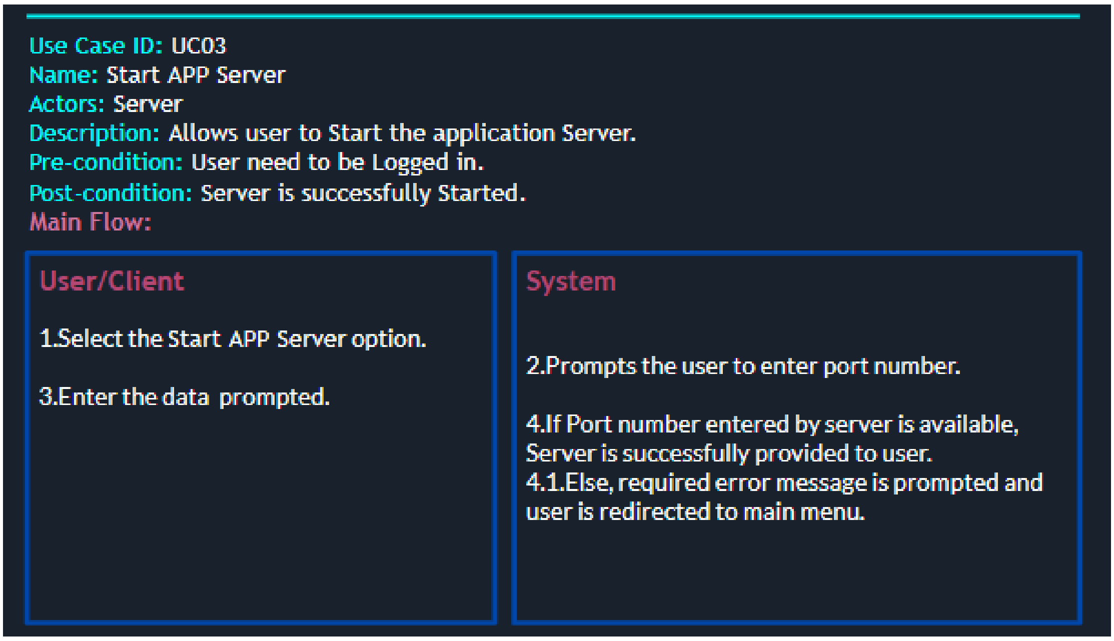
Use Case ID: UC01
Name: Register
Actors: Client and Server
Description: Allows new client/user to register for an account
Pre-condition: None
Post-condition: An account is created for the client/server and user ID and Unique Password
Main Flow:

User/Client	System
1.Select the Register option. 3.Enters the data prompted by the System.	2.Prompts for data required for registration. 4.Validates the data entered by user/client/server. 4.1.If the data is valid, create an account and display Unique Password and User ID. 4.2.If the data is invalid, display the required error message and prompt user to re-enter the data.



Use Case ID: UC02
Name: Login
Actors: Client and Server
Description: Allows user to login to their account
Pre-condition: User need to be registered
Post-condition: User will be able to access other options(start conversation, change Password , send/receive data)
Main Flow:

User/Client	System
1.Select the Login option. 3.Enters the data prompted by system.	2.Prompts for data required for logging in. 4.Validates the user id and password entered by client/server. 4.1.If the data is valid, user is logged in. 4.2.If the data is invalid, display the required error message and prompt user to re-enter the data.



Use Case ID: UC03
Name: Start APP Server
Actors: Server
Description: Allows user to Start the application Server.
Pre-condition: User need to be Logged in.
Post-condition: Server is successfully Started.
Main Flow:

User/Client

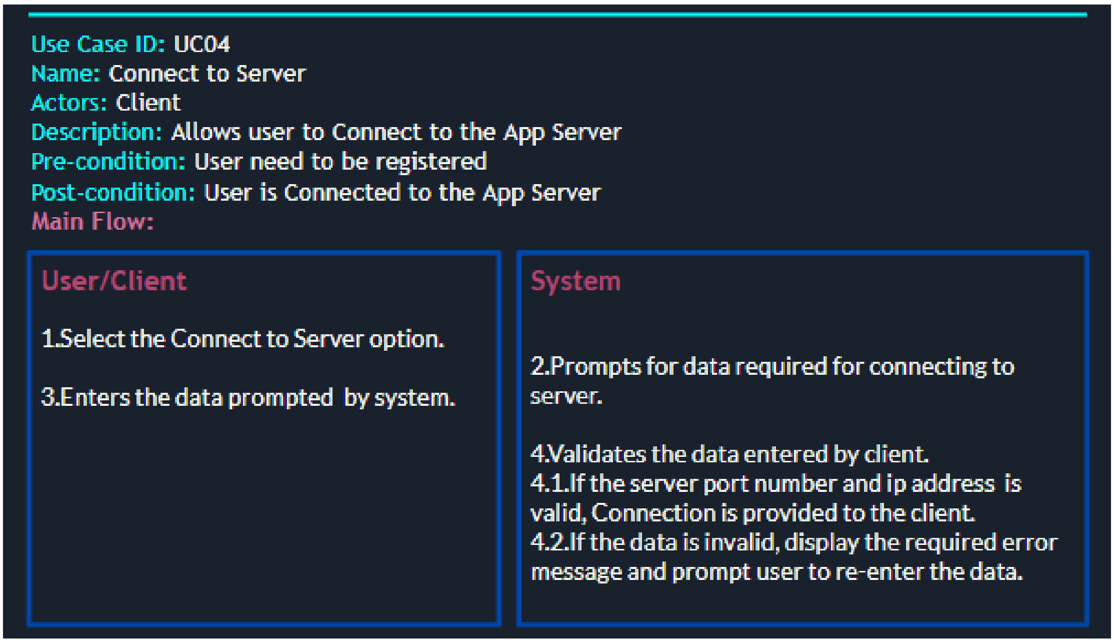
1.Select the Start APP Server option.

3.Enter the data prompted.

System

2.Prompts the user to enter port number.

4.If Port number entered by server is available, Server is successfully provided to user.
4.1.Else, required error message is prompted and user is redirected to main menu.



Use Case ID: UC04
Name: Connect to Server
Actors: Client
Description: Allows user to Connect to the App Server
Pre-condition: User need to be registered
Post-condition: User is Connected to the App Server
Main Flow:

User/Client

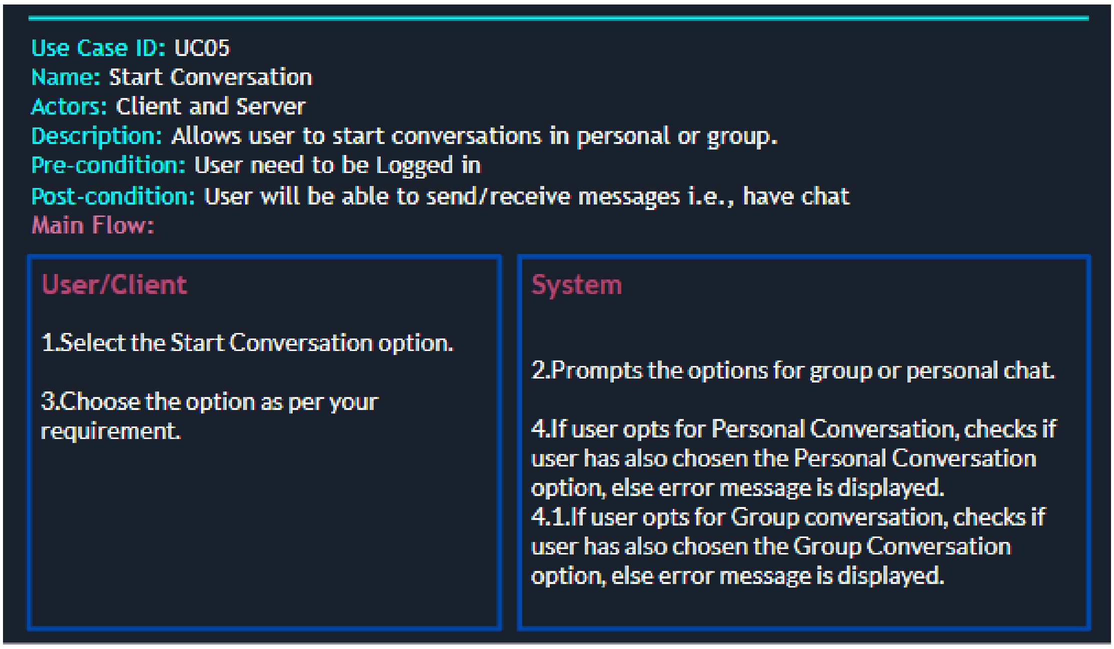
1.Select the Connect to Server option.

3.Enters the data prompted by system.

System

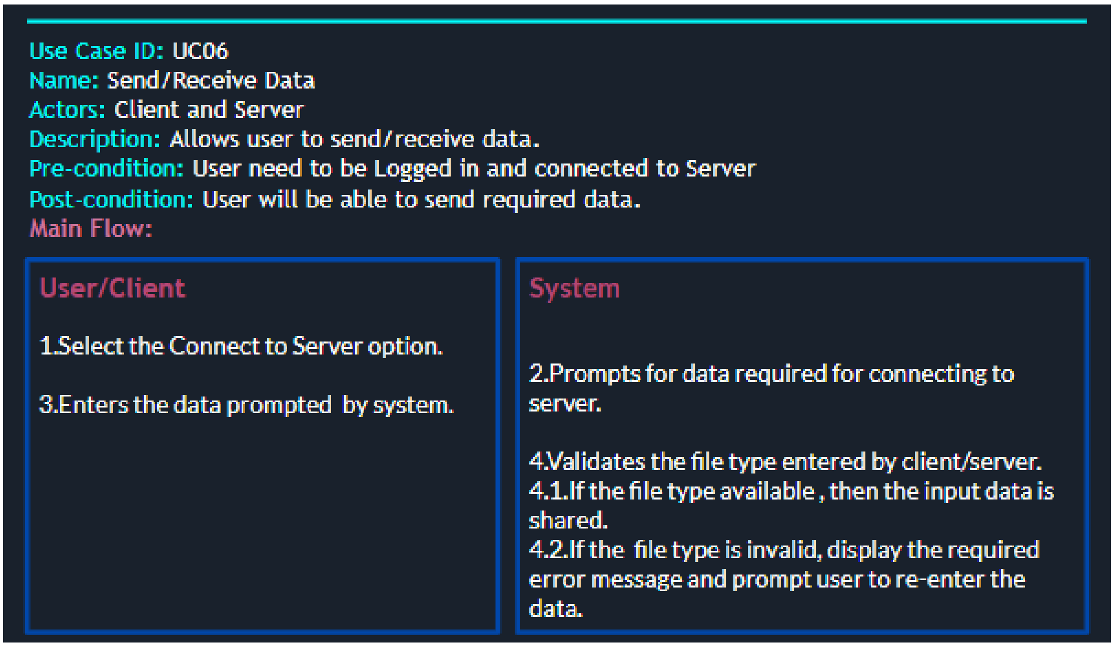
2.Prompts for data required for connecting to server.

4.Validates the data entered by client.
4.1.If the server port number and ip address is valid, Connection is provided to the client.
4.2.If the data is invalid, display the required error message and prompt user to re-enter the data.



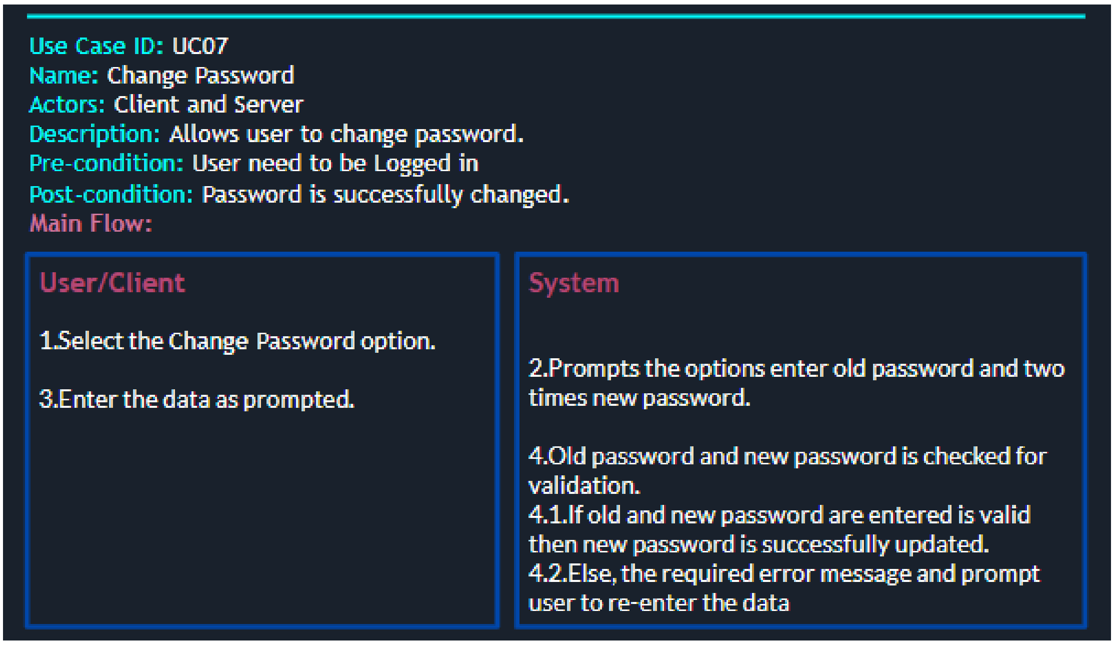
Use Case ID: UC05
Name: Start Conversation
Actors: Client and Server
Description: Allows user to start conversations in personal or group.
Pre-condition: User need to be Logged in
Post-condition: User will be able to send/receive messages i.e., have chat
Main Flow:

User/Client	System
1.Select the Start Conversation option.	
	2.Prompts the options for group or personal chat.
3.Choose the option as per your requirement.	
	4.If user opts for Personal Conversation, checks if user has also chosen the Personal Conversation option, else error message is displayed. 4.1.If user opts for Group conversation, checks if user has also chosen the Group Conversation option, else error message is displayed.



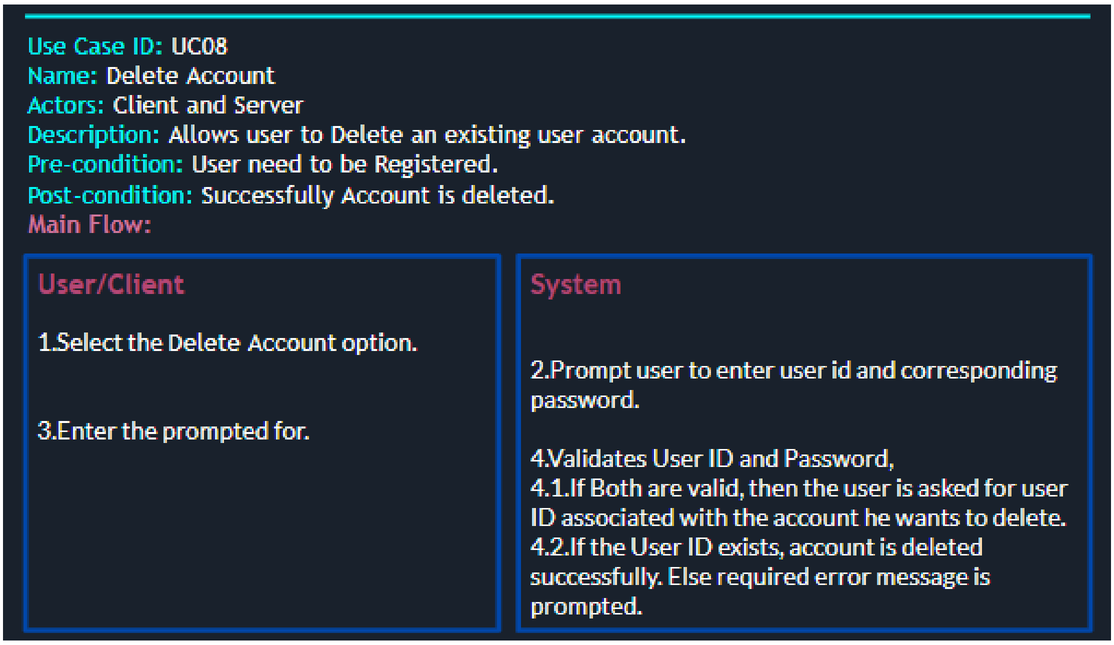
Use Case ID: UC06
Name: Send/Receive Data
Actors: Client and Server
Description: Allows user to send/receive data.
Pre-condition: User need to be Logged in and connected to Server
Post-condition: User will be able to send required data.
Main Flow:

User/Client	System
1.Select the Connect to Server option.	
	2.Prompts for data required for connecting to server.
3.Enters the data prompted by system.	
	4.Validates the file type entered by client/server. 4.1.If the file type available , then the input data is shared. 4.2.If the file type is invalid, display the required error message and prompt user to re-enter the data.



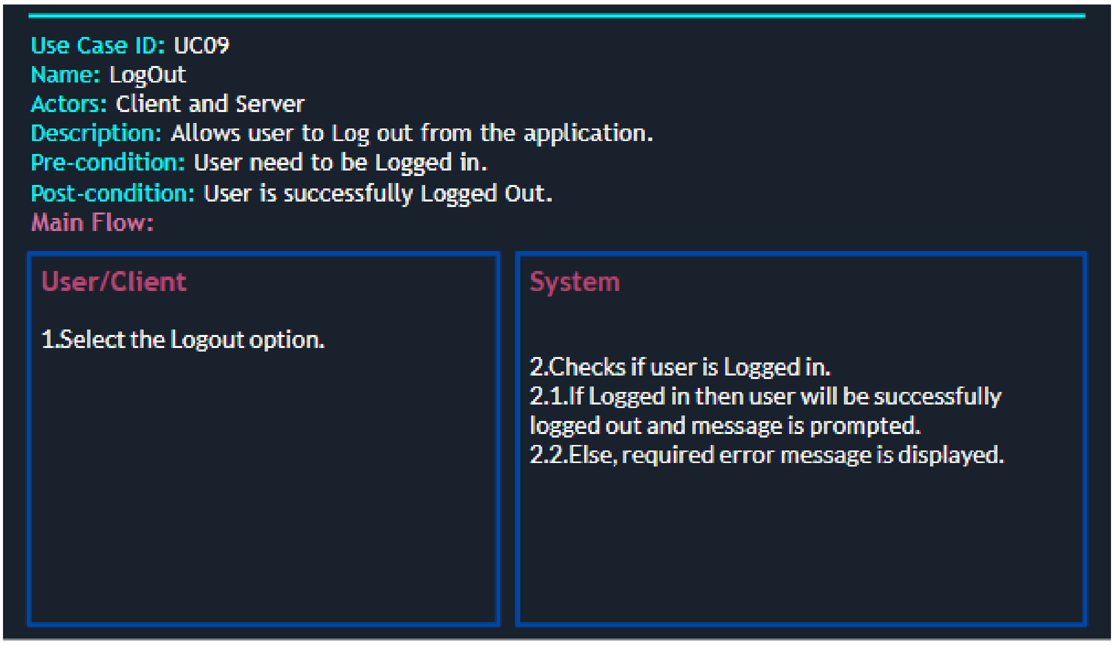
Use Case ID: UC07
Name: Change Password
Actors: Client and Server
Description: Allows user to change password.
Pre-condition: User need to be Logged in
Post-condition: Password is successfully changed.
Main Flow:

User/Client	System
1.Select the Change Password option. 3.Enter the data as prompted.	2.Prompts the options enter old password and two times new password. 4.Old password and new password is checked for validation. 4.1.If old and new password are entered is valid then new password is successfully updated. 4.2.Else, the required error message and prompt user to re-enter the data



Use Case ID: UC08
Name: Delete Account
Actors: Client and Server
Description: Allows user to Delete an existing user account.
Pre-condition: User need to be Registered.
Post-condition: Successfully Account is deleted.
Main Flow:

User/Client	System
1.Select the Delete Account option. 3.Enter the prompted for.	2.Prompt user to enter user id and corresponding password. 4.Validates User ID and Password, 4.1.If Both are valid, then the user is asked for user ID associated with the account he wants to delete. 4.2.If the User ID exists, account is deleted successfully. Else required error message is prompted.



Use Case ID: UC09
Name: LogOut
Actors: Client and Server
Description: Allows user to Log out from the application.
Pre-condition: User need to be Logged in.
Post-condition: User is successfully Logged Out.
Main Flow:

User/Client	System
1.Select the Logout option.	2.Checks if user is Logged in. 2.1.If Logged in then user will be successfully logged out and message is prompted. 2.2.Else, required error message is displayed.

Highlighting Feature of Application

1) This function helps user to retrieve the forgotten password which takes arguments as registered full name of the user

```
/*   username, id, are Linked Lists which holds all the  account's password and id details        */

int printpassword(char *name,char *uid)

{

    Details *temp1=username, *temp2=password,*temp3=id;

    int i,flag=0,flag1=0;

    if(temp1==NULL)

        return 0;

    while(temp1 != NULL )

    {
```

```
flag=0;
for(i=0;i<strlen(temp1->data);i++)
{
        if(temp1->data[i]!=name[i])
        {
                flag=1;
                break;
        }
}
if(flag==0)
{
        temp3=id;
        temp2=password;
        while(temp3 && temp2)
        {
                flag1=0;
                for(i=0;i<strlen(temp3->data);i++)
                {
                        if(temp3->data[i]!=uid[i])
                        {
                                flag1=1;
                                break;
                        }
                }
                if(flag1==0)
                {
                    printf("\n\n\t<<<.>>> Password : %s \n\n",temp2->data);
                    return 1;
                }
                temp3=temp3->next;
                temp2=temp2->next;
            }
        }
        temp1=temp1->next;
        temp2=temp2->next;
    }
    printf("\n\n\tPlease Enter valid Registered name assosciated with user ID %s, if not Register your self, then try logging in..!!\n\n",uid);
    return 0;
}
```

2) In this a part of code that helps to save the received data in the file which is named by format of dd-mm-yyyy-hr-min-sec-msec-RecievedFile-file_count.txt, where file_count is number of file received.

```
//function to handle data tranfer
void FileTransferHandlerClient(int sockfd)
{
    //retriving current date
```

```
struct tm *local;

time_t t=time(NULL);

local=localtime(&t);

FILE *fp;

int nBytes,i=0;

char net_buf[32],file_name[512],current_date[256],temp;

file_count=0;

while (1)

{

        //saving file in dd-mm-yyyy-hh-mm-ss-RecievedFile-

        bzero(current_date,sizeof(current_date));

        bzero(net_buf,sizeof(net_buf));

 strcpy(current_date,itoa(local->tm_mday,net_buf,10));

 strcat(current_date,"-");


 bzero(net_buf,sizeof(net_buf));

 strcat(current_date,itoa((local->tm_mon)+1,net_buf,10));

 strcat(current_date,"-");


 bzero(net_buf,sizeof(net_buf));

 strcat(current_date,itoa((local->tm_year)+1900,net_buf,10));

 strcat(current_date,"-");
```

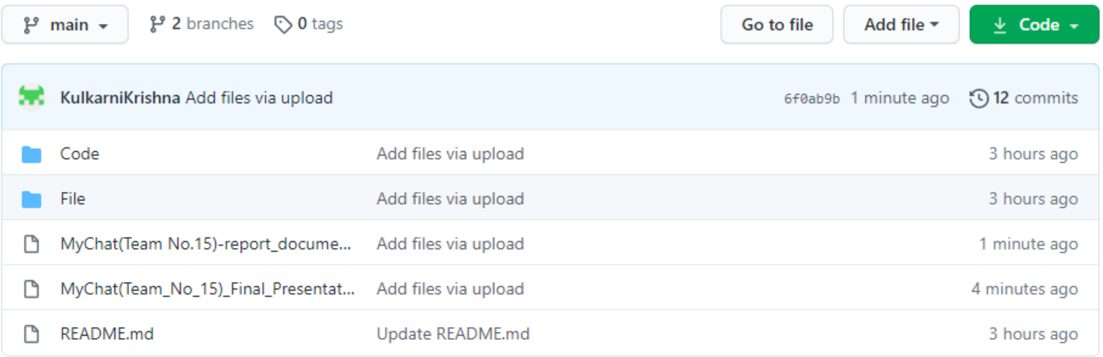
```
bzero(net_buf,sizeof(net_buf));
strcat(current_date,itoa(local->tm_hour,net_buf,10));
strcat(current_date,"-");

bzero(net_buf,sizeof(net_buf));
strcat(current_date,itoa(local->tm_min,net_buf,10));
strcat(current_date,"-");

bzero(net_buf,sizeof(net_buf));
strcat(current_date,itoa(local->tm_min,net_buf,10));
strcat(current_date,"-");

bzero(net_buf,sizeof(net_buf));
strcat(current_date,itoa(local->tm_sec,net_buf,10));
strcat(current_date,"-");

    bzero(file_name,sizeof(file_name));
    strcpy(file_name,current_date);
    strcat(file_name,"RecievedFile-");

    bzero(net_buf,sizeof(net_buf));
printf("\n\n\tEnter 'exit' as file name to terminate the program.\n\t<<.>> Please enter file name to receive : ");
if(i==0){
    scanf("%c",&temp);

    i=1;

}

scanf("%[^\n]", net_buf);

net_buf[strcspn(net_buf,"\n")]='\0';

send(sockfd, net_buf, sizeof(net_buf),0);


if(strcmp(net_buf,"exit")==0){

        break;

}


bzero(net_buf,sizeof(net_buf));

recv(sockfd, net_buf, sizeof(net_buf), 0);//recieving confirmation message for file found or not found

printf("\n\n\tConfirmation Message received : %s",net_buf);


if(strcmp(net_buf,"File Found!!")==0)

{

    printf("\n\n\t--------- Data recieving ------------\n\n");

    file_count++;

    bzero(net_buf,sizeof(net_buf));

    strcat(file_name,itoa(file_count,net_buf,10));

    printf("\n\n\t !!Recieving.......!!\n\n");

    while (1)
    {
    // receive
    bzero(net_buf,sizeof(net_buf));
    nBytes=recv(sockfd, net_buf, sizeof(net_buf), 0);


    // process recieved buffer data in to file
    if (recvFile(net_buf, sizeof(net_buf),file_name)) {
        break;
    }
    }
    printf("\n\n\t--------- Recieved Successfully ---------\n\n");
        }
    }
    printf("\n\n\tTotal Number of Files Recieved : %d\n\n",file_count);
}
```

Git-Hub Links

(K.KRISHNA) - https://github.com/KulkarniKrishna

(BACHU.RAHUL) - https://github.com/RahulBachu

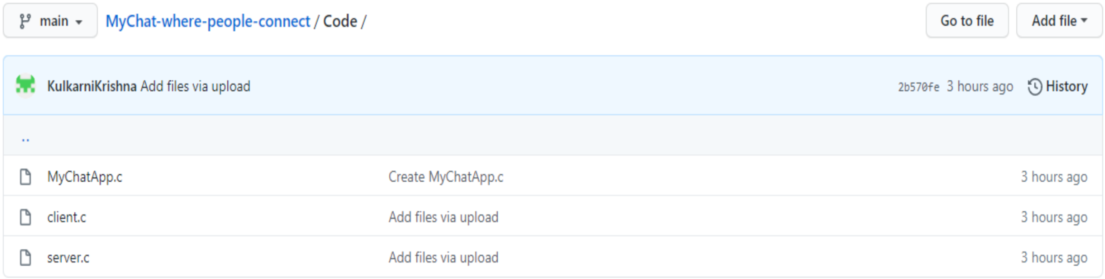
Folder Structures



KulkarniKrishna Add files via upload 6f0ab9b 1 minute ago 12 commits

Code	Add files via upload	3 hours ago
File	Add files via upload	3 hours ago
MyChat(Team No.15)-report_docume...	Add files via upload	1 minute ago
MyChat(Team_No_15)_Final_Presentat...	Add files via upload	4 minutes ago
README.md	Update README.md	3 hours ago

Code Folder



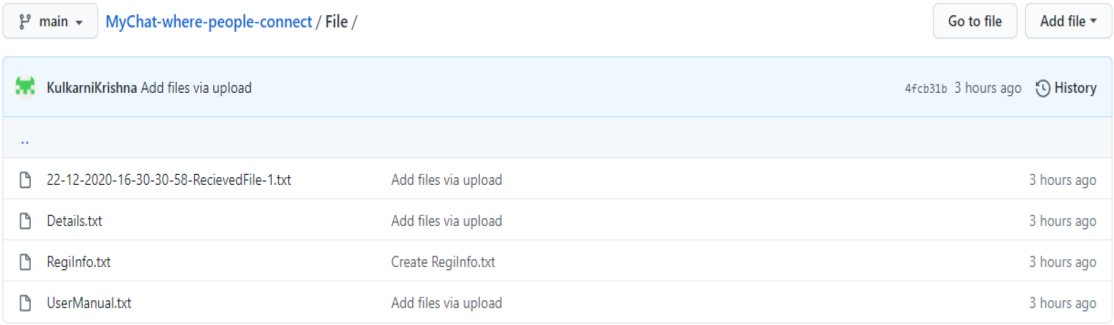
MyChat-where-people-connect / Code /

KulkarniKrishna Add files via upload 2b570fe 3 hours ago

..

MyChatApp.c	Create MyChatApp.c	3 hours ago
client.c	Add files via upload	3 hours ago
server.c	Add files via upload	3 hours ago

File Folder



MyChat-where-people-connect / File /

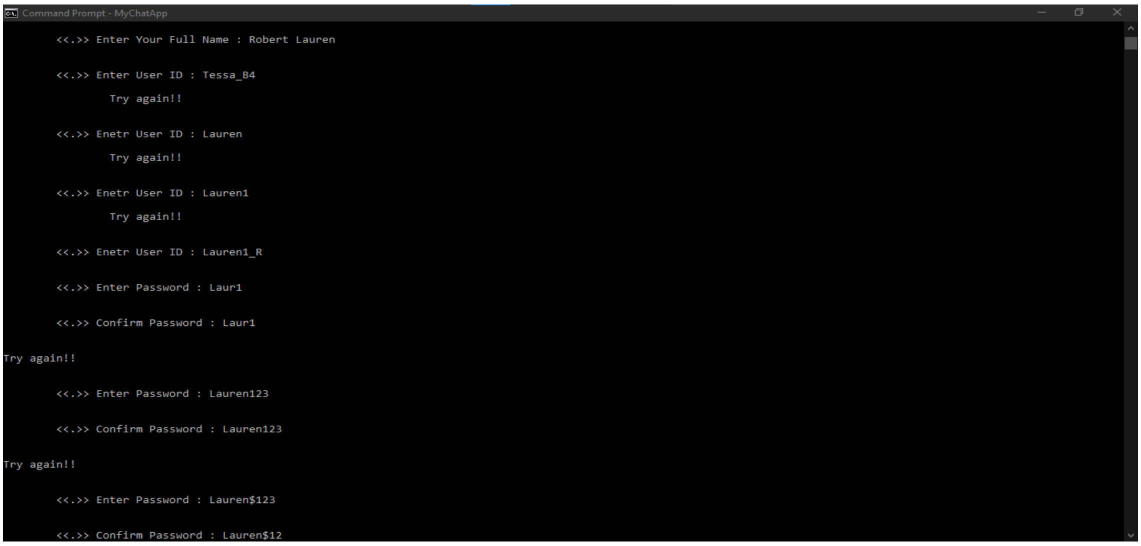
KulkarniKrishna Add files via upload 4fcb31b 3 hours ago

..

22-12-2020-16-30-30-58-RecievedFile-1.txt	Add files via upload	3 hours ago
Details.txt	Add files via upload	3 hours ago
RegiInfo.txt	Create RegiInfo.txt	3 hours ago
UserManual.txt	Add files via upload	3 hours ago

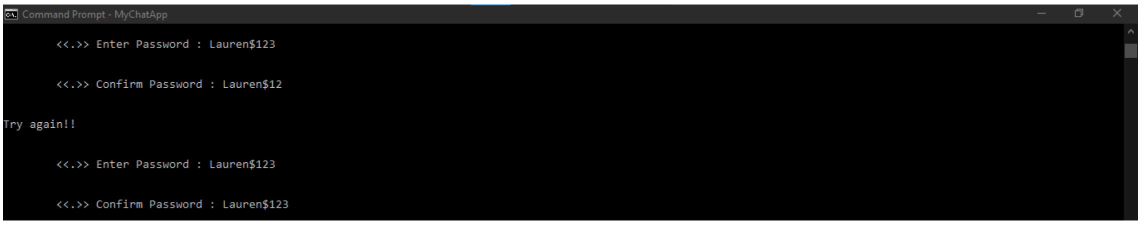
TESTING

Module -1 : Register



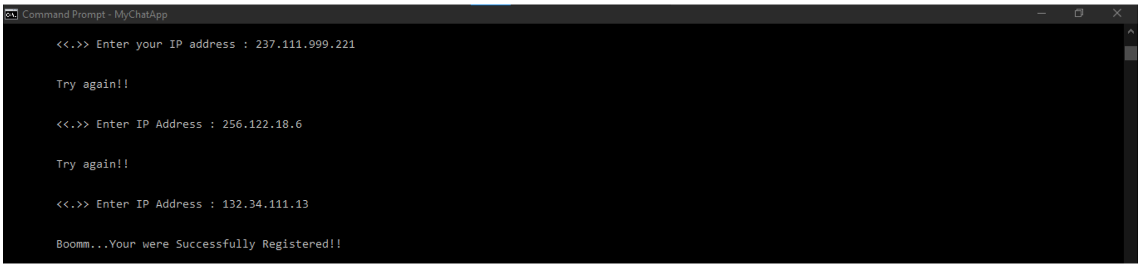
Command Prompt - MyChatApp

```
        <<.>> Enter Your Full Name : Robert Lauren

        <<.>> Enter User ID : Tessa_B4
                Try again!!

        <<.>> Enetr User ID : Lauren
                Try again!!

        <<.>> Enetr User ID : Lauren1
                Try again!!

        <<.>> Enetr User ID : Lauren1_R

        <<.>> Enter Password : Laur1

        <<.>> Confirm Password : Laur1

Try again!!

        <<.>> Enter Password : Lauren123

        <<.>> Confirm Password : Lauren123

Try again!!

        <<.>> Enter Password : Lauren$123

        <<.>> Confirm Password : Lauren$12
```



Command Prompt - MyChatApp

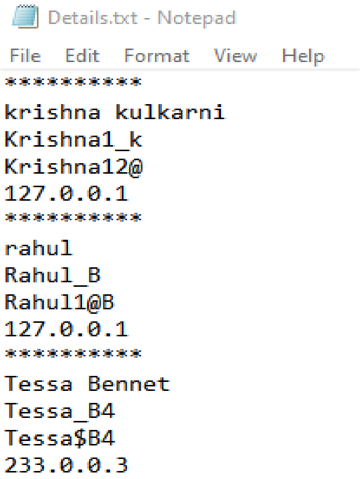
```
        <<.>> Enter Password : Lauren$123

        <<.>> Confirm Password : Lauren$12

Try again!!

        <<.>> Enter Password : Lauren$123

        <<.>> Confirm Password : Lauren$123
```



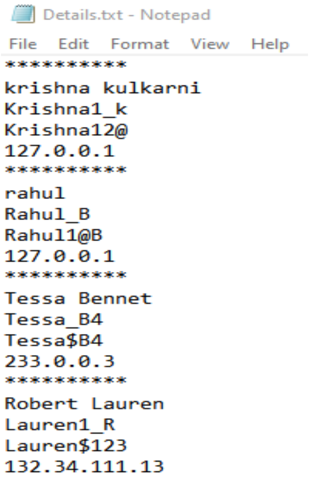
Command Prompt - MyChatApp

```
        <<.>> Enter your IP address : 237.111.999.221

        Try again!!

        <<.>> Enter IP Address : 256.122.18.6

        Try again!!

        <<.>> Enter IP Address : 132.34.111.13

        Boomm...Your were Successfully Registered!!
```

Before and After registering new user

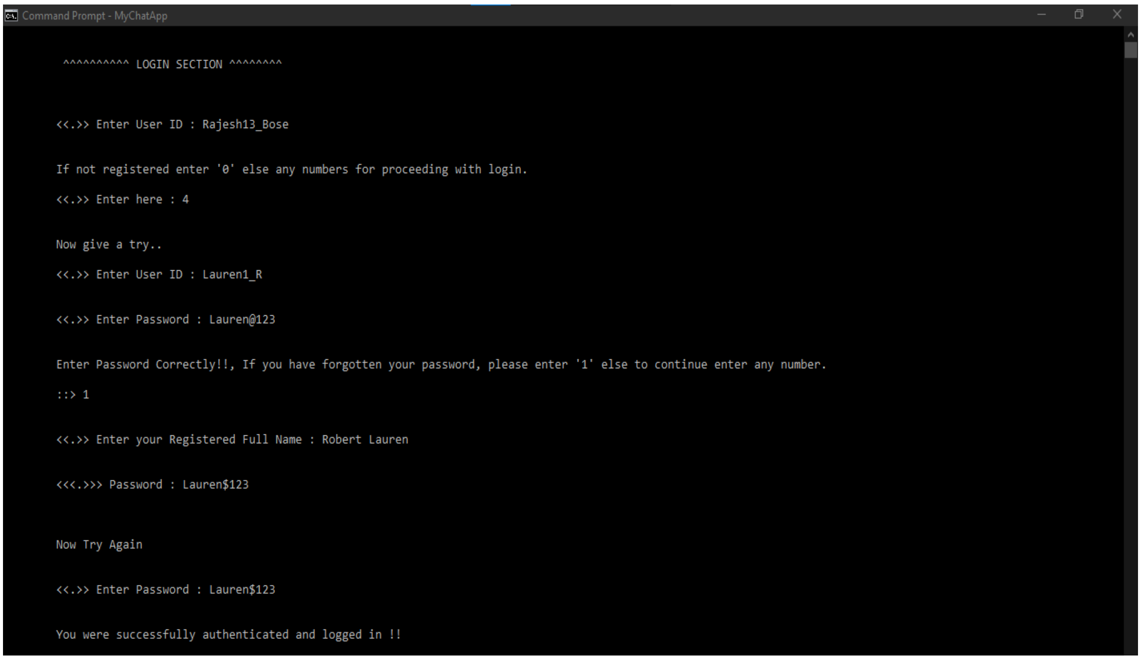


```
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
Tessa Bennet
Tessa_B4
Tessa$B4
233.0.0.3
```

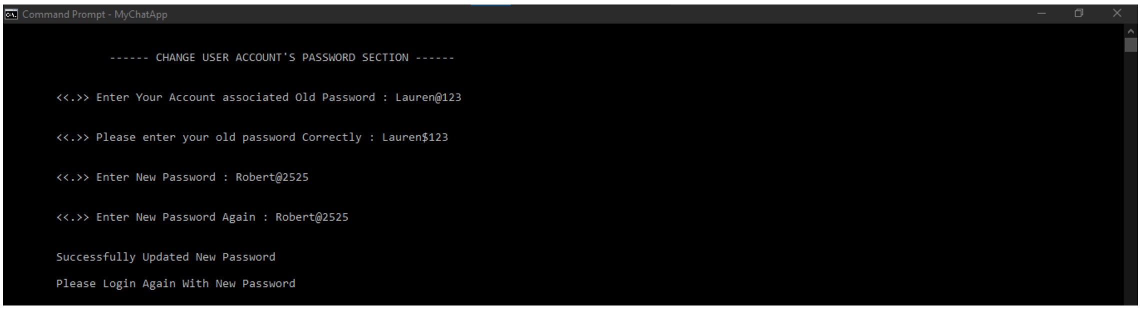


```
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
Tessa Bennet
Tessa_B4
Tessa$B4
233.0.0.3
**********
Robert Lauren
Lauren1_R
Lauren$123
132.34.111.13
```

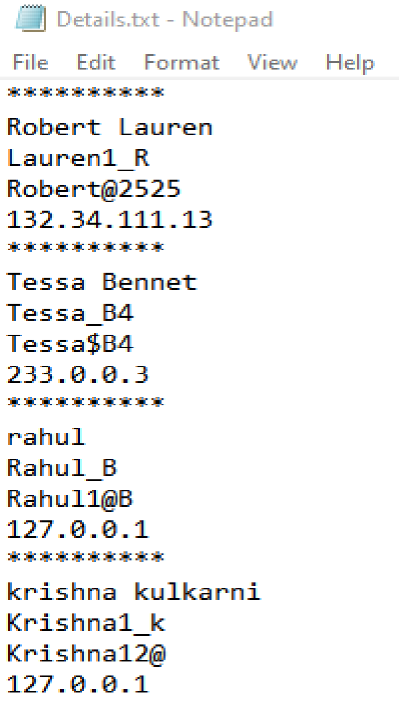
Module - 2 : Login



```
  ^^^^^^^^^^ LOGIN SECTION ^^^^^^^^


<<.>> Enter User ID : Rajesh13_Bose

If not registered enter '0' else any numbers for proceeding with login.

<<.>> Enter here : 4

Now give a try..

<<.>> Enter User ID : Lauren1_R

<<.>> Enter Password : Lauren@123

Enter Password Correctly!!, If you have forgotten your password, please enter '1' else to continue enter any number.

::> 1

<<.>> Enter your Registered Full Name : Robert Lauren

<<<.>>> Password : Lauren$123


Now Try Again

<<.>> Enter Password : Lauren$123

You were successfully authenticated and logged in !!
```

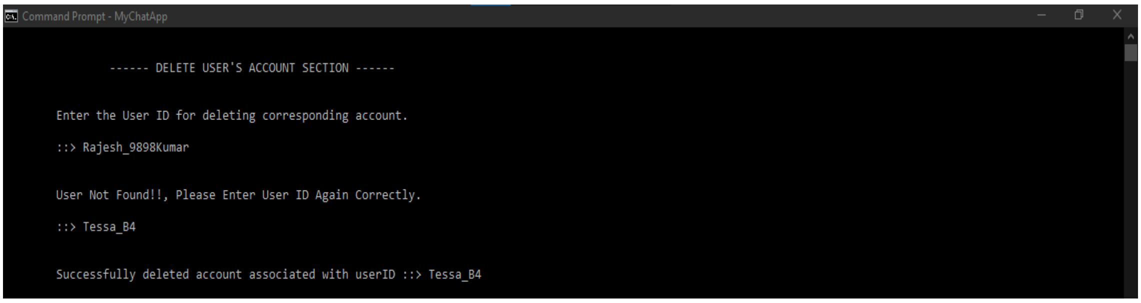


```
        ------ CHANGE USER ACCOUNT'S PASSWORD SECTION ------

<<.>> Enter Your Account associated Old Password : Lauren@123

<<.>> Please enter your old password Correctly : Lauren$123

<<.>> Enter New Password : Robert@2525

<<.>> Enter New Password Again : Robert@2525

Successfully Updated New Password

Please Login Again With New Password
```



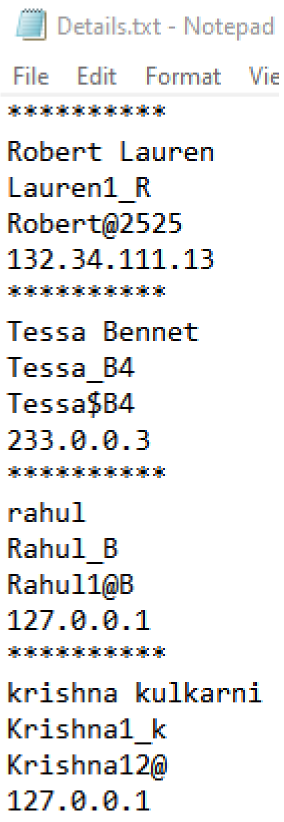
```
**********
Robert Lauren
Lauren1_R
Robert@2525
132.34.111.13
**********
Tessa Bennet
Tessa_B4
Tessa$B4
233.0.0.3
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
```

Module-4 : Delete Account

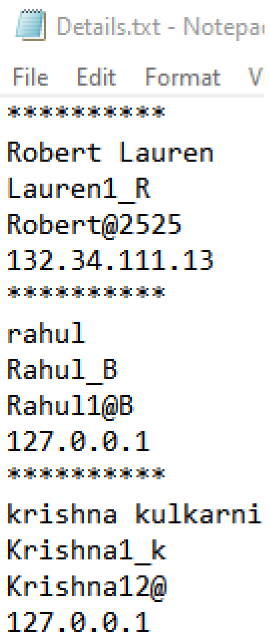


```
         ------ DELETE USER'S ACCOUNT SECTION ------

    Enter the User ID for deleting corresponding account.

    ::> Rajesh_9898Kumar

    User Not Found!!, Please Enter User ID Again Correctly.

    ::> Tessa_B4

    Successfully deleted account associated with userID ::> Tessa_B4
```

Before and After Deleting account



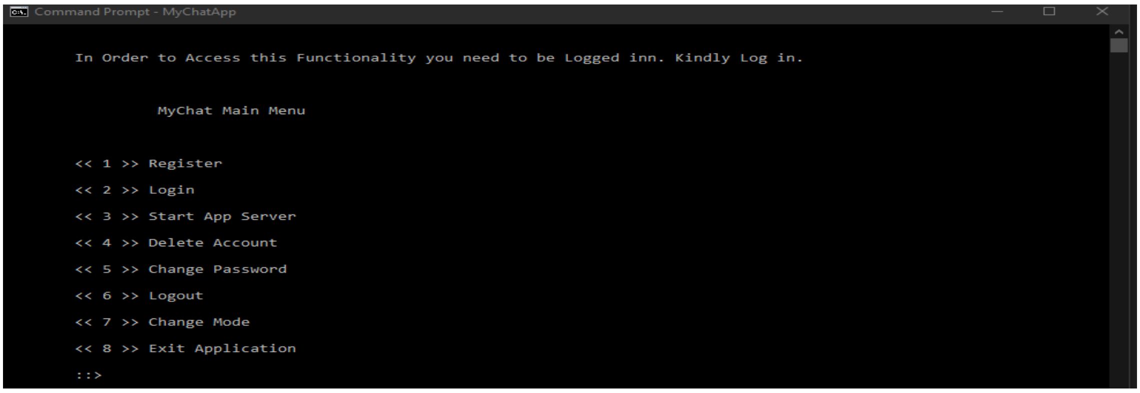
```
**********
Robert Lauren
Lauren1_R
Robert@2525
132.34.111.13
**********
Tessa Bennet
Tessa_B4
Tessa$B4
233.0.0.3
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
```



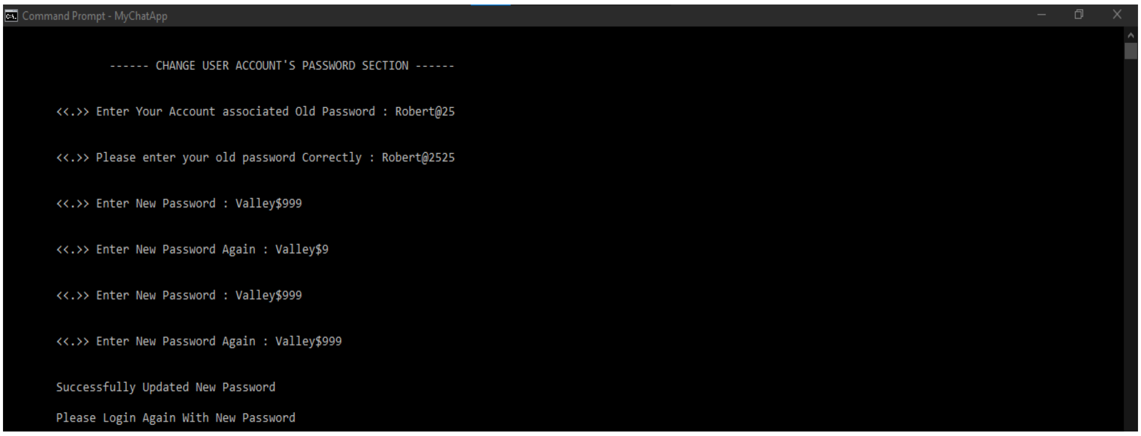
```
**********
Robert Lauren
Lauren1_R
Robert@2525
132.34.111.13
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
```

Module-5 : Change Password

In-order to Change password of your account you need be logged in.

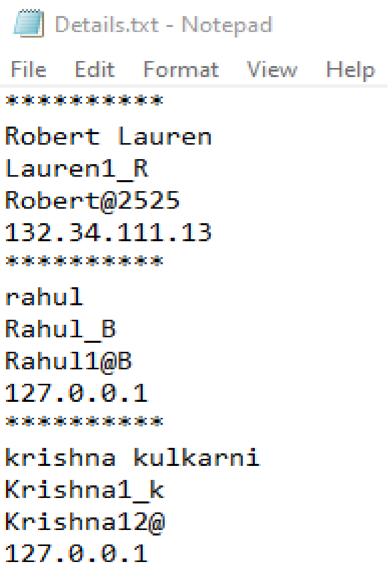


```
      In Order to Access this Functionality you need to be Logged inn. Kindly Log in.


               MyChat Main Menu


      << 1 >> Register
      << 2 >> Login
      << 3 >> Start App Server
      << 4 >> Delete Account
      << 5 >> Change Password
      << 6 >> Logout
      << 7 >> Change Mode
      << 8 >> Exit Application
      ::>
```

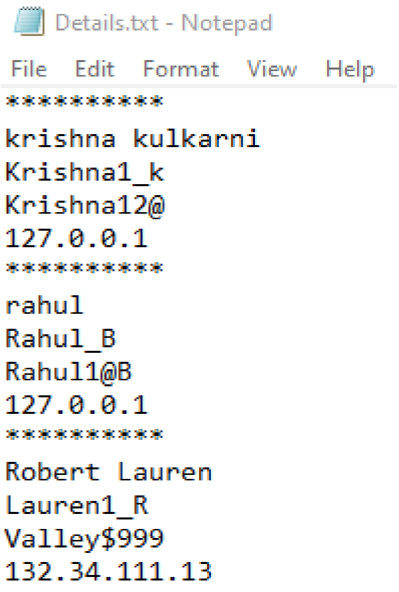


```
              ------ CHANGE USER ACCOUNT'S PASSWORD SECTION ------


       <<.>> Enter Your Account associated Old Password : Robert@25


       <<.>> Please enter your old password Correctly : Robert@2525


       <<.>> Enter New Password : Valley$999


       <<.>> Enter New Password Again : Valley$9


       <<.>> Enter New Password : Valley$999


       <<.>> Enter New Password Again : Valley$999


       Successfully Updated New Password

       Please Login Again With New Password
```

Before and After Changing Password

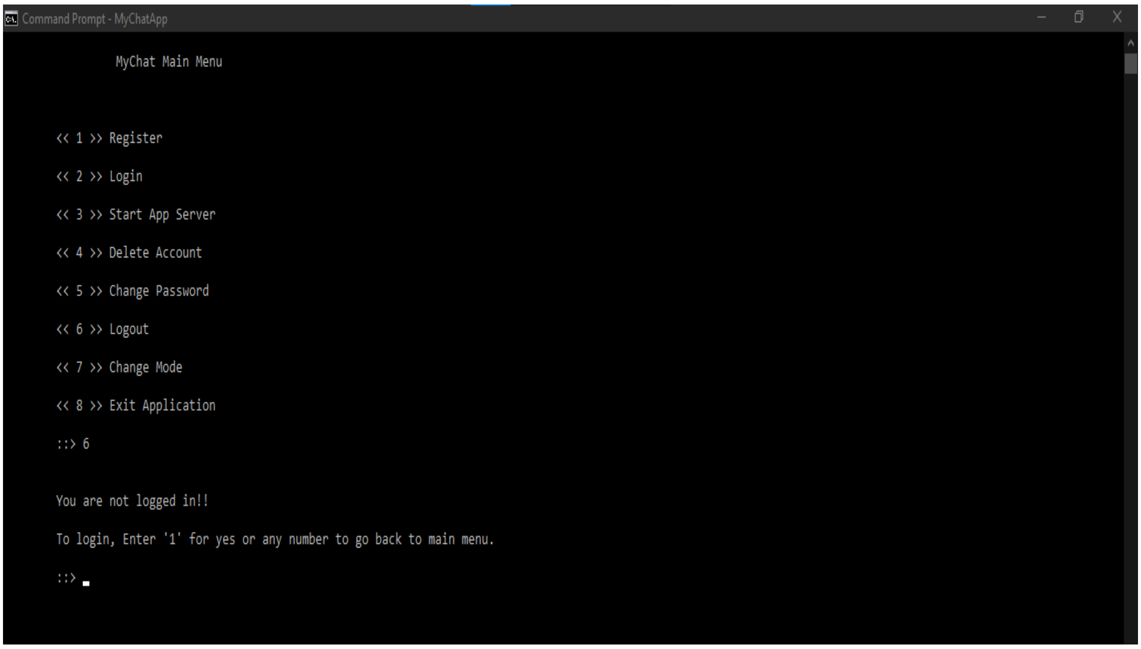


```
**********
Robert Lauren
Lauren1_R
Robert@2525
132.34.111.13
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
```

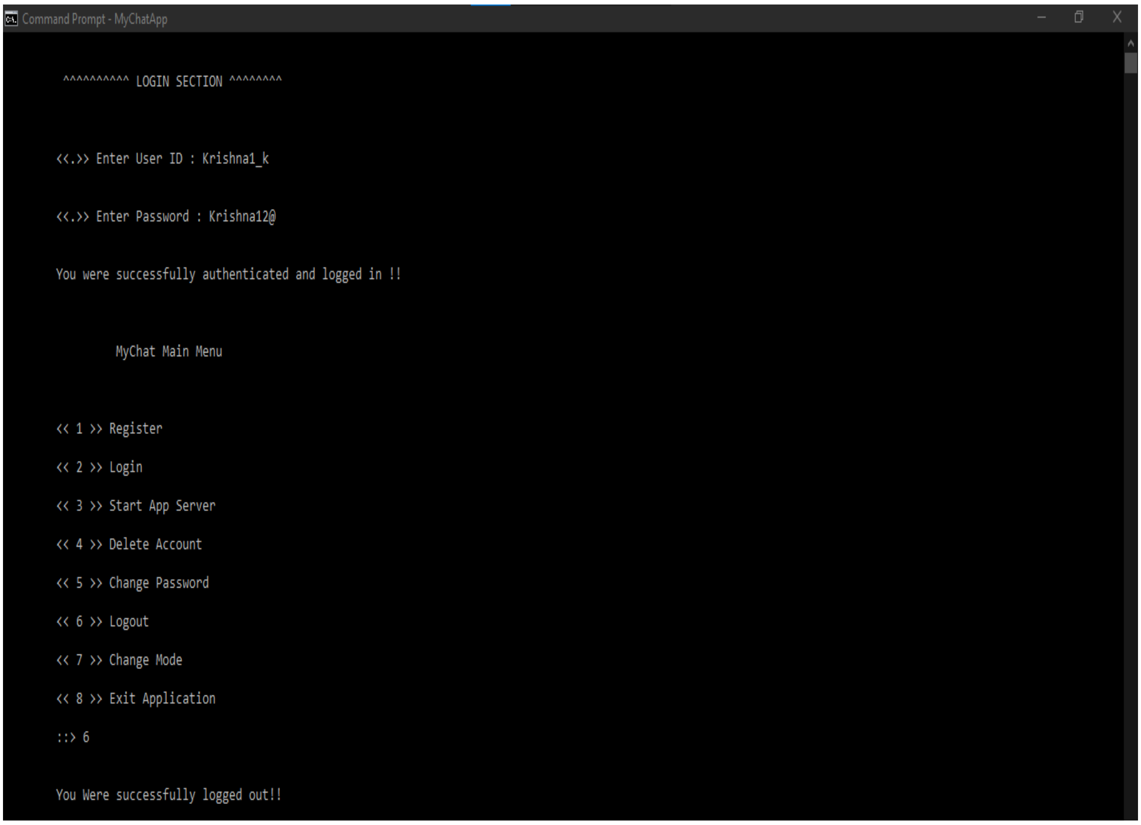


```
**********
krishna kulkarni
Krishna1_k
Krishna12@
127.0.0.1
**********
rahul
Rahul_B
Rahul1@B
127.0.0.1
**********
Robert Lauren
Lauren1_R
Valley$999
132.34.111.13
```

Module-6 : Logout



```
                MyChat Main Menu


        << 1 >> Register

        << 2 >> Login

        << 3 >> Start App Server

        << 4 >> Delete Account

        << 5 >> Change Password

        << 6 >> Logout

        << 7 >> Change Mode

        << 8 >> Exit Application

        ::> 6

        You are not logged in!!

        To login, Enter '1' for yes or any number to go back to main menu.

        ::>
```

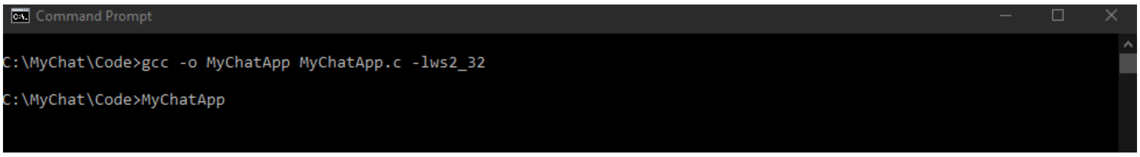


```
         ^^^^^^^^^^ LOGIN SECTION ^^^^^^^^


        <<.>> Enter User ID : Krishna1_k


        <<.>> Enter Password : Krishna12@


        You were successfully authenticated and logged in !!


                MyChat Main Menu


        << 1 >> Register

        << 2 >> Login

        << 3 >> Start App Server

        << 4 >> Delete Account

        << 5 >> Change Password

        << 6 >> Logout

        << 7 >> Change Mode

        << 8 >> Exit Application

        ::> 6

        You Were successfully logged out!!
```

RESULTS

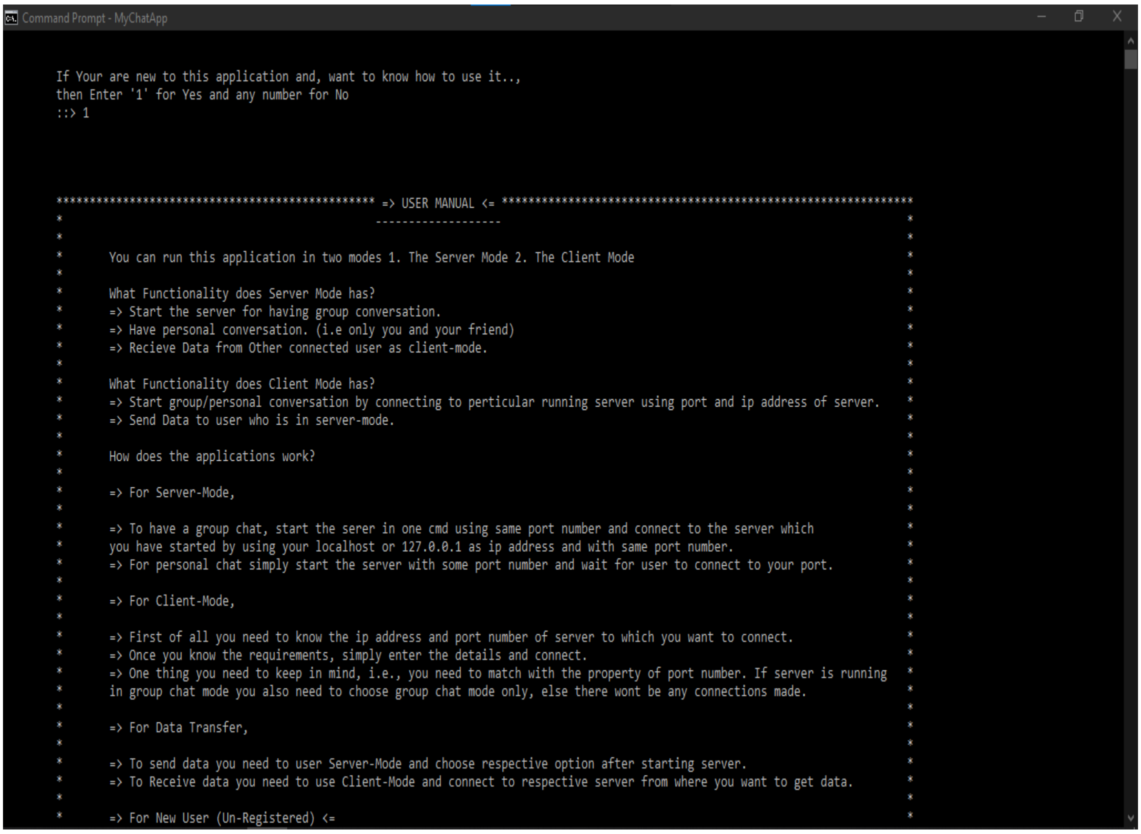
Generally most of the existing application we designed on either of the functionality that is one-to-one connection or one-to-many or data transfer hence for performing all the functionality require different application and can be less handy to user, to avoid/eliminate the problem we have developed this application such a way that user can accommodate all the three functionality in only one application and require less efforts for using this applications.

Compiling and running of this application requires an additional linking of library WS2_32

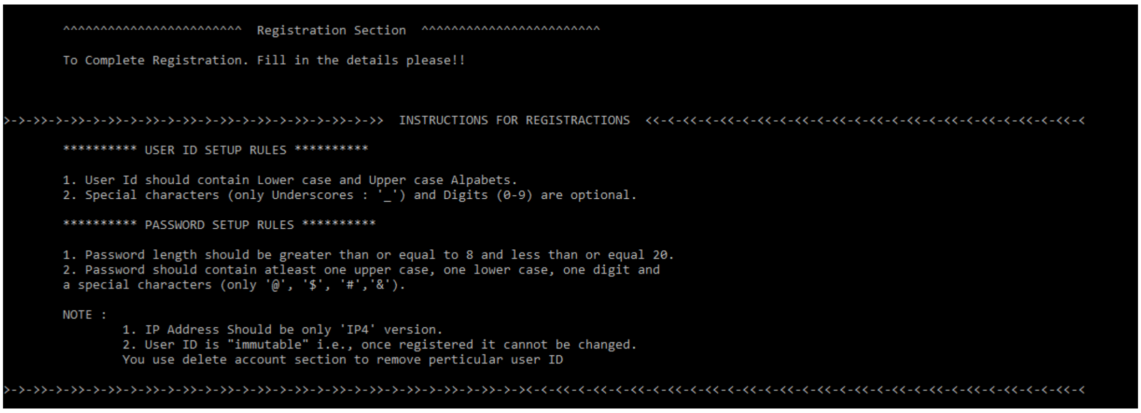


```
C:\MyChat\Code>gcc -o MyChatApp MyChatApp.c -lws2_32

C:\MyChat\Code>MyChatApp
```

Provides User manuals at every point of step while stepping in to the application.

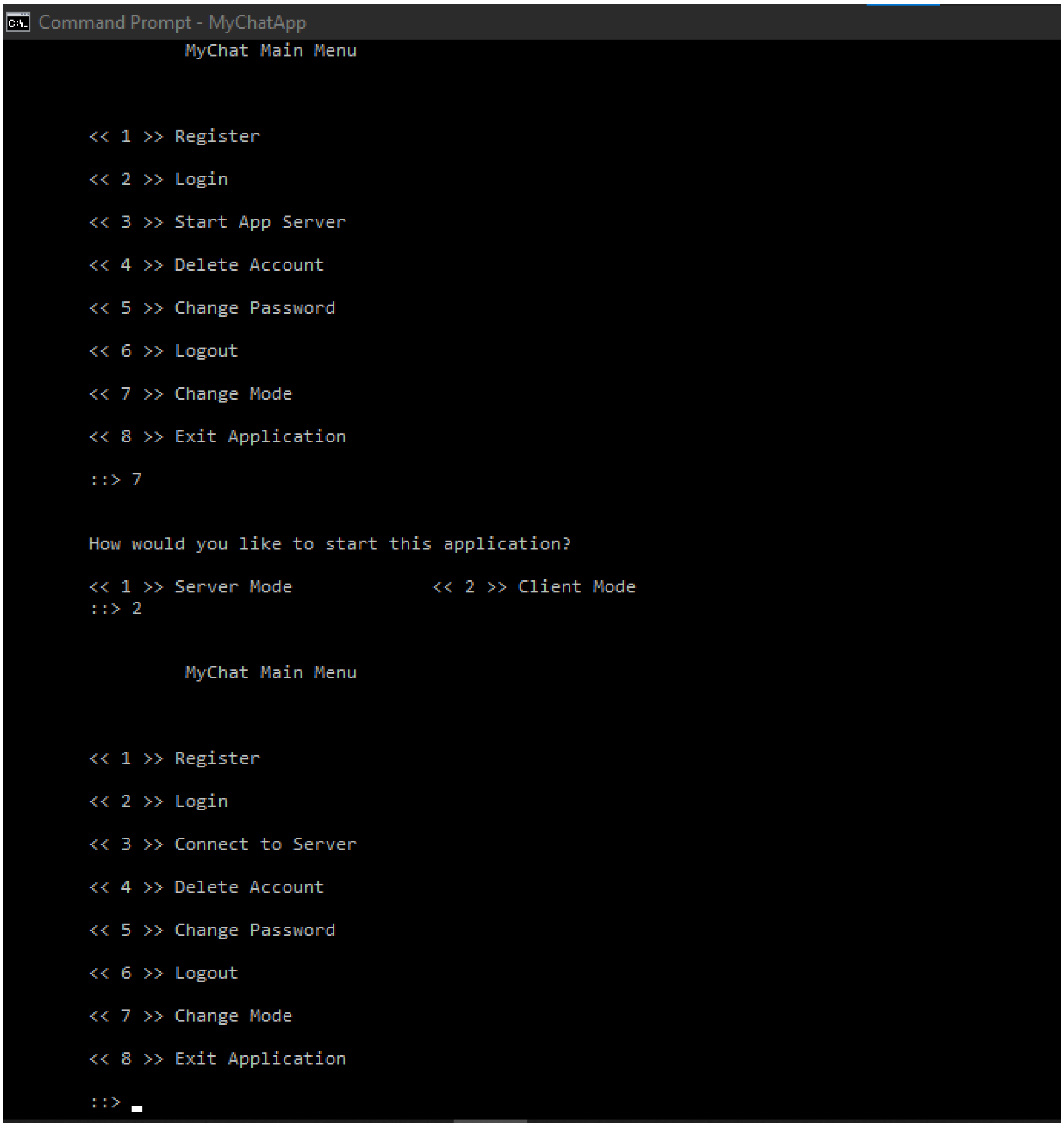


```
If Your are new to this application and, want to know how to use it..,
then Enter '1' for Yes and any number for No
::> 1



*********************************************** => USER MANUAL <= *************************************************************
*                                              -------------------                                                            *
*                                                                                                                             *
*       You can run this application in two modes 1. The Server Mode 2. The Client Mode                                      *
*                                                                                                                             *
*       What Functionality does Server Mode has?                                                                              *
*       => Start the server for having group conversation.                                                                    *
*       => Have personal conversation. (i.e only you and your friend)                                                         *
*       => Recieve Data from Other connected user as client-mode.                                                             *
*                                                                                                                             *
*       What Functionality does Client Mode has?                                                                              *
*       => Start group/personal conversation by connecting to perticular running server using port and ip address of server.  *
*       => Send Data to user who is in server-mode.                                                                           *
*                                                                                                                             *
*       How does the applications work?                                                                                       *
*                                                                                                                             *
*       => For Server-Mode,                                                                                                   *
*                                                                                                                             *
*       => To have a group chat, start the serer in one cmd using same port number and connect to the server which            *
*       you have started by using your localhost or 127.0.0.1 as ip address and with same port number.                        *
*       => For personal chat simply start the server with some port number and wait for user to connect to your port.         *
*                                                                                                                             *
*       => For Client-Mode,                                                                                                   *
*                                                                                                                             *
*       => First of all you need to know the ip address and port number of server to which you want to connect.               *
*       => Once you know the requirements, simply enter the details and connect.                                              *
*       => One thing you need to keep in mind, i.e., you need to match with the property of port number. If server is running *
*       in group chat mode you also need to choose group chat mode only, else there wont be any connections made.             *
*                                                                                                                             *
*       => For Data Transfer,                                                                                                 *
*                                                                                                                             *
*       => To send data you need to user Server-Mode and choose respective option after starting server.                      *
*       => To Receive data you need to use Client-Mode and connect to respective server from where you want to get data.      *
*                                                                                                                             *
*       => For New User (Un-Registered) <=                                                                                    *
```



```
        ^^^^^^^^^^^^^^^^^^^^^^^^  Registration Section  ^^^^^^^^^^^^^^^^^^^^^^^^

        To Complete Registration. Fill in the details please!!


>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>  INSTRUCTIONS FOR REGISTRACTIONS  <<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<

        ********** USER ID SETUP RULES **********

        1. User Id should contain Lower case and Upper case Alpabets.
        2. Special characters (only Underscores : '_') and Digits (0-9) are optional.

        ********** PASSWORD SETUP RULES **********

        1. Password length should be greater than or equal to 8 and less than or equal 20.
        2. Password should contain atleast one upper case, one lower case, one digit and
        a special characters (only '@', '$', '#','&').

        NOTE :
                1. IP Address Should be only 'IP4' version.
                2. User ID is "immutable" i.e., once registered it cannot be changed.
                You use delete account section to remove perticular user ID

>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>->->>-><-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<-<<-<
```

Flexibility in changing mode from client to server and vice-versa easily withing one app



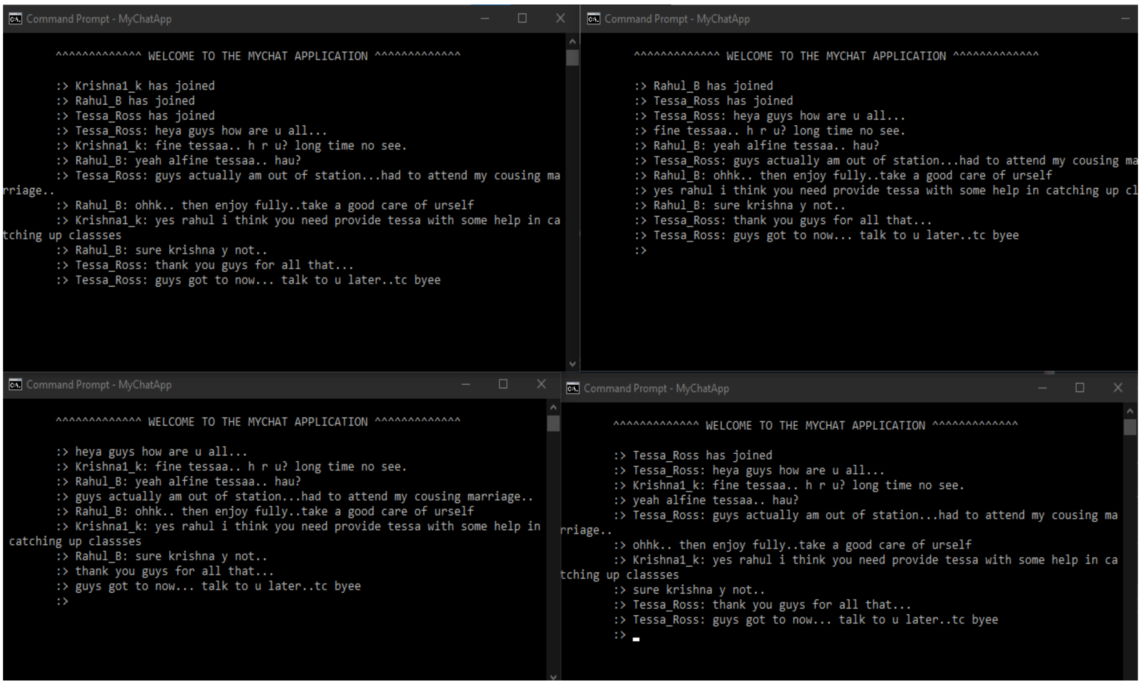
Command Prompt - MyChatApp

```
              MyChatApp Main Menu


       << 1 >> Register

       << 2 >> Login

       << 3 >> Start App Server

       << 4 >> Delete Account

       << 5 >> Change Password

       << 6 >> Logout

       << 7 >> Change Mode

       << 8 >> Exit Application

       ::> 7


       How would you like to start this application?

       << 1 >> Server Mode              << 2 >> Client Mode
       ::> 2


              MyChat Main Menu


       << 1 >> Register

       << 2 >> Login

       << 3 >> Connect to Server

       << 4 >> Delete Account

       << 5 >> Change Password

       << 6 >> Logout

       << 7 >> Change Mode

       << 8 >> Exit Application

       ::> _
```

Most attractive and powerful feature of group chatting and personal chatting

After logging and checking all the required validation, users are allowed for connection on respective ports and ip addresses,

Here, Server(Top-Left panel) and rest three are the clients/users who have connected to the server. Server is running on Port - 78989 and clients have joined the server using LocalHost(127.0.0.1). Since, all the clients are on same system, if not they can provide their own IP- address.

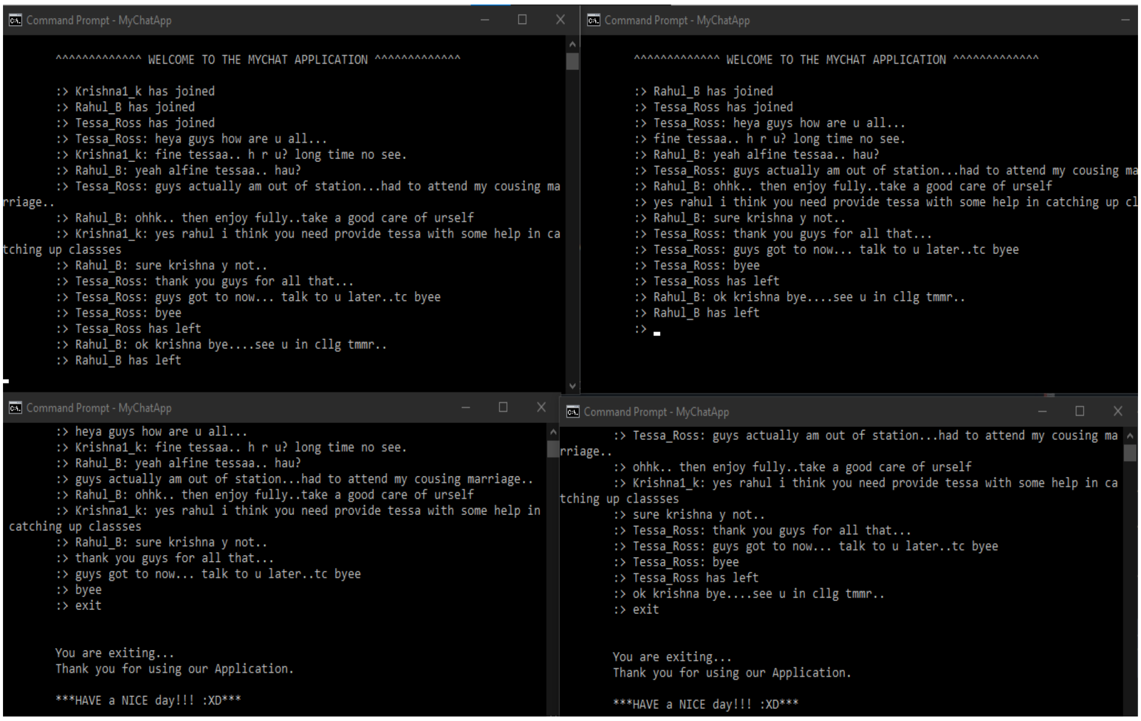


```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> Krishna1_k has joined
       :> Rahul_B has joined
       :> Tessa_Ross has joined
       :> Tessa_Ross: heya guys how are u all...
       :> Krishna1_k: fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
rriage..
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in ca
tching up classses
       :> Rahul_B: sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
```

```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> Rahul_B has joined
       :> Tessa_Ross has joined
       :> Tessa_Ross: heya guys how are u all...
       :> fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> yes rahul i think you need provide tessa with some help in catching up cl
       :> Rahul_B: sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
       :>
```

```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> heya guys how are u all...
       :> Krishna1_k: fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> guys actually am out of station...had to attend my cousing marriage..
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in
catching up classses
       :> Rahul_B: sure krishna y not..
       :> thank you guys for all that...
       :> guys got to now... talk to u later..tc byee
       :>
```

```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> Tessa_Ross has joined
       :> Tessa_Ross: heya guys how are u all...
       :> Krishna1_k: fine tessaa.. h r u? long time no see.
       :> yeah alfine tessaa.. hau?
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
rriage..
       :> ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in ca
tching up classses
       :> sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
       :> _
```



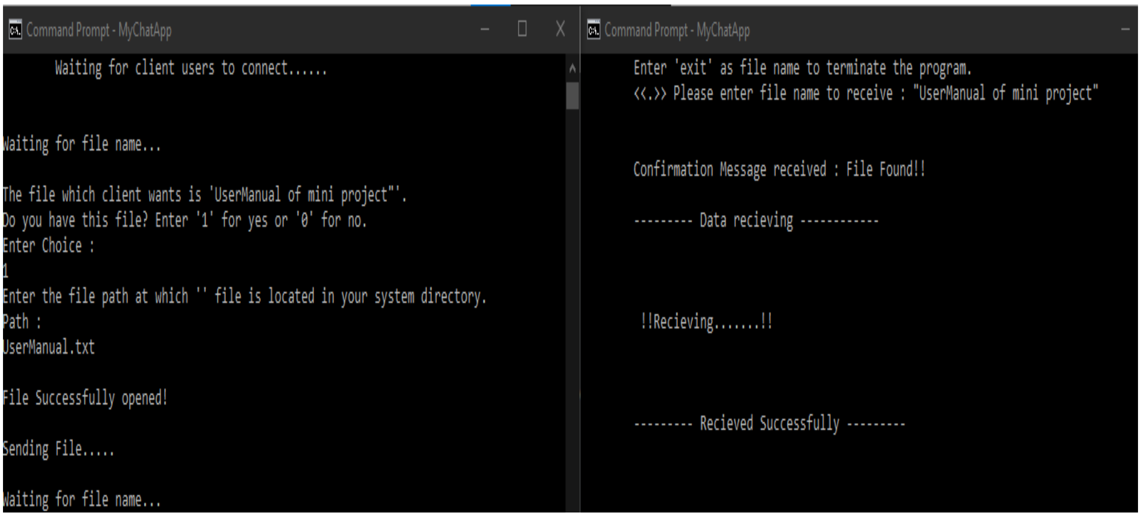
```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> Krishna1_k has joined
       :> Rahul_B has joined
       :> Tessa_Ross has joined
       :> Tessa_Ross: heya guys how are u all...
       :> Krishna1_k: fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
rriage..
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in ca
tching up classses
       :> Rahul_B: sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
       :> Tessa_Ross: byee
       :> Tessa_Ross has left
       :> Rahul_B: ok krishna bye....see u in cllg tmmr..
       :> Rahul_B has left
_
```

```
Command Prompt - MyChatApp

       ^^^^^^^^^^^^^ WELCOME TO THE MYCHAT APPLICATION ^^^^^^^^^^^^^

       :> Rahul_B has joined
       :> Tessa_Ross has joined
       :> Tessa_Ross: heya guys how are u all...
       :> fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> yes rahul i think you need provide tessa with some help in catching up cl
       :> Rahul_B: sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
       :> Tessa_Ross: byee
       :> Tessa_Ross has left
       :> Rahul_B: ok krishna bye....see u in cllg tmmr..
       :> Rahul_B has left
       :> _
```

```
Command Prompt - MyChatApp
       :> heya guys how are u all...
       :> Krishna1_k: fine tessaa.. h r u? long time no see.
       :> Rahul_B: yeah alfine tessaa.. hau?
       :> guys actually am out of station...had to attend my cousing marriage..
       :> Rahul_B: ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in
catching up classses
       :> Rahul_B: sure krishna y not..
       :> thank you guys for all that...
       :> guys got to now... talk to u later..tc byee
       :> byee
       :> exit


       You are exiting...
       Thank you for using our Application.

       ***HAVE a NICE day!!! :XD***
```

```
Command Prompt - MyChatApp
       :> Tessa_Ross: guys actually am out of station...had to attend my cousing ma
rriage..
       :> ohhk.. then enjoy fully..take a good care of urself
       :> Krishna1_k: yes rahul i think you need provide tessa with some help in ca
tching up classses
       :> sure krishna y not..
       :> Tessa_Ross: thank you guys for all that...
       :> Tessa_Ross: guys got to now... talk to u later..tc byee
       :> Tessa_Ross: byee
       :> Tessa_Ross has left
       :> ok krishna bye....see u in cllg tmmr..
       :> exit


       You are exiting...
       Thank you for using our Application.

       ***HAVE a NICE day!!! :XD***
```

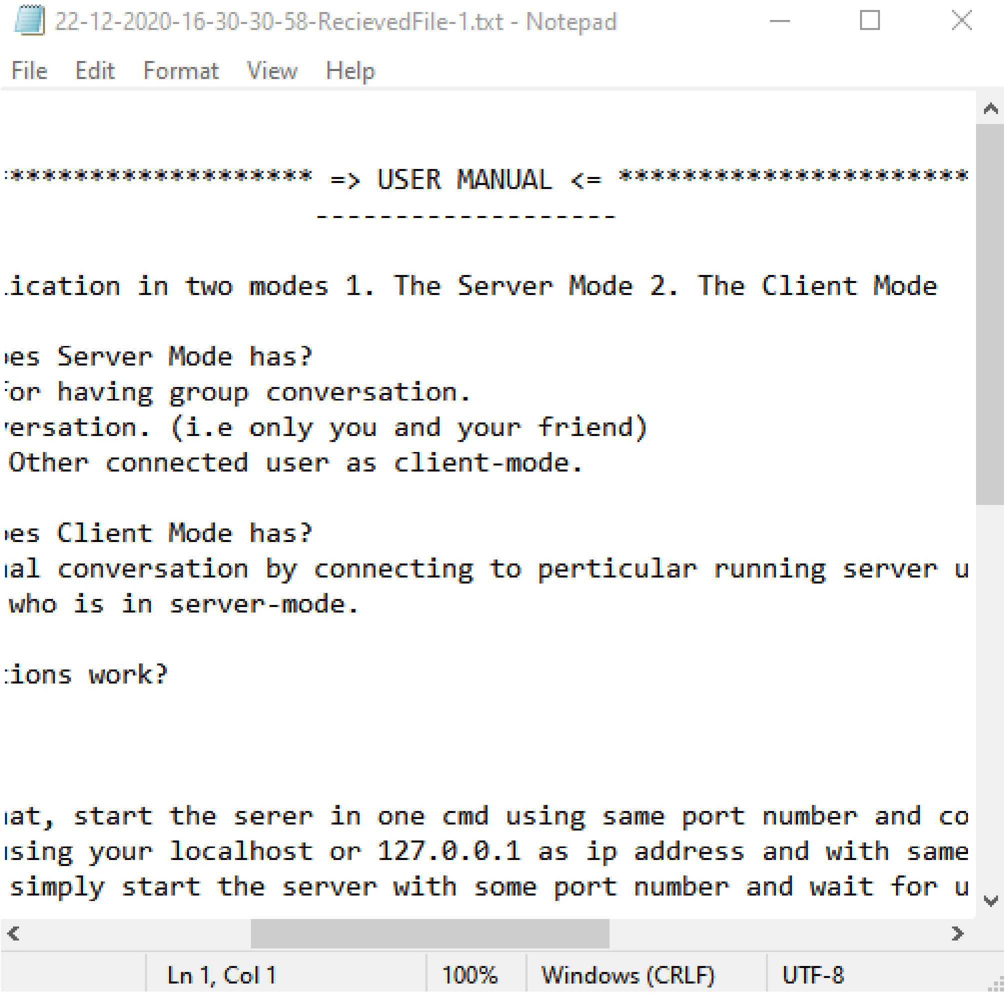
In the case of transferring data the received data is stored in the file named dd-mm-yyyy-hr-min-sec-msec-RecievedFile-file_count format for example, 22-12-2020-16-30-30-58-RecievedFile-1.



```
      Waiting for client users to connect......


Waiting for file name...

The file which client wants is 'UserManual of mini project"'.
Do you have this file? Enter '1' for yes or '0' for no.
Enter Choice :
1
Enter the file path at which '' file is located in your system directory.
Path :
UserManual.txt

File Successfully opened!

Sending File.....

Waiting for file name...
```

```
      Enter 'exit' as file name to terminate the program.
      <<.>> Please enter file name to receive : "UserManual of mini project"


      Confirmation Message received : File Found!!

      -------- Data recieving -----------



       !!Recieving.......!!



      -------- Recieved Successfully --------
```

Recieved file



```
:******************* => USER MANUAL <= *********************
                    --------------------

.ication in two modes 1. The Server Mode 2. The Client Mode

ıes Server Mode has?
'or having group conversation.
'ersation. (i.e only you and your friend)
 Other connected user as client-mode.

ıes Client Mode has?
ıal conversation by connecting to perticular running server u
 who is in server-mode.

:ions work?



ıat, start the serer in one cmd using same port number and co
ısing your localhost or 127.0.0.1 as ip address and with same
 simply start the server with some port number and wait for u
```

ADDITIONAL KNOWLEDGE ACQUIRED

Implementing and developing the MyChat Application - Mini project helped us to understand the one of the most robust feature that is Socket Programming technology in C which forms the basic for the Server-Client Connections in Networking field.

Understanding and analysing the real time scenario’s and implementing/developing the application to solve the problem gave a effective way to apply the concepts that we have learnt. The fundamental and basic concepts which form the root for networking and system programming like Sockets Functionality, TCP/UDP Protocols, DNS networking concepts(basics), Multi - threading for Multiple Client-Single Server Connections.

The encryption algorithm that helped to code and decode the data while transferring data and handle client connections using threads except being other technologies like select and fork, since threading concept is applicable in most of the other programming languages which makes it as fundamental and robust way to handle works/parallel connections in networking.

DISCUSSION AND FUTURE WORK

MyChat holds the good functionality and flexibility on having conversation and transfer data over systems. Since, it is developed on Socket Programming in C which provides a robust and large area/functions to develop this applications further.

We have developed this application in order to give user a better flexibility and data transfer protection, at the present we have included the encryption at basic level still that can be enhanced.

- The first and foremost update regarding the application will be increasing the protection on data transfer by updating the encryption algorithms at higher level so that user will be free from miss reading of data.
- Theme Setting - User can customize the application font and background colors based on users choice. That will give a handy effect on using application.
- Increase the fluency while having conversation in Group and Personal chat Modes.
- Efficiently and accurately handle the exception process so that user will get an idea on which part the application has failed and where and how he can solve it.

REFERENCES

- https://docs.microsoft.com/en-us/windows/win32/winsock/getting-started-with-winsock
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- https://nptel.ac.in/courses/106/105/106105183/ (core from lecture 19)