

Multi-User Chat Application



R. Gayathri, C. Kalieswari

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

Key Words: Java, Internet.

I. INTRODUCTION

The chatting application has huge impact on day to day life. There are numerous chatting application available in this world. Each application has different additional features varying from other applications. These application organizations compete with each other and add some competing features during each release. They have reached people much and have an impact on people's life. People find a better application from an available internet application which they feel much reliable and secure. Some of the available chatting applications that are available in these days are Whatsapp, Facebook, Instagram, Hike, etc...The above mentioned applications have billion users all over the world. Those companies are one of the top companies in the world. They have higher revenue per year and have many employees for their organizations developing additional features to compete with other organizations during their each release. These applications have different features and follows different ways to ensure security of their user data. Today a data theft is the major crime and most people are involved in it. There are many cases being filed these days about personal data loss. So the organizations have to ensure the security from data loss by the third party data crisis. The basic chatting system should involve both sending and receiving processes simultaneously. In this application both

sending and receiving messages simultaneously happens through java multi-threading concept.

II. OBJECTIVE

- To implement a chat system for private network or organizations.
- To ensure security of the message and private data that will be shared over the network.
- To store confidential data in secure way.
- To develop a two way communication system.
- To add additional features from other traditional systems that is available in the market.
- To allow both group chat and private chat.
- To enable easy and fast way of communication between people.
- To ensure unlimited data transfer without any restriction of size
- To make people get connected to others at anytime, from anywhere.
- To transfer different file formats over the system.
- To have unlimited size to store message data.

III. SCOPE OF THE PROJECT

As this world is into the internet and nothing happens without it. This application will have huge impact. It can reach people. Private organizations like IT parks, Colleges, Institutions prefer to have separate chat applications over public one. Hence this application can be implemented over there. Thus, this application has a huge impact over the people, mostly in private networks. This provides good scope for developing a better application with additional features than other traditional ones in the world.

IV. PROBLEM STATEMENT

1. Private organizations aim at having separate chat system to communicate with people and to share resources securely to them.
2. Sharing resources through other public applications are not much reliable and secure.
3. There are several restrictions in public applications.
4. Public applications are easily affected by network threats, etc.
5. This application extends one-way messaging to multi way communication

V. REQUIREMENTS

Most primary and basic requirement for deploying the chat system are network connection.

Revised Manuscript Received on May 15, 2020.

* Correspondence Author

R. Gayathri*, Electronics and Communication Engineering, National Engineering College, Kovilpatti, Tamilnadu E-mail: gayurenga@gmail.com

C. Kalieswari, Electronics and Communication Engineering, National Engineering College Kovilpatti, Tamilnadu E-mail: kalieswari_ece@nec.edu.in

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](http://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Multi-User Chat Application

Software Requirements:

Languages used: HTML, CSS, JS AND JAVA

Database : PGSQL Hardware Requirements:

Processor : Intel Core 2 Duo 1.8 GHz

Ram : 1 GB

HDD : 1.5GB

VI. FEATURES IMPLEMENTED

MESSAGING

A chat application should allow both sending and receiving process in simultaneous way. This is achieved in this application with java multi-threading concept.

GROUP CHAT

Another important feature in chat application is group chat which is implemented in this application. It allows people to chat. Message will be sent to all the users in chat room along with the name of the user who has sent the message Users who are available in the chat room will receive the message.

VII. ARCHITECTURE

This application has been implemented based on client/server model.

A. SERVER

A server may be a computer dedicated to running a server application. Organizations have dedicated computer for server application which has to be maintained periodically and has to be monitored continuously for traffic loads would never let them go down which affects the company's revenue. Most organizations have a separate monitoring system to keep an eye over their server so that they can find their server downtime before its clients. These server computers accept clients over network connections that are requested. The server responds back by sending responses being requested. There are many different server applications that vary based on their dedicated work. Some are involved for accepting requests and performing all dedicated works like business application servers while others are just to bypass the request like a proxy server. These server computers must have a faster Central processing unit, faster and more plentiful RAM, and bigger hard disc drive. More obvious distinctions include redundancy in power supplies, network connections, and RAID also as Modular design.

B. CLIENT

A client is a software application code or a system that requests another application that is running on dedicated machine called Server. These clients need not be connected to the server through wired communication. Wireless communication takes place in this process. Client with a network connection can send a request to the server.

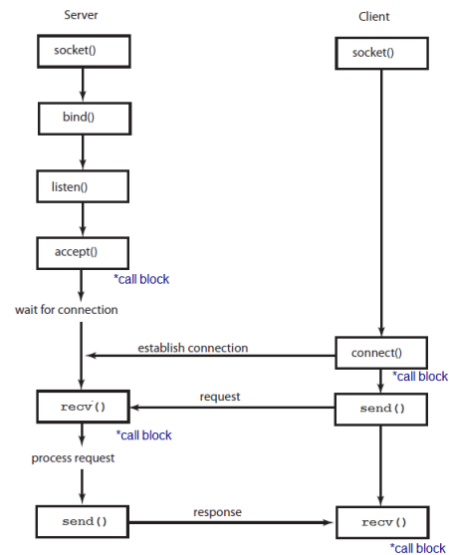


FIG 1: BLOCK DIAGRAM

DESCRIPTION

1. A static Server socket is created in beginning which is then bind with host and port .
2. After server instantiation Socket in particular host, it begins to listen in the particular port. Then the server is made to accept the request from the client through the particular port.
3. After starting the server, it can accept the requests from clients.
4. The socket is instantiated in client side to connect to the server.
5. A new Server Thread using socket is created to accept all the requests from multiple clients.
6. After accepting the request both read and write operation occurs simultaneously, clients who request the server can communicate with each other and share resources.
7. After finishing the communication the socket is closed both in the client and server side.

VIII. RESULTS AND DISCUSSIONS

Outputs for chat application are shown in below figures

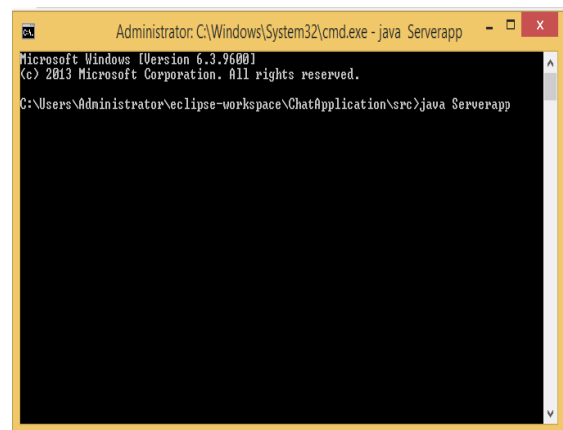


FIG 2: SERVER APPLICATION

The above figure shows server output .First server must be started to bind the socket to local host and dedicated port. After starting the server, it begins to accept the client request and communication takes place.

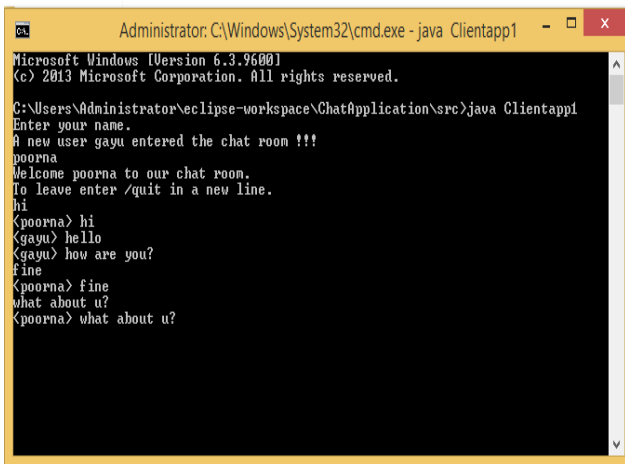


FIG 3: CLIENT APPLICATION 1



FIG 4: CLIENT APPLICATION 2

The above figures show the output of the multi-user chat application. Whenever new user enters the chat box, they must enter their names. After getting name, server informs about the new user to all other users. When any user sends the message it is sent to all the receivers along with the name. Maximum user count is set to which the user can get connection. Once the client count exceeds the server intimates that server is busy and the client will wait until the server becomes idle. Any user can leave the chat box once it sends the message “BYE”. Once the sender sends “BYE” it will be removed from the chat and all other users will be informed about it. Once the user leaves the chat box other users which are waiting for server to become idle will get a chance to communicate. Instead of sending message to all the users in the chat box message can be forwarded to particular user. When the sender sends message along with @ and receiver name then message will be forwarded to mentioned client along with sender’s name.

IX. FUTURE ENHANCEMENTS

Further enhancements would be involved in the area of security, video call, large size transfer and some additional features that are required in the competing world. Other work is involving in implementation of the system in private networks.

X. CONCLUSION

The chat application provides a better and flexible system for chatting. It is developed with recent advanced technologies in a way to provide a reliable system. Main advantages of the system are instant messaging, real-world connectivity, adding security, group chat, etc. This application can find better need in the market for most of the organizations aim at having private applications for them. Additional features will also be included in the system based on the public need which includes conference call, video chat. Location share, etc. based on the need

REFERENCES

1. “Multiusers communicating system in client/server mode based on www”, by Shen Ruiming , Computer Engineering , 1998(2):53-58
2. ”The design of instant communicating system in server side”, by Huan Kai, Tao Hongcai, Journal of Chengdu University of Information Technology, 2006(4):535-538
3. “The data visual development and application based on three layers structure ”, by Li Zuohong, Luo Zhijia, Microcomputer Information, 2006(21):182-185
4. ”Implementation of enterprise instant communicating system based on application layer with java programming”, by Lin Jianbing, Zou Jinan, vol.27, no. 6, pp. 56-61, July, 2015.
5. The Java Tutorials, “Lesson: All about Sockets”.
6. “Predicting Defects for Eclipse,” by T. Zimmermann, R. Premraj, and A. Zeller, in Proceedings of the Third International Workshop on Predictor Models in Software Engineering, Washington, DC, USA, 2007, p. 9.
7. “Private information retrieval,” by B. Chor, E. Kushilevitz, O. Goldreich, and M. Sudan. J. ACM, vol. 45, no. 6, pp. 965–981, 1998.
8. <https://www.w3schools.com/java/>
9. <https://www.javatpoint.com/java-tutorial>
10. <https://www.javatpoint.com/socket-programming>
11. <http://sufuq.com/books/java/Java%20Network%20Programming,%204th%20Edition.pdf>
12. <http://www.buyya.com/java/Chapter13.pdf>

AUTHORS PROFILE



R. GAYATHRI Under Graduate Student Electronics and Communication Engineering, National Engineering College, Kovilpatti, Tamil Nadu- 628 503. Her research interest includes web application development.



C. KALIESWARI received M.E degree in Electronics and Communication Engineering. She is currently working in National Engineering College, Kovilpatti, Tamil Nadu- 628 503. as Assistant Professor. Her research interest includes VLSI.