National University
of computer and emerging sciences

Project Report

Title: Chat Messenger using UDP

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Abstract

This report presents a detailed overview in developing a client-server based chat application using socket programming. The application is developed using Java programming. The primary objective of this report is to present the principles behind socket programming and the libraries available for socket programming applications in Java.

1. INTRODUCTION

Our project is an example of a multiple client chat server which allows multiple clients to connect a single server application. It uses the UDP model to send and receive data through datagram. It is to keep in mind that UDP is a **connectionless protocol**, hence datagrams are used to send and receive packets of data.

2.PROJECT SCOPE

This project can be mainly divided into two modules:
1. Server
2.Client
This project mainly depended on the client/server model. The client requests the server and server responses by granting the client's request.

The model used for this project is the single server – multiple client models. The following specifications must be implemented:
1. Multiple clients and a single server
2. All input and output is via the GUI

3. METHODOLOGY

A server is a computer program that provides services to the clients. The clients come and go down but the server remains the same for that particular chat room.
We have created our project in such a way that the new user is given the option to either start a new room- where it will act as a server- or join a pre-existing room using the rooms IP.

First user acts as a server while others have 2 options

- Connect as client using the IP provided
- Initiate a new chat room

The user interacts with the tool using a GUI.

4.FUTURE WORK

There is always a room for improvements in any software package, however good and efficient it may be done. But the most important thing should be the flexibility to accept further modification. Right now we are just dealing with text communication. In future this software may be extended to include features such as:
Files transfer: this will enable the user to send files of different formats to others via the chat application.

Voice chat: this will enhance the application to a higher level where communication will be possible via voice calling as in telephone.
Video chat: this will further enhance the feature of calling into video communication.

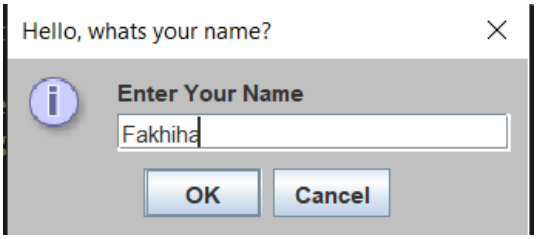
5. Libraries

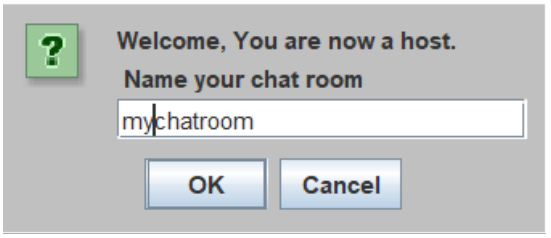
We Developed network applications in Java by using sockets and threads. The libraries used are as follows:

- Java.net
- Java.io
- Javax.swing
- Java.awt
- Java.util

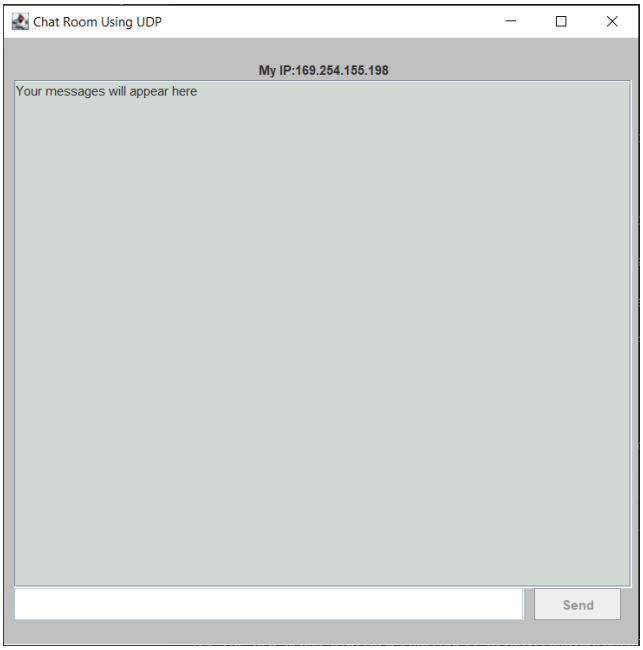
WORKING DEMO

The user is first asked for their name. After that, they are asked if they want to start a conversation/room, or want to join an already existing room. Here the user has selected that he wants to start a room, hence is asked for the room name.

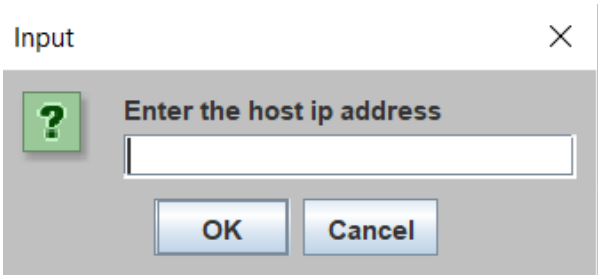




Following screen is then shown to the user-acting as a host/server for the communication that is to take place.



A new user can join the room by providing their name, and the ip address of the host, in order to join the corresponding room.



The server is also notified when a new user joins the room.

The user acting as a server, and the client can simultaneously send and receive messages to each other. There can be multiple users in the same chat room.