TCP Chat Application

Overview

This is a simple TCP chat application implemented in C++. The application consists of a client and server that communicate with each other over a TCP connection. The server handles multiple clients and allows basic arithmetic operations through message exchanges.

Features

- TCP-based communication

- Supports multiple client connections

- Basic arithmetic operations: addition, subtraction, multiplication, and division

- User-friendly interface for sending and receiving messages

Technologies Used

C++

TCP Sockets

Linux/Unix-based Operating System

Files

- **client.cpp**: The client-side code that connects to the server, sends messages, and receives responses.

- **server.cpp**: The server-side code that listens for client connections, processes incoming messages, and sends responses.

How to Compile

To compile the client and server programs, use the following commands:

```bash
g++ client.cpp -o client
g++ server.cpp -o server
```

How to Run

1. **Start the Server**:

   Open a terminal and run the server with a specified port number (e.g., `12345`):

   ```bash
   ./server 12345
   ```

2. **Start the Client**:

   Open another terminal and run the client, specifying the server's IP address (localhost for local testing) and port number:

   ```bash
   ./client 127.0.0.1 12345
   ```

3. **Chat**:

   - The client will receive an introductory message from the server.

   - The client can send messages to the server, and the server will respond accordingly.

   - Type "Goodbye" to end the chat session.

Usage

The client can send messages in the format of arithmetic operations (e.g., `3+4`, `10-2`), and the server will respond with the result. The client can also send general messages, which the server will echo back.

Note

Ensure that the server is running before starting the client. This application is a basic demonstration of TCP sockets in C++. Enhancements such as error handling, input validation, and user authentication can be implemented for a more robust application.