

# Multithreaded Chat Application - Report

## 1. Project Overview

This project is a Java-based multithreaded chat application using sockets. It consists of a server that can handle multiple client connections simultaneously, allowing real-time communication between clients.

## 2. Technologies Used

- Java
- Java Sockets
- Multithreading
- Object-Oriented Programming

## 3. Project Structure

The project includes the following key components:

- Server.java: Initializes the server and listens for client connections.
- Client.java: Connects to the server and allows sending and receiving messages.
- ClientHandler.java: Handles communication for each client on a separate thread.

## 4. How It Works

1. The server listens on a specified port (e.g., 1234).
2. Clients connect to the server.
3. Each client is assigned a handler thread.
4. Messages sent by one client are broadcast to all others.
5. A client can type 'logout' to exit the chat.

## 5. How to Run the Application

Step 1: Compile all Java files:

```
javac com/chatapp/server/*.java
```

Step 2: Run the server:

```
java com.chatapp.server.Server
```

Step 3: Open new terminals for each client and run:

```
java com.chatapp.server.Client
```

Note: Make sure all classes are in the package 'com.chatapp.server'.

## 6. Sample Output

[Server] Server started on port 1234

[Server] Client1 connected: Socket[...]

[Server] Client2 connected: Socket[...]

[Message] Client1 says: Hello!

[Message] Client2 says: Hi there!

[Server] Client1 disconnected.