Distributed and Parallel Computing

Distributed Chat Application Using Socket Programming

Department of Computer Science

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1. Assignment: Distributed Chat Application Using Socket Programming

1.1 Objective

The objective of this assignment is to design and implement a distributed chat application using socket programming in which each node acts as both a client and a server. The system should allow two terminals to communicate directly without using any centralized server. Each node must be capable of sending and receiving messages simultaneously from other nodes.

1.2 Problem Statement

Design a distributed chat system in which two nodes (Node A and Node B) communicate with each other using socket programming. Each node must execute both a server module and a client module.

When Node A sends a message to Node B:

- The message flows from Node A's client to Node A's server and then to Node B's server
- Node B receives the message on its server module
- Replies from Node B follow the reverse communication path back to Node A

Both nodes must be able to send and receive messages concurrently, making the system fully peer-to-peer in nature.

1.3 Communication Flow

1. Node A types a message intended for Node B
2. The message is sent through Node A's client socket
3. Node A's server forwards the message to Node B's server
4. Node B's server receives and displays the message
5. Node B replies using its client socket
6. The reply is routed back to Node A's server and displayed on Node A