

**Server/Client Message Sending via Sockets**

**Socket Programming Project**

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# Problem Description:

In this report, it is required to develop a Multi-User Messaging Application for the BLM3011 Operating Systems course. This project, primarily programmed in C, focuses on creating a non-GUI based communication system split into two main components: a server-side and a client-side program. The server-side is designed to continuously listen to client requests, manage user lists, and deliver both messages and alert notifications. The client-side program allows users to interact with the system, providing functionalities such as viewing and managing contact lists, sending and receiving messages, and accessing message history. This project emphasizes a modular programming approach, enhancing the clarity and maintainability of the code. Special attention is given to socket programming, which is crucial for facilitating server-client communication. Without the multithread server implementation, it would be impossible to keep up with the operations required by the server to be undergone.

# Problem Solution:

The problem solution is primarly based on developing multithread server and client side programs so that both the clients would be able to connect to the server and the server could be able to server the clients at the same time thanks to Multiprogramming.

# Problems Faced on the Road:

Primary problems that I faced during the development of Project were directly related with strings, multithreading and socket programming.

In order to solve the string operation problems, I learnt the string library of C further and that helped me a substantially so much so that I was shocked to realize that to some degree that there are functions present in the library that are characteristic to some high level languages. It was splendid to be able to use them in a low level language like C.

In order to solve the problems that I have with multithreading, I needed to read documentations and scrutinize the documents and codes. Locking the resources and sharing them after the need was satisfies and implementing the multithread programming step by step in various experiential programs paved the way for me to further understand the topic and implement the multithread programming.

In order to solve the problems that I have with socket programming, I needed to watch tutorials and read codes so that I could develop a basic level of understanding. Owing to my prior Works and develop experiences in socket programming in various languages, I was able to sort it out and further move into developing the Project.

# Functions: