

Data Communication Assignment

Introduction

This assignment aims for students to develop an original client-server application using the C programming language. Each student will work on a concept of their choice and implement this concept in a client-server architecture. For example, a server can work like a database. In this scenario, a client connects to the server and sends data. The server checks this data, processes it, and then sends a response message to the client. This structure can be used to create a server-client system similar to a key-value store application such as Redis.

Project Requirements

- The C language should be used in at least one of the client or server applications
- Multiple clients should be able to connect to the server simultaneously
- Network communication must be provided using the TCP/IP protocol
- The application must have a unique purpose and function

Sample Project Ideas

- A simple multiplayer game: Server manages the game logic, clients send player actions
- Remote command execution application: Clients send commands, the server executes these commands and sends back the results
- Weather information service

Technical Requirements

Server Application

1. Listening for client connections using TCP sockets
2. Managing multiple client connections
3. Processing requests from clients and sending appropriate responses
4. Storing and managing data as required

Client Application

1. Connecting to the server via TCP socket
2. Receiving input from the user (if necessary)
3. Sending requests to the server and receiving responses
4. Displaying results to the user

Evaluation Criteria

Projects will be evaluated according to the following criteria:

1. Originality and creativity of the project: The innovative aspects and problem-solving approach of the developed application will be evaluated.
2. Correct operation of the code and fulfillment of the desired functions: The application is expected to work without errors and fulfill the specified requirements.
3. Effectiveness of multiple client support: The server's ability to manage multiple clients simultaneously will be evaluated.
4. Technical understanding and application knowledge: Students are expected to have detailed knowledge of the application they are developing and to be able to provide comprehensive answers to technical questions about the project. In this context, students will be asked three technical questions about their application, and their answers to these questions will be evaluated.