

Distributed Systems Continuous Assessment Report

1. Introduction

This project implements the Client–Server distributed paradigm using Java TCP sockets. The system allows multiple clients to connect to a central server to manage student records.

2. System Architecture

The architecture consists of a server listening on port 5000 and multiple clients connecting via TCP. Each client connection is handled using a separate thread to enable concurrent access.

3. Communication Flow

Client sends request (ADD, GET, LIST). Server parses the request, processes it, and sends a response back. All communication is logged on the server side.

4. Technologies Used

Java, TCP Sockets, Multithreading, Collections.synchronizedMap for thread safety.

5. Challenges Encountered

Ensuring thread safety when multiple clients access shared data. Maintaining reliable socket communication and correct message parsing.

6. Execution Instructions

Compile: `javac *.java` Run server: `java StudentServer` Run client: `java StudentClient` Port: 5000