

CSE344 - Final Project Report

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1 Overview

- First, all requirements are done.
- Error handling of command line arguments is done.
- All system call error handling is done.
- All system resources are free.

2 Client

- Reads all requests from file.
- Creates a joinable thread for each request.
- Threads connect to the server and query.
- Prints the query result to the screen.
- After threads are terminated, they are joined by the main thread.

3 Servant

- Reads the given data set directory range and takes it into memory.
- Linked list is used for this data structure.
- Linked list structure is implemented with a directory tree logic, respectively Dataset, Directory, File and Record.
- After the reading process is done, the servant starts listening to its unique port number.
- Starts searching port number starting from `PORT_START_NUMBER = 16000`. Selects the unused port number.

- Then sends the process id, IP address, port number, city name range to the server.
- Creates a detached thread for each incoming connections and the thread queries the incoming request and writes its answer to the incoming connection file descriptor.
- The reason why it is a detached thread is that instead of joining the threads that created the main thread and waiting for the incoming requests, the detached thread can return the memory it received to the system itself.

4 Server

- Creates a thread pool for incoming requests. Creates a request queue for non-busy threads.
- Threads are detached threads. The reason is not to inflate the memory because the threads are infinitely running and they are not terminated. Then the main thread will not have to join them.
- Creates its socket and starts waiting for request.
- Synchronized request queue with monitor.
- If the request is from the servant, it means that the information of the servant has come. Adds this information to memory.
- There are 3 scenarios from the incoming request client. Request may be invalid. Informs the client. There is no suitable servant for the incoming request. The client is informed. The incoming request is correct and the result is found and sent to the client.

5 Compile and Run

- make → Compiles the whole program
Type make in the file contains the makefile
- make clean → Cleans all objects files