

# **CSE 344 SYSTEM PROGRAMMING**

## **FINAL REPORT**

### **SERVER PROCESS**

In the server process, at first, I checked if the server process is already running; if not, then I checked the arguments to make sure that there is nothing wrong with them. If there is any error about the arguments, I exited the program by informing the user. If not, I created the daemon process, I created the required data structure for the dataset (A 2D string array) required mutexes and condition variables, request handler threads and pool handler thread and waited for a shutdown request (A SIGINT signal). Before than them, I created a socket, set its options, bound it and started listening for the receiving connections.

Pool handler only informs the user with the help of the log file if all handler threads are busy.

A handler thread, gets a unique ID for itself and waits for a connection request to accept. When a request accepted, sets its business information and also informs the pool handler that the density of the server has changed. Then get the total query count of the client and handles them in a loop with reader writer paradigm with writer priority. After handling the requests of a client, closes the TCP channel. If shutdown happened, the handler thread exits itself; unless, keeps waiting to accept another request.

When SIGINT happened, the blocked threads are detached, the busy threads are waited to handle their jobs, then all resources are released and the program terminates.

### **CLIENT PROCESS**

In a client process, firstly all the arguments are checked for any errors, then creates the socket and makes a connection with the server, then traverses the query file to learn how many queries it has, and send this data to the server and get the row/column info to create a temporary dataset data to fill it with the answers returned. After, sends queries and gets their results in a for loop and informs the user about the result. After all, It closes the connection, releases all the resources and exits the program.

In case of SIGINT, socket connection is closed, all the resources are released and the client terminates.