Gebze Technical University

CSE 344 System Programming Final Report

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June 9, 2021

1 Server

1.1 struct Serversetup

1- All information about the server is kept in this structure.

2- As many threads and sockets are created as the poolsize is.

3- After the sockets are created, they are initialized as EMPTY.

4-Scheduler() function waits for a connection, when it connects, it searches for an EMPTY socket and assigns the created socketfd to it, then broadcasts to activate the threads.

5-All threads in await state start running and look for the socket assigned to them, if they are assigned, they initiate communication with the client.

6- Before table records are sent, some serialize operations are applied and sent with the send str() function.

2 Csv

2.1 struct Csv

1- After reading the dataset, all information is saved in this structure.

2- It also contains the necessary variables to implement the reader-writer paradigm.

3- After the data is read from the file and parsed, it is stored in a 2d string array.

4- The reader-writer paradigm was implemented as we saw in the lesson.

5- The reason why I use 2d string array is completely easy to implement.

2.2 readerLock readerUnlock sample

```
void reader_lock(struct Csv *handle){
    if (pthread_mutex_lock(&handle->m) != 0){
     errexit("reader_lock, pthread_mutex_lock");
    }
    while ((handle->AW + handle->WW) > 0){
     handle->WR++;
     pthread_cond_wait(&handle->okToRead, &handle->m);
     handle->WR--;
    }
    handle->AR++;
     if (pthread_mutex_unlock(&handle->m) != 0){
     errexit("reader_lock, pthread_mutex_unlock");
    }
}
```

```
void reader_unlock(struct Csv *handle)
{
    if (pthread_mutex_lock(&handle->m) != 0){
     errexit("reader_unlock, pthread_mutex_lock");
    }
    handle->AR--;
    if (handle->AR == 0 && handle->WW > 0){
     if (pthread_cond_signal(&handle->okToWrite) != 0){
        errexit("reader_unlock, pthread_cond_signal");
       }
    }
    if (pthread_mutex_unlock(&handle->m) != 0){
     errexit("reader_unlock, pthread_mutex_unlock");
    }
}
```

It is used in the searchforquery function to wrap read or write operations.

3 Client

It reads the queries from the file and sends the query to the server if it matches its own id. It does this in a loop. If there is more than one query, it sends them all over the same connection.