

PA1 Report

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My code is based on “Beej's Guide to Network Programming”. I modify “A Simple Stream Server” and “A Simple Stream Client” on it.

I used `fread()` function for reading data from STDIN. `while((len_read = fread(buf, 1, MAXDATASIZE - 8 - key_len, stdin)) > 0)` keep reading data from STDIN until reading EOF.

For receiving and sending, I declare `recv_byte` and `send_byte` functions. These two function ensure sending whole data whose length is passed by argument, while `recv`, `send` functions does not ensure.

A client will send a header containing `op`, `key_length` and `data_length`. Then the server will receive it and will know how many bytes it have to read. The client will send the key and the messages. and the server receives it.

Since the server know how long the message is. Before receiving the message, it can terminate the communication, if the total message length is bigger then 10mb.

I used `ntoh{l,s}`, `hton{l,s}` for chaing byte order. `Op` takes two byte. But since it is just one byte. I decided not to change byte order. (Also TA have mentioned about it on BB.)

When a client try to communicate with the server, the server creates the child process. So if the server manage the number of child, it implies it manages the number of client which is communicating to the server.

I put `shared_data` struct. It is shared with all children. `Active_clients` is increased by 1 when child is created, and is decreased by 1 when the child terminates.

Since it is shared. There might be synchronization issue. So it uses semaphore for the synchronization.

When `fd` is assigned for communication by `accept()`, before communication, it checks the value of `active_clients` of `shared_data` struct. If `active_clients` is bigger than 50, it means there are 50 children already. So that child terminates immediately.

References

<https://beej.us/guide/bgnet/>

<https://www.geeksforgeeks.org/dsa/vigenere-cipher/>

<https://reakwon.tistory.com/107>

<https://velog.io/@naive/getopt-%EC%82%AC%EC%9A%A9%EB%B2%95>