

【2018 Network System Programming Homework 5】

This homework is focuses on FIFO-PIPE.

Rules:

1. Please use **C language** in this homework and run your program on Ubuntu **18.04**.
2. Please provide **Makefile** to compile your homework; otherwise, you will **get ZERO**.
3. Do not copy others homework.
4. If you have any question, please send email to `sp_ta@net.nsysu.edu.tw` or come to F5018, but TA does not help to debug.

Upload:

1. Please compress your homework into **zip** or **tar** archive.
2. Naming rules: "**StudentID_SP_HW5.zip**". For example:
M063040001_SP_HW5.zip
3. Upload your homework to NSYSU Cyber University.
4. **Deadline: 2018/11/6 23:59; if it is overdue, you will also get ZERO.**

Request:

Read the reference pdf book “The Linux Programming Interface-FIFO-PIPE.pdf” and write programs to answer 44-4. 44-5. 44-6.

Questions depiction are in page 32 like below picture.

- 44-4. Add code to the server in Listing 44-7 (`fifo_seqnum_server.c`) so that if the program receives the SIGINT or SIGTERM signals, it removes the server FIFO and terminates.
- 44-5. The server in Listing 44-7 (`fifo_seqnum_server.c`) performs a second `O_WRONLY` open of the FIFO so that it never sees end-of-file when reading from the reading descriptor (`serverFd`) of the FIFO. Instead of doing this, an alternative approach could be tried: whenever the server sees end-of-file on the reading descriptor, it closes the descriptor, and then once more opens the FIFO for reading. (This open would block until the next client opened the FIFO for writing.) What is wrong with this approach?
- 44-6. The server in Listing 44-7 (`fifo_seqnum_server.c`) assumes that the client process is well behaved. If a misbehaving client created a client FIFO and sent a request to the server, but did not open its FIFO, then the server's attempt to open the client FIFO would block, and other client's requests would be indefinitely delayed. (If done maliciously, this would constitute a *denial-of-service attack*.) Devise a scheme to deal with this problem. Extend the server (and possibly the client in Listing 44-8) accordingly.