

Homework #2

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Environment

- hardware
 - iMac (Retina 5K, 27-inch, 2020)
 - processor : 3.1 GHz 6 core Intel Core i5
 - memory : 8GB 2667 MHz DDR4
 - graphic : AMD radeon Pro 5300 4 GB
- operating system
 - macOS
- used libraries
 - The new libraries for hw3 are like below.)
 - sys/select.h
 - for using fd_set and timeval
 - hw2 libraries)
 - netdb.h
 - for using hostent for hostname to address
 - arpa/inet.h
 - for using inet_addr / inet_ntoa
 - sys/socket.h, sys/types.h
 - for using many kinds of operands like accept(), bind(), etc.
 - netinet/in.h
 - for using sockaddr_in struct
 - stdio.h
 - string.h
 - for using strlen, memset

Compilation commands(If needed)

- I make Makefile which is like below

```
proxy : main.o
    gcc -o proxy main.o

main.o : main.c
    gcc -c -w -o main.o main.c

clean :
    rm *.o *.html proxy
```

And it also is hw3.zip

So in terminal, Just make temp make proxy file

And ./proxy <port number> then server works.

If there is some issue that prints some errors in the terminal, then you must use another port number.

If you want to remove the proxy executable file, then just write make clean in the terminal.

Implementation details

- In my implement, order is like below

- (1) socket() proxy server socket
- (2) bind proxy server
- (3) listen proxy server
- (4) accept the client
- (5) Initializes arguments for select()
- (6) Check I/O events
- (7) receive socket from client
- (8) check input is valid
- (9) if valid and didn't exist.
 - (a) make input as the format to send to the origin server
 - (b) get server
 - (c) socket which will send to server
 - (d) connect to server
 - (e) receive socket from server
 - (f) write to client the data and make new file with filename is origin server host name.html
- (10) if valid and exist.
 - (a) write to the client the existing file.
- (11) else write data which implies Not implemented or Bad request.

From HW2, what I must add is about I/O multiplexing and saving the object.

- 1) For saving the object, I use fopen. So if fopen is right then the object exists. Thus return the object to the client. And if it does not exist, receive objects from the origin server and save it and write it.
- 2) For I/O multiplexing, I refer to 07-1. Socket Programming. Thus I use select() for I/O multiplexing.