

## 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
  - 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 hw2.zip

So in terminal, Just make temp make proxy file

And ./proxy <port number> then it work

In another terminal, run telnet localhost <port number>, which is used for ./proxy <port number>

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

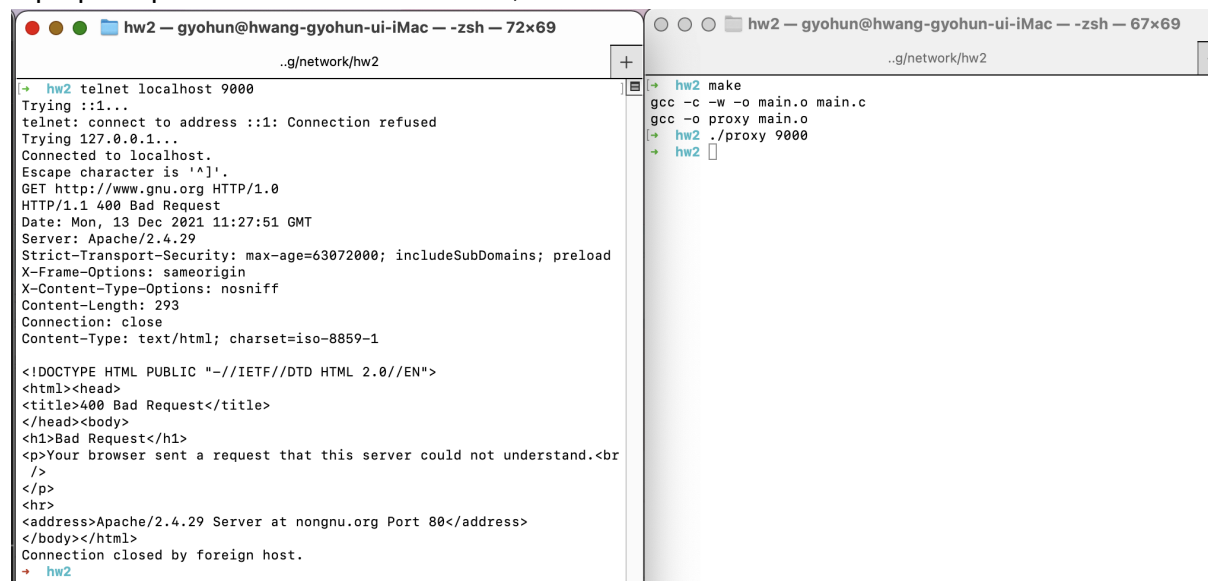
- In my implement, order is like below

- (1) socket() proxy server socket
- (2) bind proxy server
- (3) listen proxy server
- (4) accept the client
- (5) receive socket from client
- (6) check input is valid
- (7) if valid
  - (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
- (8) else write data which implies Not implemented or Bad request

## Result

like the right terminal, Just ./proxy <port number>.

If proper input telnet in the left terminal, that returns the data like below.



```
hw2 — gyohun@hwang-gyohun-ui-iMac — -zsh — 72x69
..g/network/hw2
hw2 telnet localhost 9000
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
GET http://www.gnu.org HTTP/1.0
HTTP/1.1 400 Bad Request
Date: Mon, 13 Dec 2021 11:27:51 GMT
Server: Apache/2.4.29
Strict-Transport-Security: max-age=63072000; includeSubDomains; preload
X-Frame-Options: sameorigin
X-Content-Type-Options: nosniff
Content-Length: 293
Connection: close
Content-Type: text/html; charset=iso-8859-1

<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>400 Bad Request</title>
</head><body>
<h1>Bad Request</h1>
<p>Your browser sent a request that this server could not understand.<br />
</p>
<hr>
<address>Apache/2.4.29 Server at nongnu.org Port 80</address>
</body></html>
Connection closed by foreign host.
hw2

hw2 — gyohun@hwang-gyohun-ui-iMac — -zsh — 67x69
..g/network/hw2
hw2 make
gcc -c -w -o main.o main.c
gcc -o proxy main.o
hw2 ./proxy 9000
hw2
```

And if inapposite input, then return Bad Request(400) or Not Implemented(501) like below.

```
hw2 — gyohun@hwang-gyohun-ui-iMac — -zsh — 72x69
..g/network/hw2
→ hw2 telnet localhost 9002
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
GET https://www.gnu.org HTTP/1.0
Bad Request(400)
Connection closed by foreign host.
→ hw2 telnet localhost 9002
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
LET http://www.org.org
Not Implemented(501)
Connection closed by foreign host.
→ hw2 █

hw2 — gyohun@hwang-gyohun-ui-iMac — -zsh — 67x69
..g/network/hw2
→ hw2 ./proxy 9002
→ hw2 ./proxy 9002
→ hw2 █
```