



네트워크 프로그래밍 Network Programming

Chae-Bong Sohn
cbsohn@kw.ac.kr

Simple FTP Client

FTP Command

- FTP Transfer Protocol (FTP)
- RFC 959
- 4 File Transfer Functions → 4.1 FTP Commands
- https://www.w3.org/Protocols/rfc959/4_FileTransfer.html

File Transfer Functions (Wikipedia)

- The File Transfer Protocol (FTP) is a standard communication protocol used for the transfer of computer files from a server to a client on a computer network.
- FTP is built on a client-server model architecture using separate control and data connections between the client and the server.
- FTP users may authenticate themselves with a clear-text sign-in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it.
- For secure transmission that protects the username and password, and encrypts the content, FTP is often secured with SSL/TLS (FTPS) or replaced with SSH File Transfer Protocol (SFTP).

File Transfer Functions

- The first FTP client applications were command-line programs developed before operating systems had graphical user interfaces, and are still shipped with most Windows, Unix, and Linux operating systems.
- Many FTP clients and automation utilities have since been developed for desktops, servers, mobile devices, and hardware, and FTP has been incorporated into productivity applications, such as HTML editors.
- In January 2021, support for the FTP protocol was disabled in Google Chrome 88 and disabled in Firefox 88.0.
- In July 2021, Firefox 90 dropped FTP entirely and Google followed suit in October 2021, removing FTP entirely in Google Chrome 95.

FTP Test Server Information

- Server IP : 223.194.7.95
- FTP Port : 21
- ID : elec
- PASSWORD : comm

FTP Command Examples

```
bongbong@ssl:~$ telnet 223.194.7.95 21
Trying 223.194.7.79...
Connected to 223.194.7.79.
Escape character is '^]'.
220 (vsFTPd 3.0.3)
USER elec
331 Please specify the password.
PASS comm
230 Login successful.
HELP
214-The following commands are recognized.
ABOR ACCT ALLO APPE CDUP CWD  DELE EPRT EPSV FEAT HELP LIST MDTM MKD
MODE NLST NOOP OPTS PASS PASV PORT PWD  QUIT REIN REST RETR RMD  RNFR
RNT0 SITE SIZE SMNT STAT STOR STOU STRU SYST TYPE USER XCUP XCWD XMKD
XPWD XRMD
214 Help OK.
```

FTP Command Examples

```
bongbong@ssl:~$ telnet 223.194.7.95 21
Trying 223.194.7.79...
Connected to 223.194.7.79.
Escape character is '^]'.
220 (vsFTPd 3.0.3)
USER elec
331 Please specify the password.
PASS comm
230 Login successful.
```

FTP Command Examples

PASV

227 Entering Passive Mode (223,194,5,95,221,191).

LIST

150 Here comes the directory listing.

226 Directory send OK.

PASV

227 Entering Passive Mode (223,194,5,95,239,231).

RETR welcome.txt

150 Opening BINARY mode data connection for welcome (54 bytes).

226 Transfer complete.

QUIT

221 Goodbye.

FTP Command Examples (Listen Port)

bongbong@ssl:~\$ telnet 223.194.7.79 56767

Trying 223.194.7.79...

Connected to 223.194.7.79.

Escape character is '^['.

-rw-r--r-- 1 1001 1001 68 May 21 10:49 welcome.txt

Connection closed by foreign host.

FTP Command Examples (Listen Port)

```
bongbong@ssl:~$ telnet 223.194.7.79 61415
Trying 223.194.7.79...
Connected to 223.194.7.79.
Escape character is '^]'.
Welcome to Electronics and Communications Engineering
Connection closed by foreign host.
```