

TCP Echo Server and Client

ECEN 602 Network Programming Assignment 1

Team ID: 9

Below is the test cases performed on the TCP echo server and client:

1. The client sends a line of text terminated by a new line:
The server returns the same message back as per the echo protocol

```
○ rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echos 2000
Starting server process pid: 9863
TCPserver started on port 2000
Reaping clients
Waiting for up to 10s for a new connection
Reaping clients
mode: 0, current handler: 0
Adding child pid: 9892
Got new connection... creating TCPclient
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
TCPserver timeout
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
TCPserver timeout
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
[]

○ rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 2000
Hello World! I am a client.
Hello World! I am a client.
█
```

2. The client sends a line of text of the max length of buffer (512 characters) without a new line:
The client keeps reading the *stdin* until it finds a new line character and keeps sending the buffer to the server.

```
○ rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echos 2000
Starting server process pid: 11192
TCPserver started on port 2000
Reaping clients
Waiting for up to 10s for a new connection
Reaping clients
mode: 0, current handler: 0
Adding child pid: 11198
Got new connection... creating TCPclient
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
TCPserver timeout
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
[]

○ rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 2000
This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that choose to implement an Echo Protocol are expected to adopt and implement this standard. A very useful debugging and measurement tool is an echo service. An echo service simply sends back to the originating source any data it receives. This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that choose to implement an Echo Protocol are expected to adopt and implement this standard. A very useful debugging and measurement tool is an echo service. An echo service simply sends back to the originating source any data it receives. This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that choose to implement an Echo Protocol are expected to adopt and implement this standard. A very useful debugging and measurement tool is an echo service. An echo service simply sends back to the originating source any data it receives. This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that choose to implement an Echo Protocol are expected to adopt and implement this standard. A very useful debugging and measurement tool is an echo service. An echo service simply sends back to the originating source any data it receives. This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that choose to implement an Echo Protocol are expected to adopt and implement this standard. A very useful debugging and measurement tool is an echo service. An echo service simply sends back to the originating source any data it receives.
█
```

3. The client sends a line with no characters and an EOF (Ctrl+D for Linux):
The client terminates when it receives an EOF from *stdin* and the server closes the

connection by terminating the client handler process.

```

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echos 2000
Starting server process pid: 11908
TCPServer started on port 2000
Reaping clients
Waiting for up to 10s for a new connection
Reaping clients
mode: 0, current_handler: 0
Adding child pid: 11914
Reaping clients
Got new connection... creating TCPClient
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
TCPServer timeout
Reaping clients
Reaped 1 clients
0 connected clients remaining
Waiting for up to 10s for a new connection
TCPServer timeout
Reaping clients
Waiting for up to 10s for a new connection
TCPServer timeout
Reaping clients
Waiting for up to 10s for a new connection
[]

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 2000
o rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$

```

- The client is terminated after entering some text:

The server disconnects the client and terminates the client handler

```

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echos 2000
Starting server process pid: 14269
TCPServer started on port 2000
Reaping clients
Waiting for up to 10s for a new connection
Reaping clients
mode: 0, current_handler: 0
Adding child pid: 14216
Got new connection... creating TCPClient
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
TCPServer timeout
Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
TCPServer timeout
Reaping clients
Reaped 1 clients
0 connected clients remaining
Waiting for up to 10s for a new connection
[]

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 2000
hello
hello

i am a client^C
o rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$

```

- Three clients connect to the server:

The server handles all three clients simultaneously

```

Reaping clients
Reaped 0 clients
1 connected clients remaining
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
Reaping clients
Reaped 0 clients
1 connected clients remaining
mode: 0, current_handler: 0
Adding child pid: 15666
Reaping clients
Reaped 0 clients
2 connected clients remaining
Got new connection... creating TCPClient
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
Reaping clients
Reaped 0 clients
2 connected clients remaining
mode: 0, current_handler: 0
Adding child pid: 15680
Reaping clients
Reaped 0 clients
3 connected clients remaining
Got new connection... creating TCPClient
Waiting for up to 10s for a new connection
Handling connection from ::1
Calling handler
TCPServer timeout
Reaping clients
Reaped 0 clients
3 connected clients remaining
Waiting for up to 10s for a new connection
TCPServer timeout
Reaping clients
Reaped 0 clients
3 connected clients remaining
Waiting for up to 10s for a new connection
[]

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 20
00

I am client 1.
I am client 1.
[]

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1
20
00

I am client 2
I am client 2
[]

rishabh@LAPTOP-S9IQMU7Q:~/ecen602TAMU/ComputerNetworking_TAMU/MP1/src$ ./echo ::1 20
00

I am client 3
I am client 3
[]

```

Architecture of the TCP Echo Server and Client

