

Operating System
Lab-3
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B20CS003

Part 2- Unix Programming: Client-Math Server Chat Model

Working-

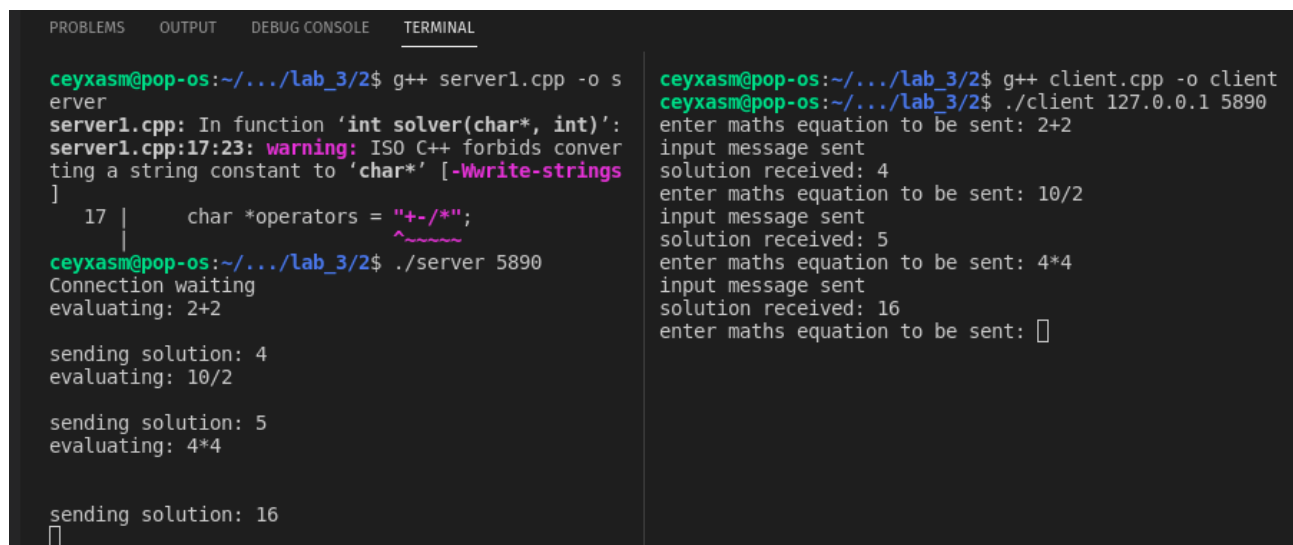
- Server is started which listens to a specified port
- Client is initiated with server IP and port
- After connection is established, it send a simple arithmetic expression which is sent to server through the socket
- Server receives the expression, evaluates it and sends it back to client which then displays it.

Execution-

- ``g++ server1.cpp -o server``
- ``./server 5678``
- ``g++ client.cpp -o client``
- ``./client 127.0.0.1 5678``

Server Model 1

- Server can handle only 1 client
- If any other client attempts to connect to the server, it has to wait indefinitely



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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
ceyxasm@pop-os:~/.../lab_3/2$ g++ server1.cpp -o server
server1.cpp: In function 'int solver(char*, int)':
server1.cpp:17:23: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
    17 |         char *operators = "+-/*";
        |         ^~~~~~
ceyxasm@pop-os:~/.../lab_3/2$ ./server 5890
Connection waiting
evaluating: 2+2

sending solution: 4
evaluating: 10/2

sending solution: 5
evaluating: 4*4

sending solution: 16
[]

ceyxasm@pop-os:~/.../lab_3/2$ g++ client.cpp -o client
ceyxasm@pop-os:~/.../lab_3/2$ ./client 127.0.0.1 5890
enter maths equation to be sent: 2+2
input message sent
solution received: 4
enter maths equation to be sent: 10/2
input message sent
solution received: 5
enter maths equation to be sent: 4*4
input message sent
solution received: 16
enter maths equation to be sent: []
```

Server Model 2

- Server2 is a multi-process server that forks a new process whenever it receives a new client request.
- Multiple clients are able to communicate with the server simultaneously.

<pre>ceyxasm@pop-os:~/.../lab_3/2\$./server 5555 waiting connection connected to 127.0.0.1: 57962 connected to 127.0.0.1: 35314 evaluating: 23-22 Client 35314 message received Sending reply to client 35314:1 evaluating: 14+5 Client 35314 message received Sending reply to client 35314:19 evaluating: 2*7 Client 57962 message received Sending reply to client 57962:14 evaluating: 9/4 Client 57962 message received Sending reply to client 57962:2 █</pre>	<pre>ceyxasm@pop-os:~/.../lab_3/2\$./client 127.0.0.1 5555 enter maths equation to be sent: 2*7 input message sent solution received: 14 enter maths equation to be sent: 9/4 input message sent solution received: 24 enter maths equation to be sent: █</pre>	<pre>ceyxasm@pop-os:~/.../lab_3/2\$./client 127.0.0.1 5555 enter maths equation to be sent: 23-22 input message sent solution received: 1 enter maths equation to be sent: 14+5 input message sent solution received: 19 enter maths equation to be sent: █</pre>
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Server Model 3

- In this part, the server is a single process which uses the concept of multithreading that uses select system calls to handle multiple clients concurrently.
- Even if all the all the clients disconnct, the server keeps running as it expects clients to connect.

<pre>ceyxasm@pop-os:~/.../lab_3/2\$./server 5550 waiting connection connected evaluating: 2+2 0 Client message received Sending reply to client 4 connected evaluating: 3+3 0 Client message received Sending reply to client 6 client disconnected... client disconnected... connected evaluating: 9/3 0 Client message received Sending reply to client 3 █</pre>	<pre>ceyxasm@pop-os:~/.../lab_3/2\$./client 127.0.0.1 5550 enter maths equation to be sent: 2+2 input message sent solution received: 4 enter maths equation to be sent: ^C ceyxasm@pop-os:~/.../lab_3/2\$./client 127.0.0.1 5550 enter maths equation to be sent: 9/3 input message sent solution received: 3 enter maths equation to be sent: █</pre>	<pre>ceyxasm@pop-os:~/.../lab_3/2\$./client 127.0.0.1 5550 s equation to be sent: 3+3 input message sent solution received: 6 enter maths equation to be sent: ^C ceyxasm@pop-os:~/.../lab_3/2\$ █</pre>
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