



flamealchemist server

\$./server.out 8081

8081

waiting for a client!

IP address is: 127.0.0.1

port is: 59464

trying to connect to a client!

waiting for a client!

127.0.0.1:59464 says : emoclew

Enter the contents to be sent to the 127.0.0.1:59464: you as well

IP address is: 127.0.0.1

port is: 59466

trying to connect to a client!

waiting for a client!

127.0.0.1:59466 says : esirprus a si siht

Enter the contents to be sent to the 127.0.0.1:59466: ikr

IP address is: 127.0.0.1

port is: 59472

trying to connect to a client!

waiting for a client!

127.0.0.1:59472 says : eno driht eht ma i

Enter the contents to be sent to the 127.0.0.1:59472: wow

IP address is: 127.0.0.1

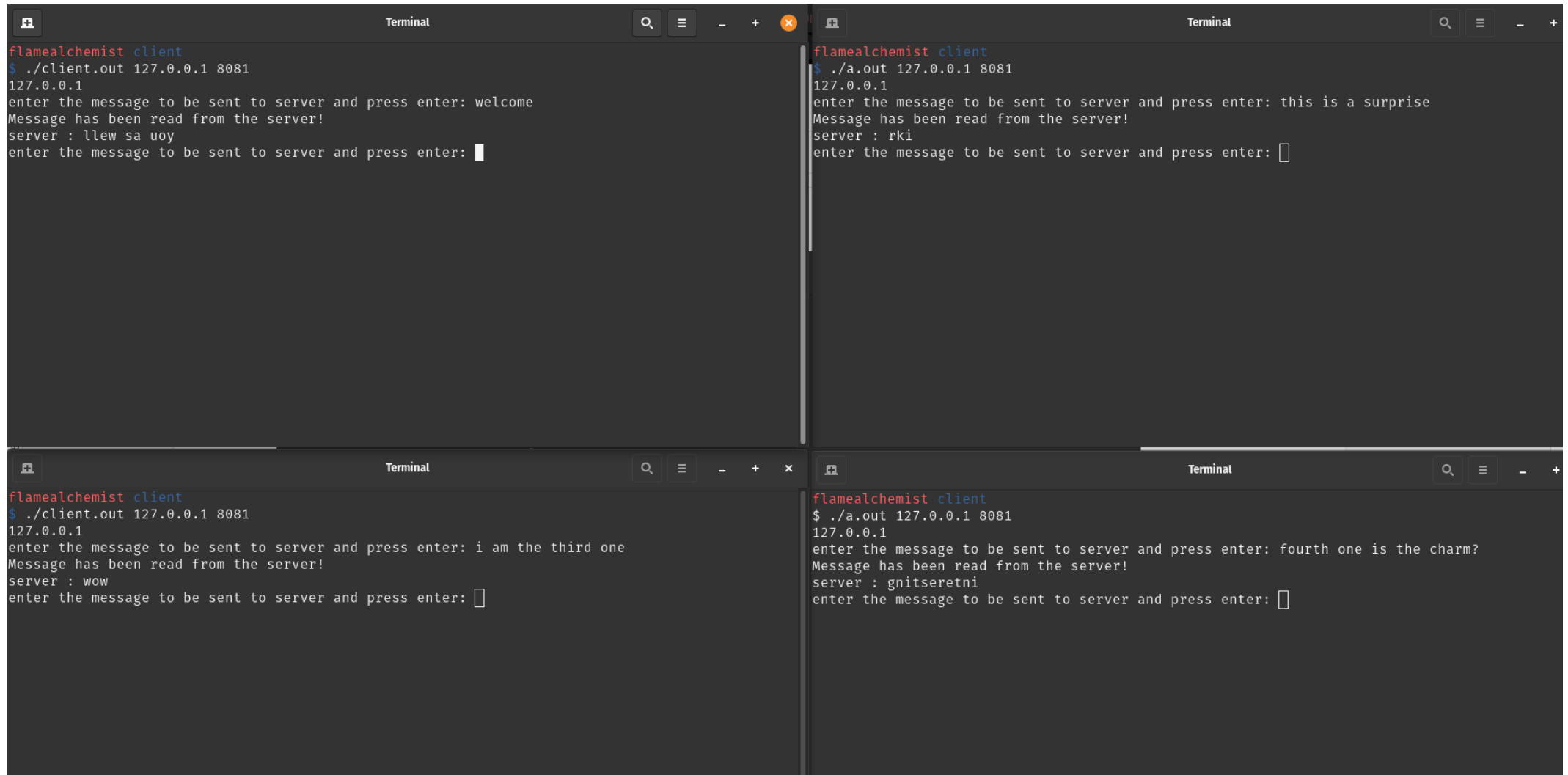
port is: 59474

trying to connect to a client!

waiting for a client!

127.0.0.1:59474 says : ?mrahc eht si eno htruof

Enter the contents to be sent to the 127.0.0.1:59474: interesting



- Server is running locally(takes port number as the command line argument) on IP address 127.0.0.1 and Port number 8081 and is waiting for a client
- Client specifies IP address and Port number as the command line arguments
- After connection is established, client sends a string taken as an input to the stdin to the server which is printed in reverse on the server
- This is followed by server taking an input from the stdin and passing it on the client where the client prints it in the reverse order and waits for a new client to come in and follow up
- The last 3 steps are repeated for multiple clients as shown

Addition of a 5th client will cause it to be terminated immediately.

This is checked by usage of semaphores. The semaphore is initialised with a value of 4 and uses a try_wait condition each time a new client tries to connect. As soon as try_wait encounters the condition that the value of the semaphore is zero, then the new requested connection is terminated. As soon as one of the clients exits, the value of the semaphore increments again space for a new client.

The screenshots below illustrate the case where a 5th client tries to connect to the server unsuccessfully.

```
flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: welcome
Message has been read from the server!
server : llew sa uoy
enter the message to be sent to server and press enter: 
```

```
flamealchemist client
$ ./a.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: this is a surprise
Message has been read from the server!
server : rki
enter the message to be sent to server and press enter: 
```

```
flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
connection refused
flamealchemist client
$
```



```
flamealchemist server
$ ./server.out 8081
8081
waiting for a client!
IP address is: 127.0.0.1
port is: 59464
trying to connect to a client!
waiting for a client!
127.0.0.1:59464 says : emoclew
Enter the contents to be sent to the 127.0.0.1:59464: you as well
IP address is: 127.0.0.1
port is: 59466
trying to connect to a client!
waiting for a client!
127.0.0.1:59466 says : esirprus a si siht
Enter the contents to be sent to the 127.0.0.1:59466: ikr
IP address is: 127.0.0.1
port is: 59472
trying to connect to a client!
waiting for a client!
127.0.0.1:59472 says : eno driht eht ma i
Enter the contents to be sent to the 127.0.0.1:59472: wow
IP address is: 127.0.0.1
port is: 59474
trying to connect to a client!
waiting for a client!
127.0.0.1:59474 says : ?mrahc eht si eno htruof
Enter the contents to be sent to the 127.0.0.1:59474: interesting
IP address is: 127.0.0.1
port is: 59502
trying to connect to a client!
waiting for a client!
Unfortunately, 4 other clients are already connected to the server!
```



Last case : when one of the 4 clients exits allowing a new client to connect to the server

```
flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: welcome
Message has been read from the server!
server : llew sa uoy
enter the message to be sent to server and press enter:

flamealchemist client
$ ./a.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: this is a surprise
Message has been read from the server!
server : rki
enter the message to be sent to server and press enter:

flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
connection refused
flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: this time i was allowed!
Message has been read from the server!
server : uoy rof doog
enter the message to be sent to server and press enter:

flamealchemist client
$ ./client.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter:
Message has been read from the server!
server : wow
enter the message to be sent to server and press enter:
flamealchemist client
$

flamealchemist client
$ ./a.out 127.0.0.1 8081
127.0.0.1
enter the message to be sent to server and press enter: fourth one is the charm?
Message has been read from the server!
server : er!
enter the message to be sent to server and press enter:
```



```
flamealchemist server
$ ./server.out 8081
8081
waiting for a client!
IP address is: 127.0.0.1
port is: 59464
trying to connect to a client!
waiting for a client!
127.0.0.1:59464 says : emoclew
Enter the contents to be sent to the 127.0.0.1:59464: you as well
IP address is: 127.0.0.1
port is: 59466
trying to connect to a client!
waiting for a client!
127.0.0.1:59466 says : esirprus a si siht
Enter the contents to be sent to the 127.0.0.1:59466: ikr
IP address is: 127.0.0.1
port is: 59472
trying to connect to a client!
waiting for a client!
127.0.0.1:59472 says : eno driht eht ma i
Enter the contents to be sent to the 127.0.0.1:59472: wow
IP address is: 127.0.0.1
port is: 59474
trying to connect to a client!
waiting for a client!
127.0.0.1:59474 says : ?mrahc eht si eno htruof
Enter the contents to be sent to the 127.0.0.1:59474: interesting
IP address is: 127.0.0.1
port is: 59502
trying to connect to a client!
waiting for a client!
Unfortunately, 4 other clients are already connected to the server!
127.0.0.1:59472 has exited.
IP address is: 127.0.0.1
port is: 59696
trying to connect to a client!
waiting for a client!
127.0.0.1:59696 says : !dewolla saw i emit siht
Enter the contents to be sent to the 127.0.0.1:59696: good for you
█
```

Screenshot showing escape sequence for client:

```
flamealchemist client
$ ./client.out 127.0.0.1 8080
127.0.0.1
enter the message to be sent to server and press enter: heya server
Message has been read from the server!
server : 29325 ayeh
enter the message to be sent to server and press enter: gotta bounce
Message has been read from the server!
server : ay ees
enter the message to be sent to server and press enter: exit
flamealchemist client
$
```

```
flamealchemist server
$ ./server.out 8080
8080
waiting for a client!
IP address is: 127.0.0.1
port is: 52392
trying to connect to a client!
waiting for a client!
127.0.0.1:52392 says : revres ayeh
Enter the contents to be sent to the 127.0.0.1:52392: heya 52392
IP address is: 127.0.0.1
port is: 52398
trying to connect to a client!
waiting for a client!
127.0.0.1:52398 says : ereht yeh
Enter the contents to be sent to the 127.0.0.1:52398: yo
127.0.0.1:52398 says : ydwoh
Enter the contents to be sent to the 127.0.0.1:52398: ip local
127.0.0.1:52392 says : ecnuob attog
Enter the contents to be sent to the 127.0.0.1:52392: see ya
127.0.0.1:52392 has exited.
127.0.0.1:52398 has exited.
```

```
flamealchemist client
$ ./client.out 127.0.0.1 8080
127.0.0.1
enter the message to be sent to server and press enter: hey there
Message has been read from the server!
server : oy
enter the message to be sent to server and press enter: howdy
Message has been read from the server!
server : lacol pi
enter the message to be sent to server and press enter: exit
flamealchemist client
$
```