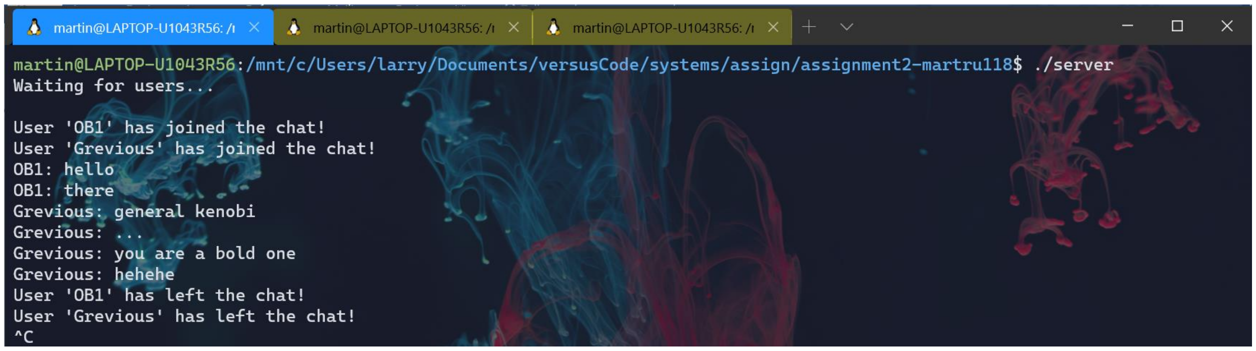
Assignment 2: Chat Client & Server

Server


martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r

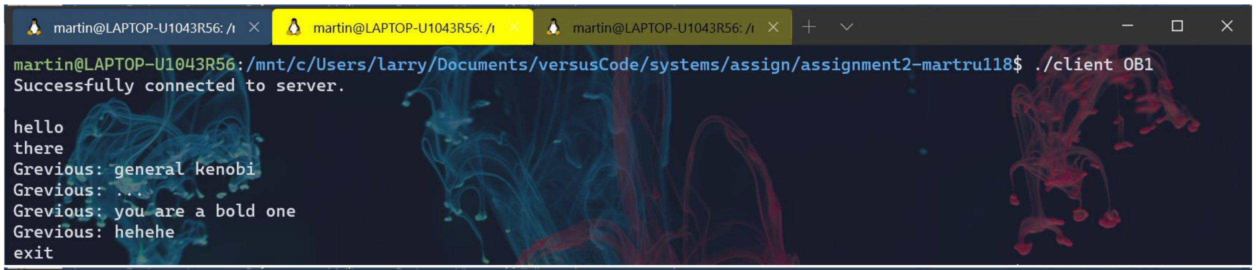
```
martin@LAPTOP-U1043R56:/mnt/c/Users/larry/Documents/versusCode/systems/assign/assignment2-martru118$ ./server
Waiting for users...

User 'OB1' has joined the chat!
User 'Grevious' has joined the chat!
OB1: hello
OB1: there
Grevious: general kenobi
Grevious: ...
Grevious: you are a bold one
Grevious: hehehe
User 'OB1' has left the chat!
User 'Grevious' has left the chat!
^C
```

First, establish a connection to the network via port `55555`. To do this, we retrieve the file descriptor for the socket at this port by using the first address found by `getaddrinfo`. Here, we want a connection stream, so we want to find an address that would accept all connections on a host. Afterwards, we use `setsockopt` to make this address reusable after the socket has closed. Once we have a socket, we use `bind` to associate that socket with the chosen port.

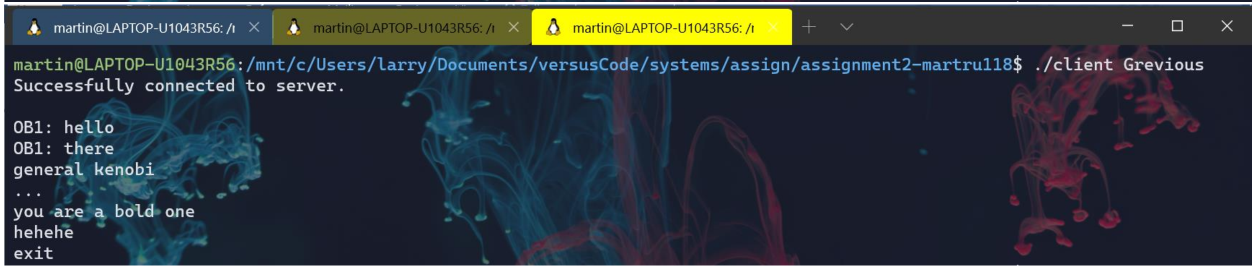
Now, the server waits for incoming connections. Using `listen`, the server would be expecting up to 10 connections on the socket. These connections are then monitored using `select`. To read incoming messages, add the socket to the set `*readfds`, a parameter of `select`. On success, the socket would be used for reading data.

Incoming connections are handled by the `connAccept` procedure. Here, the server retrieves the `name` of the client. The socket of the new client is added to the set `allfds` by keeping track of the maximum file descriptor. If there are no incoming connections, read data from a client. We use `readn` to receive messages. Then, we format the message to include the `name` of the client and send the formatted message to all other clients using `writen`.

Client


martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r

```
martin@LAPTOP-U1043R56:/mnt/c/Users/larry/Documents/versusCode/systems/assign/assignment2-martru118$ ./client OB1
Successfully connected to server.

hello
there
Grevious: general kenobi
Grevious: ...
Grevious: you are a bold one
Grevious: hehehe
exit
```


martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r
martin@LAPTOP-U1043R56: /r

```
martin@LAPTOP-U1043R56:/mnt/c/Users/larry/Documents/versusCode/systems/assign/assignment2-martru118$ ./client Grevious
Successfully connected to server.

OB1: hello
OB1: there
general kenobi
...
you are a bold one
hehehe
exit
```

The client connects to the network in a way similar to that of the server. The client retrieves a connection stream, finds an address that would accept all connections on a host, and uses that address to find a socket. The client also uses `select` in a similar way.

However, a connection is established using `connect`, and the port number is specified with `htons`. Before connecting to the network, we must check for command line arguments to make sure the client has a `name`. The client sends their `name` to the server after a connection is established. We now check all other clients for any messages. Then, we send a message to the server from keyboard input using `stdin`.