

Program 01

Sockets

Introduction:

Program 01 is intended to be a make shift SMTP server utilizing TCP socket api to "send" emails. To retrieve email, a UDP implementation of the socket api was used.

To send email, open a connection to the server on the designated port. Follow RFC standards for entering email.

To retrieve email, open a UDP client and enter the appropriate get command, GET /db/<username> HTTP/1.1\nhost:<servername>\ncount:<emails to get>

Design:

C++ was chosen as the programming language as it is the one allowed I was most familiar with.

For sending over TCP the following reply codes were used:

220 Hello:

Used to greet initial connection

221 Goodbye:

Used to close connection

250 OK:

Used to acknowledge

354 Start mail input, end with <CRLF>.<CRLF>

Used to enter "Data" mode to enter multiple lines of data.

500 Command syntax error:

General syntax erros

501 Argument syntax error:

Missing an argument

502 Command not implemented:

Used for planned future improvemenst"HELP")

503 Bad sequence of commands:

Used to notify user of proper order of commands

554 Transaction failed:

General transmission failure.

Output:

Client

```
bhubler@bhubler-Ubuntu: ~/Documents/CS447_Networking/Program01/Client
File Edit View Search Terminal Help
bhubler@bhubler-Ubuntu:~/Documents/CS447_Networking/Program01/Client$ ./main.app
Welcome to Haddocks Mail Client

1. Send Email
2. Check Email
3. Exit
1

220 Hello: Haddock's SMTP Mail Service, ready at Sat Sep 29 10:15:17 2018
helo
250 OK:Hello [127.0.0.1]
mail from:<bhubler@447f18.edu>
250 OK:<bhubler@447f18.edu>
rcpt to:<ben@447f18.edu>
250 OK:<ben@447f18.edu>
data
```

Server

```
^C
bhubler@bhubler-Ubuntu:~/Documents/CS447_Networking/Program01/Server$ ./main.app
8101
Welcome to the electronic age Captain!
Waiting for UDP Connections on port 8101

Waiting for TCP Connections on port 8101

^C
bhubler@bhubler-Ubuntu:~/Documents/CS447_Networking/Program01/Server$ ./main.app
8100
Welcome to the electronic age Captain!
Waiting for TCP Connections on port 8100

Waiting for UDP Connections on port 8100

Opening SMTP Thread for client IP: 127.0.0.1
helo
mail from:<bhubler@447f18.edu>
rcpt to:<ben@447f18.edu>
RCPT Addr: <ben@447f18.edu>
```

UDP Client

```
bhubler@bhubler-Ubuntu:~$ printf "get /db/b/ http/1.1\nhost: 127.0.0.1\ncount: 1\n"|nc -u 127.0.0.1 447f18
http/1.1
Server: 127.0.0.1
Last-Modified: Sat Sep 29 10:19:21 2018
Count: 1
Content-Type: text/plain
Message: 1

Date: Sat Sep 29 04:27:22 2018
From: <bhubler@447f18.edu>
To: <b@447f18.edu>
Subject: The Last Unicorn

Dear Haddock,

Glad to hear that you found the last Unicorn. We are looking forward to your safe return.

Yours truly,
Tintin and Snowy.
```

Summary:

In short I have learned a great deal about the socket api, I unfortunately am unable to complete the programming assignment to my satisfaction. The server is basically done, multiple TCP connections can be made and messages can be sent with a fair amount of error checking. Messages can also be retrieved using a UDP client.

Unfortunately, I spent entirely too much time working on small aspects of the program and was only able to test the server using telnet for TCP and netcat to test UDP.

Aside from having mismanaged time, the primary issue I ran into that kept me from completing both clients, was how to accommodate for multiple lines of data to compose an email message. The server works as I have tested it thoroughly using telnet, even with multiple clients.