Software Test Plan
TauNet
CS 300 Fall 2015

OVERVIEW:
Most of the testing took place on the cipher saber encryption and on the socket connections. For this document I will focus on these two areas.

ENCRYPTION:
To test the cipher saber I used the test files an Bart's ciphersaber2 github repository. I wrote a main function at the end of the file that reads bytes from a file and runs the cipher saber encryption backward and forward to see if it decrypts and encrypts properly. I don't think it's necessary to include specific test cases in this document since it will be evident that the encryption works when I run tests of the final program. Which I will include. Here is a copy of the code for illustration.

```
if __name__ == "__main__":
    password = b'asdfg'
    REPS = 10
    infile = open("testfile.txt", 'br')
    #outfile = open("outfile.txt", 'br')
    message = infile.read()
    #message = b'ksjhlkjhgsa'

    print(message)
    decryptedText = decrypt(message, password)
    print(decryptedText)
    encryptedText = encrypt(message, password)
```

I wrote the encryption part first and I thought I had it working until I tested it against the files. It took lots of digging into the arc four algorithm. But after lots of visually dissecting my code, I got it to work. I also did a lot of debugging using print statements to see what data types things were at what point. Python is a little confusing in that way because there aren't explicit data type declarations.

SOCKETS:
Testing on sockets is tricky because either they work or they don't. Same with connections in general. The exceptions gave me an idea of where something what went wrong but I had to do a lot of research to figure out why. I did include exceptions with descriptive messages which helped at first but I've seen them all many times by now. Some issues I had to enlist more knowledgeable people than myself to help. One example was the that my program was only listening in localhost for awhile, which apparently works in many cases but not in mine. I ended up needing to bind my socket to the wildcard host.

Sockets still seem a bit magical when I try to think about how they actually work. But python has useful libraries and functions and plenty of sample code online to work through it.

Aside from some exception handling and a lot of trial and error. Most of the testing I did on my sockets was against the echo server.

TEST CASES:

Case 1: Echo Server Dialogue:

Listening on 0.0.0.0 : 6283

```
*********************************************
What would you like to do?
1. Send Message
2. View Messages
3. Quit
*********************************************

:   1
1 .  tdulcet
2 .  patter5
3 .  relsqui
4 .  pyrrh
5 .  aarong
6 .  mancat
7 .  dom
8 .  brodie
9 .  chupacabra
10 .  paolo2
11 .  mrme
12 .  manpreet20
13 .  huyng90
14 .  rhatchet
15 .  natreed
16 .  leng
17 .  aldridge85
18 .  etsai
19 .  jbucklin
20 .  po8
21 .  lukekaz9
22 .  echoserver
23 .  Test

Choose a person to send a message to:

22
Enter your message
Hit enter AT ANY TIME to return to main menu.
:  hello
Connecting on barton.cs.pdx.edu:6283.
:  version: 0.2
from: echoserver
to: natreed

2015-12-03 22:19:40-0800 174.25.163.179:52453
version: 0.2
from: natreed
to: echoserver

hello
This is fun!
Connecting on barton.cs.pdx.edu:6283.
:  version: 0.2
from: echoserver
to: natreed

2015-12-03 22:20:02-0800 174.25.163.179:52454
version: 0.2
from: natreed
to: echoserver

This is fun!

*********************************************
What would you like to do?
1. Send Message
2. View Messages
3. Quit
*********************************************

:   3
nathans-mini:Tnet nathanreed$
```

Case 2: Connect to bad address

```
**********************************************
What would you like to do?
1. Send Message
2. View Messages
3. Quit
**********************************************

:   1
1 .  tdulcet
2 .  patter5
3 .  relsqui
4 .  pyrrh
5 .  aarong
6 .  mancat
7 .  dom
8 .  brodie
9 .  chupacabra
10 .  paolo2
11 .  mrme
12 .  manpreet20
13 .  huyng90
14 .  rhatchet
15 .  natreed
16 .  leng
17 .  aldridge85
18 .  etsai
19 .  jbucklin
20 .  po8
21 .  lukekaz9
22 .  echoserver
23 .  Test

Choose a person to send a message to:

21
Enter your message
Hit enter AT ANY TIME to return to main menu.


:  hello
Connecting on 198.29.41.107:6283.

:

198.29.41.107:6283 is unreachable.
HIT THE ENTER KEY TO RETURN TO THE MENU
Exception in thread Thread-4:
Traceback (most recent call last):
  File "/Library/Frameworks/Python.framework/Versions/3.3/lib/python3.3/threading.py", line 901, in
_bootstrap_inner
    self.run()
  File "/Library/Frameworks/Python.framework/Versions/3.3/lib/python3.3/threading.py", line 858, in run
    self._target(*self._args, **self._kwargs)
  File "/Users/nathanreed/PycharmProjects/Tnet/client.py", line 28, in clientFunc
    sock.shutdown(socket.SHUT_RDWR)
OSError: [Errno 57] Socket is not connected


**********************************************
What would you like to do?
1. Send Message
2. View Messages
3. Quit
**********************************************

:   2
No messages ..
**********************************************
What would you like to do?
1. Send Message
2. View Messages
3. Quit
**********************************************

:
```