

Discussions

How to use Application:

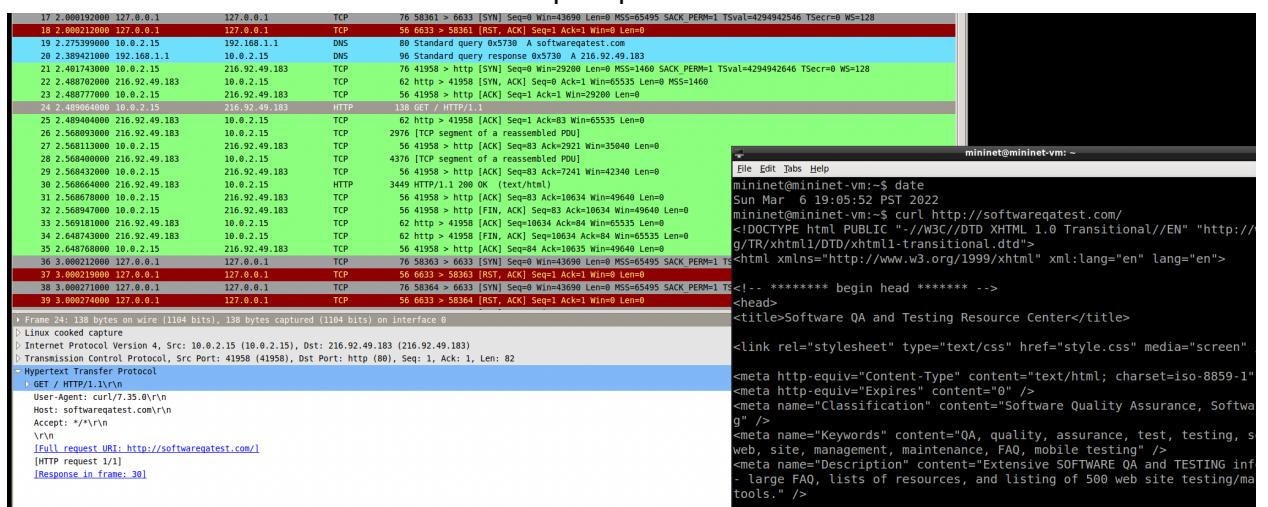
- Uses python3
 - Command: “python3 echung13MyCurl.py <argument1> <optional argument2>
 - All arguments must start with “http://”
 - Example commands lines:
 - python3 echung13MyCurl.py <http://www.google.com:80>
 - Indicates url containing:
 - Server hostname: www.google.com
 - Destination port : 80
 - python3 echung13MyCurl.py http://93.184.216.34:80/foo.html www.example.com
 - Indicates url containing:
 - Ip address : 93.184.216.34
 - Destination port: 80
 - Server hostname: www.example.com
 - Html object: /foo.html

Things to Note:

- Program does not support chunk encoding or “https”
 - There is a 6 sec timeout set in place

Test:

- <http://www.softwareqatest.com/>
 - Web object successfully downloaded
 - Log.csv:
 - Successful, 200, http://www.softwareqatest.com/, www.softwareqatest.com/, 192.168.1.14, 216.92.49.183, 63400, 80, HTTP/1.1 200 OK
 - Wireshark:
 - Actual Curl Command:
 - The first screenshot is the http Request and the second screenshot is the http response

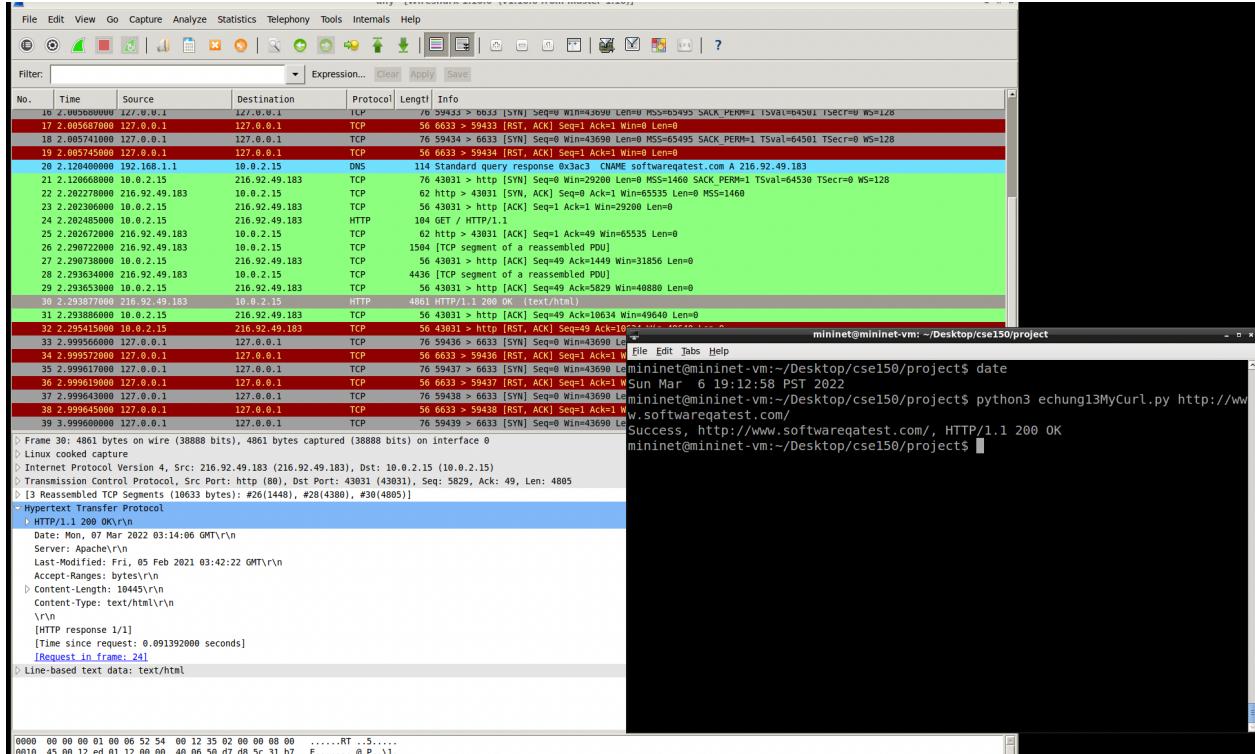


```
17.7 0.000192088 17.7 0.1 TCP 76 5931 > 6633 [SYN] Seq=0 Win=1690 Len=4554 MSS=65595 SACK_PERM=1 Tsval=4294942925  
18.2 0.000212088 17.7 0.1 TCP 56 6633 > 58361 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0  
19.2 0.000232088 19.2 168.1.1 DNS 88 Standard query 0x7530 A softwaretest.com  
20.2 0.000242088 19.2 168.1.1 DNS 96 Standard query response 0x7530 A 216.92.49.183  
21.4 0.0014072088 18.0 2.15 TCP 76 41958 > http [SYN] Seq=0 Win=25208 Len=0 MSS=1460 SACK_PERM=1 Tsval=4294942646  
22.4 0.0008720088 216.92.49.183 TCP 62 http > 41958 [SYN] ACK Seq=0 Ack=1 Win=65535 Len=0 MSS=1460  
23.4 0.0008720088 18.0 2.15 TCP 56 41958 > http [ACK] Seq=1 Ack=1 Win=29208 Len=0  
24.4 0.0008640088 18.0 2.15 TCP 138 http > 41958 [ACK] Seq=1 Ack=1 Win=0  
25.4 0.0008400088 216.92.49.183 TCP 52 http > 41958 [ACK] Seq=1 Ack=1 Win=65535 Len=0  
26.4 0.0008400088 216.92.49.183 TCP 2976 [TCP segment of a reassembled PDU]  
27.2 0.5681130890 18.0 2.15 TCP 56 41958 > http [ACK] Seq=83 Ack=2921 Len=35040 Len=0  
28.2 0.5684008088 216.92.49.183 TCP 4376 [TCP segment of a reassembled PDU]  
29.2 0.5684320088 18.0 2.15 TCP 56 41958 > http [ACK] Seq=83 Ack=7241 Len=42340 Len=0  
30.4 0.5684320088 216.92.49.183 TCP 3449 HTTP/1.1 288 OK [text/html]  
31.2 0.5687808088 18.0 2.15 TCP 56 41958 > http [ACK] Seq=83 Ack=10634 Win=49640 Len=0  
32.2 0.5689478088 18.0 2.15 TCP 56 41958 > http [FIN, ACK] Seq=10634 Ack=83 Win=49640 Len=0  
33.2 0.5690478088 216.92.49.183 TCP 62 http > 41958 [ACK] Seq=10634 Ack=83 Win=65535 Len=0  
34.2 0.5690478088 216.92.49.183 TCP 52 http > 41958 [TCP segment of a reassembled PDU] Seq=10634 Ack=83 Win=65535 Len=0  
35.2 0.6407760880 18.0 2.15 TCP 56 41958 > http [ACK] Seq=84 Ack=10635 Win=49640 Len=0  
36.3 0.6902320880 17.7 0.1 TCP 76 58363 > 6633 [SYN] Seq=0 Win=1690 Len=0 MSS=65595 SACK_PERM=1 Tsval=4294942925  
Frame 30: 3499 bytes on wire (27928 bits), 3499 bytes captured (27928 bits) on interface   
 0 Linux cooked capture  
 1 Internal Protocol Version 4, Src: 216.92.49.183 (216.92.49.183), Dst: 10.0.2.15 (10.0.2.15)  
 2 Transmission Control Protocol, Src Port: 41958 (41958), Seq: 7241, Ack: 83, Len: 3393  
 3 Resesembled TCP Segments (10633 bytes): #26(2920), #28(4320), #30(3393)  
 4 HyperText Transfer Protocol  
 5 HTTP/1.1 288 OK<br>  
Date: Mon, 07 Mar 2022 03:08:18 GMT<br>  
Server: Apache/2.4<br>  
Last-Modified: Fri, 05 Feb 2021 03:42:22 GMT<br>  
Accept-Ranges: bytes<br>  
Content-Length: 104545<br>  
Content-Type: text/html<br>  
Vary:  
[HTTP response 1/1]  
[Time since request: 0.076600000 seconds]  
[Request in frame: 24]  
[Line-based text data: text/html]  
  
0000  00 00 00 01 00 06 52 00 00 12 35 02 00 00 00 00 .....RT ..5.....  
0010  45 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 F 1 0A 01  
File Edit Insert View Source Help
```

mininet@mininet-vm: ~

■ Own Program:

- The first screenshot shows the http request and the second shows the http response



- The output matches curl for the most part. The only difference is my program takes less packets compared to the curl
- <http://www.testingmcafesites.com/>
 - Web object successfully downloaded
 - Log.csv:
 - Successful, 200, http://www.testingmcafesites.com/, www.testingmcafesites.com/, 192.168.1.14, 161.69.29.75, 63421, 80, HTTP/1.1 200 OK
 - Wireshark:
 - Actual Curl:
 - The first screenshot is the http Request and the second screenshot is the http response

The image displays two screenshots of NetworkMiner tool interface showing network traffic analysis.

Screenshot 1 (Left): Shows the initial HTTP request. The packet list shows a single frame (Frame 34) with the following details:

- No.: 34
- Time: 2022-03-06 10:02:15.000
- Source: 127.0.0.1
- Destination: 127.0.0.1
- Protocol: TCP
- Length: 146
- Info: GET / HTTP/1.1

The packet details pane shows the raw request:

```
User-Agent: curl/7.35.0\r\nHost: www.testingmcafesites.com\r\nAccept: */*\r\n\r\nFull request URL: http://www.testingmcafesites.com/\r\nHTTP request 1/1\r\nResponse in frame: 46
```

Screenshot 2 (Right): Shows the corresponding HTTP response. The packet list shows multiple frames (Frames 35-59) with the following details:

- No.: 35 to 59
- Time: 2022-03-06 10:02:15.000 to 2022-03-06 10:02:22.000
- Source: 127.0.0.1
- Destination: 127.0.0.1
- Protocol: TCP
- Length: 146 to 942
- Info: 200 OK

The packet details pane shows the raw response:

```
<html>
<head>
    <title>URL for testing.</title>
</head>
<body>
    <code>
        <A href="http://www.testingmcafesites.com/index.html">http://www.testingmcafesites.com/index.html</A><br>
    <br>
        This is an index url which gives an overview of the different test urls available.<br>
        <br>
        <A href="http://www.testingmcafesites.com/testcat_ac.html">http://www.testingmcafesites.com/testcat_ac.html</A><br>
        -This is an example URL which should be categorized as an art/culture website with a minimal risk reputation score.<br>
    <br>
</code>
</body>
</html>
```

Screenshot 3 (Left): Shows another HTTP request (Frame 46). The packet list shows a single frame (Frame 46) with the following details:

- No.: 46
- Time: 2022-03-06 10:02:15.000
- Source: 127.0.0.1
- Destination: 127.0.0.1
- Protocol: TCP
- Length: 942
- Info: GET / HTTP/1.1

The packet details pane shows the raw request:

```
Content-Type: text/html\r\nContent-Length: 28634\r\nConnection: keep-alive\r\nLast-Modified: Mon, 22 Jun 2020 20:38:18 GMT\r\nAccept-Ranges: bytes\r\nEtag: <7371810548601>\r\nServer: Microsoft-IIS/8.5\r\nX-Powered-By: ASP.NET\r\nX-LMNTINEB021\r\nDate: Mon, 07 Mar 2022 03:17:38 GMT\r\n\r\nHTTP response 1/1\r\nTime since request: 0.07685800 seconds\r\nRequest in frame: 34
```

Screenshot 4 (Right): Shows the corresponding HTTP response (Frame 47). The packet list shows a single frame (Frame 47) with the following details:

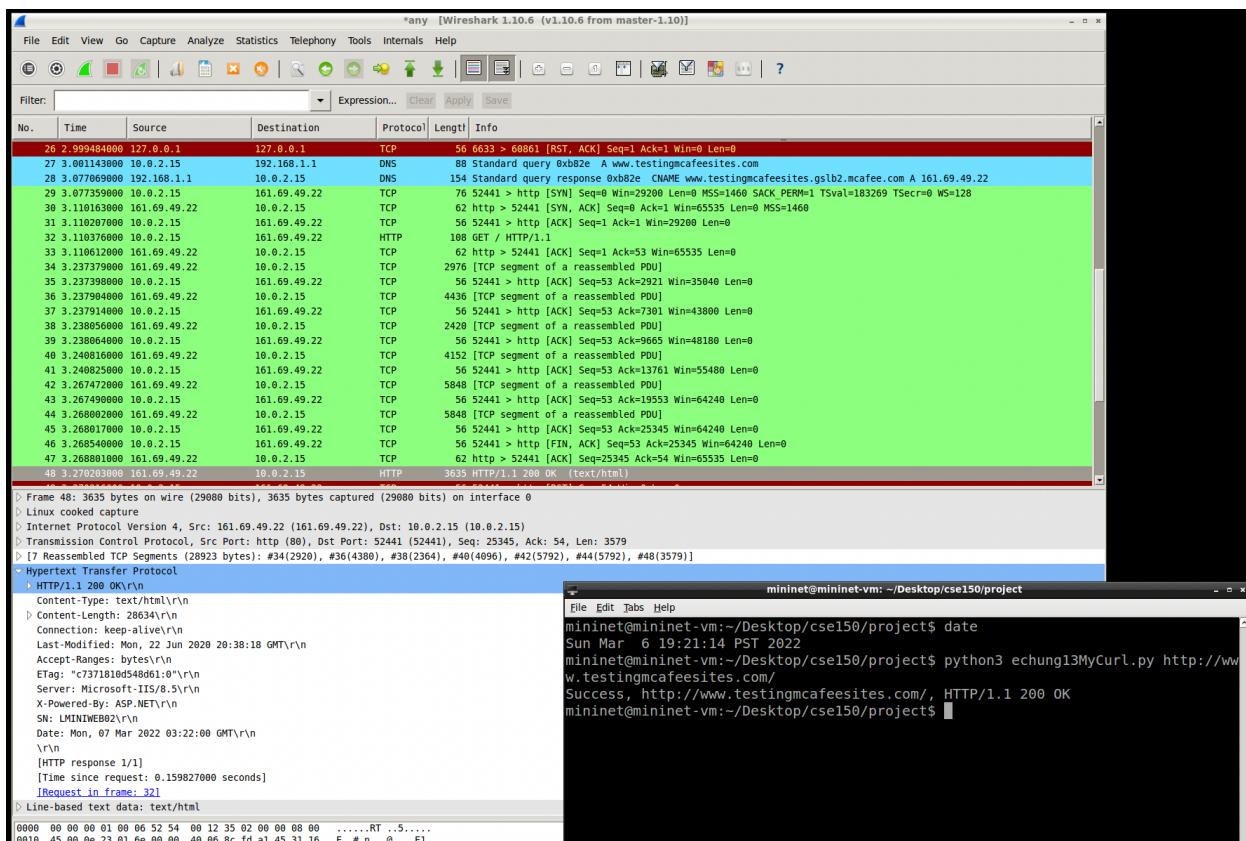
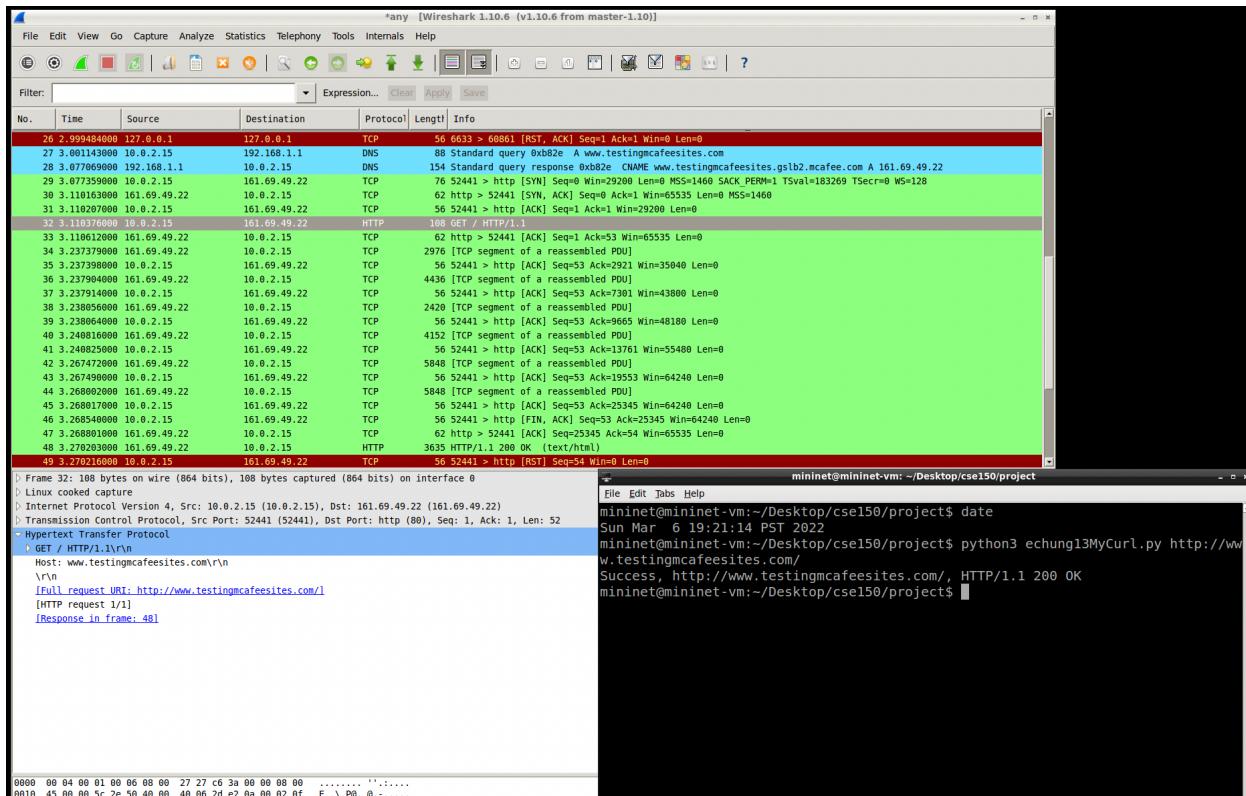
- No.: 47
- Time: 2022-03-06 10:02:15.000
- Source: 127.0.0.1
- Destination: 127.0.0.1
- Protocol: TCP
- Length: 942
- Info: 200 OK

The packet details pane shows the raw response:

```
<html>
<head>
    <title>URL for testing.</title>
</head>
<body>
    <code>
        <A href="http://www.testingmcafesites.com/index.html">http://www.testingmcafesites.com/index.html</A><br>
    <br>
        This is an index url which gives an overview of the different test urls available.<br>
        <br>
        <A href="http://www.testingmcafesites.com/testcat_ac.html">http://www.testingmcafesites.com/testcat_ac.html</A><br>
        -This is an example URL which should be categorized as an art/culture website with a minimal risk reputation score.<br>
    <br>
</code>
</body>
</html>
```

Own Program

- The first screenshot is the http Request and the second screenshot is the http response



- The output matches the curl for the most part. The only difference is my program takes less packets compared to the curl

- <http://www.example.com/anyname.html>
 - Web object unsuccessfully downloaded
 - Log.csv:
 - Unsuccessful, 404, http://www.example.com/anyname.html, www.example.com, 192.168.1.14, 93.184.216.34, 63428, 80, HTTP/1.1 404 Not Found
 - Wireshark:
 - Actual Curl:
 - The first screenshot is the http Request and the second screenshot is the http response

Any - [Wireshark 1.10.6 (v1.10.6 from master-1.10)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
23	3.0992549000	127.0.0.1	127.0.0.1	TCP	76	33254 > 6633 [SYN] Seq=0 Win=43690 MSS=65495 SACK PERM=1 TStamp=235250 TSecr=0 WS=128
24	3.0992660000	127.0.0.1	127.0.0.1	TCP	56	6633 > 33254 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
25	3.7581830000	10.0.2.15	192.168.1.1	DNS	77	Standard query 0xb6b6 A www.example.com
26	3.7786890000	192.168.1.1	10.0.2.15	DNS	93	Standard query response 0xb6b6 A 93.184.216.34
27	3.8092690000	10.0.2.15	93.184.216.34	TCP	76	51318 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK PERM=1 TStamp=235450 TSecr=0 WS=128
28	3.8177740000	93.184.216.34	10.0.2.15	TCP	62	http > 51318 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
29	3.8177970000	10.0.2.15	93.184.216.34	TCP	56	51318 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
30	3.8178840000	10.0.2.15	93.184.216.34	HTTP	147	GET /anyname.html HTTP/1.1
31	3.8181150000	93.184.216.34	10.0.2.15	HTTP	62	62 http > 51318 [ACK] Seq=92 Ack=92 Win=65535 Len=0
32	3.8346000000	93.184.216.34	10.0.2.15	HTTP	1594	[TCP segment of a reassembled PDU]
33	3.8346260000	10.0.2.15	93.184.216.34	HTTP	56	51318 > http [ACK] Seq=92 Ack=1449 Win=31856 Len=0
34	3.8351770000	93.184.216.34	10.0.2.15	HTTP	206	HTTP/1.1 404 Not Found (text/html)
35	3.8351850000	10.0.2.15	93.184.216.34	HTTP	56	51318 > http [ACK] Seq=92 Ack=1599 Win=34752 Len=0
36	3.8353300000	10.0.2.15	93.184.216.34	HTTP	56	51318 > http [FIN, ACK] Seq=92 Ack=1599 Win=34752 Len=0
37	3.8355540000	93.184.216.34	10.0.2.15	HTTP	62	http > 51318 [ACK] Seq=1599 Ack=93 Win=65535 Len=0
38	3.8499510000	93.184.216.34	10.0.2.15	HTTP	62	62 http > 51318 [FIN, ACK] Seq=1599 Ack=93 Win=65535 Len=0
39	3.8499720000	10.0.2.15	93.184.216.34	HTTP	56	51318 > http [ACK] Seq=93 Ack=1600 Win=34752 Len=0
40	3.9997880000	127.0.0.1	127.0.0.1	TCP	76	33256 > 6633 [SYN] Seq=0 Win=43690 Len=0 MSS=65495 SACK PERM=1 TStamp=235500 TSecr=0 WS=128
41	3.9997860000	127.0.0.1	127.0.0.1	TCP	56	6633 > 33256 [RST, ACK] Seq=1 Win=0 mininet@mininet-vm: ~/Desktop/cse150/project
42	3.9998550000	127.0.0.1	127.0.0.1	TCP	76	33257 > 6633 [SYN] Seq=0 Win=0 mininet@mininet-vm: ~/Desktop/cse150/project\$ date
43	3.9998580000	127.0.0.1	127.0.0.1	TCP	56	6633 > 33257 [RST, ACK] Seq=1 Win=0 mininet@mininet-vm: ~/Desktop/cse150/project\$ date
44	3.9998840000	127.0.0.1	127.0.0.1	TCP	76	33258 > 6633 [SYN] Seq=0 Win=0 mininet@mininet-vm: ~/Desktop/cse150/project\$ curl http://www.example.com/anyname.html
45	3.9998660000	127.0.0.1	127.0.0.1	TCP	56	6633 > 33258 [RST, ACK] Seq=1 Win=0 mininet@mininet-vm: ~/Desktop/cse150/project\$ curl http://www.example.com/anyname.html

```

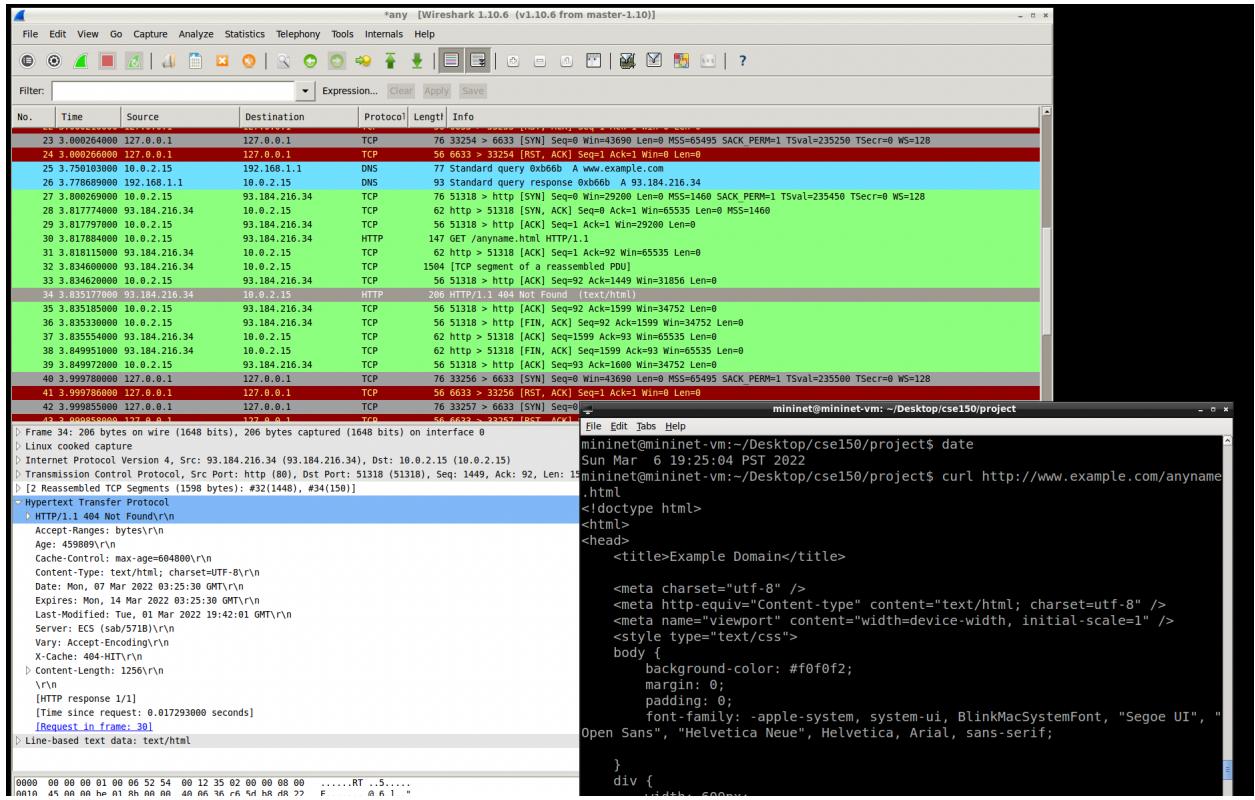
Frame 30: 147 bytes on wire (1176 bits), 147 bytes captured (1176 bits) on interface 0
  Linux cooked capture
  Internet Protocol Version 4, Src: 10.0.2.15 (10.0.2.15), Dst: 93.184.216.34 (93.184.216.34)
  Transmission Control Protocol, Src Port: 51318 (51318), Dst Port: http (80), Seq: 1, Ack: 1, Len: 91
  Hypertext Transfer Protocol
    GET /anyname.html HTTP/1.1\r\n
      User-Agent: curl/7.35.0\r\n
      Host: www.example.com\r\n
      Accept: */*\r\n
      \r\n
      (Full request URL: http://www.example.com/anyname.html
      [HTTP request 1/1]
      [Response in frame: 34]

```

```

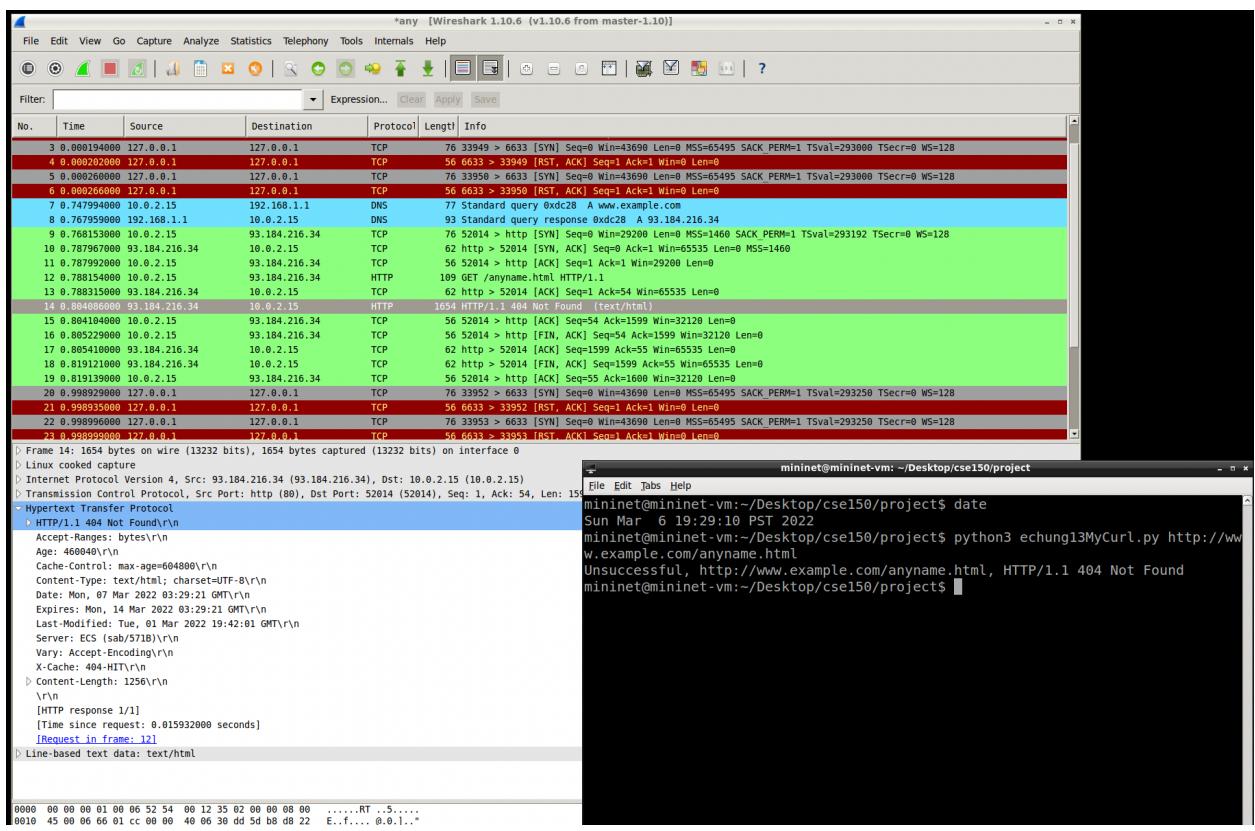
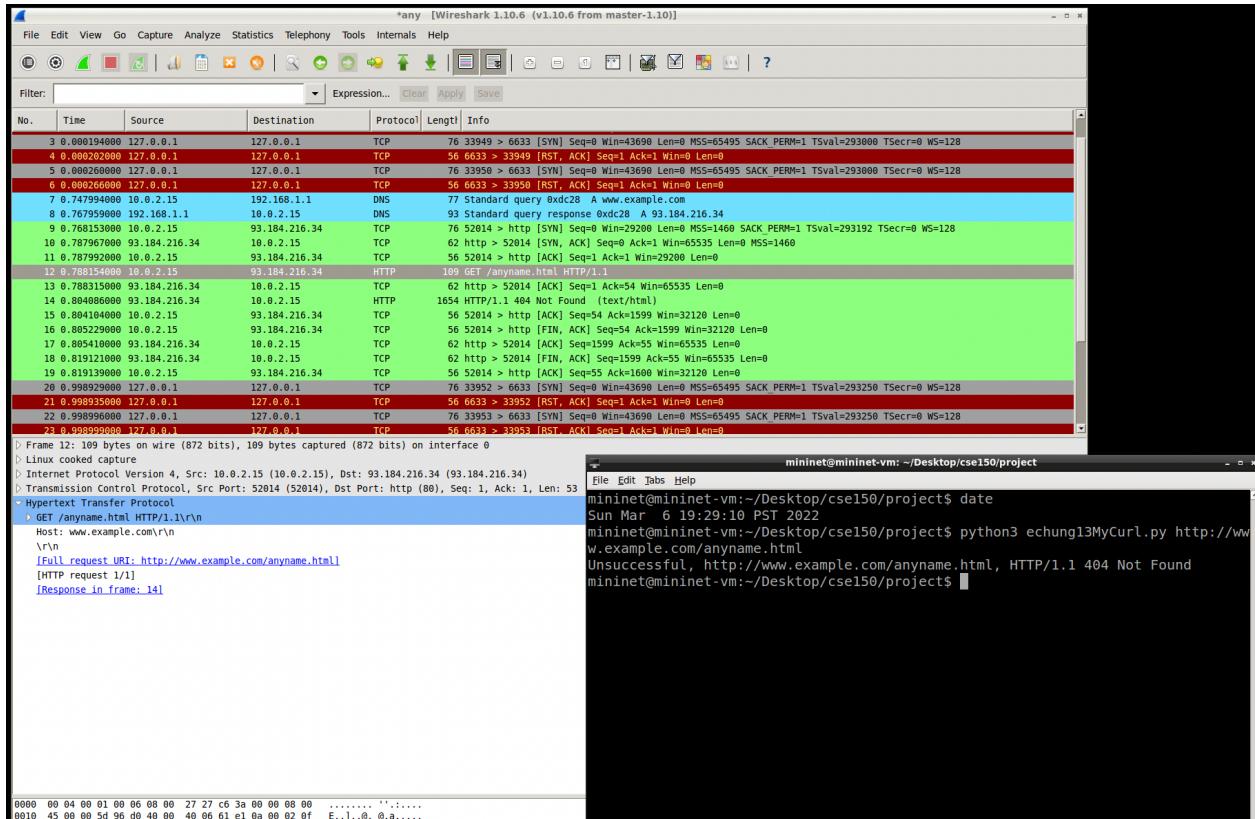
0000  00 04 00 01 00 06 08 00 27 27 c6 3a 00 00 08 00  ..... '.....'.
0010  45 00 00 83 74 f3 40 00 40 06 83 98 0a 00 02 0f  E...t.0. 0.....

```

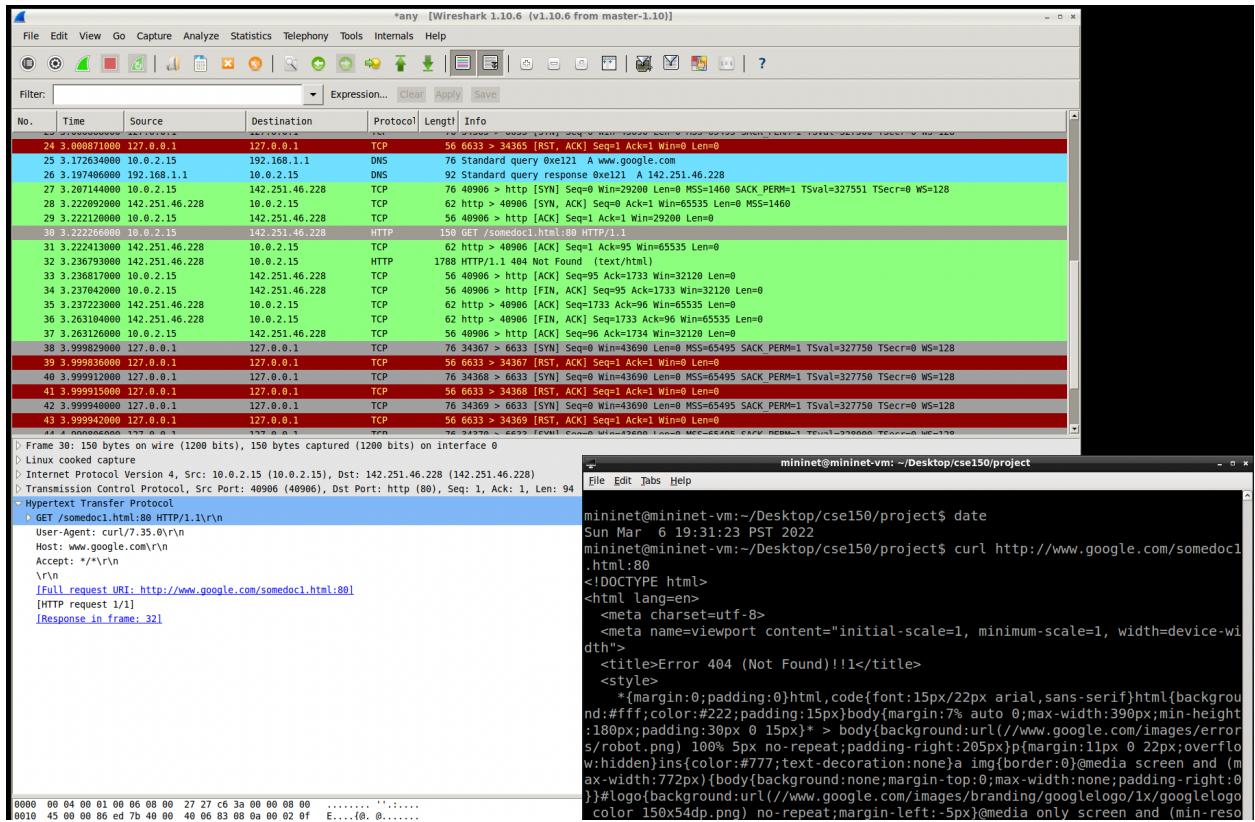


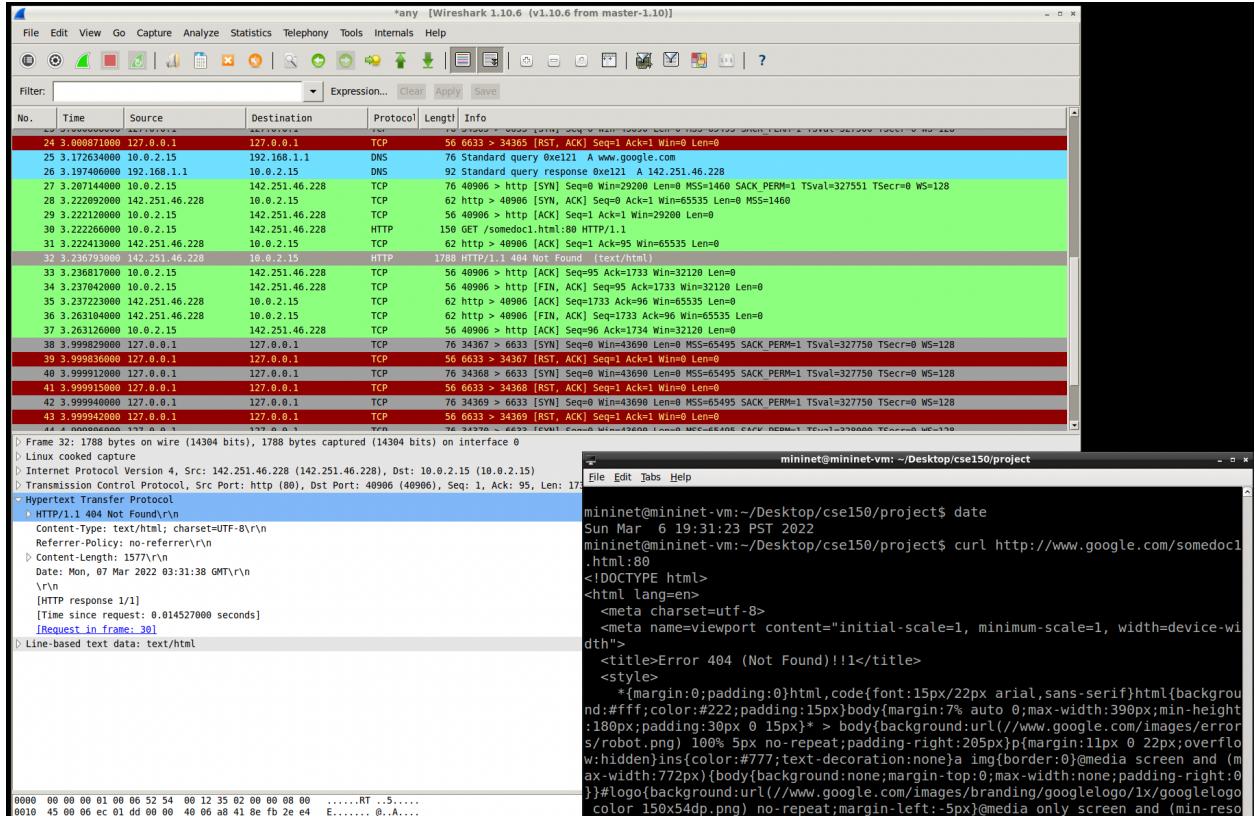
■ Own Program

- The first screenshot is the http Request and the second screenshot is the http response



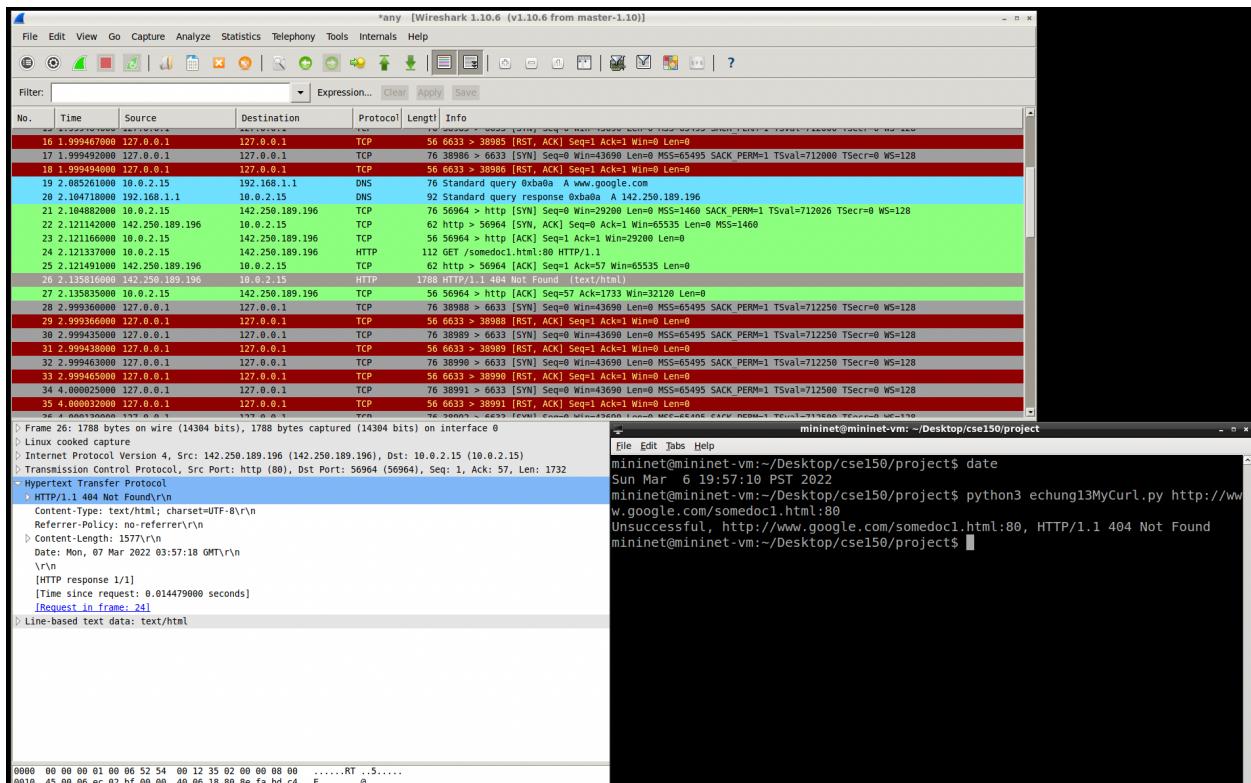
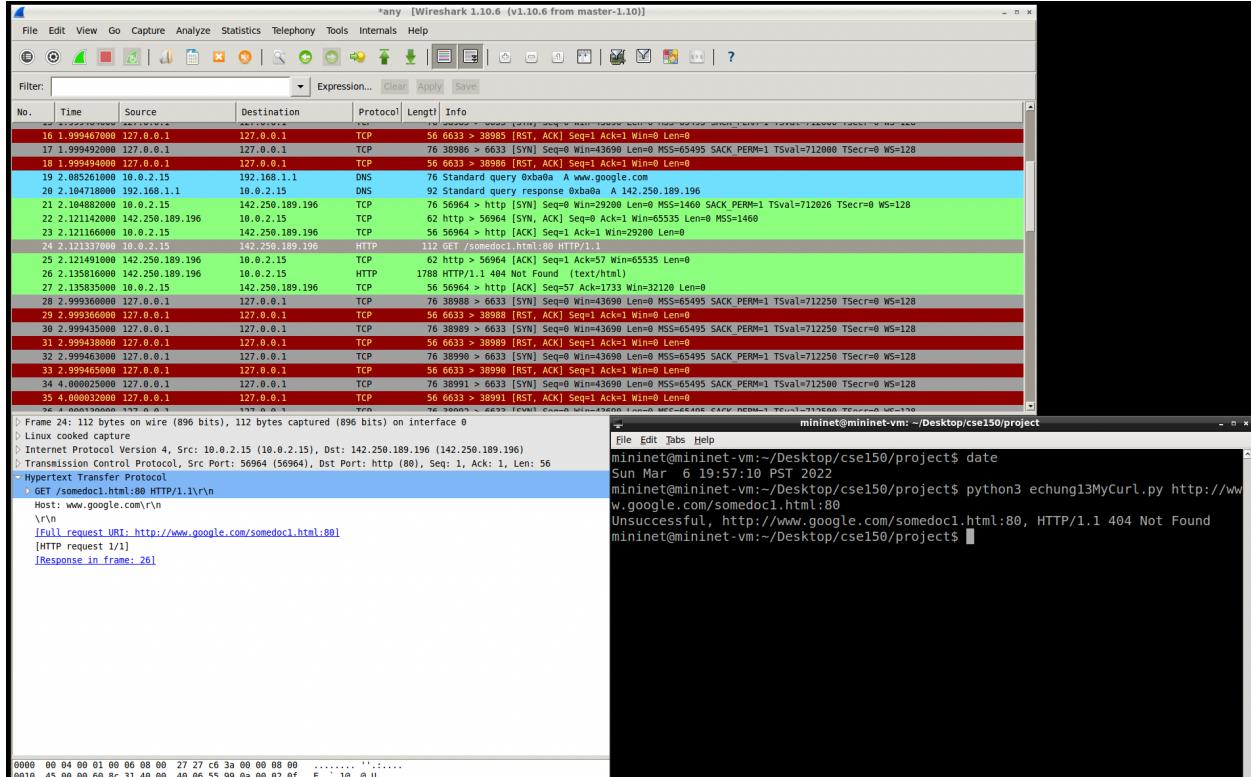
- The output matches the curl for the most part. The only difference is my program takes less packets compared to the curl
- <http://www.google.com/somedoc1.html:80>
 - Web object unsuccessfully downloaded
 - Log.csv:
 - Unsuccessful, 404, http://www.google.com/somedoc1.html:80, www.google.com, 192.168.1.14, 142.250.189.228, 63429, 80, HTTP/1.1 404 Not Found
 - Wireshark:
 - Actual Curl:
 - The first screenshot is the http Request and the second screenshot is the http response

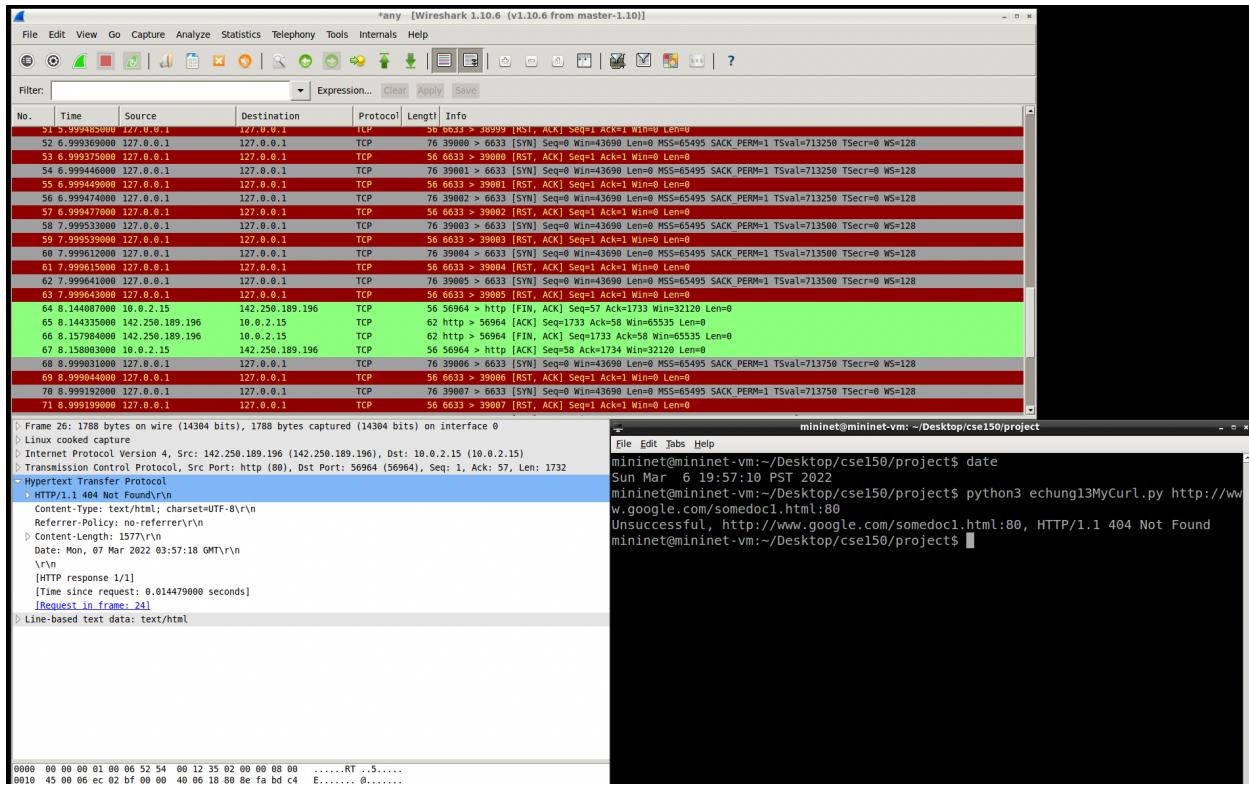




■ Own Program

- The first screenshot is the http Request, the second screenshot is the http response, and the third one is for the closing of TCP connection





- The output matches the curl for the most part. The only difference is my program takes longer to close the TCP connection versus the actual curl.
- <http://www.ucla.edu>
 - Web object unsuccessfully downloaded
 - Log.csv
 - Unsuccessful, 301, http://www.ucla.edu, www.ucla.edu, 192.168.1.14, 13.224.2.123, 63434, 80, HTTP/1.1 301 Moved Permanently
 - Wireshark:
 - Actual Curl:
 - The first screenshot is the http Request and the second screenshot is the http response

Wireshark 1.10.6 (v1.10.6 from master-1.10)

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
9	1.0001666000	127.0.0.1	127.0.0.1	TCP	70	39801 > 0x33 [SYN] Seq=0 Win=43090 Len=0 MSS=65495 SACK_PERM=1 TStamp=708250 TSecr=0 WS=128
10	1.0001666000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39661 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
11	1.0001666000	127.0.0.1	127.0.0.1	TCP	76	39662 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708250 TSecr=0 WS=128
12	1.0001666000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39662 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
13	1.2760239000	10.0.2.15	192.168.1.1	DNS	74	Standard query 0x1e07 A www.ucla.edu
14	1.3558450000	192.168.1.1	10.0.2.15	DNS	181	Standard query response 0x1e07 CNAM www.ucla.edu A 13.226.230.114 A 13.226.230.6 A 13.226.230.114
15	1.4171006000	10.0.2.15	13.226.230.114	TCP	76	37157 > http [ACK] Seq=77 Win=30856 Len=0 MSS=1460
16	1.4397930000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
17	1.4398150000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
18	1.4433260000	10.0.2.15	13.226.230.114	HTTP	132	GET / HTTP/1.1
19	1.4435590000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [ACK] Seq=1 Ack=77 Win=65535 Len=0
20	1.4651070000	13.226.230.114	10.0.2.15	HTTP	634	HTTP/1.1 301 Moved Permanently (text/html)
21	1.4651270000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=77 Win=30856 Len=0 MSS=1460
22	1.4657050000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [FIN, ACK] Seq=77 Win=30856 Len=0
23	1.4660990000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [ACK] Seq=579 Ack=78 Win=65535 Len=0
24	1.4854540000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [FIN, ACK] Seq=579 Ack=78 Win=65535 Len=0
25	1.4854750000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=78 Win=30856 Len=0
26	2.0065540000	127.0.0.1	127.0.0.1	TCP	76	39664 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708500 TSecr=0 WS=128
27	2.0065610000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39664 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
28	2.0065610000	127.0.0.1	127.0.0.1	TCP	76	39665 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708500 TSecr=0 WS=128
29	2.0065610000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39665 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0

Frame 18: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on interface 0

Linux cooked capture

Internet Protocol Version 4, Src: 10.0.2.15 (10.0.2.15), Dst: 13.226.230.114 (13.226.230.114)

Transmission Control Protocol, Src Port: 37157 (37157), Dst Port: http (80), Seq: 1, Ack: 1, Len: 76

- Hypertext Transfer Protocol

> GET / HTTP/1.1\r\n

User-Agent: curl/7.35.0\r\n

Host: www.ucla.edu\r\n

Accept: */*\r\n

\r\n

[Full request URI: http://www.ucla.edu/]

[HTTP request 1/1]

[Response in frame: 20]

mininet@mininet-vm:~/Desktop/cse150/project\$

```
mininet@mininet-vm:~/Desktop/cse150/project$ date
Sun Mar 6 20:00:47 PST 2022
mininet@mininet-vm:~/Desktop/cse150/project$ curl http://www.ucla.edu
<html>
<head><title>301 Moved Permanently</title></head>
<body bcolor="white">
<center><h1>301 Moved Permanently</h1></center>
<r><center>CloudFront</center>
</body>
</html>
mininet@mininet-vm:~/Desktop/cse150/project$
```

Wireshark 1.10.6 (v1.10.6 from master-1.10)

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
9	1.0001666000	127.0.0.1	127.0.0.1	TCP	70	39801 > 0x33 [SYN] Seq=0 Win=43090 Len=0 MSS=65495 SACK_PERM=1 TStamp=708250 TSecr=0 WS=128
10	1.0001666000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39661 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
11	1.0001666000	127.0.0.1	127.0.0.1	TCP	76	39662 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708250 TSecr=0 WS=128
12	1.0001666000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39662 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
13	1.2760239000	10.0.2.15	192.168.1.1	DNS	74	Standard query 0x1e07 A www.ucla.edu
14	1.3558450000	192.168.1.1	10.0.2.15	DNS	181	Standard query response 0x1e07 CNAM www.ucla.edu A 13.226.230.114 A 13.226.230.6 A 13.226.230.114
15	1.4171006000	10.0.2.15	13.226.230.114	TCP	76	37157 > http [ACK] Seq=77 Win=30856 Len=0 MSS=1460
16	1.4397930000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
17	1.4398150000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
18	1.4433260000	10.0.2.15	13.226.230.114	HTTP	132	GET / HTTP/1.1
19	1.4435590000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [ACK] Seq=1 Ack=77 Win=65535 Len=0
20	1.4651070000	13.226.230.114	10.0.2.15	HTTP	634	HTTP/1.1 301 Moved Permanently (text/html)
21	1.4651270000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=77 Win=30856 Len=0 MSS=1460
22	1.4657050000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [FIN, ACK] Seq=77 Win=30856 Len=0
23	1.4660990000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [ACK] Seq=579 Ack=78 Win=65535 Len=0
24	1.4854540000	13.226.230.114	10.0.2.15	TCP	62	http > 37157 [FIN, ACK] Seq=579 Ack=78 Win=65535 Len=0
25	1.4854750000	10.0.2.15	13.226.230.114	TCP	56	37157 > http [ACK] Seq=78 Win=30856 Len=0
26	2.0065540000	127.0.0.1	127.0.0.1	TCP	76	39664 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708500 TSecr=0 WS=128
27	2.0065610000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39664 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
28	2.0065610000	127.0.0.1	127.0.0.1	TCP	76	39665 > 6633 [SYN] Seq=0 Win=3690 Len=0 MSS=65495 SACK_PERM=1 TStamp=708500 TSecr=0 WS=128
29	2.0065610000	127.0.0.1	127.0.0.1	TCP	56	6633 > 39665 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0

Frame 20: 654 bytes on wire (5072 bits), 654 bytes captured (5072 bits) on interface 0

Linux cooked capture

Internet Protocol Version 4, Src: 13.226.230.114 (13.226.230.114), Dst: 10.0.2.15 (10.0.2.15)

Transmission Control Protocol, Src Port: http (80), Dst Port: http (80), Seq: 1, Ack: 77, Len: 578

- Hypertext Transfer Protocol

> HTTP/1.1 301 Moved Permanently\r\n

Server: CloudFront\r\n

Date: Mon, 07 Mar 2022 04:01:03 GMT\r\n

Content-Type: text/html\r\n

Content-Length: 181\r\n

Connection: keep-alive\r\n

Location: https://www.ucla.edu/\r\n

X-Cache: Redirect from cloudfront\r\n

Via: 1.1 4c7e669df0fa9ec10fc8d9b6501458.cloudfront.net (CloudFront)\r\n

X-Amz-CF-Pop: LAX5-C3\r\n

X-Amz-CF-Id: Tqe4FrNBWwOSDedqf_7xKb9sYEExU1ciuphhDT_24KMH4smIm==\r\n

\r\n

[HTTP response 1/1]

[Time since request: 0.021781000 seconds]

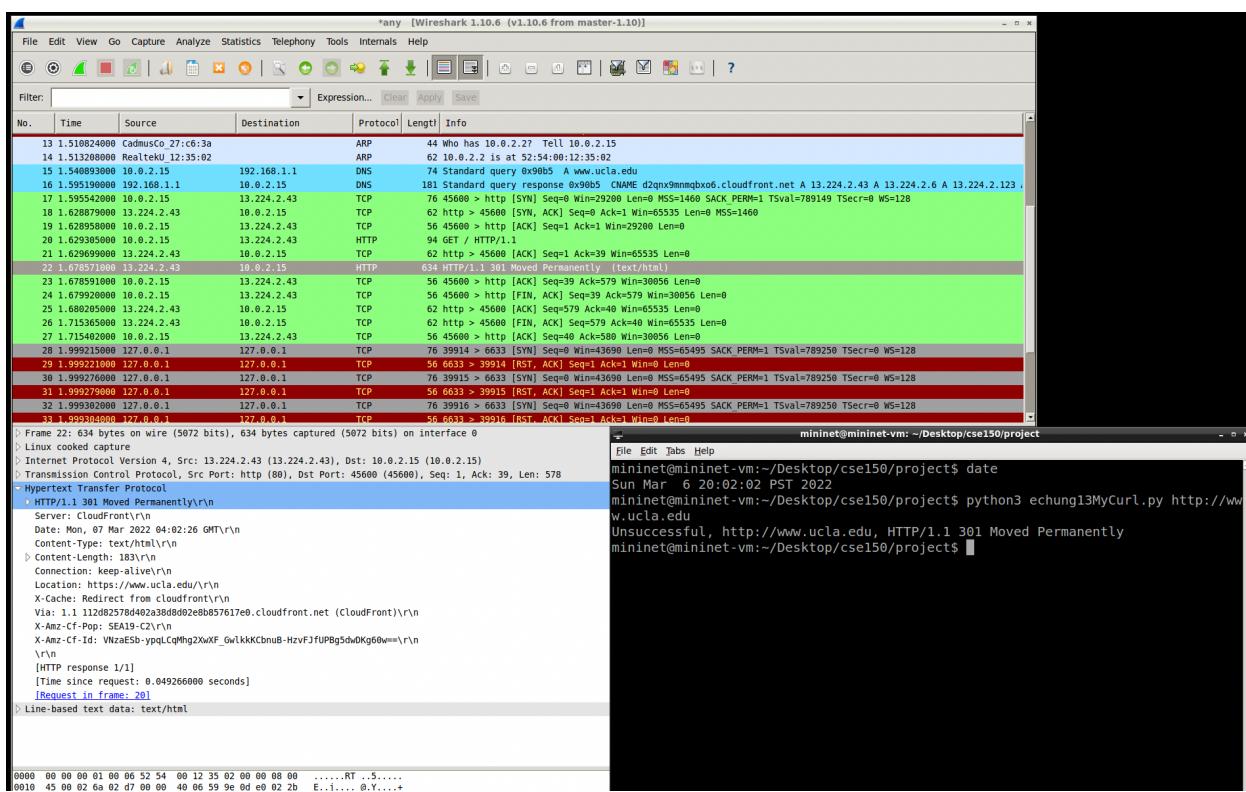
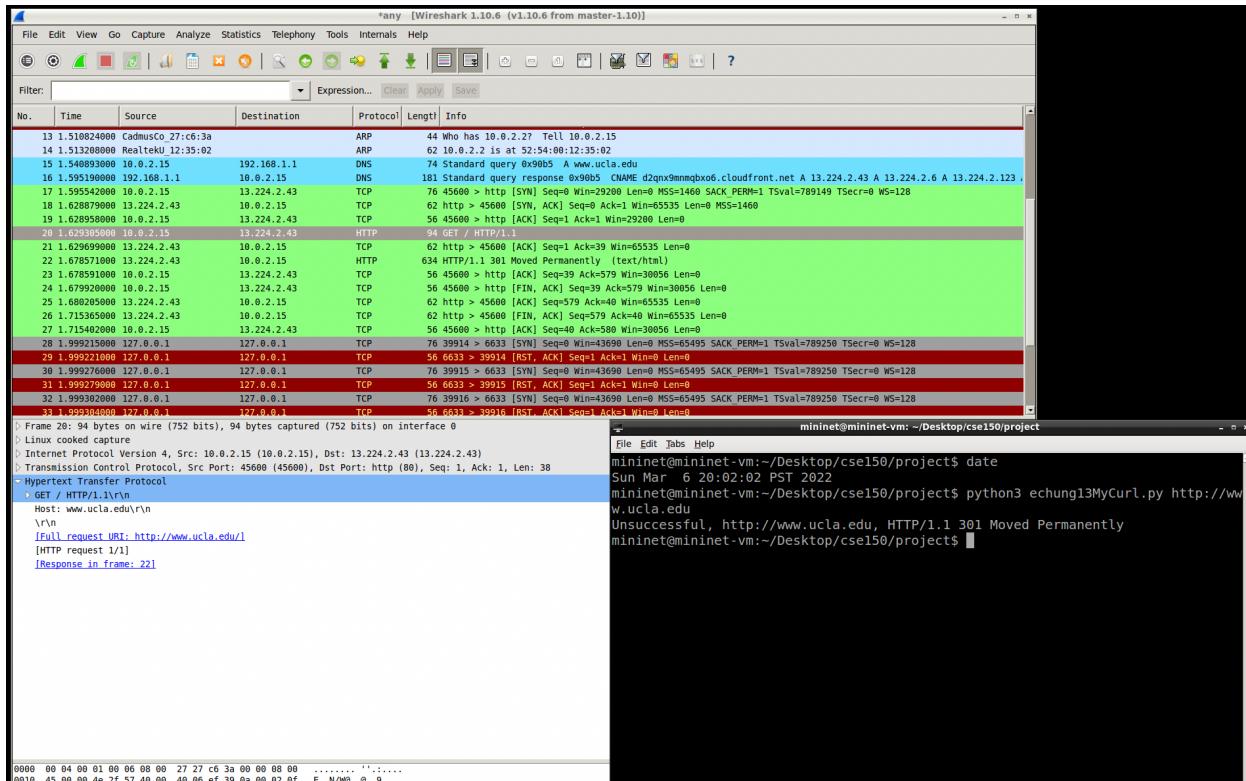
[Request in frame: 18]

Line-based text data: text/html

```
mininet@mininet-vm:~/Desktop/cse150/project$ date
Sun Mar 6 20:00:47 PST 2022
mininet@mininet-vm:~/Desktop/cse150/project$ curl http://www.ucla.edu
<html>
<head><title>301 Moved Permanently</title></head>
<body bcolor="white">
<center><h1>301 Moved Permanently</h1></center>
<r><center>CloudFront</center>
</body>
</html>
mininet@mininet-vm:~/Desktop/cse150/project$
```

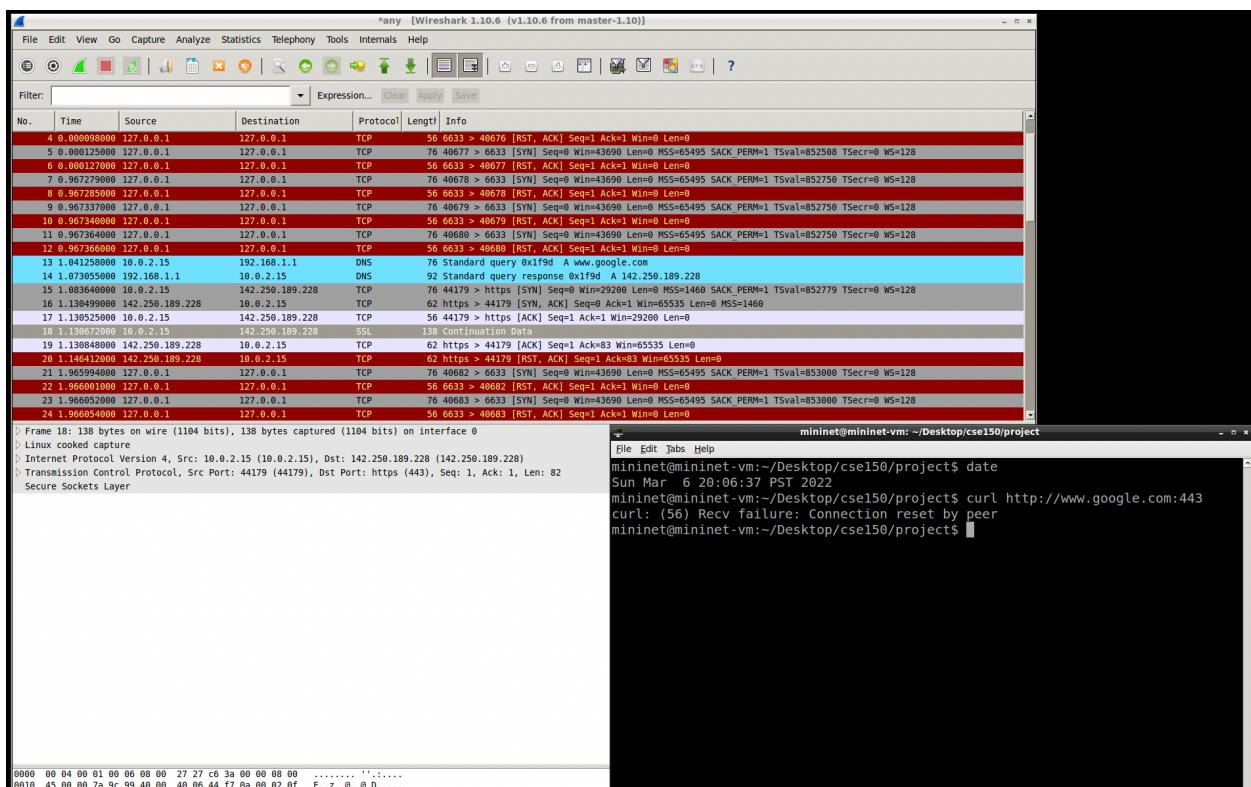
Own Program

- The first screenshot is the http Request and the second screenshot is the http response

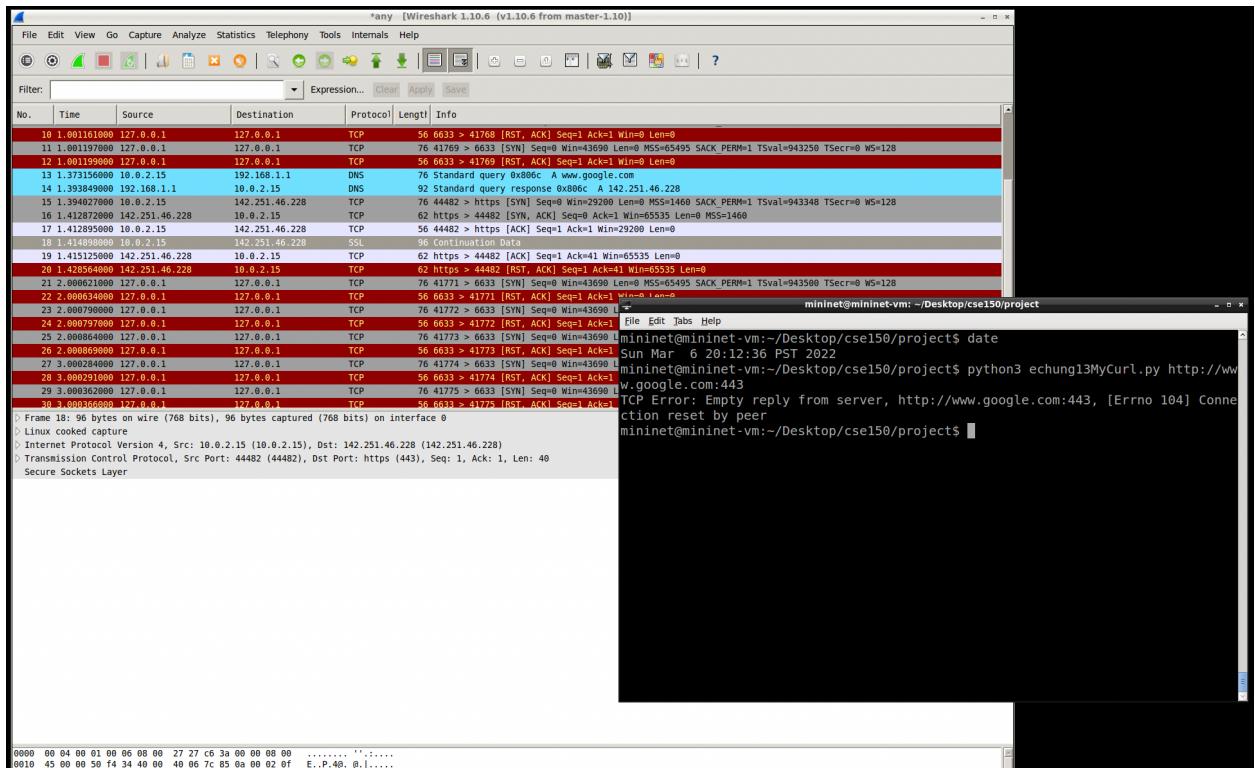


- The outputs matches the curl
- <http://www.google.com:443>
- Web object unsuccessfully downloaded

- Log.csv
 - Unsuccessful, , http://www.google.com:443, www.google.com, 192.168.1.14, 142.250.189.228, 63435, 443, [Errno 54] Connection reset by peer
- Wireshark:
 - Actual Curl:



■ Own Program



- The output matches the curl.

Summary of Tests:

For the most part, the actual curl and my program match. There are some few differences like the number of packets used and one of the test(<http://www.google.com/somedoc1.html:80>) took longer to close.