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CSE 150 Final Project
3/5/2022

How to use jchew3MyCurl.py:

- python3 jchew3MyCurl.py [fullURL] [opthostname]
- If fullURL includes an IP address, [opthostname] is required.
- If fullURL contains a domain name, [opthostname] is not required.

Test URLs:

- <http://neverssl.com/>
 - Successful download
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
5	16.079271000	10.0.2.15	75.75.75.75	DNS	74	Standard query 0x7f1f A neverssl.com
6	16.147122000	75.75.75.75	10.0.2.15	DNS	138	Standard query response 0x7f1f A 13.226.219.37 A 13.226.219.114
7	16.147419000	10.0.2.15	13.226.219.37	TCP	76	36414 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TS=
8	16.172371000	13.226.219.37	10.0.2.15	TCP	62	http > 36414 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
9	16.172387000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
10	16.172761000	10.0.2.15	13.226.219.37	HTTP	94	GET / HTTP/1.1
11	16.173170000	13.226.219.37	10.0.2.15	TCP	62	http > 36414 [ACK] Seq=1 Ack=39 Win=65535 Len=0
12	16.204221000	13.226.219.37	10.0.2.15	TCP	2020	[TCP segment of a reassembled PDU]
13	16.204233000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=39 Ack=1965 Win=32120 Len=0
14	16.204640000	13.226.219.37	10.0.2.15	HTTP	2577	HTTP/1.1 200 OK (text/html)
15	16.204646000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=39 Ack=4486 Win=37960 Len=0
16	16.205299000	10.0.2.15	75.75.75.75	DNS	74	Standard query 0xed08 A neverssl.com
17	16.249139000	75.75.75.75	10.0.2.15	DNS	138	Standard query response 0xed08 A 13.226.219.105 A 13.226.219.37
18	16.249840000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [FIN, ACK] Seq=39 Ack=4486 Win=37960 Len=0
19	16.252695000	13.226.219.37	10.0.2.15	TCP	62	http > 36414 [ACK] Seq=4486 Ack=40 Win=65535 Len=0
20	16.274422000	13.226.219.37	10.0.2.15	TCP	62	http > 36414 [FIN, ACK] Seq=4486 Ack=40 Win=65535 Len=0
21	16.274438000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=40 Ack=4487 Win=37960 Len=0

Transmission Control Protocol, Src Port: 36414 (36414), Dst Port: http (80), Seq: 1, Ack: 1, Len: 30

Hypertext Transfer Protocol

GET / HTTP/1.1\r\n

[Expert Info (Chat/Sequence): GET / HTTP/1.1\r\n]

Request Method: GET

Request URI: /

Request Version: HTTP/1.1

Host: neverssl.com\r\n

\r\n

[Full request URI: http://neverssl.com/]

[HTTP request 1/1]

[Response in frame: 14]

No.	Time	Source	Destination	Protocol	Length	Info
10	16.172761000	10.0.2.15	13.226.219.37	HTTP	94	GET / HTTP/1.1
11	16.173170000	13.226.219.37	10.0.2.15	TCP	62	http > 36414 [ACK] Seq=1 Ack=39 Win=65535 Len=0
12	16.204221000	13.226.219.37	10.0.2.15	TCP	2020	[TCP segment of a reassembled PDU]
13	16.204233000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=39 Ack=1965 Win=32120 Len=0
14	16.204640000	13.226.219.37	10.0.2.15	HTTP	2577	HTTP/1.1 200 OK (text/html)
15	16.204646000	10.0.2.15	13.226.219.37	TCP	56	36414 > http [ACK] Seq=39 Ack=4486 Win=37960 Len=0

HTTP/1.1 200 OK\r\n

[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]

Request Version: HTTP/1.1

Status Code: 200

Response Phrase: OK

Content-Type: text/html\r\n

Content-Length: 3961\r\n

Connection: keep-alive\r\n

Date: Sat, 05 Mar 2022 08:28:46 GMT\r\n

Last-Modified: Thu, 04 Nov 2021 18:27:33 GMT\r\n

ETag: "41f0211ff315bbd7e2b6dc2e98143935"\r\n

Accept-Ranges: bytes\r\n

Server: AmazonS3\r\n

Vary: Accept-Encoding\r\n

Cache-Control: public, max-age=86400\r\n

X-Cache: Hit from cloudfront\r\n

Via: 1.1 e0b4c2be9c748aa43f3011ef33d65f4e.cloudfront.net (CloudFront)\r\n

X-Amz-Cf-Pop: LAX50-CL\r\n

X-Amz-Cf-Id: zb4EZPbVjUx6yDmXuDzilygswiJMT07B1VC5S5Euhhsj57-PVDCQ==\r\n

Age: 62639\r\n

\r\n

- http://demo.borland.com/testsite/stadyn_largepagewithimages.html
 - Successful download
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
3	11.731038000	10.0.2.15	75.75.75.75	DNS	78	Standard query 0x64b7 A demo.borland.com
4	11.897760000	75.75.75.75	10.0.2.15	DNS	94	Standard query response 0x64b7 A 143.186.120.171
5	11.897968000	10.0.2.15	143.186.120.171	TCP	76	58991 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TS=
6	12.055058000	143.186.120.171	10.0.2.15	TCP	62	http > 58991 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
7	12.055134000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
8	12.055776000	10.0.2.15	143.186.120.171	HTTP	138	GET /testsite/stadyn_largepagewithimages.html HTTP/1.1
9	12.056336000	143.186.120.171	10.0.2.15	TCP	62	http > 58991 [ACK] Seq=1 Ack=83 Win=65535 Len=0
10	12.223827000	143.186.120.171	10.0.2.15	TCP	2976	[TCP segment of a reassembled PDU]
11	12.223841000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=2921 Win=35040 Len=0
12	12.224125000	143.186.120.171	10.0.2.15	TCP	1516	[TCP segment of a reassembled PDU]
13	12.224131000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=4381 Win=37960 Len=0
14	12.224823000	10.0.2.15	75.75.75.75	DNS	78	Standard query 0x5a60 A demo.borland.com
15	12.225554000	143.186.120.171	10.0.2.15	TCP	1516	[TCP segment of a reassembled PDU]
16	12.225562000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=5841 Win=40880 Len=0
17	12.225614000	143.186.120.171	10.0.2.15	TCP	1516	[TCP segment of a reassembled PDU]
18	12.225618000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=7301 Win=43800 Len=0
19	12.227319000	143.186.120.171	10.0.2.15	TCP	1516	[TCP segment of a reassembled PDU]

Hypertext Transfer Protocol

- GET /testsite/stadyn_largepagewithimages.html HTTP/1.1\r\n
 - [Expert Info (Chat/Sequence): GET /testsite/stadyn_largepagewithimages.html HTTP/1.1\r\n]
 - Request Method: GET
 - Request URI: /testsite/stadyn_largepagewithimages.html
 - Request Version: HTTP/1.1
 - Host: demo.borland.com\r\n
 - \r\n
 - [Full request URI: http://demo.borland.com/testsite/stadyn_largepagewithimages.html]
 - [HTTP request 1/1]
 - [Response in frame: 104]

No.	Time	Source	Destination	Protocol	Length	Info
100	12.840701000	143.186.120.171	10.0.2.15	TCP	8816	[TCP segment of a reassembled PDU]
101	12.840705000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=224841 Win=65535 Len=0
102	12.848142000	143.186.120.171	10.0.2.15	TCP	4436	[TCP segment of a reassembled PDU]
103	12.848153000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=229221 Win=65535 Len=0
104	12.848203000	143.186.120.171	10.0.2.15	HTTP	10126	HTTP/1.1 200 OK (text/html)
105	12.848208000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=83 Ack=239291 Win=65535 Len=0
106	12.848808000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [FIN, ACK] Seq=83 Ack=239291 Win=65535 Len=0
107	12.852629000	143.186.120.171	10.0.2.15	TCP	62	http > 58991 [ACK] Seq=239291 Ack=84 Win=65535 Len=0
108	13.008135000	143.186.120.171	10.0.2.15	TCP	62	http > 58991 [FIN, ACK] Seq=239291 Ack=84 Win=65535 Len=0
109	13.008151000	10.0.2.15	143.186.120.171	TCP	56	58991 > http [ACK] Seq=84 Ack=239292 Win=64896 Len=0

Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]

Request Version: HTTP/1.1

Status Code: 200

Response Phrase: OK

Content-Type: text/html\r\n

Last-Modified: Wed, 13 Apr 2011 12:32:41 GMT\r\n

Accept-Ranges: bytes\r\n

Etag: "69d5eld6f9cb1:0"\r\n

Server: Microsoft-IIS/10.0\r\n

X-FRAME-OPTIONS: SAMEORIGIN\r\n

X-Powered-By: ASP.NET\r\n

Date: Sun, 06 Mar 2022 01:58:38 GMT\r\n

Content-Length: 239012\r\n

\r\n

- <http://www.google.com/somedoc1.html:80>
 - Unsuccessful download
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.2.15	75.75.75.75	DNS	76	Standard query 0xb191 A www.google.com
2	0.017075000	75.75.75.75	10.0.2.15	DNS	92	Standard query response 0xb191 A 142.250.191.68
3	0.017252000	10.0.2.15	142.250.191.68	TCP	76	36466 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=
4	0.035484000	142.250.191.68	10.0.2.15	TCP	62	http > 36466 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
5	0.035510000	10.0.2.15	142.250.191.68	TCP	56	36466 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
6	0.036013000	10.0.2.15	142.250.191.68	HTTP	112	GET /somedoc1.html:80 HTTP/1.1
7	0.036556000	142.250.191.68	10.0.2.15	TCP	62	http > 36466 [ACK] Seq=1 Ack=57 Win=65535 Len=0
8	0.055801000	142.250.191.68	10.0.2.15	HTTP	1788	HTTP/1.1 404 Not Found (text/html)
9	0.055012000	10.0.2.15	142.250.191.68	TCP	56	36466 > http [ACK] Seq=57 Ack=1733 Win=32120 Len=0
10	0.055691000	10.0.2.15	75.75.75.75	DNS	76	Standard query 0x6fec A www.google.com
11	0.074739000	75.75.75.75	10.0.2.15	DNS	92	Standard query response 0x6fec A 142.250.191.68
12	0.075455000	10.0.2.15	142.250.191.68	TCP	56	36466 > http [FIN, ACK] Seq=57 Ack=1733 Win=32120 Len=0
13	0.075739000	142.250.191.68	10.0.2.15	TCP	62	http > 36466 [ACK] Seq=1733 Ack=58 Win=65535 Len=0
14	0.091064000	142.250.191.68	10.0.2.15	TCP	62	http > 36466 [FIN, ACK] Seq=1733 Ack=58 Win=65535 Len=0
15	0.091079000	10.0.2.15	142.250.191.68	TCP	56	36466 > http [ACK] Seq=58 Ack=1734 Win=32120 Len=0

Transmission Control Protocol, Src Port: 36466 (36466), Dst Port: http (80), Seq: 1, Ack: 1, Len: 56

- Hypertext Transfer Protocol
 - GET /somedoc1.html:80 HTTP/1.1\r\n
 - [Expert Info (Chat/Sequence): GET /somedoc1.html:80 HTTP/1.1\r\n]
 - Request Method: GET
 - Request URI: /somedoc1.html:80
 - Request Version: HTTP/1.1

Host: www.google.com\r\n

\r\n

[Full request URI: http://www.google.com/somedoc1.html:80]

[HTTP request 1/1]

[Response in frame: 8]

[illegible]

- <http://www.example.com/anyname.html>
 - Unsuccessful download
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
37	16.17232800	10.0.2.15	75.75.75.75	DNS	77	Standard query 0xf39c A www.example.com
38	16.18937000	75.75.75.75	10.0.2.15	DNS	93	Standard query response 0xf39c A 93.184.216.34
39	16.18954300	10.0.2.15	93.184.216.34	TCP	76	52847 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TS
40	16.20789800	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
41	16.20791700	10.0.2.15	93.184.216.34	TCP	56	52847 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
42	16.20831100	10.0.2.15	93.184.216.34	HTTP	109	GET /anyname.html HTTP/1.1
43	16.20833100	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [ACK] Seq=1 Ack=54 Win=65535 Len=0
44	16.22408800	93.184.216.34	10.0.2.15	HTTP	1654	HTTP/1.1 404 Not Found (text/html)
45	16.22409700	10.0.2.15	93.184.216.34	TCP	56	52847 > http [ACK] Seq=54 Ack=1599 Win=32120 Len=0
46	16.22479700	10.0.2.15	75.75.75.75	DNS	77	Standard query 0xbb82 A www.example.com
47	16.24506200	75.75.75.75	10.0.2.15	DNS	93	Standard query response 0xbb82 A 93.184.216.34
48	16.24575300	10.0.2.15	93.184.216.34	TCP	56	52847 > http [FIN, ACK] Seq=54 Ack=1599 Win=32120 Len=0
49	16.24605300	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [ACK] Seq=1599 Ack=55 Win=65535 Len=0
50	16.26242900	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [FIN, ACK] Seq=1599 Ack=55 Win=65535 Len=0
51	16.26244800	10.0.2.15	93.184.216.34	TCP	56	52847 > http [ACK] Seq=55 Ack=1600 Win=32120 Len=0

Internet Protocol Version 4, Src: 10.0.2.15, Dst: 93.184.216.34 (93.184.216.34)						
Transmission Control Protocol, Src Port: 52847 (52847), Dst Port: http (80), Seq: 1, Ack: 1, Len: 53						
Hypertext Transfer Protocol						
GET /anyname.html HTTP/1.1\r\n						
[Expert Info (Chat/Sequence): GET /anyname.html HTTP/1.1\r\n]						
Request Method: GET						
Request URI: /anyname.html						
Request Version: HTTP/1.1						
Host: www.example.com\r\n						
\r\n						
[Full request URI: http://www.example.com/anyname.html]						
[HTTP request 1/1]						
[Response in frame: 44]						

No.	Time	Source	Destination	Protocol	Length	Info
42	16.20831100	10.0.2.15	93.184.216.34	HTTP	109	GET /anyname.html HTTP/1.1
43	16.20833100	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [ACK] Seq=1 Ack=54 Win=65535 Len=0
44	16.22408800	93.184.216.34	10.0.2.15	HTTP	1654	HTTP/1.1 404 Not Found (text/html)
45	16.22409700	10.0.2.15	93.184.216.34	TCP	56	52847 > http [ACK] Seq=54 Ack=1599 Win=32120 Len=0
46	16.22479700	10.0.2.15	75.75.75.75	DNS	77	Standard query 0xbb82 A www.example.com
47	16.24506200	75.75.75.75	10.0.2.15	DNS	93	Standard query response 0xbb82 A 93.184.216.34
48	16.24575300	10.0.2.15	93.184.216.34	TCP	56	52847 > http [FIN, ACK] Seq=54 Ack=1599 Win=32120 Len=0
49	16.24605300	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [ACK] Seq=1599 Ack=55 Win=65535 Len=0
50	16.26242900	93.184.216.34	10.0.2.15	TCP	62	http > 52847 [FIN, ACK] Seq=1599 Ack=55 Win=65535 Len=0
51	16.26244800	10.0.2.15	93.184.216.34	TCP	56	52847 > http [ACK] Seq=55 Ack=1600 Win=32120 Len=0

HTTP/1.1 404 Not Found\r\n						
[Expert Info (Chat/Sequence): HTTP/1.1 404 Not Found\r\n]						
Request Version: HTTP/1.1						
Status Code: 404						
Response Phrase: Not Found						
Accept-Ranges: bytes\r\n						
Age: 366819\r\n						
Cache-Control: max-age=604800\r\n						
Content-Type: text/html; charset=UTF-8\r\n						
Date: Sun, 06 Mar 2022 01:35:40 GMT\r\n						
Expires: Sun, 13 Mar 2022 01:35:40 GMT\r\n						
Last-Modified: Tue, 01 Mar 2022 19:42:01 GMT\r\n						
Server: ECS (sab/571B)\r\n						
Vary: Accept-Encoding\r\n						
X-Cache: 404-HIT\r\n						
Content-Length: 1256\r\n						
\r\n						

- <http://www.ucla.edu>
 - Unsuccessful (Redirect)
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.2.15	75.75.75.75	DNS	74	Standard query 0x5ddf A www.ucla.edu
2	0.033732000	75.75.75.75	10.0.2.15	DNS	181	Standard query response 0x5ddf CNAME dqnx9mmqbx06.cloudfront.
3	0.033986000	10.0.2.15	13.226.230.114	TCP	76	57388 > http [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TS
4	0.059317000	13.226.230.114	10.0.2.15	TCP	62	http > 57388 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
5	0.059366000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [ACK] Seq=1 Ack=1 Win=29200 Len=0
6	0.059812000	10.0.2.15	13.226.230.114	HTTP	94	GET / HTTP/1.1
7	0.066238000	13.226.230.114	10.0.2.15	TCP	62	http > 57388 [ACK] Seq=1 Ack=39 Win=65535 Len=0
8	0.096156000	13.226.230.114	10.0.2.15	HTTP	634	HTTP/1.1 301 Moved Permanently (text/html)
9	0.096169000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [ACK] Seq=39 Ack=579 Win=30056 Len=0
10	0.096979000	10.0.2.15	75.75.75.75	DNS	74	Standard query 0x33a1 A www.ucla.edu
11	0.131040000	75.75.75.75	10.0.2.15	DNS	181	Standard query response 0x33a1 CNAME dqnx9mmqbx06.cloudfront.
12	0.131684000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [FIN, ACK] Seq=39 Ack=579 Win=30056 Len=0
13	0.131968000	13.226.230.114	10.0.2.15	TCP	62	http > 57388 [ACK] Seq=579 Ack=40 Win=65535 Len=0
14	0.155317000	13.226.230.114	10.0.2.15	TCP	62	http > 57388 [FIN, ACK] Seq=579 Ack=40 Win=65535 Len=0
15	0.155337000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [ACK] Seq=40 Ack=580 Win=30056 Len=0

The image shows a Wireshark packet capture of an HTTP GET request. The packet list on the left shows three packets: an Internet Protocol version 4 packet (No. 1), a Transmission Control Protocol packet (No. 2), and a Hypertext Transfer Protocol packet (No. 3). The selected packet (No. 3) is expanded, showing the GET / HTTP/1.1 request. The packet details pane on the right shows the request method (GET), request URI (/), request version (HTTP/1.1), host (www.ucla.edu), and the full request URI (http://www.ucla.edu/). The packet bytes pane at the bottom shows the raw data of the packet, including the GET request line and the HTTP version.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.0.2.15	10.0.2.15	Internet Protocol Version 4	60	Src: 10.0.2.15 (10.0.2.15), Dst: 10.0.2.15 (10.0.2.15)
2	0.000000	10.0.2.15	10.0.2.15	Transmission Control Protocol	38	Src Port: 57388 (57388), Dst Port: http (80), Seq: 1, Ack: 1, Len: 38
3	0.000000	10.0.2.15	10.0.2.15	Hypertext Transfer Protocol	114	GET / HTTP/1.1\r\n\r\nHost: www.ucla.edu\r\n\r\n[Full request URI: http://www.ucla.edu/]\r\n[HTTP request 1/1]\r\n[Response in frame: 8]

Packet 3 Details:

- [Expert Info (Chat/Sequence): GET / HTTP/1.1\r\n]
- Request Method: GET
- Request URI: /
- Request Version: HTTP/1.1
- Host: www.ucla.edu\r\n\r\n
- [Full request URI: http://www.ucla.edu/]
- [HTTP request 1/1]
- [Response in frame: 8]

Packet 3 Bytes:

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0000  00 04 00 01 00 06 08 00 27 27 c6 3a 00 00 08 00  ....:.....

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No.	Time	Source	Destination	Protocol	Length	Info
5	0.059366000	10.0.2.15	13.226.230.114	TCP	57	62 http > 57388 [ACK] Seq=1 Ack=1 Win=29208 Len=0
6	0.059812000	10.0.2.15	13.226.230.114	HTTP	94	GET / HTTP/1.1
7	0.060238000	13.226.230.114	10.0.2.15	TCP	62	62 http > 57388 [ACK] Seq=1 Ack=39 Win=65535 Len=0
8	0.096156000	13.226.230.114	10.0.2.15	HTTP	634	HTTP/1.1 301 Moved Permanently (text/html)
9	0.096169000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [ACK] Seq=39 Ack=579 Win=38056 Len=0
10	0.096979000	10.0.2.15	75.75.75.75	DNS	74	Standard query 0x33a1 A www.ucla.edu
11	0.131040000	75.75.75.75	10.0.2.15	DNS	181	Standard query response 0x33a1 CNAME d2qnrx9nmqbxo6.cloudfront.
12	0.131684000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [FIN, ACK] Seq=39 Ack=579 Win=38056 Len=0
13	0.131968000	13.226.230.114	10.0.2.15	TCP	62	62 http > 57388 [ACK] Seq=579 Ack=40 Win=65535 Len=0
14	0.155317000	13.226.230.114	10.0.2.15	TCP	62	62 http > 57388 [FIN, ACK] Seq=579 Ack=40 Win=65535 Len=0
15	0.155337000	10.0.2.15	13.226.230.114	TCP	56	57388 > http [ACK] Seq=40 Ack=580 Win=38056 Len=0

```
> HTTP/1.1 301 Moved Permanently\r\n
  [Expert Info (Chat/Sequence): HTTP/1.1 301 Moved Permanently\r\n]
    Request Version: HTTP/1.1
    Status Code: 301
    Response Phrase: Moved Permanently

Server: CloudFront\r\n
Date: Sun, 06 Mar 2022 01:20:49 GMT\r\n
Content-Type: text/html\r\n
Content-Length: 183\r\n
Connection: keep-alive\r\n
Location: https://www.ucla.edu/\r\n
X-Cache: Redirect from cloudfront\r\n
Via: 1.1 703d8189eebca19920d4f049a6c8c1c2.cloudfront.net (CloudFront)\r\n
X-Amz-Cf-Pop: LAX50-C3\r\n
X-Amz-Cf-Id: Lg9ef-yAYSotkGCKXhY7a97yCAkYJfj9neBED6o9tJTmJgyzaQn8w==\r\n
\r\n
```

```
0040 20 33 30 31 20 4d 6f 76 65 64 20 50 65 72 6d 61 301 Mov ed Perma
0050 6e 65 6e 74 6c 79 0d 0a 53 65 72 76 65 72 3a 20 nently.. Server:
0060 43 6c 6f 75 64 46 72 6f 6e 74 0d 0a 44 61 74 65 CloudFro nt..Date
0070 3a 20 53 75 6e 2c 20 30 36 20 4d 61 72 20 32 30 : Sun, 0 6 Mar 20
```

```
% Total % Received % Xferd Average Speed Time Time
Time Current %
Left Speed
0 0 0 0 0 0 0 0 0:00:00 0:00:00
0 0 0 0 0 0 0 0 0:00:00 0:00:00
8 233k 8 20162 0 19789 0 0:00:12 0:00:01
100 233k 100 233k 0 157k 0 0:00:01 0:00:01
---:--- 158k
mininet@mininet-vm:~$ python3 jchew3MjCurl.py http://www.google.c
om/somedoc1.html:80
Unsuccessful
http://www.google.com/somedoc1.html:80
HTTP/1.1 404 Not Found
```

```
mininet@mininet-vm:-$ curl http://www.google.com/somedoc1.html:80  
-o curl_out.html  
% Total % Received % Xferd Average Speed Time Time  
Time Current  
  
Left Speed  
0 0 0 0 0 0 0 0  
100 1577 100 1577 0 18559 0 -----  
----- 19000
```

```
mininet@mininet-vm:-$ python3 jchew3MYCurl.py http://www.ucla.edu  
Unsuccessful  
http://www.ucla.edu  
HTTP/1.1 301 Moved Permanently
```

```
mininet@mininet-vm:-$ curl http://www.ucla.edu -o curl_out.html  
% Total % Received % Xferd Average Speed Time Time  
Time Current  
  
Left Speed  
0 0 0 0 0 0 0 0  
100 183 100 183 0 725 0 -----  
----- 759
```

```
mininet@mininet-vm:-$ date  
Sat Mar 5 17:24:21 PST 2022
```


- <http://www.google.com:443>
 - Unsuccessful download (port 443)
 - Matches Curl

No.	Time	Source	Destination	Protocol	Length	Info
59	2.974568000	10.0.2.15	75.75.75.75	DNS	76	Standard query 0x8dc1 A www.google.com
60	2.992872000	75.75.75.75	10.0.2.15	DNS	92	Standard query response 0x8dc1 A 172.217.5.100
61	2.993116000	10.0.2.15	172.217.5.100	TCP	76	38144 > https [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK PERM=1 TS=
62	3.011272000	172.217.5.100	10.0.2.15	TCP	62	https > 38144 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
63	3.011292000	10.0.2.15	172.217.5.100	TCP	56	38144 > https [ACK] Seq=1 Ack=1 Win=29200 Len=0
64	3.011671000	10.0.2.15	172.217.5.100	SSL	96	Continuation Data
65	3.012209000	172.217.5.100	10.0.2.15	TCP	62	https > 38144 [ACK] Seq=1 Ack=41 Win=65535 Len=0
66	3.031609000	172.217.5.100	10.0.2.15	TCP	62	https > 38144 [FIN, ACK] Seq=1 Ack=41 Win=65535 Len=0
67	3.032082000	10.0.2.15	172.217.5.100	TCP	56	38144 > https [ACK] Seq=41 Ack=2 Win=29200 Len=0
68	3.032329000	10.0.2.15	75.75.75.75	DNS	76	Standard query 0xaf26 A www.google.com
69	3.051992000	75.75.75.75	10.0.2.15	DNS	92	Standard query response 0xaf26 A 142.251.32.36
70	3.052317000	10.0.2.15	172.217.5.100	TCP	56	38144 > https [FIN, ACK] Seq=41 Ack=2 Win=29200 Len=0
71	3.052688000	172.217.5.100	10.0.2.15	TCP	62	https > 38144 [ACK] Seq=2 Ack=42 Win=65535 Len=0

Transmission Control Protocol, Src Port: 38144 (38144), Dst Port: https (443), Seq: 1, Ack: 1, Len: 0
 Source port: 38144 (38144)
 Destination port: https (443)
 [Stream index: 29]
 Sequence number: 1 (relative sequence number)
 Acknowledgment number: 1 (relative ack number)
 Header length: 20 bytes
 Flags: 0x010 (ACK)

- 000... = Reserved: Not set
- ...0... = Nonce: Not set
-0... = Congestion Window Reduced (CWR): Not set
- = ECN-Echo: Not set
-0... = Urgent: Not set
-1... = Acknowledgment: Set

```
mininet@mininet-vm:~$ python3 jchewMyCurl.py http://www.google.c
om:443
Empty reply from server.
mininet@mininet-vm:~$ date
Sat Mar 5 17:43:34 PST 2022
mininet@mininet-vm:~$
```

[illegible]

```
mininet@mininet-vm:~$ python3 jchew3MyCurl.py http://www.google.c
om:443
Empty reply from server.
mininet@mininet-vm:~$ curl http://www.google.com:443 -o curl_out.
html
  % Total    % Received % Xferd  Average Speed   Time    Time
  Time      Current                      Dload  Upload   Total   Spent
  Left  Speed
  0     0    0     0     0     0     0     0  --:--:--  --:--:--
  0     0    0     0     0     0     0     0  --:--:--  --:--:--
-:--:--    0
curl: (52) Empty reply from server
mininet@mininet-vm:~$ date
Sat Mar  5 17:48:20 PST 2022
mininet@mininet-vm:~$
```