

# Computer Networks

## Lab Assignment 5 Report

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**Roll No: 190020020**

**IP Address: 192.168.29.165**

### **Q1.**

1. My browser is running HTTP version 1.1. Server is also running HTTP version 1.1.
2. My browser indicates that it can accept en-US language.
3. The IP address of my computer is 192.168.29.165. Of the gaia.cs.umass.edu server is 128.119.245.12.
4. Status code returned from the server to my browser is 200.
5. The HTML file that I am retrieving was last modified at the server at Tue, 02 Mar 2021, 06:59:01 GMT.
6. 128 bytes of content are being returned to my browser.
7. All the headers in the data are displayed in the packet-listing window. I don't see any of them within the data that are not displayed in the packet-listing window.

http						
No.	Time	Source	Destination	Protocol	Length	Info
19	0.000481777	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
27	0.000401313	128.119.245.12	192.168.29.165	HTTP	552	HTTP/1.1 200 OK (text/html)
38	0.089013182	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
72	0.000255882	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)

- ▶ Frame 19: 442 bytes on wire (3536 bits), 442 bytes captured (3536 bits) on interface enp0s3, id 0
- ▶ Ethernet II, Src: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34), Dst: Serverco\_07:48:4d (a8:da:0c:07:48:4d)
- ▶ Internet Protocol Version 4, Src: 192.168.29.165, Dst: 128.119.245.12
- ▶ Transmission Control Protocol, Src Port: 46820, Dst Port: 80, Seq: 1, Ack: 1, Len: 376

#### Hypertext Transfer Protocol

GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n

▶ [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n]

Request Method: GET

Request URI: /wireshark-labs/HTTP-wireshark-file1.html

Request Version: HTTP/1.1

Host: gaia.cs.umass.edu\r\n

User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86\_64; rv:85.0) Gecko/20100101 Firefox/85.0\r\n

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,\*/\*;q=0.8\r\n

Accept-Language: en-US,en;q=0.5\r\n

Accept-Encoding: gzip, deflate\r\n

Connection: keep-alive\r\n

Upgrade-Insecure-Requests: 1\r\n

\r\n

[Full request URI: <http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html>]

[HTTP request 1/1]

[Response in frame: 27]

http						
No.	Time	Source	Destination	Protocol	Length	Info
19	0.000481777	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
27	0.000401313	128.119.245.12	192.168.29.165	HTTP	552	HTTP/1.1 200 OK (text/html)
38	0.089013182	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
72	0.000255882	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)

- ▶ Frame 27: 552 bytes on wire (4416 bits), 552 bytes captured (4416 bits) on interface enp0s3, id 0
- ▶ Ethernet II, Src: Serverco\_07:48:4d (a8:da:0c:07:48:4d), Dst: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34)
- ▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.29.165
- ▶ Transmission Control Protocol, Src Port: 80, Dst Port: 46820, Seq: 1, Ack: 377, Len: 486

#### Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

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

Response Version: HTTP/1.1

Status Code: 200

[Status Code Description: OK]

Response Phrase: OK

Date: Wed, 03 Mar 2021 02:40:18 GMT\r\n

Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.14 mod\_perl/2.0.11 Perl/v5.16.3\r\n

Last-Modified: Tue, 02 Mar 2021 06:59:01 GMT\r\n

ETag: "80-5bc8844f08ac6"\r\n

Accept-Ranges: bytes\r\n

Content-Length: 128\r\n

Keep-Alive: timeout=5, max=100\r\n

Connection: Keep-Alive\r\n

Content-Type: text/html; charset=UTF-8\r\n

\r\n

[HTTP response 1/1]

Q2.

8. No, I don't see "IF-MODIFIED-SINCE" line in the HTTP GET.

http						
No.	Time	Source	Destination	Protocol	Length	Info
14	0.000287471	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
18	0.000000231	128.119.245.12	192.168.29.165	HTTP	796	HTTP/1.1 200 OK (text/html)
29	0.073442548	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
118	0.000001668	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
208	0.000750384	192.168.29.165	128.119.245.12	HTTP	554	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
212	0.066160612	128.119.245.12	192.168.29.165	HTTP	305	HTTP/1.1 304 Not Modified
220	0.000106284	192.168.29.165	35.224.170.84	HTTP	153	GET / HTTP/1.1
222	0.000000389	35.224.170.84	192.168.29.165	HTTP	214	HTTP/1.1 204 No Content

Frame 14: 442 bytes on wire (3536 bits), 442 bytes captured (3536 bits) on interface enp0s3, id 0  
Ethernet II, Src: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34), Dst: Serverco\_07:48:4d (a8:da:0c:07:48:4d)  
Internet Protocol Version 4, Src: 192.168.29.165, Dst: 128.119.245.12  
Transmission Control Protocol, Src Port: 47116, Dst Port: 80, Seq: 1, Ack: 1, Len: 376  
Hypertext Transfer Protocol  
GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n  
[Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]  
Request Method: GET  
Request URI: /wireshark-labs/HTTP-wireshark-file2.html  
Request Version: HTTP/1.1  
Host: gaia.cs.umass.edu\r\n  
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86\_64; rv:86.0) Gecko/20100101 Firefox/86.0\r\n  
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,\*/\*;q=0.8\r\n  
Accept-Language: en-US,en;q=0.5\r\n  
Accept-Encoding: gzip, deflate\r\n  
Connection: keep-alive\r\n  
Upgrade-Insecure-Requests: 1\r\n  
\r\n  
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]  
[HTTP request 1/2]  
[Response in frame: 18]  
[Next request in frame: 208]

9. Yes, the server explicitly returned the contents of the file. We can say this because we can see the contents of the file in Line-based text data field.

http						
No.	Time	Source	Destination	Protocol	Length	Info
14	0.000287471	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
18	0.000000231	128.119.245.12	192.168.29.165	HTTP	796	HTTP/1.1 200 OK (text/html)
29	0.073442548	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
118	0.000001668	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
208	0.000750384	192.168.29.165	128.119.245.12	HTTP	554	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
212	0.066160612	128.119.245.12	192.168.29.165	HTTP	305	HTTP/1.1 304 Not Modified
220	0.000106284	192.168.29.165	35.224.170.84	HTTP	153	GET / HTTP/1.1
222	0.000000389	35.224.170.84	192.168.29.165	HTTP	214	HTTP/1.1 204 No Content

Keep-Alive: timeout=5, max=100\r\n  
Connection: Keep-Alive\r\n  
Content-Type: text/html; charset=UTF-8\r\n  
\r\n  
[HTTP response 1/2]  
[Time since request: 0.313541354 seconds]  
[Request in frame: 14]  
[Next request in frame: 208]  
[Next response in frame: 212]  
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]  
File Data: 371 bytes  
Line-based text data: text/html (10 lines)  
\n  
<html>\n  
\n  
Congratulations again! Now you've downloaded the file lab2-2.html. <br>\n  
This file's last modification date will not change. <p>\n  
Thus if you download this multiple times on your browser, a complete copy <br>\n  
will only be sent once by the server due to the inclusion of the IN-MODIFIED-SINCE<br>\n  
field in your browser's HTTP GET request to the server.\n

10. Yes, I can see a IF-MODIFIED-SINCE line in the http get. It is followed by Tue, 02 Mar 2021 06:59:01 GMT\r\n.

http						
No.	Time	Source	Destination	Protocol	Length	Info
14	0.000287471	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
18	0.000000231	128.119.245.12	192.168.29.165	HTTP	796	HTTP/1.1 200 OK (text/html)
29	0.073442548	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
118	0.000001668	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
208	0.000750384	192.168.29.165	128.119.245.12	HTTP	554	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
212	0.066160612	128.119.245.12	192.168.29.165	HTTP	305	HTTP/1.1 304 Not Modified
220	0.000106284	192.168.29.165	35.224.170.84	HTTP	153	GET / HTTP/1.1
222	0.000000389	35.224.170.84	192.168.29.165	HTTP	214	HTTP/1.1 204 No Content

  

Transmission Control Protocol, Src Port: 47116, Dst Port: 80, Seq: 377, Ack: 731, Len: 488
Hypertext Transfer Protocol
GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file2.html
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:86.0) Gecko/20100101 Firefox/86.0\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
Accept-Language: en-US,en;q=0.5\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
If-Modified-Since: Tue, 02 Mar 2021 06:59:01 GMT\r\n
If-None-Match: "173-5bc8844f082f6"\r\n
Cache-Control: max-age=0\r\n
\r\n

11. HTTP status code and phrase returned from the server in response to this second HTTP GET is HTTP/1.1 304 Not Modified. No, the server didn't return the contents of the file explicitly, instead my browser knows that it has been accessed recently, so the browser loaded it from the cache instead of the server.

http						
No.	Time	Source	Destination	Protocol	Length	Info
14	0.000287471	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
18	0.000000231	128.119.245.12	192.168.29.165	HTTP	796	HTTP/1.1 200 OK (text/html)
29	0.073442548	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
118	0.000001668	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
208	0.000750384	192.168.29.165	128.119.245.12	HTTP	554	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
212	0.066160612	128.119.245.12	192.168.29.165	HTTP	305	HTTP/1.1 304 Not Modified
220	0.000106284	192.168.29.165	35.224.170.84	HTTP	153	GET / HTTP/1.1
222	0.000000389	35.224.170.84	192.168.29.165	HTTP	214	HTTP/1.1 204 No Content

  

▶ Ethernet II, Src: Serverco_07:48:4d (a8:da:0c:07:48:4d), Dst: PcsCompu_c3:f4:34 (08:00:27:c3:f4:34)
▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.29.165
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 47116, Seq: 731, Ack: 865, Len: 239
▼ Hypertext Transfer Protocol
▼ HTTP/1.1 304 Not Modified\r\n
▶ [Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
Response Version: HTTP/1.1
Status Code: 304
[Status Code Description: Not Modified]
Response Phrase: Not Modified
Date: Wed, 03 Mar 2021 03:49:33 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.14 mod_perl/2.0.11 Perl/v5.16.3\r\n
Connection: Keep-Alive\r\n
Keep-Alive: timeout=5, max=99\r\n
ETag: "173-5bc8844f082f6"\r\n
\r\n
[HTTP response 2/2]
[Time since request: 0.307484912 seconds]
<a href="#">[Prev request in frame: 14]</a>
<a href="#">[Prev response in frame: 18]</a>
<a href="#">[Request in frame: 208]</a>
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]

Q3.

12. My browser has sent only one HTTP GET request message for the website excluding the favicon GET request. Packet number 38 contains the GET message for the Bill of Rights.
13. Packet number 47 contains the status code and phrase associated with the response to the HTTP GET request.
14. Status code and phrase in the response is 200 OK.  
Whole info is HTTP /1.1 200 OK.
15. Here, it took 4 data-containing TCP segments to carry the single HTTP response and the text of the Bill of Rights. Total of 4861 bytes was brought in 4 different TCP packets of sizes 1448, 1448, 1448, 517 bytes respectively.

http						
No.	Time	Source	Destination	Protocol	Length	Info
38	0.000241640	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1
47	0.000000061	128.119.245.12	192.168.29.165	HTTP	583	HTTP/1.1 200 OK (text/html)
73	0.000309807	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
148	0.000000637	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)

```

Frame 47: 583 bytes on wire (4664 bits), 583 bytes captured (4664 bits) on interface enp0s3, id 0
Ethernet II, Src: Serverco_07:48:4d (a8:da:0c:07:48:4d), Dst: PcsCompu_c3:f4:34 (08:00:27:c3:f4:34)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.29.165
Transmission Control Protocol, Src Port: 80, Dst Port: 47168, Seq: 4345, Ack: 377, Len: 517
[4 Reassembled TCP Segments (4861 bytes): #42(1448), #44(1448), #46(1448), #47(517)]
  [Frame: 42, payload: 0-1447 (1448 bytes)]
  [Frame: 44, payload: 1448-2895 (1448 bytes)]
  [Frame: 46, payload: 2896-4343 (1448 bytes)]
  [Frame: 47, payload: 4344-4860 (517 bytes)]
  [Segment count: 4]
  [Reassembled TCP length: 4861]
  [Reassembled TCP Data: 485454502f312e3120323030204f4b0d0a446174653a205765642c2030333204d61722032...]
Hypertext Transfer Protocol
  HTTP/1.1 200 OK\r\n
    [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
    Response Version: HTTP/1.1
    Status Code: 200
    [Status Code Description: OK]
    Response Phrase: OK
    Date: Wed, 03 Mar 2021 04:10:51 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.14 mod_perl/2.0.11 Perl/v5.16.3\r\n
    Last-Modified: Tue, 02 Mar 2021 06:59:01 GMT\r\n

```

http						
No.	Time	Source	Destination	Protocol	Length	Info
38	0.000241640	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1
47	0.000000061	128.119.245.12	192.168.29.165	HTTP	583	HTTP/1.1 200 OK (text/html)
73	0.000309807	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
148	0.000000637	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)

```

Frame 38: 442 bytes on wire (3536 bits), 442 bytes captured (3536 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_c3:f4:34 (08:00:27:c3:f4:34), Dst: Serverco_07:48:4d (a8:da:0c:07:48:4d)
Internet Protocol Version 4, Src: 192.168.29.165, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 47168, Dst Port: 80, Seq: 1, Ack: 1, Len: 376
Hypertext Transfer Protocol
  GET /wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1\r\n
    [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1\r\n]
    Request Method: GET
    Request URI: /wireshark-labs/HTTP-wireshark-file3.html
    Request Version: HTTP/1.1
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:86.0) Gecko/20100101 Firefox/86.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
    Accept-Language: en-US,en;q=0.5\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    Upgrade-Insecure-Requests: 1\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file3.html]
    [HTTP request 1/1]
    [Response in frame: 47]

```

Q4.

16. My browser has totally sent 3 HTTP GET requests excluding one for the favicon. The internet addresses to which the GET requests were sent are:

- i. 128.129.245.12 for the HTML.
- ii. 128.129.245.12 for pearson.png
- iii. 178.79.137.64 for 8E\_cover\_small.jpg

17. My browser has downloaded the two images serially. We can say this because the TCP port is different for both images. It would be the same if those 2 images were downloaded parallelly.

http						
No.	Time	Source	Destination	Protocol	Length	Info
34	0.000259523	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1
40	0.003127021	128.119.245.12	192.168.29.165	HTTP	1367	HTTP/1.1 200 OK (text/html)
124	0.165934347	192.168.29.165	128.119.245.12	HTTP	399	GET /pearson.png HTTP/1.1
136	0.064850339	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
139	0.000000028	128.119.245.12	192.168.29.165	HTTP	782	HTTP/1.1 200 OK (PNG)
143	0.000000303	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
153	0.000171059	192.168.29.165	178.79.137.64	HTTP	406	GET /8E_cover_small.jpg HTTP/1.1
157	0.000000143	178.79.137.64	192.168.29.165	HTTP	237	HTTP/1.1 301 Moved Permanently
175	0.000264050	2405:201:c002:6822::...	2405:200:161f:1731::...	OCSP	464	Request
180	0.420394146	2405:200:161f:1731::...	2405:201:c002:6822::...	OCSP	975	Response

Frame 139: 782 bytes on wire (6256 bits), 782 bytes captured (6256 bits) on interface enp0s3, id 0  
Ethernet II, Src: Serverco\_07:48:4d (a8:da:0c:07:48:4d), Dst: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34)  
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.29.165  
Transmission Control Protocol, Src Port: 80, Dst Port: 47206, Seq: 2897, Ack: 334, Len: 716  
[2 Reassembled TCP Segments (3612 bytes): #138(2896), #139(716)]  
[Frame: 138, payload: 0-2895 (2896 bytes)]  
[Frame: 139, payload: 2896-3611 (716 bytes)]  
[Segment count: 2]  
[Reassembled TCP length: 3612]  
[Reassembled TCP Data: 485454502f312e3120323030204f4b0d0a446174653a205765642c2030333204d61722032...]  
Hypertext Transfer Protocol  
HTTP/1.1 200 OK\r\n  
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]  
Response Version: HTTP/1.1  
Status Code: 200  
[Status Code Description: OK]  
Response Phrase: OK  
Date: Wed, 03 Mar 2021 04:22:55 GMT\r\nServer: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.14 mod\_perl/2.0.11 Perl/v5.16.3\r\nLast-Modified: Sat, 06 Aug 2016 10:08:14 GMT\r\nETag: "cc3-539645c7f1ee7"\r\nAccept-Ranges: bytes\r\n



No.	Time	Source	Destination	Protocol	Length	Info
34	0.000259523	192.168.29.165	128.119.245.12	HTTP	442	GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1
40	0.003127021	128.119.245.12	192.168.29.165	HTTP	1367	HTTP/1.1 200 OK (text/html)
124	0.165934347	192.168.29.165	128.119.245.12	HTTP	399	GET /pearson.png HTTP/1.1
136	0.064850339	192.168.29.165	128.119.245.12	HTTP	399	GET /favicon.ico HTTP/1.1
139	0.000000028	128.119.245.12	192.168.29.165	HTTP	782	HTTP/1.1 200 OK (PNG)
143	0.000000303	128.119.245.12	192.168.29.165	HTTP	551	HTTP/1.1 404 Not Found (text/html)
153	0.000171059	192.168.29.165	178.79.137.164	HTTP	406	GET /8E_cover_small.jpg HTTP/1.1
157	0.000000143	178.79.137.164	192.168.29.165	HTTP	237	HTTP/1.1 301 Moved Permanently
175	0.000264050	2405:201:c002:6822::...	2405:200:161f:1731::...	OCSP	464	Request
180	0.420394146	2405:200:161f:1731::...	2405:201:c002:6822::...	OCSP	975	Response

▶ Frame 157: 237 bytes on wire (1896 bits), 237 bytes captured (1896 bits) on interface enp0s3, id 0  
 ▶ Ethernet II, Src: Serverco\_07:48:4d (a8:da:0c:07:48:4d), Dst: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34)  
 ▶ Internet Protocol Version 4, Src: 178.79.137.164, Dst: 192.168.29.165  
 ▶ Transmission Control Protocol, Src Port: 80, Dst Port: 34010, Seq: 1, Ack: 341, Len: 171  
 ▶ Hypertext Transfer Protocol  
   ▶ HTTP/1.1 301 Moved Permanently\r\n  
     ▶ [Expert Info (Chat/Sequence): HTTP/1.1 301 Moved Permanently\r\n  
       Response Version: HTTP/1.1  
       Status Code: 301  
       [Status Code Description: Moved Permanently]  
       Response Phrase: Moved Permanently  
       Location: https://kurose.cslash.net/8E\_cover\_small.jpg\r\n  
     ▶ Content-Length: 0\r\n  
       Date: Wed, 03 Mar 2021 04:22:55 GMT\r\n  
       Server: lighttpd/1.4.47\r\n  
       \r\n  
       [HTTP response 1/1]  
       [Time since request: 0.141783697 seconds]  
       [Request in frame: 153]  
       [Request URI: http://kurose.cslash.net/8E\_cover\_small.jpg]

Q5.

18. The server's response in response to the initial HTTP GET message from your browser is 401 Unauthorized.

Status code: 401

Phrase: Unauthorized.

No.	Time	Source	Destination	Protocol	Length	Info
95	0.176427669	128.119.245.12	192.168.29.165	HTTP	550	HTTP/1.1 404 Not Found (text/html)
84	0.199064514	192.168.29.165	128.119.245.12	HTTP	415	GET /favicon.ico HTTP/1.1
73	0.003831312	128.119.245.12	192.168.29.165	HTTP	556	HTTP/1.1 200 OK (text/html)
69	0.000213323	192.168.29.165	128.119.245.12	HTTP	517	GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1
21	0.000927972	128.119.245.12	192.168.29.165	HTTP	783	HTTP/1.1 401 Unauthorized (text/html)
15	0.000315353	192.168.29.165	128.119.245.12	HTTP	458	GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1

▶ Ethernet II, Src: PcsCompu\_c3:f4:34 (08:00:27:c3:f4:34), Dst: Serverco\_07:48:4d (a8:da:0c:07:48:4d)  
 ▶ Internet Protocol Version 4, Src: 192.168.29.165, Dst: 128.119.245.12  
 ▶ Transmission Control Protocol, Src Port: 47260, Dst Port: 80, Seq: 452, Ack: 491, Len: 349  
 ▶ Hypertext Transfer Protocol  
   ▶ GET /favicon.ico HTTP/1.1\r\n  
     ▶ [Expert Info (Chat/Sequence): GET /favicon.ico HTTP/1.1\r\n  
       Request Method: GET  
       Request URI: /favicon.ico  
       Request Version: HTTP/1.1  
       Host: gaia.cs.umass.edu\r\n  
       User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86\_64; rv:86.0) Gecko/20100101 Firefox/86.0\r\n  
       Accept: image/webp,\*/\*\r\n  
       Accept-Language: en-US,en;q=0.5\r\n  
       Accept-Encoding: gzip, deflate\r\n  
       Connection: keep-alive\r\n  
       Referer: http://gaia.cs.umass.edu/wireshark-labs/protected\_pages/HTTP-wireshark-file5.html\r\n  
       \r\n  
       [Full request URI: http://gaia.cs.umass.edu/favicon.ico]  
       [HTTP request 2/2]  
       [Prev request in frame: 69]  
       [Response in frame: 95]



```

Frame 69: 517 bytes on wire (4136 bits), 517 bytes captured (4136 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_c3:f4:34 (08:00:27:c3:f4:34), Dst: Serverco_07:48:4d (a8:da:0c:07:48:4d)
Internet Protocol Version 4, Src: 192.168.29.165, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 47260, Dst Port: 80, Seq: 1, Ack: 1, Len: 451
Hypertext Transfer Protocol
  GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1\r\n
    [Expert Info (Chat/Sequence): GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1\r\n]
    Request Method: GET
    Request URI: /wireshark-labs/protected_pages/HTTP-wireshark-file5.html
    Request Version: HTTP/1.1
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:86.0) Gecko/20100101 Firefox/86.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
    Accept-Language: en-US,en;q=0.5\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    Upgrade-Insecure-Requests: 1\r\n
  Authorization: Basic d2lyZXNoYXJrLXN0dWR1bnRzOm5ldHdvcms=\r\n
    Credentials: wireshark-students:network
\r\n
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/protected_pages/HTTP-wireshark-file5.html]
[HTTP request 1/2]

```