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Bill Pfeil
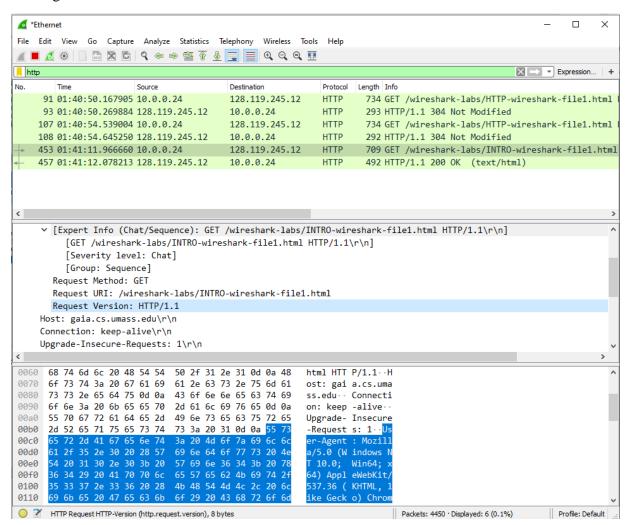
CS 372-X001
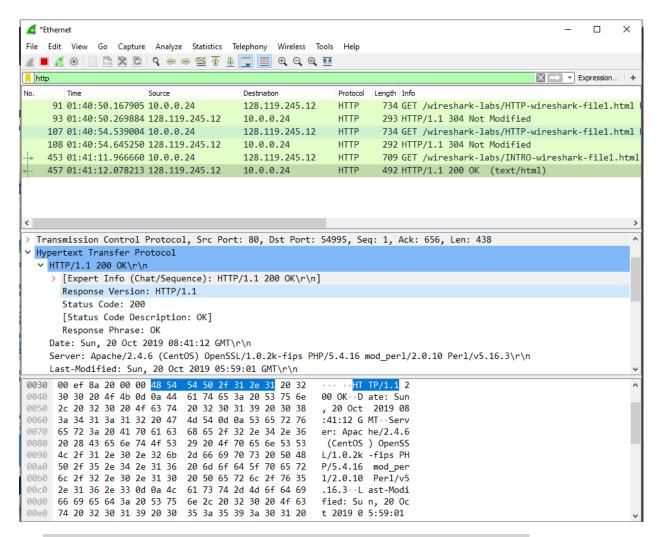
10/27/2019

Lab 2

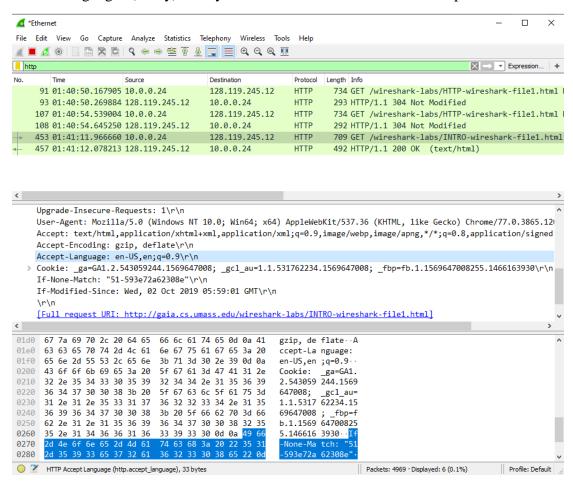# 1. The Basic HTTP GET/response interaction

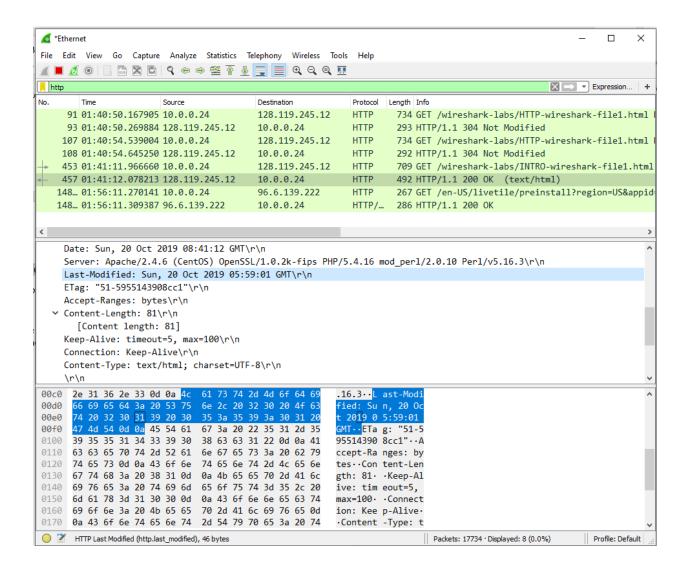1. Is your browser running HTTP version 1.0 or 1.1? What version of HTTP is the server running?

- both my computer and server's HTTP version are 1.1(above screenshot)
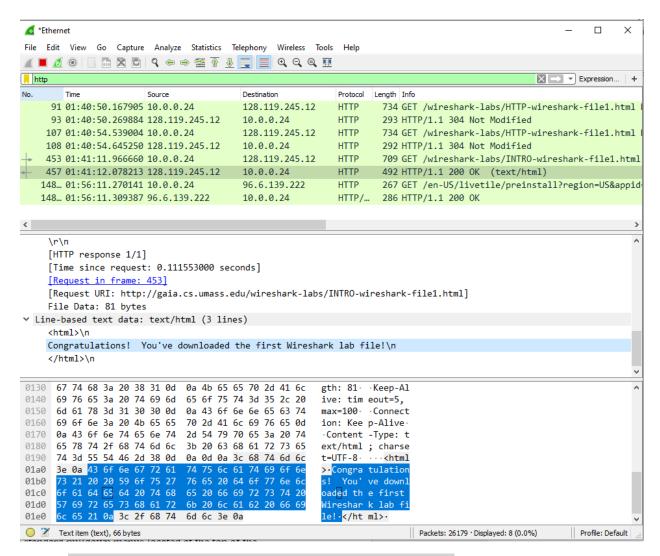
2. What languages (if any) does your browser indicate that it can accept to the server?

- US English (en-US) is accepted

3. What is the IP address of your computer? Of the gaia.cs.umass.edu server?

- my computer's IP address is 10.0.0.24 and gaia.cs.umass.edu server's IP address is 128.119.245.12 (above screenshot)

4. What is the status code returned from the server to your browser?

- 200 OK (check the screenshot of Q1)

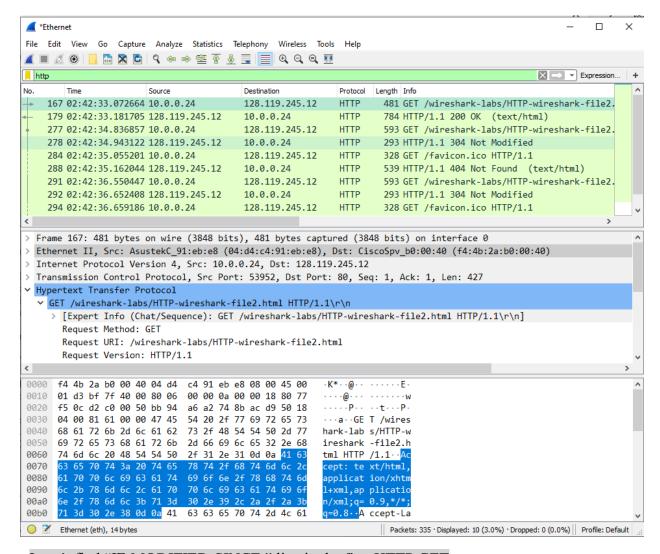5. When was the HTML file that you are retrieving last modified at the server?

- The last modified time is Sun, 20 October 2019 05:59:01 GMT (above screenshot)

6. How many bytes of content are being returned to your browser?

 - 81 bytes (above screenshot)

7. By inspecting the raw data in the packet content window, do you see any headers within the data that are not displayed in the packet-listing window? If so, name one.

- Line-base text data isn't displayed on packet-listing window
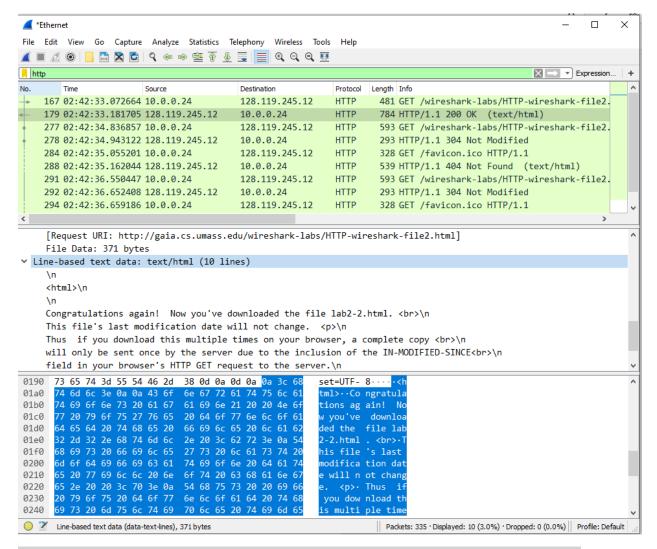
2. The HTTP CONDITIONAL GET/response interaction

8. Inspect the contents of the first HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE" line in the HTTP GET?

- I can't find "IF-MODIFIED-SINCE:" line in the first HTTP GET

9. Inspect the contents of the server response. Did the server explicitly return the contents of the file? How can you tell?

- the server explicitly returned the contents of the file as the Line-based text data (above screenshot)

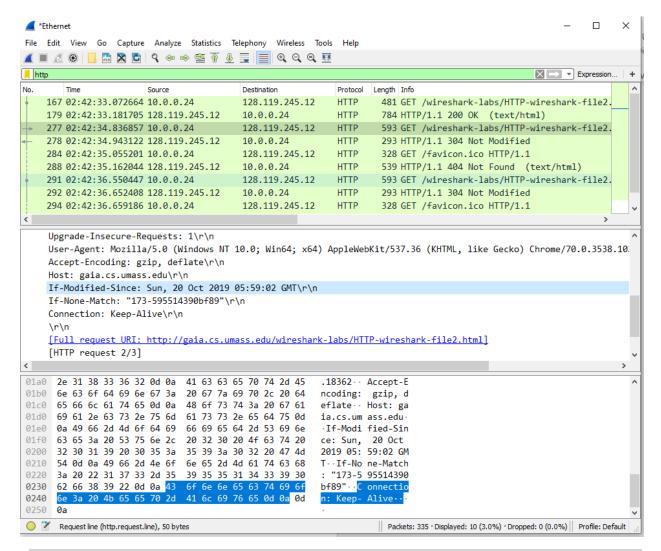10. Now inspect the contents of the second HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE:" line in the HTTP GET? If so, what information follows the "IF-MODIFIED-SINCE:" header?

- Yes, the second HTTP GET has "IF-MODIFIED-SINCE:". It followed the time stamp (Sun, 20 Oct 2019 05:59:02 GMT\r\n)

11. What is the HTTP status code and phrase returned from the server in response to this second HTTP GET? Did the server explicitly return the contents of the file? Explain.

- The second HTTP GET returned status code and phrase, "304 Not Modified" and the packet is shorter than the first one. In addition, it didn't include the Line-based text data.

3. Retrieving Long Documents

12. How many HTTP GET request messages did your browser send? Which packet number in the trace contains the GET message for the Bill or Rights?

- There is only one HTTP GET request message with packet number 113

13. Which packet number in the trace contains the status code and phrase associated with the response to the HTTP GET request?

- The packet number 133 contains the status code and phrase (above screenshot)

14. What is the status code and phrase in the response?

- "200 OK" on the packet number 133 (above screenshot)

15. How many data-containing TCP segments were needed to carry the single HTTP response and the text of the Bill of Rights?

- There are 4 TCP segments carried the single HTTP response

4. HTML Documents with Embedded Objects

16. How many HTTP GET request messages did your browser send? To which Internet addresses were these GET requests sent?

- There are 3 HTTP GET request massages which are for requesting http page, pearson logo as png file, and a textbook cover image as jpg file.

17. Can you tell whether your browser downloaded the two images serially, or whether they were downloaded from the two web sites in parallel? Explain

- I think my browser (Microsoft Edge) downloaded the two images serially because the first image file (logo) completed the request and send process first and then the second image file (textbook cover) completed. If the process did parallelly, both HTTP GET request massages would be in the same time line.

5. HTTP Authentication

18. What is the server's response (status code and phrase) in response to the initial HTTP GET message from your browser?

- The server's response is "401 Unauthorized" as the initial HTTP GET massage

19. When your browser's sends the HTTP GET message for the second time, what new field is included in the HTTP GET message?

- The new field is included the authorization with the key (Basic d2lyZXNoYXJrLXN0dWRlbnRzOm5ldHdvcms=) because I sent username and password to the server when I requested to access

Extra credit #3

Socket programming in c

1. Code screenshots

```c
                    ec_lab2.c
1    #include<stdio.h>
2    #include<string.h>  //strlen
3    #include<sys/socket.h>
4    #include<arpa/inet.h> //inet_addr
5
6    int main(int argc , char *argv[])
7    {
8        int socket_desc;
9        struct sockaddr_in server;
10       char *message , server_reply[2000];
11
12       //Create socket
13       socket_desc = socket(AF_INET , SOCK_STREAM , 0);
14       if (socket_desc == -1)
15       {
16           printf("Could not create socket");
17       }
18
19       server.sin_addr.s_addr = inet_addr("172.217.14.196");
20       server.sin_family = AF_INET;
21       server.sin_port = htons( 80 );
22
23       //Connect to remote server
24       if (connect(socket_desc , (struct sockaddr *)&server , sizeof(server)) < 0)
25       {
26           puts("connect error");
27           return 1;
28       }
29
30       puts("Connected\n");
31
32       //Send some data
33       message = "GET / HTTP/1.1\r\n\r\n";
34       if( send(socket_desc , message , strlen(message) , 0) < 0)
35       {
36           puts("Send failed");
37           return 1;
38       }
39       puts("Data Send\n");
```

```
41      //Receive a reply from the server
42      if( recv(socket_desc, server_reply , 2000 , 0) < 0)
43 v    {
44        puts("recv failed");
45      }
46      puts("Reply received\n");
47      puts(server_reply);
48
49      return 0;
50  }
51
```

2. www.google.com

```
[jeongju@flip3 ~/cs372]$ gcc ec_lab2.c -o lab2
[jeongju@flip3 ~/cs372]$ ./lab2
Connected

Data Send

Reply received

HTTP/1.1 200 OK
Date: Mon, 21 Oct 2019 00:13:54 GMT
Expires: -1
Cache-Control: private, max-age=0
Content-Type: text/html; charset=ISO-8859-1
P3P: CP="This is not a P3P policy! See g.co/p3phelp for more info."
Server: gws
X-XSS-Protection: 0
X-Frame-Options: SAMEORIGIN
Set-Cookie: 1P_JAR=2019-10-21-00; expires=Wed, 20-Nov-2019 00:13:54 GMT; path=/; domain=.google.com; Sam
eSite=none
Set-Cookie: NID=189=qubg9poojHXP9neVmK2ioRO6XT_1Z9rc1j94d9Q-Lw035eCIb3NQ676s6khcE9A_Dt6uU9vpSbbgeHtHfx_1
lzmqQzh3EMXJ9nxHpdjdfriGNn9UnQq2I6tuf8c16eTh6_UhupZPEfbq83BT61qHvXe6H0qfN2IBvBW8LJIEGFM; expires=Tue, 21
-Apr-2020 00:13:54 GMT; path=/; domain=.google.com; HttpOnly
Accept-Ranges: none
Vary: Accept-Encoding
Transfer-Encoding: chunked

5e09
<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="en"><head><meta content="Se
arch the world's information, including webpages, images, videos and more. Google has many special featu
```

3. http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file3.html

```
[jeongju@flip3 ~/cs372]$ gcc ec_lab2.c -o lab2
[jeongju@flip3 ~/cs372]$ ./lab2
Connected

Data Send

Reply received

HTTP/1.1 400 Bad Request
Date: Mon, 21 Oct 2019 00:19:52 GMT
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.10 Perl/v5.16.3
Content-Length: 226
Connection: close
Content-Type: text/html; charset=iso-8859-1

<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>400 Bad Request</title>
</head><body>
<h1>Bad Request</h1>
<p>Your browser sent a request that this server could not understand.<br />
</p>
</body></html>

[jeongju@flip3 ~/cs372]$
```

- The ip address of http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file3.html is 128.119.245.12. However, I tried to run with that ip address, always got 400 bad request status and code.