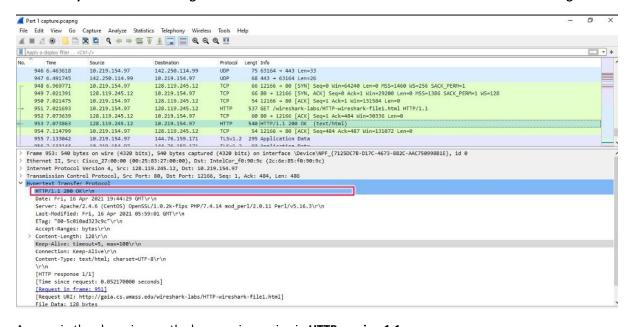
ASSIGNMENT 2

Name: Sudharsan Srinivasan

UTA ID: 1001755919

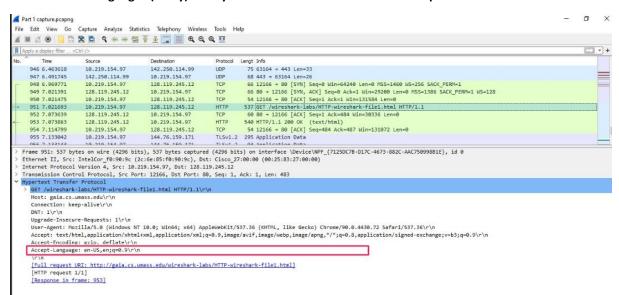
Part 1- The Basic HTTP GET/response interaction:

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



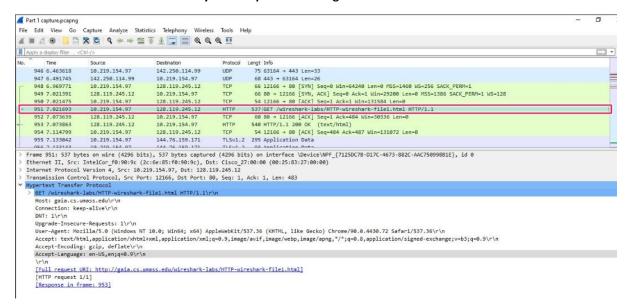
As seen in the above image, the browser is running in HTTP version 1.1

2. What languages (if any) does your browser indicate that it can accept to the server?



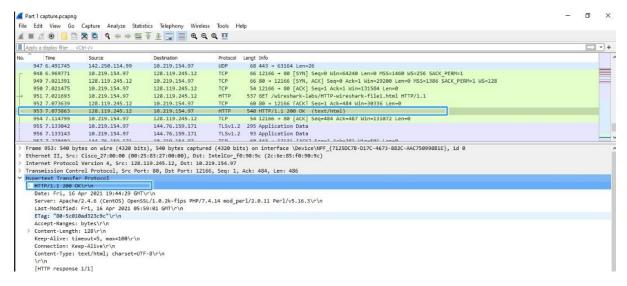
In the above image, it indicates that the accepted language to the server is en-US

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



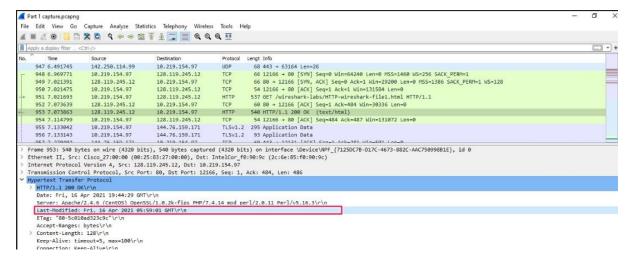
As seen above, the IP address of the computer is **10.219.154.97** and the address of gaia.cs.umass.edu is **128.119.245.12**

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



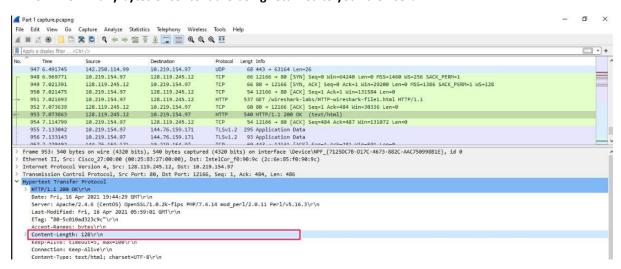
As indicated in the image above, the status code returned from the server to the browser for the file is 200 OK

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



The HTML file was last modified on Fri, 16 Apr 2021 05:59:01 GMT

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



The content length contains 128 bytes returned from the browser.

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.

No. There is no difference between the packet content and packet listing window.

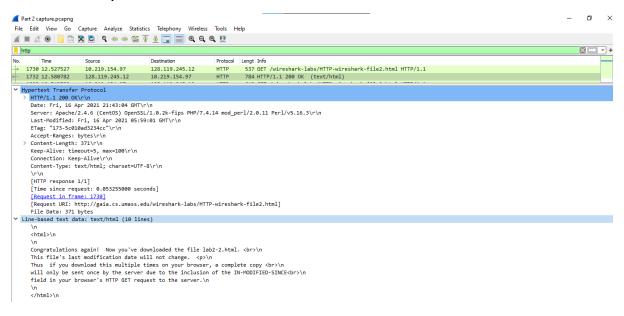
Part 2 - The HTTP CONDITIONAL GET/response interaction:

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?



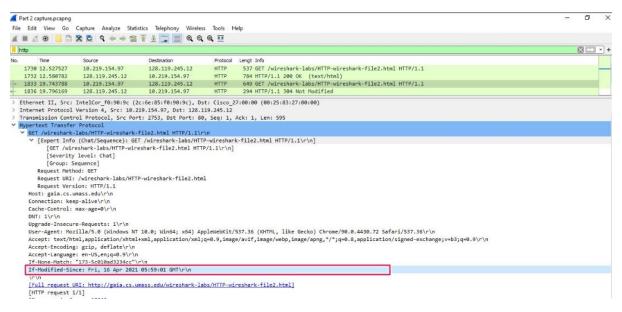
On inspecting the HTTP-wireshark-file2.html file, it can be seen that there is **NO** "IF-MODIFIED-SINCE" line in the HTTP GET.

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



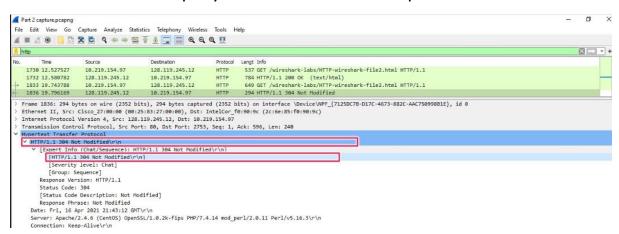
As seen in the above image, the contents of the file are explicitly returned in "Line-based text data section"

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?



In the second GET Request, there is a new field that reads "**If-Modified-Since**" which gives the date and time of the file.

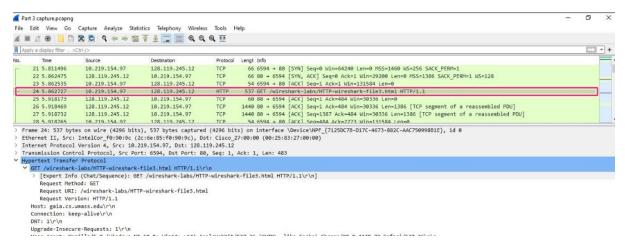
11. What is the HTTP status code and phrase returned from the server in response to this second HTTP GET? Did the server explicitly return the contents of the file? Explain.



In the second HTTP request, the status code is "**304 Not Modified**". This shows that the file has been retrieved from the cache of the local browser instead of the server, therefore it is not modified.

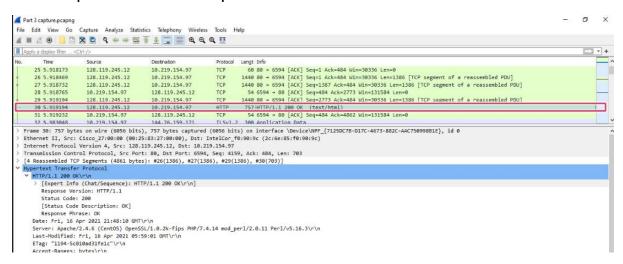
Part 3 - Retrieving Long Documents:

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?



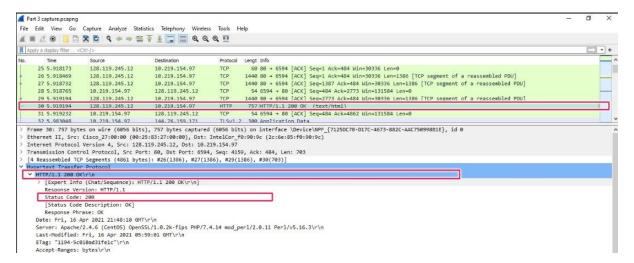
The browser send **1 HTTP GET request message** in total and the packet number **24** contains the GET message for the Bill or Rights.

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



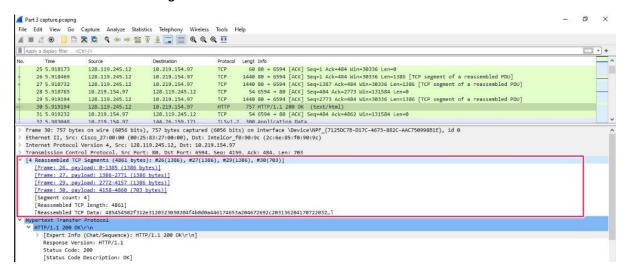
The packet number is **30** which contains status code and phrase associated with the response to the HTTP Get request.

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



The status code for the file is 200 and the phrase is OK as seen in the highlighted areas in the image above.

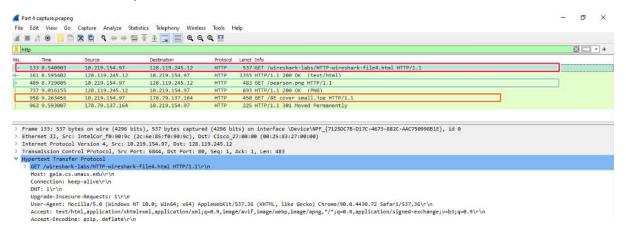
15. How many data-containing TCP segments were needed to carry the single HTTP response and the text of the Bill of Rights?



As seen above, the data was sent in 4 TCP Segments to carry the HTTP response and then reassembled later.

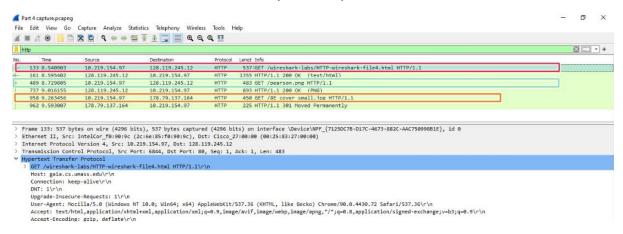
Part 4 - HTML Documents with Embedded Objects:

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



The browser sends 3 different GET requests:

- 1st GET: To get the page address: 128.119.245.12
- 2nd GET : To get the Pearson logo: **128.119.245.12**
- 3rd GET: To get the Pearson Book Cover: 178.79.137.164
 - 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.

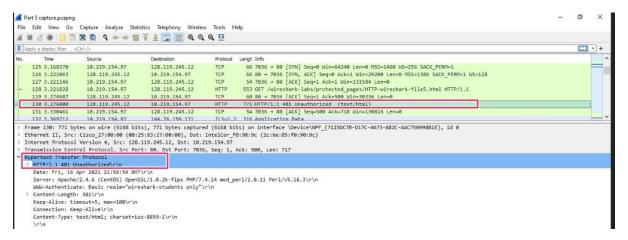


As seen from the above image, the requests for the two images are sent and downloaded serially one after the other. This can be seen above, where the GET request for **pearson.png** was sent and returned with status **OK**, followed by GET request for **8E_cover_small.jpg**.

The time for the 1st GET request is **8.729805** and for the 2nd request is **9.263456** indicating that the requests have been sent serially, one after the other.

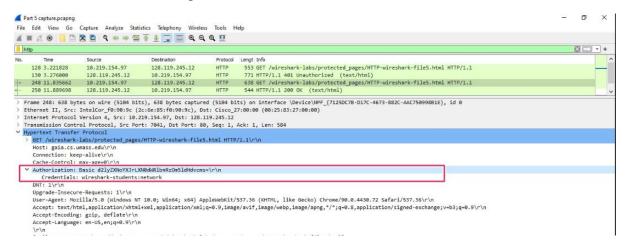
Part 5 - HTTP Authentication:

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 to the initial HTTP GET message is **401 Unauthorized** because there is no username and password fields values for it to check and therefore the request/access is denied.

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



When the browser sends HTTP GET message again for the second time, there is a new field "Authorization" that gets included in HTTP. This field contains the credentials that we used for username and password field in the webpage.