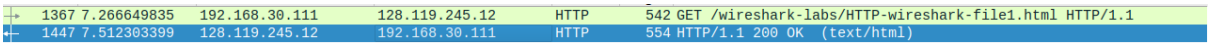
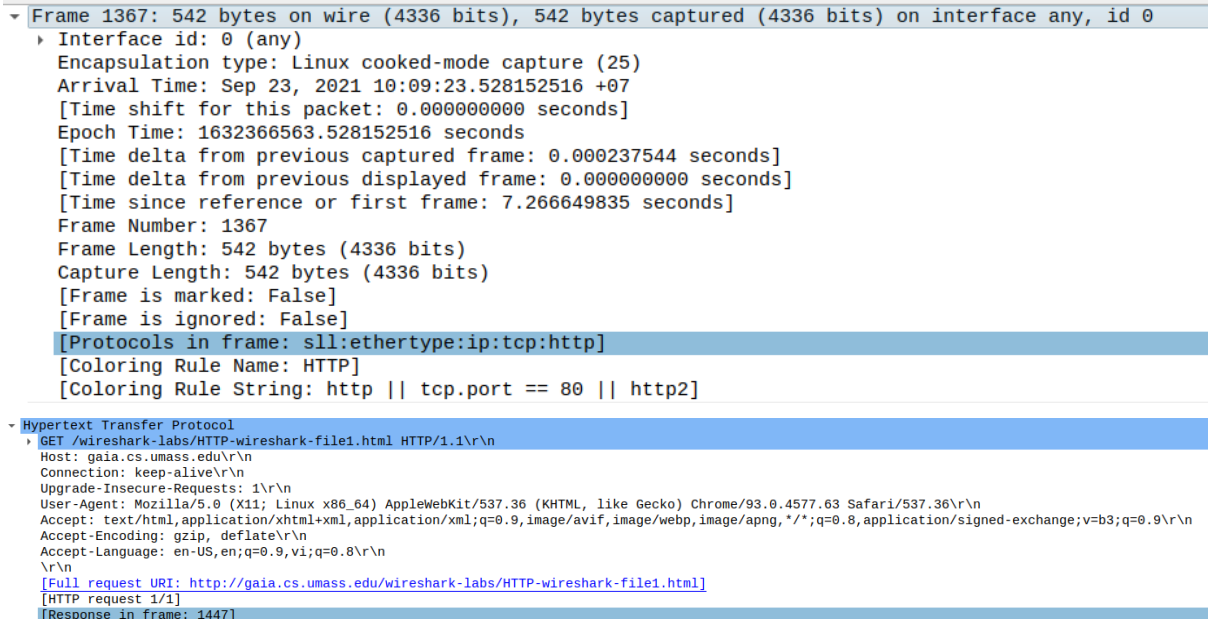
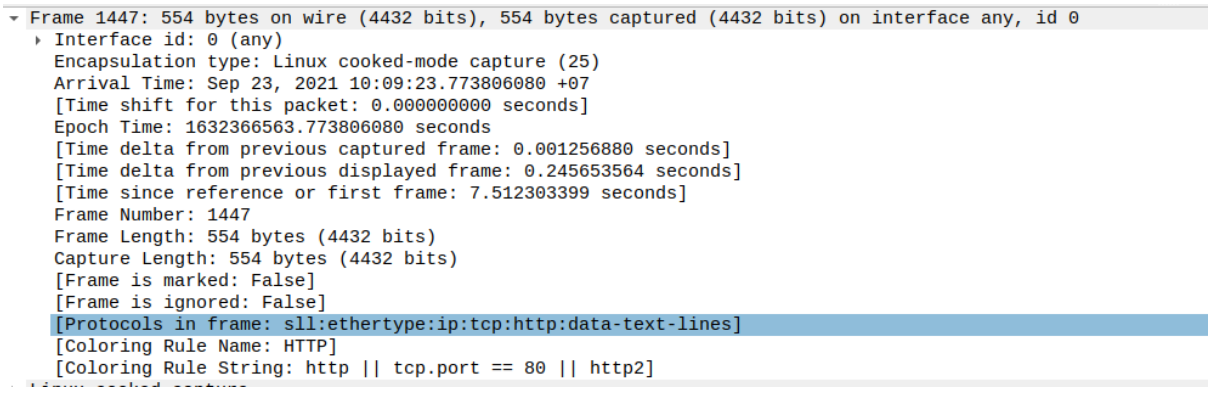
- The Basic HTTP GET/response interaction

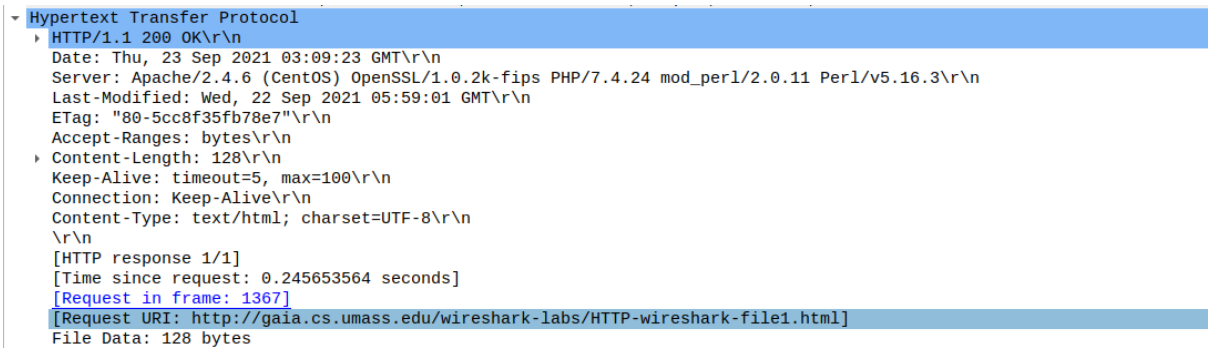


HTTP GET:



HTTP Response:





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

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

Accept-Language: en-US, vi

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

Internet address of the gaia.cs.umass.edu: 128.119.245.12

Internet address of my computer: 192.168.30.111

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

Status code: 200

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

Last-Modified: Wed, 22 Sep 2021 05:59:01 GMT

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

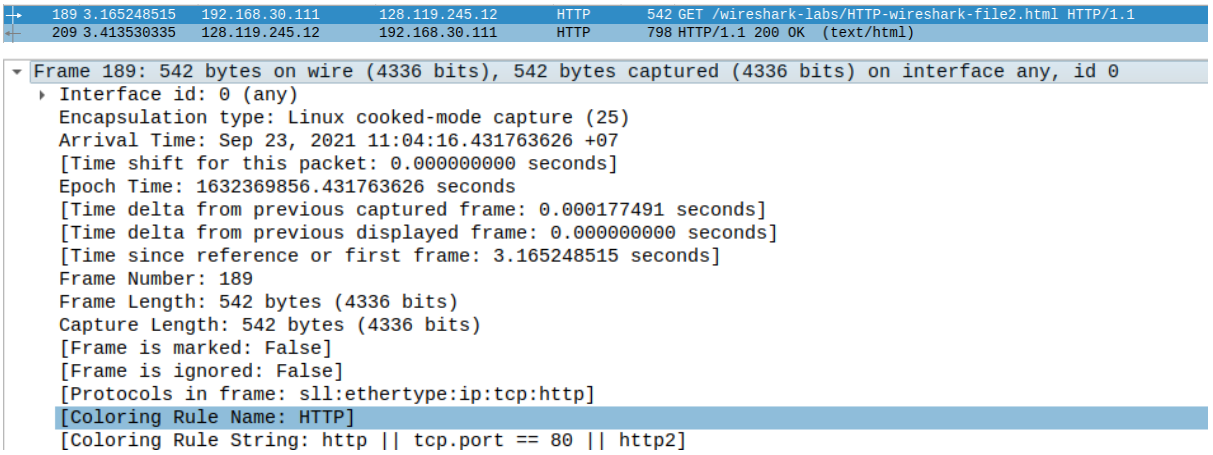
128 bytes

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.

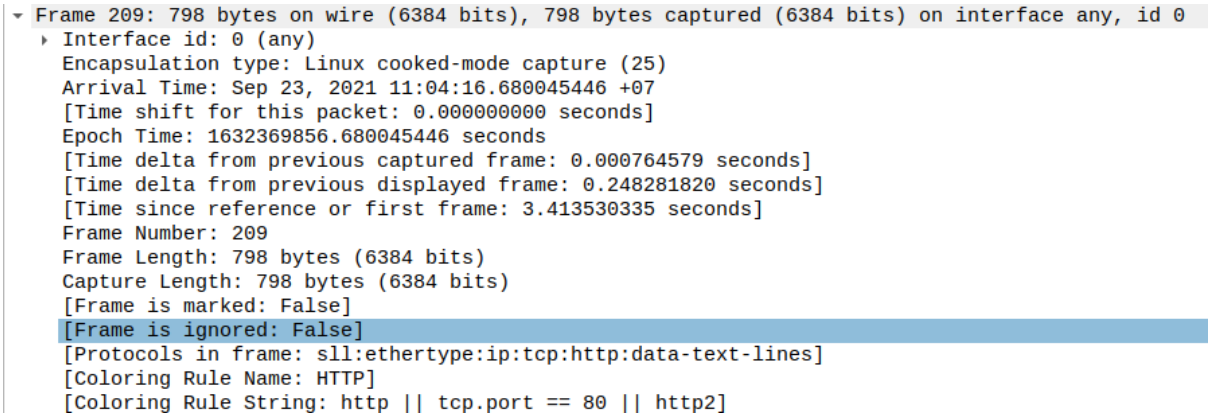
- The HTTP CONDITIONAL GET/response interaction:

First time:

HTTP GET



HTTP Response



```
Hypertext Transfer Protocol
  HTTP/1.1 200 OK\r\n
  Date: Thu, 23 Sep 2021 04:04:16 GMT\r\n
  Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.24 mod_perl/2.0.11 Perl/v5.16.3\r\n
  Last-Modified: Wed, 22 Sep 2021 05:59:01 GMT\r\n
  ETag: "173-5cc8f35fb7117"\r\n
  Accept-Ranges: bytes\r\n
  Content-Length: 371\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]
  [Time since request: 0.248281820 seconds]
  [Request in frame: 189]
  [Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]
  File Data: 371 bytes
```

Second time:

HTTP GET

```
83825 631.613145339 192.168.30.111    128.119.245.12    HTTP    654 GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
83867 631.862543711 128.119.245.12    192.168.30.111    HTTP    308 HTTP/1.1 304 Not Modified
```

```
Frame 83825: 654 bytes on wire (5232 bits), 654 bytes captured (5232 bits) on interface any, id 0
  Interface id: 0 (any)
  Encapsulation type: Linux cooked-mode capture (25)
  Arrival Time: Sep 23, 2021 11:14:44.879660450 +07
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1632370484.879660450 seconds
  [Time delta from previous captured frame: 0.000418687 seconds]
  [Time delta from previous displayed frame: 192.124118557 seconds]
  [Time since reference or first frame: 631.613145339 seconds]
  Frame Number: 83825
  Frame Length: 654 bytes (5232 bits)
  Capture Length: 654 bytes (5232 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: sll:ethertype:ip:tcp:http]
  [Coloring Rule Name: HTTP]
  [Coloring Rule String: http || tcp.port == 80 || http2]
```

```
Hypertext Transfer Protocol
  GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n
  Host: gaia.cs.umass.edu\r\n
  Connection: keep-alive\r\n
  Cache-Control: max-age=0\r\n
  Upgrade-Insecure-Requests: 1\r\n
  User-Agent: Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/93.0.4577.63 Safari/537.36\r\n
  Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9\r\n
  Accept-Encoding: gzip, deflate\r\n
  Accept-Language: en-US,en;q=0.9,vi;q=0.8\r\n
  If-None-Match: "173-5cc8f35fb7117"\r\n
  If-Modified-Since: Wed, 22 Sep 2021 05:59:01 GMT\r\n
  \r\n
  [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]
  [HTTP request 1/1]
  [Response in frame: 83867]
```

HTTP Response

```
Frame 83825: 654 bytes on wire (5232 bits), 654 bytes captured (5232 bits) on interface any, id 0
  Interface id: 0 (any)
  Encapsulation type: Linux cooked-mode capture (25)
  Arrival Time: Sep 23, 2021 11:14:44.879660450 +07
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1632370484.879660450 seconds
  [Time delta from previous captured frame: 0.000418687 seconds]
  [Time delta from previous displayed frame: 192.124118557 seconds]
  [Time since reference or first frame: 631.613145339 seconds]
  Frame Number: 83825
  Frame Length: 654 bytes (5232 bits)
  Capture Length: 654 bytes (5232 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: sll:ethertype:ip:tcp:http]
  [Coloring Rule Name: HTTP]
  [Coloring Rule String: http || tcp.port == 80 || http2]
```

```
Hypertext Transfer Protocol
  GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n
  Host: gaia.cs.umass.edu\r\n
  Connection: keep-alive\r\n
  Cache-Control: max-age=0\r\n
  Upgrade-Insecure-Requests: 1\r\n
  User-Agent: Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/93.0.4577.63 Safari/537.36\r\n
  Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9\r\n
  Accept-Encoding: gzip, deflate\r\n
  Accept-Language: en-US,en;q=0.9,vi;q=0.8\r\n
  If-None-Match: "173-5cc8f35fb7117"\r\n
  If-Modified-Since: Wed, 22 Sep 2021 05:59:01 GMT\r\n
  \r\n
  [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]
  [HTTP request 1/1]
  [Response in frame: 83867]
```

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? No

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

Explicitly

```
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
  \n
  </html>\n
```

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?

```
[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
```

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 HTTP status code is “304: Not Modified”
- The server did not return the contents of the file because the browser simply retrieved the contents from its cache. Had the file been modified since it was last accessed, it would have returned the contents of the file, instead it simply told my browser to retrieve the old file from its cached memory.