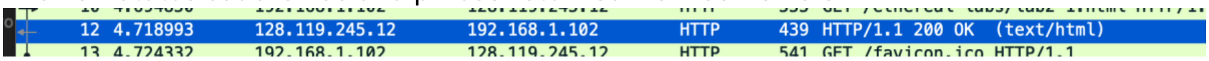
Written by z5223731
Exercise 3 Answer:

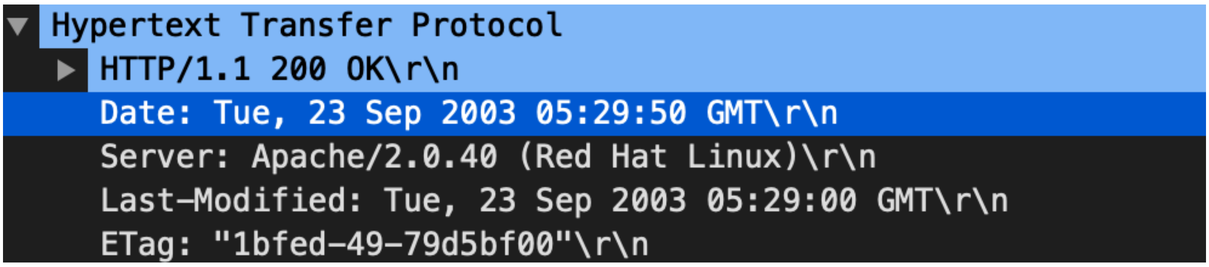
Question 1: What is the status code and phrase returned from the server to the client browser?
Answer: Status code is 200 and phrase returned from server is OK.



```
12 4.718993  128.119.245.12  192.168.1.102  HTTP  439 HTTP/1.1 200 OK  (text/html)
13 4.724332  192.168.1.102   128.119.245.12 HTTP  541 GET /favicon.ico HTTP/1.1
```

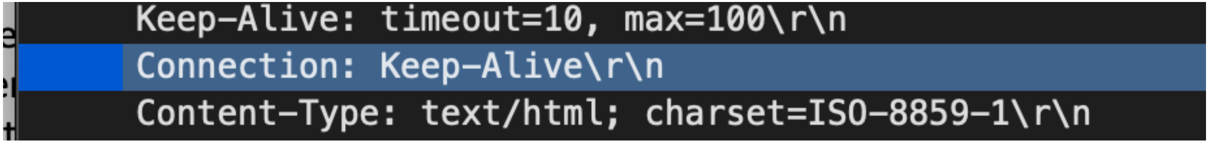
Question 2: When was the HTML file that the browser is retrieving last modified at the server? Does the response also contain a DATE header? How are these two fields different?
Answer:

1. The date of last modified is Tue, 23 Sep 2003 05:29:00 GMT
2. Yes
3. The date header contains the date and time of the last message was generated but the Last-Modified header contains the date and time of the resource in the server was last modified.



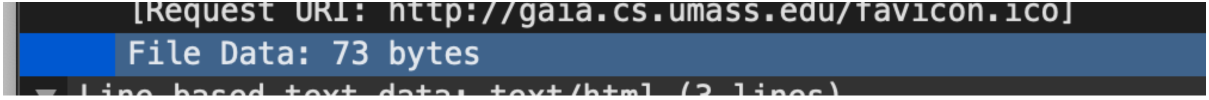
```
▼ Hypertext Transfer Protocol
  ▶ HTTP/1.1 200 OK\r\n
    Date: Tue, 23 Sep 2003 05:29:50 GMT\r\n
    Server: Apache/2.0.40 (Red Hat Linux)\r\n
    Last-Modified: Tue, 23 Sep 2003 05:29:00 GMT\r\n
    ETag: "1bfed-49-79d5bf00"\r\n
```

Question 3: Is the connection established between the browser and the server persistent or non-persistent? How can you infer this?
Answer: The connection is persistent due to the Connection field is Keep-Alive and also the default connection of HTTP 1.1 is persistent.



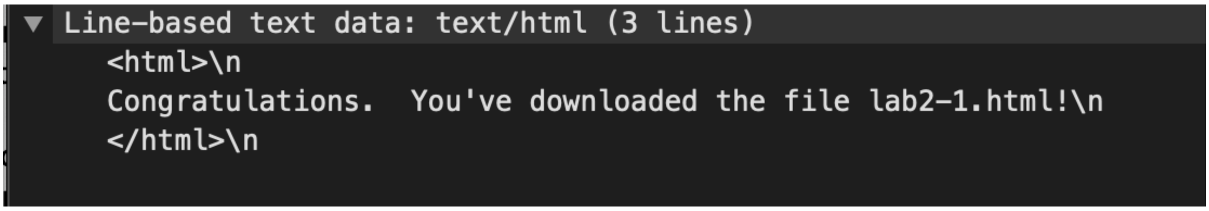
```
Keep-Alive: timeout=10, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=ISO-8859-1\r\n
```

Question 4: How many bytes of content are being returned to the browser?
Answer: 73 bytes.



```
[Request URI: http://gaia.cs.umass.edu/favicon.ico]
File Data: 73 bytes
```

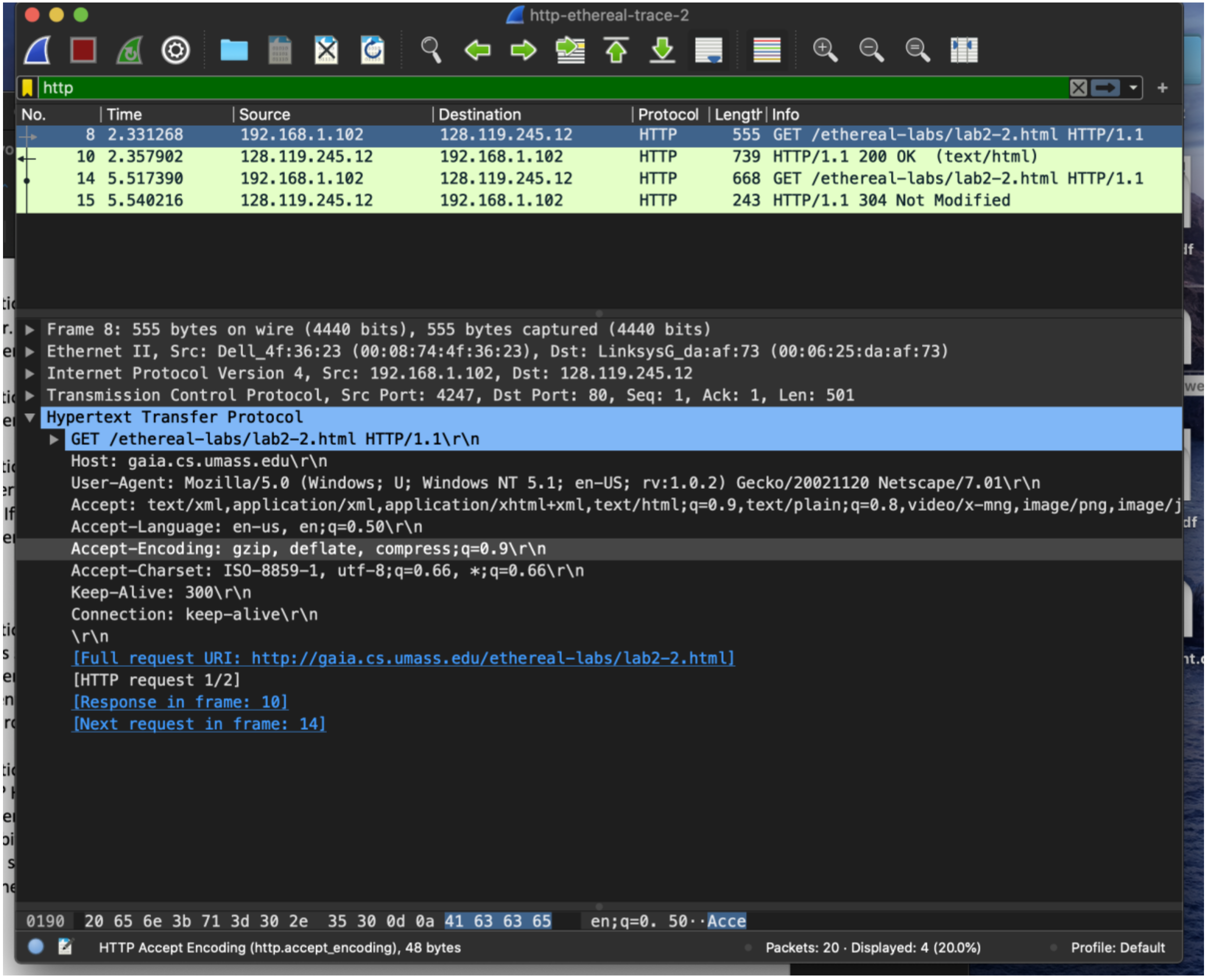
Question 5: What is the data contained inside the HTTP response packet?
Answer: “Congratulations. You've downloaded the file lab2-1.html!” or we can say text and html.



```
▼ Line-based text data: text/html (3 lines)
    <html>\n
    Congratulations.  You've downloaded the file lab2-1.html!\n
    </html>\n
```

Exercise 4 Answer:

Question 1: Inspect the contents of the first HTTP GET request from the browser to the server. Do you see an “IF-MODIFIED-SINCE” line in the HTTP GET?
Answer: Nope



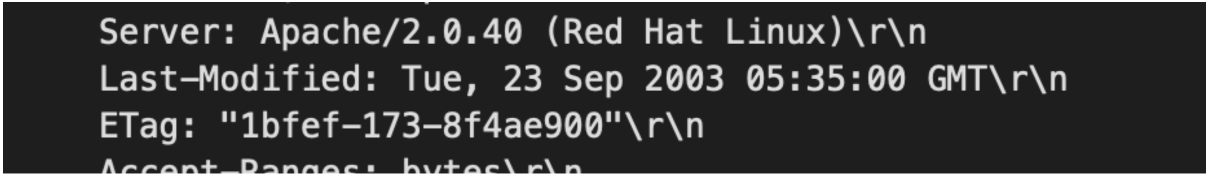
```
No.    Time      Source          Destination     Protocol Length Info
     8 2.331268  192.168.1.102   128.119.245.12  HTTP      555 GET /ethereal-labs/lab2-2.html HTTP/1.1
    10 2.357902  128.119.245.12  192.168.1.102   HTTP      739 HTTP/1.1 200 OK  (text/html)
    14 5.517390  192.168.1.102   128.119.245.12  HTTP      668 GET /ethereal-labs/lab2-2.html HTTP/1.1
    15 5.540216  128.119.245.12  192.168.1.102   HTTP      243 HTTP/1.1 304 Not Modified
```

```
▶ Frame 8: 555 bytes on wire (4440 bits), 555 bytes captured (4440 bits)
▶ Ethernet II, Src: Dell_4f:36:23 (00:08:74:4f:36:23), Dst: LinksysG_da:af:73 (00:06:25:da:af:73)
▶ Internet Protocol Version 4, Src: 192.168.1.102, Dst: 128.119.245.12
▶ Transmission Control Protocol, Src Port: 4247, Dst Port: 80, Seq: 1, Ack: 1, Len: 501
▼ Hypertext Transfer Protocol
  ▶ GET /ethereal-labs/lab2-2.html HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.0.2) Gecko/20021120 Netscape/7.01\r\n
    Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,video/x-mng,image/png,image/j
    Accept-Language: en-us, en;q=0.50\r\n
    Accept-Encoding: gzip, deflate, compress;q=0.9\r\n
    Accept-Charset: ISO-8859-1, utf-8;q=0.66, *;q=0.66\r\n
    Keep-Alive: 300\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/ethereal-labs/lab2-2.html]
    [HTTP request 1/2]
    [Response in frame: 10]
    [Next request in frame: 14]
```

```
0190  20 65 6e 3b 71 3d 30 2e  35 30 0d 0a 41 63 63 65    en;q=0. 50··Acce
```

```
HTTP Accept Encoding (http.accept_encoding), 48 bytes    Packets: 20 · Displayed: 4 (20.0%)    Profile: Default
```

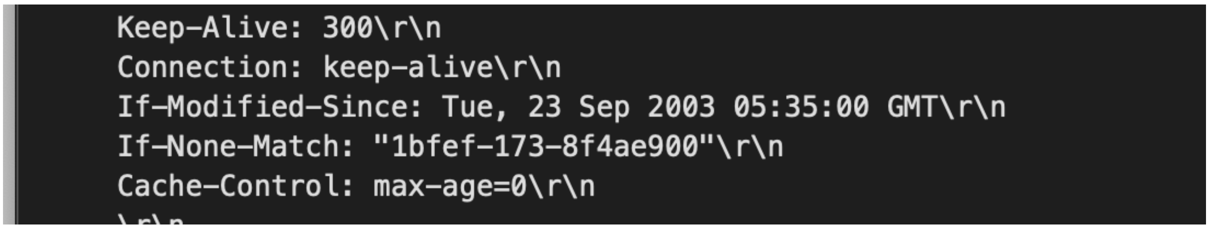
Question 2: Does the response indicate the last time that the requested file was modified?
Answer: Yes, the time is Tue, 23 Sep 2003 05:35:00 GMT



```
Server: Apache/2.0.40 (Red Hat Linux)\r\n
Last-Modified: Tue, 23 Sep 2003 05:35:00 GMT\r\n
ETag: "1bfef-173-8f4ae900"\r\n
Accept-Ranges: bytes\r\n
```

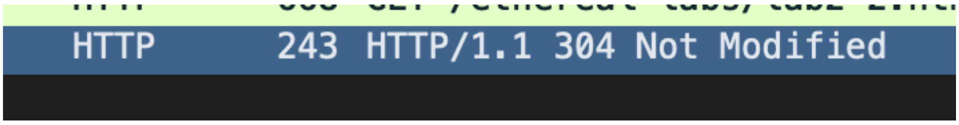
Question 3: Now inspect the contents of the second HTTP GET request from the browser to the server. Do you see an “IF-MODIFIED-SINCE:” and “IF-NONE-MATCH” lines in the HTTP GET? If so, what information is contained in these header lines?
Answer: Yes

If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT
If-None-Match: "1bfef-173-8f4ae900"



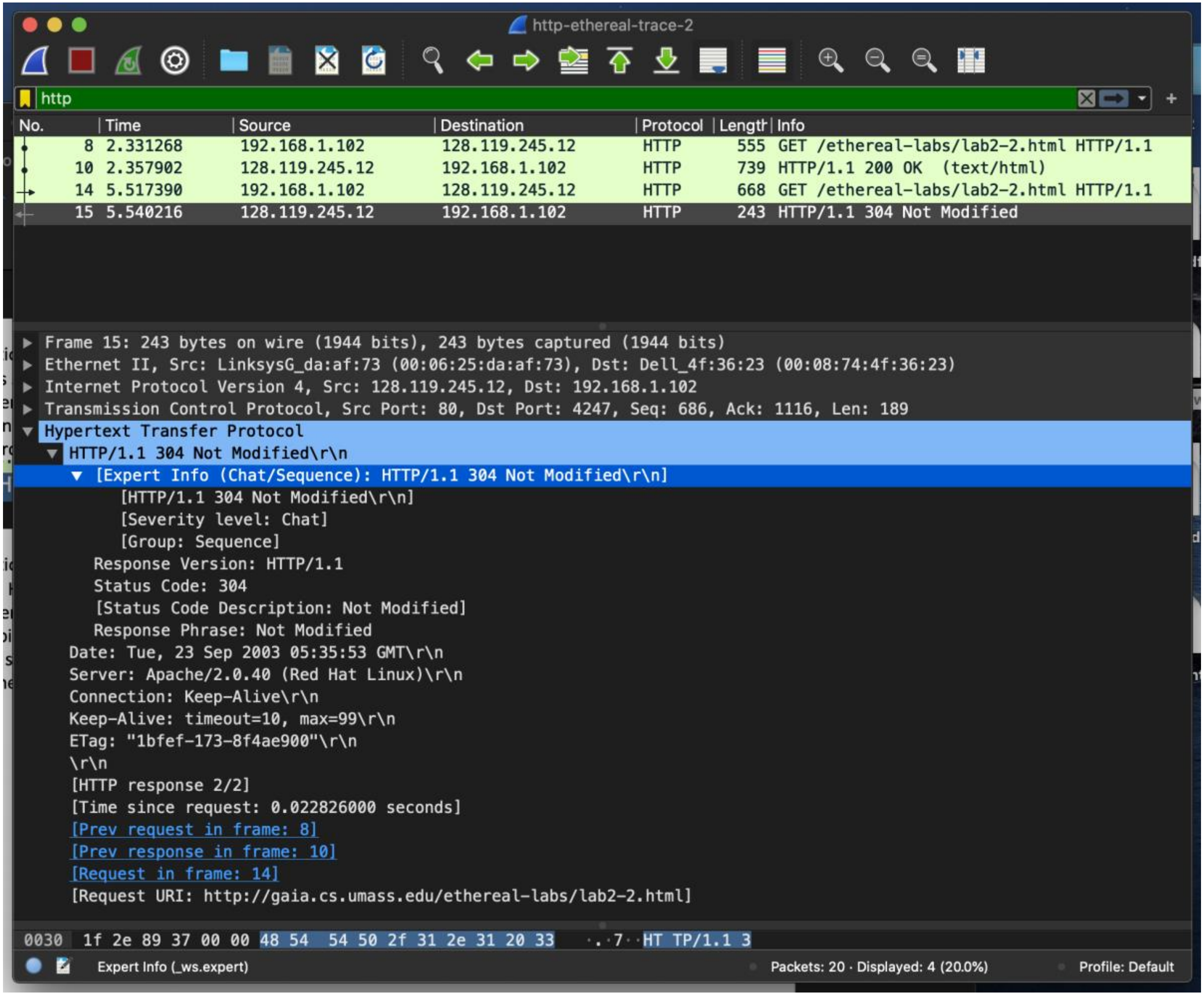
```
    Keep-Alive: 300\r\n
    Connection: keep-alive\r\n
    If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT\r\n
    If-None-Match: "1bfef-173-8f4ae900"\r\n
    Cache-Control: max-age=0\r\n
```

Question 4: 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.
Answer: Status code is 304 and phrase is Not Modified. The server doesn’t return the contents of the file because there is no Last-Modified field which indicate the time of resource in the server was modified.



```
HTTP      243  HTTP/1.1 304 Not Modified
```

Question 5: What is the value of the Etag field in the 2nd response message and how it is used? Has this value changed since the 1st response message was received?
Answer: The value of Etag in the 2nd response message is “1bfef-173-8f4ae900", Etag is a little bit similar to Last-Modified but Etag value is unique identifier generated and change every single time by the server if the cached content is modified, it is used for determining whether the cached content is up to date or not.



```
http

No.  Time       Source           Destination      Protocol  Length Info
  8  2.331268   192.168.1.102    128.119.245.12   HTTP      555  GET /ethereal-labs/lab2-2.html HTTP/1.1
 10  2.357902   128.119.245.12   192.168.1.102    HTTP      739  HTTP/1.1 200 OK  (text/html)
 14  5.517390   192.168.1.102    128.119.245.12   HTTP      668  GET /ethereal-labs/lab2-2.html HTTP/1.1
 15  5.540216   128.119.245.12   192.168.1.102    HTTP      243  HTTP/1.1 304 Not Modified

▶ Frame 15: 243 bytes on wire (1944 bits), 243 bytes captured (1944 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: Dell_4f:36:23 (00:08:74:4f:36:23)
▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.102
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 4247, Seq: 686, Ack: 1116, Len: 189
▼ Hypertext Transfer Protocol
  ▼ HTTP/1.1 304 Not Modified\r\n
    ▼ [Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
        [HTTP/1.1 304 Not Modified\r\n]
        [Severity level: Chat]
        [Group: Sequence]
      Response Version: HTTP/1.1
      Status Code: 304
      [Status Code Description: Not Modified]
      Response Phrase: Not Modified
    Date: Tue, 23 Sep 2003 05:35:53 GMT\r\n
    Server: Apache/2.0.40 (Red Hat Linux)\r\n
    Connection: Keep-Alive\r\n
    Keep-Alive: timeout=10, max=99\r\n
    ETag: "1bfef-173-8f4ae900"\r\n
    \r\n
    [HTTP response 2/2]
    [Time since request: 0.022826000 seconds]
    [Prev request in frame: 8]
    [Prev response in frame: 10]
    [Request in frame: 14]
    [Request URI: http://gaia.cs.umass.edu/ethereal-labs/lab2-2.html]

0030  1f 2e 89 37 00 00 48 54  54 50 2f 31 2e 31 20 33   ·.·7··HT TP/1.1 3

Expert Info (_ws.expert)                    Packets: 20 · Displayed: 4 (20.0%)        Profile: Default
```