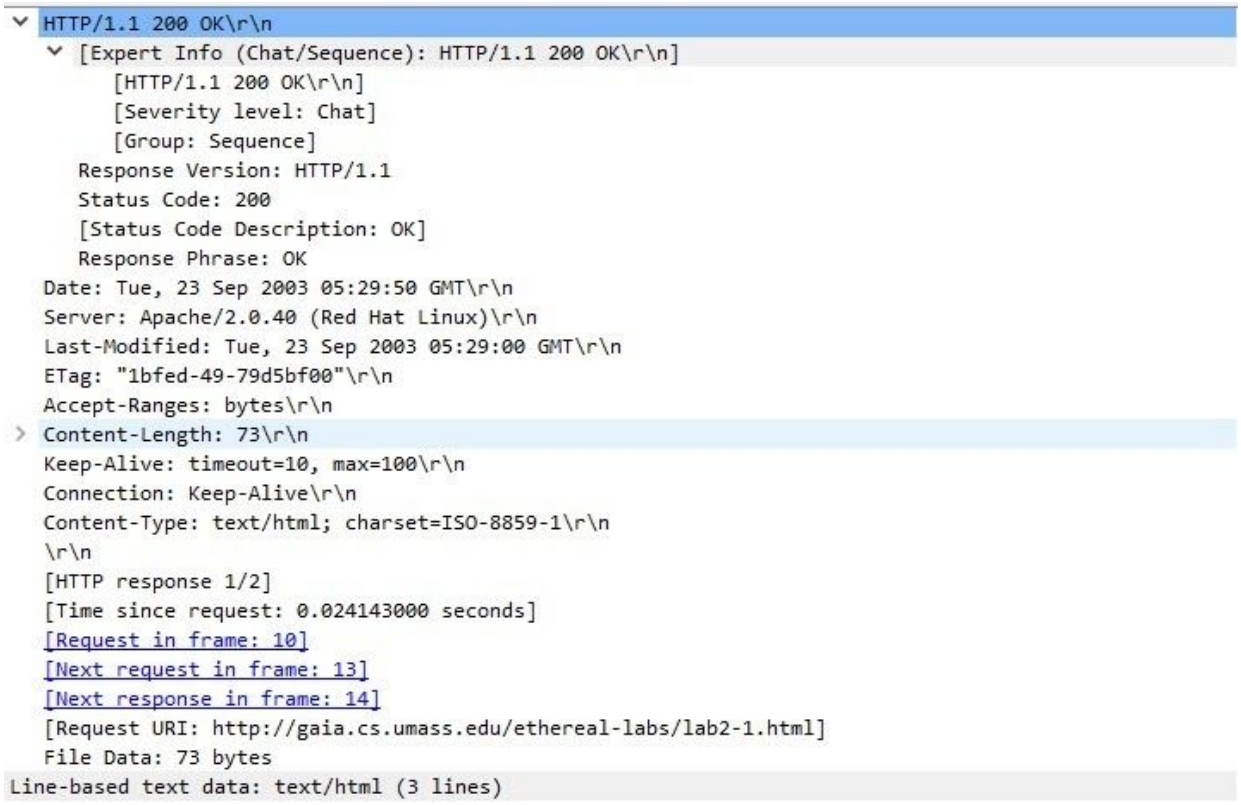
Lab 2 by John Dao, z5258962

Exercise 3: Using Wireshark to understand basic HTTP request/response messages (marked, include in your report)

The full response (HTTP):



Q1: What is the status code and phrase returned from the server to the client browser?'

The status code and phrase returned from the server to the client is **200** with status description of "**ok"**

Q2: 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?

The date that the HTML file that is retrieved by the browser was last modified on **tuesday, 23 Sep 2003** at **05:29:00 GMT**

Q3: Is the connection established between the browser and the server persistent or non-persistent? How can you infer this?

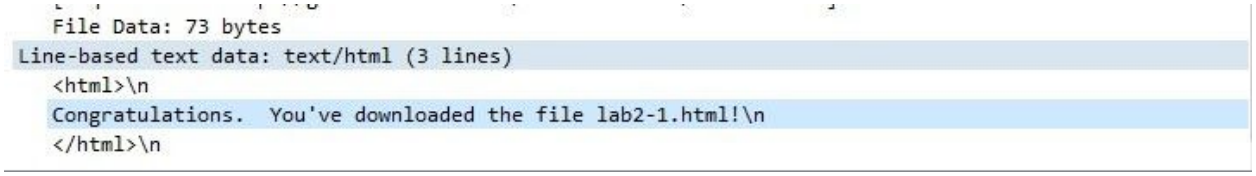
The Connection established is persistent with the fact that the connection header contains **Keep-Alive** with a timeout of 10 and max of 100. This means that every connection will

continue to sent and receive HTTP requests without the need to continually refresh/open a new connection.

Q4: How many bytes of content are being returned to the browser?

The file data size is **73 bytes** as designated by the header named “File Data”

Q5: What is the data contained inside the HTTP response packet?



Exercise 4: Using Wireshark to understand the HTTP CONDITIONAL GET/response interaction (marked, include in your report)

The full response (GET):

Q1: 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?

No, there is no such line in the HTTP GET

Q2: Does the response indicate the last time that the requested file was modified?

Yes. The file was last modified **Tue, 23 sep 2003** at **05:35:00 GMT**

Q3: 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?

Full response:

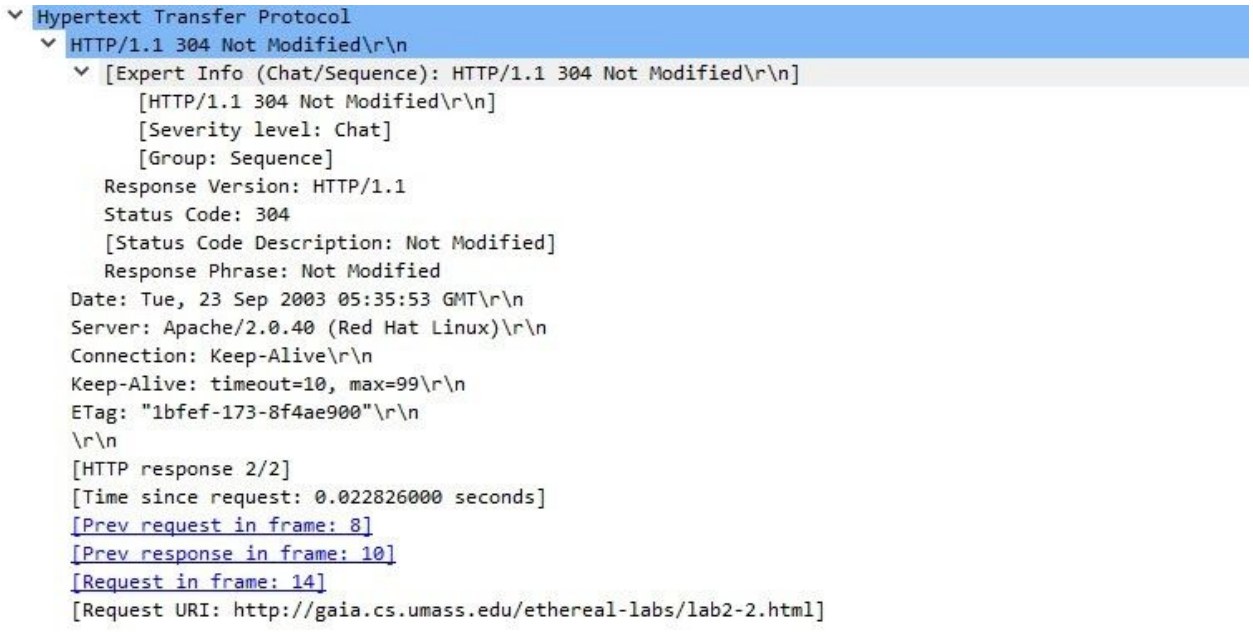
Yes.

“IF-MODIFIED-SINCE:” contains: TUE, 23 Sep 2003 05:35:00 GMT

“IF-NONE-MATCH” contains: “1bfef-173-8f4ae900”

Q4: 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.

Full response:



The HTTP status was **304** with a description of **Not modified**.
In this event where the status was not modified, the server did not return the contents of the file. This is due to the fact that there was no change in the file and thus no need to modify the local file.

Q5: What is the value of the Etag field in the 2nd response message and how it is used? Has this value changed since the 1 st response message was received?

The value of the Etag in the 2nd response is **ETag: "1bfef-173-8f4ae900".**
This value has not changed since the 1st response message was received.

The etag is used to compare whether the cache and the incoming resources are different.
They are different when the etags are not matched and in this case, the cache and the incoming resource are the same, explaining the 304 not modified status.

Exercise 5: Ping Client (marked, submit source code as a separate file, include sample output in the report)

```
λ python PingClient.py 127.0.0.1 100
Ping to 127.0.0.1, seq = 3331, time out
Ping to 127.0.0.1, seq = 3332, rtt = 30 ms
Ping to 127.0.0.1, seq = 3333, rtt = 160 ms
Ping to 127.0.0.1, seq = 3334, rtt = 159 ms
Ping to 127.0.0.1, seq = 3335, rtt = 190 ms
Ping to 127.0.0.1, seq = 3336, rtt = 189 ms
Ping to 127.0.0.1, seq = 3337, rtt = 85 ms
Ping to 127.0.0.1, seq = 3338, rtt = 139 ms
Ping to 127.0.0.1, seq = 3339, rtt = 199 ms
Ping to 127.0.0.1, seq = 3340, rtt = 42 ms
Ping to 127.0.0.1, seq = 3341, time out
Ping to 127.0.0.1, seq = 3342, rtt = 51 ms
Ping to 127.0.0.1, seq = 3343, rtt = 5 ms
Ping to 127.0.0.1, seq = 3344, rtt = 122 ms
Ping to 127.0.0.1, seq = 3345, rtt = 95 ms
Minimum rtt is: 5.357177734375
Maximum of rtt is: 199.002685546875
average rtt is: 113.22278771033653
```