

E3:

Question 1: What is the status code and phrase returned from the server to the client browser?

A: `HTTP/1.1 200 OK\r\n` It is 200 OK.

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

A: `Last-Modified: Tue, 23 Sep 2003 05:29:00 GMT\r\n` . The last modified time is Tuesday, 23 September 2003 05:29:00 GMT.

`Date: Tue, 23 Sep 2003 05:29:50 GMT\r\n` . The date is 50 seconds later. Those two are different, "Last-Modified" is the time that the file was last modified on the server and the Date is the time that the response is.

Question 3: Is the connection established between the browser and the server persistent or non-persistent? How can you infer this?

A: Persistent. Because the connection type is Keep-Alive.

`Connection: Keep-Alive\r\n`

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

A: The Content-Length should be the size, so it is 73 bytes.

`Content-Length: 73\r\n`

Question 5: What is the data contained inside the HTTP response packet?

A: It has three sections: a status line, six header lines, and then the entity body.

E4:

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?

A: No

Question 2: Does the HTTP response from the server indicate the last time that the requested file was modified?

A: Yes.

`Last-Modified: Tue, 23 Sep 2003 05:35:00 GMT\r\n`

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

A: Yes.

`If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT\r\n`

`If-None-Match: "1bfef-173-8f4ae900"\r\n`

So, "IF-MODIFIED-SINCE:" contains a timestamp indicating the last time the browser cached the requested resource. When make a get request, it will first compare it, if it same with the server, it means the client should use the cached copy and do not need to download again. "IF-NONE-MATCH" contains ETag which is the last time the client

received the requested resource from server. "IF-MODIFIED-SINCE" uses timestamp while "IF-NONE-MATCH" uses an "Etag" values to check whether the client cache is expired or not.

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 file's contents? Explain.

A: Status Code: 304 Not Modified, no file's contents. It is a conditional GET, as the client cached then same copy as the server did, the client do not need to download the page again, just use the copy one.

Question 5: What is the value of the Etag field in the 2nd response message, and how is it used? Is the Etag value the same as in the 1ST response?

A: ETag: "1bfef-173-8f4ae900"\r\n

The value is same as before, that is the reason why it returns 304 Not Modified. It is be used to check the client cached copy is overdate or not, if it not, the copy can be used and there is no necessity to download again.