

Exercise 3:

Q1:

The status code: 200 phrase: OK

```
✓ Hypertext Transfer Protocol
  ✓ HTTP/1.1 200 OK\r\n
    > [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
      Response Version: HTTP/1.1
      Status Code: 200
      [Status Code Description: OK]
      Response Phrase: OK
```

Q2:

- 1) On Tuesday, 23 September 2003, 05:29:00 GMT.
- 2) Yes, also contains a DATE header.
- 3) The Date field represents the date when the message was originated.

The last-modified field represents the date when the origin server believes the variant was last modified.

No.	Time	Source	Destination	Protocol	Length	Info
10	4.694850	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-labs/lab2-1.html HTTP/1.1
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
14	4.750366	128.119.245.12	192.168.1.102	HTTP	1395	HTTP/1.1 404 Not Found (text/html)

```
> Transmission Control Protocol, Src Port: 80, Dst Port: 4127, Seq: 1, Ack: 502, Len: 385
✓ 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
    Accept-Ranges: bytes\r\n
```

Q3:

The connection is persistent. As the connection is keeping alive.

Request:

No.	Time	Source	Destination	Protocol	Length	Info
10	4.694850	192.168.1.102	128.119.245.12	HTTP	555	GET /ethere
12	4.718993	128.119.245.12	192.168.1.102	HTTP	439	HTTP/1.1 200
13	4.724332	192.168.1.102	128.119.245.12	HTTP	541	GET /favico
14	4.750366	128.119.245.12	192.168.1.102	HTTP	1395	HTTP/1.1 404

User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.0.2) Gecko/20021120
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8
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

Response:

No.	Time	Source	Destination	Protocol	Length	Info
10	4.694850	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-labs/lab2-1.html HTTP/1.1
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
14	4.750366	128.119.245.12	192.168.1.102	HTTP	1395	HTTP/1.1 404 Not Found (text/html)

```
Accept-Ranges: bytes\r\n
> Content-Length: 73\r\n
Keep-Alive: timeout=10, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=ISO-8859-1\r\n
\r\n
[HTTP response 1/2]
[Time since request: 0.024143000 seconds]
```

Q4:

73 bytes of content.

No.	Time	Source	Destination	Protocol	Length	Info
10	4.694850	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-labs/lab2-1.html HTTP/1.1
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
14	4.750366	128.119.245.12	192.168.1.102	HTTP	1395	HTTP/1.1 404 Not Found (text/html)

```
▼ 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
    Accept-Ranges: bytes\r\n
  ▼ Content-Length: 73\r\n
    [Content length: 73]
```

Q5:

A text in html format.

No.	Time	Source	Destination	Protocol	Length	Info
10	4.694850	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-labs/lab2-1.html HTTP/1.1
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
14	4.750366	128.119.245.12	192.168.1.102	HTTP	1395	HTTP/1.1 404 Not Found (text/html)

```
Accept-Ranges: bytes\r\n
▼ Content-Length: 73\r\n
  [Content length: 73]
Keep-Alive: timeout=10, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=ISO-8859-1\r\n
```

Exercise 4:

Q1:

No, I don't see the "IF-MODIFIED-SINCE", because this is the first time for the client to make a request to the server.

Q2:

Yes, as the picture shows.

No.	Time	Source	Destination	Protocol	Length	Info
8	2.331268	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-la
10	2.357902	128.119.245.12	192.168.1.102	HTTP	739	HTTP/1.1 200 OK
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668	GET /ethereal-la
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243	HTTP/1.1 304 Not

<	>
HTTP/1.1 200 OK\r\n	
> [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]	
Response Version: HTTP/1.1	
Status Code: 200	
[Status Code Description: OK]	
Response Phrase: OK	
Date: Tue, 23 Sep 2003 05:35:50 GMT\r\n	
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	

Q3:

- 1) Yes, the second HTTP GET has "IF-MODIFIED-SINCE:" and "IF-NONE-MATCH" lines.
- 2) IF-MODIFIED-SINCE: contains the modified time.
IF-NONE-MATCH: contain some ascii characters.

No.	Time	Source	Destination	Protocol	Length	Info
8	2.331268	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-l
10	2.357902	128.119.245.12	192.168.1.102	HTTP	739	HTTP/1.1 200 OK
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668	GET /ethereal-l
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243	HTTP/1.1 304 No

<	>
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	
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	
\r\n	

Q4:

- 1) The status code: 304 the phrase: Not Modified

- 2) No, the server didn't return the contents of the file. Because the content had not been modified, the client can directly use the contents from local cache.

No.	Time	Source	Destination	Protocol	Length	Info
8	2.331268	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-lab
10	2.357902	128.119.245.12	192.168.1.102	HTTP	739	HTTP/1.1 200 OK
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668	GET /ethereal-lab
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243	HTTP/1.1 304 Not

```

Hypertext Transfer Protocol
  HTTP/1.1 304 Not Modified\r\n
    [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
    Date: Tue, 23 Sep 2003 05:35:53 GMT\r\n
    Server: Apache/2.0.40 (Red Hat Linux)\r\n
  
```

Q5:

- 1) The content of Etag is a series of ascii characters : "1bfef-173-8f4ae900".
- 2) No, it hasn't changed, because the Etag changes while the content in local cache is modified. In this case, the content in local cache doesn't change, so the Etag doesn't change either.

The first one:

```

Response Phrase: OK
Date: Tue, 23 Sep 2003 05:35:50 GMT\r\n
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
Content-Length: 371\r\n
  
```

The second one:

8	2.331268	192.168.1.102	128.119.245.12	HTTP	555 GET /et
10	2.357902	128.119.245.12	192.168.1.102	HTTP	739 HTTP/1.
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668 GET /et
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.

<

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]

Exercise 5:

sample output

uxterm	uxterm
Reply not sent. Received from 127.0.0.1: PING 9 Fri Jun 21 15:42:55 2019 Reply sent. Received from 127.0.0.1: PING 0 Fri Jun 21 15:43:07 2019 Reply sent. Received from 127.0.0.1: PING 1 Fri Jun 21 15:43:07 2019 Reply sent. Received from 127.0.0.1: PING 2 Fri Jun 21 15:43:07 2019 Reply not sent. Received from 127.0.0.1: PING 3 Fri Jun 21 15:43:08 2019 Reply sent. Received from 127.0.0.1: PING 4 Fri Jun 21 15:43:08 2019 Reply not sent. Received from 127.0.0.1: PING 5 Fri Jun 21 15:43:09 2019 Reply not sent. Received from 127.0.0.1: PING 6 Fri Jun 21 15:43:10 2019 Reply sent. Received from 127.0.0.1: PING 7 Fri Jun 21 15:43:10 2019 Reply sent. Received from 127.0.0.1: PING 8 Fri Jun 21 15:43:11 2019 Reply sent. Received from 127.0.0.1: PING 9 Fri Jun 21 15:43:11 2019 Reply sent.	127.0.0.1 8080 ping to 127.0.0.1, seq = 1, rtt = 99 ms ping to 127.0.0.1, seq = 2, rtt = 196 ms ping to 127.0.0.1, seq = 3, rtt = 114 ms ping to 127.0.0.1, seq = 4, rtt = 68 ms ping to 127.0.0.1, seq = 5, rtt = 29 ms ping to 127.0.0.1, seq = 6, rtt = 176 ms ping to 127.0.0.1, seq = 7, rtt = 103 ms ping to 127.0.0.1, seq = 8, time out ping to 127.0.0.1, seq = 9, time out ping to 127.0.0.1, seq = 10, rtt = 93 ms z5228412@vx4:/tmp_and/ravel/export/ravel/4/z5228412/9331\$ python3 PingClient.py 127.0.0.1 8080 ping to 127.0.0.1, seq = 1, rtt = 149 ms ping to 127.0.0.1, seq = 2, rtt = 52 ms ping to 127.0.0.1, seq = 3, time out ping to 127.0.0.1, seq = 4, rtt = 87 ms ping to 127.0.0.1, seq = 5, time out ping to 127.0.0.1, seq = 6, time out ping to 127.0.0.1, seq = 7, rtt = 40 ms ping to 127.0.0.1, seq = 8, rtt = 115 ms ping to 127.0.0.1, seq = 9, rtt = 21 ms ping to 127.0.0.1, seq = 10, rtt = 32 ms z5228412@vx4:/tmp_and/ravel/export/ravel/4/z5228412/9331\$