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
```

O2:

- 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: "lbfed-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 20
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 40

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
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

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.:
4	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
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
4	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.

, hiceb					
۱o. ^	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)
	Assent Danges	hut oo \ m\ m			
	Accept-Ranges: Content-Length:	The state of the s			
•	Content-Length: Content leng				
		eout=10, max=100\r\n			
	Connection: Kee				

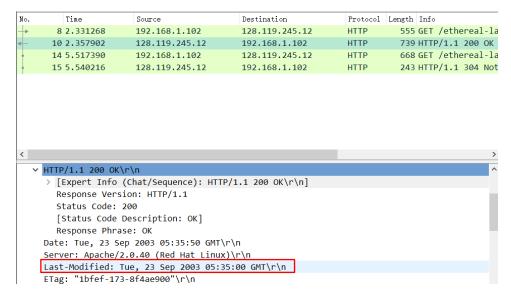
Exercise 4:

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.



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.

С		Time	Source	Destination	Protocol L	ength Inio
	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
-	1 4	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

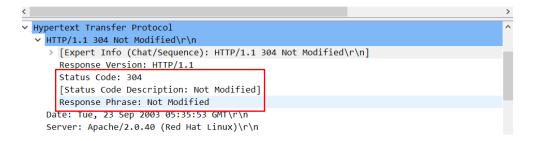
```
Accept-Encoding: gzip, deflate, compress;q=0.9\r\n
Accept-Charset: ISO-8859-1, utf-8;q=0.66, *;q=0.66\r\n
Keep-Alive: 300\r\n
Connection: keep-alive\r\n
If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT\r\n
If-None-Match: "1bfef-173-8f4ae900"\r\n
Cache-Control: max-age=0\r\n
\r\n
```

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.

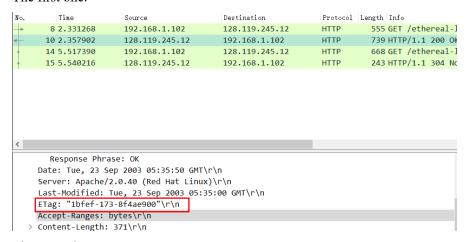




Q5:

- 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:



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
4	15 5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.
/					
<					
<	Response Phra	ase: Not Modified			
<	•	ase: Not Modified ep 2003 05:35:53 GMT	\r\n		
<	Date: Tue, 23 S				
<	Date: Tue, 23 S	ep 2003 05:35:53 GMT 2.0.40 (Red Hat Linux			
<	Date: Tue, 23 S Server: Apache/ Connection: Kee	ep 2003 05:35:53 GMT 2.0.40 (Red Hat Linux			
<	Date: Tue, 23 S Server: Apache/ Connection: Kee Keep-Alive: tim	ep 2003 05:35:53 GMT 2.0.40 (Red Hat Linu p-Alive\r\n			
<	Date: Tue, 23 S Server: Apache/ Connection: Kee Keep-Alive: tim	ep 2003 05:35:53 GMT 2.0.40 (Red Hat Linux p-Alive\r\n <u>eout=10, max=99\</u> r\n			
<	Date: Tue, 23 S Server: Apache/ Connection: Kee Keep-Alive: tim ETag: "1bfef-17 \r\n	ep 2003 05:35:53 GMT' 2.0.40 (Red Hat Linux p-Alive\r\n eout=10, max=99\r\n 3-8f4ae900"\r\n			
<	Date: Tue, 23 S Server: Apache/ Connection: Kee Keep-Alive: tim ETag: "1bfef-17 \r\n [HTTP response	ep 2003 05:35:53 GMT' 2.0.40 (Red Hat Linux p-Alive\r\n eout=10, max=99\r\n 3-8f4ae900"\r\n	x)\r\n		

Exercise 5:

sample output

```
uxterm
                                                                                                                                                        uxterm
Reply not sent.
Received from 127.0.0.1: PING 9 Fri Jun 21 15:42:55 2019
                                                                                                   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
 Reply sent.
Received from 127.0.0.1: PING 0 Fri Jun 21 15:43:07 2019
                                                                                                   ping to 127.0.0.1, seq = 4, rtt = 68 ms
    Reply sent.
    ceived from 127.0.0.1: PING 1 Fri Jun 21 15:43:07 2019
                                                                                                   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
  Reply sent.
eceived from 127.0.0.1: PING 2 Fri Jun 21 15:43:07 2019
                                                                                                   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 = 9, time out
ping to 127,0,0,1, seq = 10, rtt = 93 ms
z5228412@vx4:/tmp_amd/ravel/export/ravel/4/z5228412/9331$ python3 PingClient.py
  Reply not sent.
Received from 127.0.0.1: PING 3 Fri Jun 21 15:43:08 2019
   Reply sent.
secived 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
                                                                                                   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
    Reply not sent.
                                                                                                   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
  eceived 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.
   eceived from 127.0.0.1: PING 8 Fri Jun 21 15:43:11 2019
                                                                                                   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
  Reply sent.
Received from 127.0.0.1: PING 9 Fri Jun 21 15:43:11 2019
                                                                                                   ping to 127.0.0.1, seq = 10, rtt = 32 ms z5228412@vx4:/tmp_amd/ravel/export/ravel/4/z5228412/9331$
    Reply sent.
0
```