Lab2

ZID: Z5239803

Exercise 3:

Q1:

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)

Status code: 200   Phrase: OK

Q2:

```
▼ 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
```

Last-Modified time is Tue, 23th Sep 2003 05: 29: 00 GMT.

The response contains a Date header: Tue, 23th Sep 2003 05: 29: 50 GMT.

Date means the time server return message to the client, while Last-Modified means the latest updating time of the file on the server.

Q3:

```
    Keep-Alive: timeout=10, max=100\r\n
    Connection: Keep-Alive\r\n
```

The connection is persistent because its property is Keep-Alive.

Q4:

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

73 bytes content was returned to the browser by the server.

Q4:

```
▶ Frame 12: 439 bytes on wire (3512 bits), 439 bytes captured (3512 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: DellComp_4f:36:23 (00:08:74:4f:36:23)
▶ Internet Protocol Version 4, Src: 128.119.245.12 (128.119.245.12), Dst: 192.168.1.102 (192.168.1.102)
▶ Transmission Control Protocol, Src Port: 80 (80), Dst Port: 4127 (4127), Seq: 1, Ack: 502, Len: 385
▶ Hypertext Transfer Protocol
▼ Line-based text data: text/html
    <html>\n
    Congratulations.  You've downloaded the file lab2-1.html!\n
    </html>\n
```

The first response is text file: You've downloaded the file lab2-1.html!

```
▶ Frame 14: 1395 bytes on wire (11160 bits), 1395 bytes captured (11160 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: DellComp_4f:36:23 (00:08:74:4f:36:23)
▶ Internet Protocol Version 4, Src: 128.119.245.12 (128.119.245.12), Dst: 192.168.1.102 (192.168.1.102)
▶ Transmission Control Protocol, Src Port: 80 (80), Dst Port: 4127 (4127), Seq: 386, Ack: 989, Len: 1341
▶ Hypertext Transfer Protocol
▼ Line-based text data: text/html
    \n
    <?xml version="1.0" encoding="ISO-8859-1"?>\n
    <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"\n
        "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">\n
    <html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">\n
    <head>\n
    <title>Object not found!</title>\n
    <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />\n
    <link rev="made" href="mailto:system@gaia.cs.umass.edu" />\n
    <style type="text/css">\n
```

The second response is text file. It contains many information. The main part is:

```
    If you entered the URL manually please check your\n
    spelling and try again.\n
\n
  \n
\n
</dd></dl><dl><dd>\n
If you think this is a server error, please contact\n
the <a href="mailto:system@gaia.cs.umass.edu">webmaster</a>\n
```

Exercise 4:

Q1:

```
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en
Accept: text/xml,application/xml,application/xhtml+xml,
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
```

No, this message does not contain 'IF-MODIFIED-SINCE'. It's the first request.

Q2:

```
▼ Hypertext Transfer Protocol
  ▶ HTTP/1.1 200 OK\r\n
    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
```

Yes, it indicates. Last-Modified time is Tue, 23th Sep 2003 05: 35: 00 GMT.

Q3:

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

Yes. 'If-Modified-Since' is the time record of the latest updating time of local file cache. If the time matches the Last-Modified time on the server, the server won't return the file again.

'If-None-Match' is the etag of the local file cache. If it equals to the file etag on the server, the server won't return the file either.

Q4:

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

The status code is 304, and the phrase is 'Not Modified'.

The server didn't explicitly return the file because the file etag of the client cache and file etag on the server are the same, which means the file in cache hasn't been modified.

Q5:

The first response Etag: "1bfef-173-8f4ae900"
The second response Etag: "1bfef-173-8f4ae900"
The two Etags are the same, which indicates the file remains unmodified in local cache and there is no need to return the file from server.

Exercise 4:

```
                            uxterm                      ↑ _ □ ✕
z5239803@vx4:/tmp_amd/glass/export/glass/1/z5239803/Desktop/9331 Lab/Lab2$ java
PingServer.java 2020
Received from 127.0.0.1: 100 PING0 2020-10-04 03:38:11.041
    Reply sent.
Received from 127.0.0.1: 101 PING1 2020-10-04 03:38:11.113
    Reply not sent.
Received from 127.0.0.1: 102 PING2 2020-10-04 03:38:11.513
    Reply sent.
Received from 127.0.0.1: 103 PING3 2020-10-04 03:38:11.533
    Reply not sent.
Received from 127.0.0.1: 104 PING4 2020-10-04 03:38:11.933
    Reply sent.
Received from 127.0.0.1: 105 PING5 2020-10-04 03:38:12.094
    Reply sent.
Received from 127.0.0.1: 106 PING6 2020-10-04 03:38:12.098
    Reply sent.
Received from 127.0.0.1: 107 PING7 2020-10-04 03:38:12.187
    Reply sent.
Received from 127.0.0.1: 108 PING8 2020-10-04 03:38:12.366
    Reply sent.
Received from 127.0.0.1: 109 PING9 2020-10-04 03:38:12.390
    Reply sent.
Received from 127.0.0.1: 110 PING10 2020-10-04 03:38:12.472
    Reply sent.
Received from 127.0.0.1: 111 PING11 2020-10-04 03:38:12.540
    Reply not sent.
Received from 127.0.0.1: 112 PING12 2020-10-04 03:38:12.941
    Reply sent.
Received from 127.0.0.1: 113 PING13 2020-10-04 03:38:13.017
    Reply sent.
Received from 127.0.0.1: 114 PING14 2020-10-04 03:38:13.175
    Reply sent.
█
```

```
                            uxterm                      ↑ _ □ ✕
z5239803@vx4:/tmp_amd/glass/export/glass/1/z5239803/Desktop/9331 Lab/Lab2$ pytho
n3 PingClient.py 127.0.0.1 2020
100 PING to 127.0.0.1, seq=0, rtt=72 ms
101 PING to 127.0.0.1, seq=1, rtt= time out
102 PING to 127.0.0.1, seq=2, rtt=20 ms
103 PING to 127.0.0.1, seq=3, rtt= time out
104 PING to 127.0.0.1, seq=4, rtt=161 ms
105 PING to 127.0.0.1, seq=5, rtt=4 ms
106 PING to 127.0.0.1, seq=6, rtt=90 ms
107 PING to 127.0.0.1, seq=7, rtt=179 ms
108 PING to 127.0.0.1, seq=8, rtt=24 ms
109 PING to 127.0.0.1, seq=9, rtt=83 ms
110 PING to 127.0.0.1, seq=10, rtt=68 ms
111 PING to 127.0.0.1, seq=11, rtt= time out
112 PING to 127.0.0.1, seq=12, rtt=77 ms
113 PING to 127.0.0.1, seq=13, rtt=157 ms
114 PING to 127.0.0.1, seq=14, rtt=147 ms


Minimum RTT = 4 ms
Maximum RTT = 179 ms
Average RTT = 90 ms
30.0% of packets have been lost through the network
```