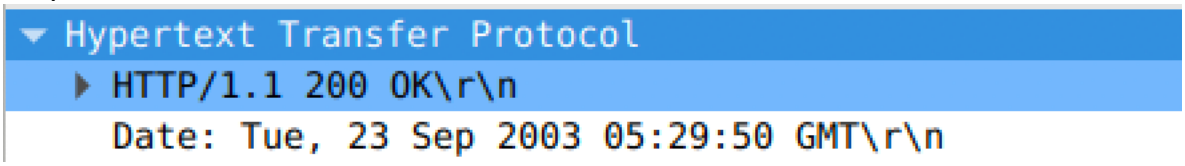
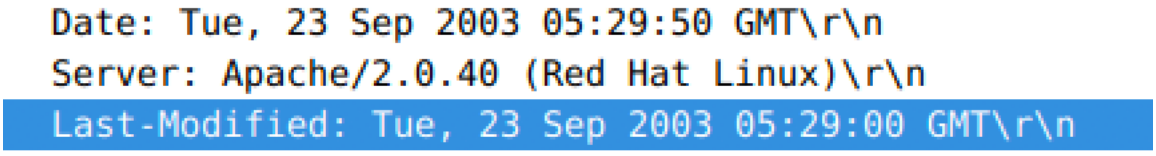
Exercise 3: Using Wireshark to understand basic HTTP request/response messages

Question1:
From the picture given below, we can find the status code is **200**. Also, the response is **OK**.

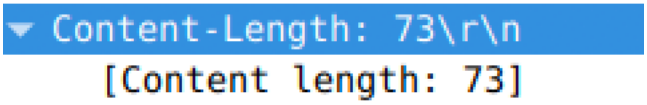


Question2:
From the picture given below, we can find **the last modified date** is **Tue, 23 Sep 2003 05:29:00 GMT**. Furthermore, we can also get **the response date** is **Tue, 23 Sep 2003 05:29:50 GMT**. The date of the last modified must before the date of response. Also based on the lecture, the last modified date can improve the speed of loading pages. This is efficient for users to check whether some changes that happened after the last time of the visit.



Question3:
From the picture given below, we can find the value of connection is **Connection: keep-alive\r\n**. Based on the lecture, we can find that this connection is persistent.

Question4:
From the result given below, we can find the length header of response content is 73, which is **Content-Length: 73\r\n** in the picture. Therefore, we can get the content length is **73 bytes**.



Question5:

The type of the data is **text/html**. The data contained is **<html>\n Congratulations. You've downloaded the file lab2-1.html!\n </html>\n**.

```
Line-based text data: text/html
  <html>\n
  Congratulations.  You've downloaded the file lab2-1.html!\n
  </html>\n
```

Exercise 4: Using Wireshark to understand the HTTP CONDITIONAL GET/RESPONSE interaction

Question1:

No. From the picture(a part of the whole picture) we **cannot** find the "**IF-MODIFIED-SINCE**" line in the first HTTP GET.

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

Question2:

Yes. From the picture, we can find the line of last modified. Also, the last modified date is **Tue, 23 Sep 2003 05:35:00 GMT**.

```
▸ 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
  ETag: "1bfef-173-8f4ae900"\r\n
  Accept-Ranges: bytes\r\n
```

Qustion3:

Yes. We can find the "**If-Modified-Since**" and "**If-None-Match**" lines in the HTTP GET. Both of these 2 lines are inquiring whether the content has been changed. The first line, which is "**If-Modified-Since**", is used to check whether the content has been changed after the data has been given. The second line, "**If-None-Match**", which can give us the ETag. If the content has been modified the server should return the code **200** after the data was given. Code 200 shows that the

data on the server has been changed or modified. Otherwise, the server should return the code **304** which is represented that the data was not modified.

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

Question4:

The server returned the status code 304 which means the data has not been modified. In this situation, the server didn't return the file. This is because the content of the file has been modified since the date provided by the visitor. Therefore, the visitor can use the cache in the local computer instead of downloading the file from the server again. By using the cache, we can improve the speed of loading files. This can also improve the experience of users.

```
▸ [Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
  Request Version: HTTP/1.1
  Status Code: 304
  Response Phrase: Not Modified
```

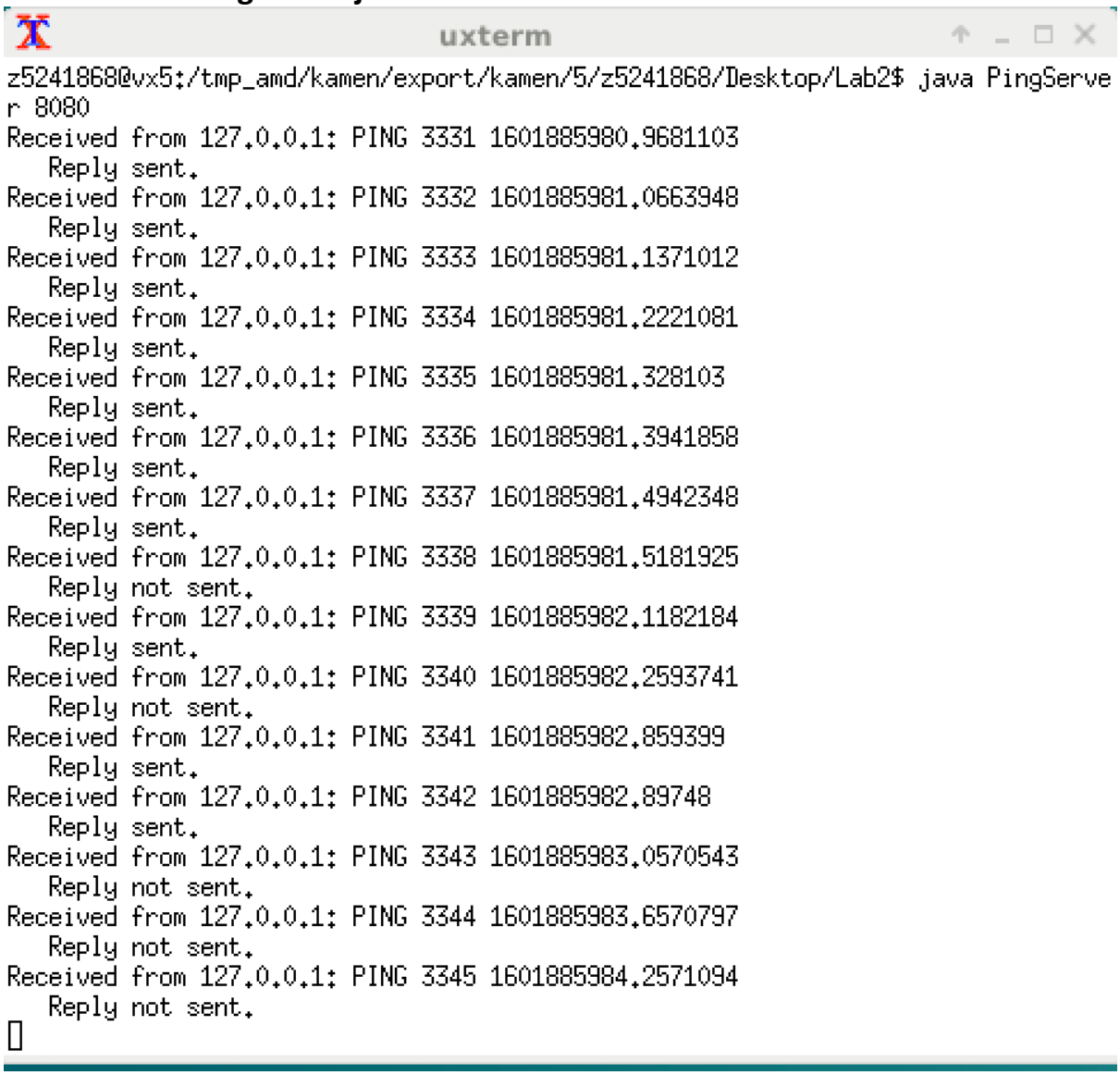
Question5:

The second ETag is "1bfef-173-8f4ae900", this value is used to compare with the ETag given by the second time HTTP GET. If none of the ETags match the given one, the server will return code 200. If there exists an ETag which is the same as the given ETag, the server will return 304, which is NOT Modified. Furthermore, we can find the first ETag is "1bfef-173-8f4ae900", which is the same as the second ETag. Therefore, it had already been changed after the first response has been received.

Exercise 5: Coding problem

By coding the program of the PingClient.py, we can get the following results as the picture showing below.

The result of PingServer.java



The result of PingClient.py