

# Lab2

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Exercise 3:

Q1.

The status code is 200 and the phrase is "OK" .

The image shows a Wireshark packet capture interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, and Wireless. Below the menu is a toolbar with various icons. A filter bar shows 'Apply a display filter ... <Ctrl-/>'. The main packet list table has columns for No., Time, Source, and Destination. Packet 12 is selected, showing details for an HTTP 1.1 200 OK response. The status bar at the bottom indicates 'HTTP Last Modified (http.last\_modified), 46 bytes'.

No.	Time	Source	Destination
7	4.675312	192.168.1.102	128.119.245.12
8	4.694429	128.119.245.12	192.168.1.102
9	4.694458	192.168.1.102	128.119.245.12
10	4.694850	192.168.1.102	128.119.245.12
11	4.717289	128.119.245.12	192.168.1.102
12	4.718993	128.119.245.12	192.168.1.102
13	4.724332	192.168.1.102	128.119.245.12
14	4.750366	128.119.245.12	192.168.1.102
15	4.859777	192.168.1.102	128.119.245.12
16	6.034987	192.168.1.102	192.168.1.104
17	6.052471	192.168.1.104	192.168.1.102

Frame 12: 439 bytes on wire (3512 bits), 439 bytes captured  
Ethernet II, Src: LinksysG\_da:af:73 (00:06:25:da:af:73), Ds  
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192  
Transmission Control Protocol, Src Port: 80, Dst Port: 412  
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  
Keep-Alive: timeout=10, max=100\r\n  
Connection: Keep-Alive\r\n

HTTP Last Modified (http.last\_modified), 46 bytes

Q2.

The HTML file that the browser is retrieving was last modified on Tue, 23 Sep 2003 05:29:00 GMT.

This can be seen in the "Last-Modified" header on the graph.

Yes, this response also contains the DATE Header, the Date header indicates the time when the response was generated, while the Last-Modified header indicates the time when the HTML file was last modified.

Q3.

The connection header in the response clearly indicates "keep-alive", which represents a persistent connection. After the client sends a request, it can continue to use the same TCP connection to send the next request without closing the connection.

```
Transmission Control Protocol, Src Port: 80, Dst Port: 4127, Seq: 1, Ack: 5024
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
    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.

According to content-length header, the length of the content being returned to the client is 73 bytes.

```
Transmission Control Protocol, Src Port: 80, Dst Port: 4127, Seq: 1, Ack: 5024
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
    Keep-Alive: timeout=10, max=100\r\n
    Connection: Keep-Alive\r\n
```

Q5.

According to Content-Type header, the data contained inside the HTTP response packet is HTML text file.

```
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
    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]
```

Exercise 4:

Q1.

Not seeing "IF-MODIFIED-SINCE" line in HTTP GET.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.1.102	192.168.1.104	SNMP	92	get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.
2	0.017091	192.168.1.104	192.168.1.102	SNMP	93	get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.
3	2.306971	Dell_4f:36:23	Broadcast	ARP	42	Who has 192.168.1.1? Tell 192.168.1.102
4	2.307813	LinksysG_da:af:73	Dell_4f:36:23	ARP	60	192.168.1.1 is at 00:06:25:da:af:73
5	2.307828	192.168.1.102	128.119.245.12	TCP	62	4247 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=146
6	2.329702	128.119.245.12	192.168.1.102	TCP	62	80 → 4247 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0
7	2.329731	192.168.1.102	128.119.245.12	TCP	54	4247 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
8	2.331268	192.168.1.102	128.119.245.12	HTTP	555	GET /ethereal-labs/lab2-2.html HTTP/1.1
9	2.355725	128.119.245.12	192.168.1.102	TCP	60	80 → 4247 [ACK] Seq=1 Ack=502 Win=6432 Len=0
10	2.357902	128.119.245.12	192.168.1.102	HTTP	739	HTTP/1.1 200 OK (text/html)
11	2.539993	192.168.1.102	128.119.245.12	TCP	54	4247 → 80 [ACK] Seq=502 Ack=686 Win=63555 Len=0
12	3.016744	192.168.1.102	192.168.1.104	SNMP	92	get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.
13	3.033773	192.168.1.104	192.168.1.102	SNMP	93	get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668	GET /ethereal-labs/lab2-2.html HTTP/1.1
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243	HTTP/1.1 304 Not Modified
16	5.658309	192.168.1.102	128.119.245.12	TCP	54	4247 → 80 [ACK] Seq=1116 Ack=875 Win=63366 Le
17	6.033489	192.168.1.102	192.168.1.104	SNMP	92	get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.

  

▶ Frame 8: 555 bytes on wire (4440 bits), 555 bytes captured (4440 bits)  
 ▶ Ethernet II, Src: Dell\_4f:36:23 (00:08:74:4f:36:23), Dst: LinksysG\_da:af:73 (00:06:25:da:af:73)  
 ▶ Internet Protocol Version 4, Src: 192.168.1.102, Dst: 128.119.245.12  
 ▶ Transmission Control Protocol, Src Port: 4247, Dst Port: 80, Seq: 1, Ack: 1, Len: 0  
 ▶ Hypertext Transfer Protocol  
   GET /ethereal-labs/lab2-2.html HTTP/1.1  
   Host: gaia.cs.umass.edu  
   User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.0.2) Gecko/20030902 Firefox/1.0.2  
   Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,application/javascript;q=0.7,\*/\*;q=0.5  
   Accept-Language: en-us,en;q=0.5  
   Accept-Encoding: gzip, deflate, compress;q=0.9  
   Accept-Charset: ISO-8859-1, utf-8;q=0.66,\*/\*;q=0.66  
   Keep-Alive: 300  
   Connection: keep-alive  
   [Full request URI: http://gaia.cs.umass.edu/ethereal-labs/lab2-2.html]  
   [HTTP request 1/2]  
   [Response in frame: 10]  
   [Next request in frame: 14]

Q2.

Yes, the HTTP response from the server indicates the last time the requested file was modified, which was on Tue, 23 Sep 2003 05:35:00 GMT.

▶ Frame 10: 739 bytes on wire (5912 bits), 739 bytes captured (5912 bits) ▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: Dell_4f:36:23 (00:08:74:4f:36:23) ▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.102 ▶ Transmission Control Protocol, Src Port: 80, Dst Port: 4247, Seq: 1, Ack: 502, Len: 739 ▶ Hypertext Transfer Protocol HTTP/1.1 200 OK Date: Tue, 23 Sep 2003 05:35:50 GMT Server: Apache/2.0.40 (Red Hat Linux) Last-Modified: Tue, 23 Sep 2003 05:35:00 GMT ETag: "1bfef-173-8f4ae900" Accept-Ranges: bytes Content-Length: 371 Keep-Alive: timeout=10, max=100 Connection: Keep-Alive Content-Type: text/html; charset=ISO-8859-1 [HTTP response 1/2] [Time since request: 0.026634000 seconds] [Request in frame: 8] [Next request in frame: 14]	0000 00 06 25 da af 73 00 08 74 4f 36 23 08 00 00 00 0010 02 1d 02 5a 40 00 80 06 00 00 c0 a8 01 00 00 00 0020 f5 0c 10 97 00 50 fa 88 01 31 81 6a b3 00 00 00 0030 fa f0 39 a2 00 00 47 45 54 20 2f 65 74 00 00 00 0040 65 61 6c 2d 6c 61 62 73 2f 6c 61 62 32 00 00 00 0050 68 74 6d 6c 20 48 54 54 50 2f 31 2e 31 00 00 00 0060 6f 73 74 3a 20 67 61 69 61 2e 63 73 2e 00 00 00 0070 73 73 2e 65 64 75 0d 0a 55 73 65 72 2d 00 00 00 0080 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f 35 00 00 00 0090 28 5f 69 6e 64 6f 77 73 3b 20 55 3b 20 00 00 00 00a0 64 6f 77 73 20 4e 54 20 35 2e 31 3b 20 00 00 00 00b0 55 53 3b 20 72 76 3a 31 2e 30 2e 32 29 00 00 00 00c0 63 6b 6f 2f 32 30 30 32 31 31 32 39 20 00 00 00 00d0 73 63 61 70 65 2f 37 2e 30 31 0d 0a 41 00 00 00 00e0 70 74 3a 20 74 65 78 74 2f 78 6d 6c 2c 00 00 00 00f0 6c 69 63 61 74 69 6f 6e 2f 78 6d 6c 2c 00 00 00 0100 6c 69 63 61 74 69 6f 6e 2f 78 6d 6c 2c 00 00 00 0110 6d 6c 2c 74 65 78 74 2f 68 74 6d 6c 3b 00 00 00 0120 2e 39 2c 74 65 78 74 2f 70 6c 61 69 6e 00 00 00 0130 3a 2e 38 2c 76 69 64 65 6f 7f 78 2d 6d 00 00 00
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Q3.

"IF-MODIFIED-SINCE:" and "IF-NONE-MATCH" can be seen in the response. If-Modified-Since: This header field indicates the time when the client obtained the resource. The server will check whether the last modification time of the resource is later than this time. If the resource is not updated, the server will return a 304 Not Modified response. If-None-Match: This header field contains an entity tag (ETag) that identifies the resource.



12	3.016744	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	
13	3.033773	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668 GET /ethereal-labs/lab2-2.html HTTP/1.1	
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.1 304 Not Modified	
16	5.658309	192.168.1.102	128.119.245.12	TCP	54 4247 → 80 [ACK] Seq=1116 Ack=875 Win=63366 Len=0	
17	6.033489	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	
18	6.050941	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	

  

Frame 14: 668 bytes on wire (5344 bits), 668 bytes captured (5344 bits)	0170	2a 3b 71 3d 30 2e 31 0d	0a 41 63 63 65 70 74
Ethernet II, Src: Dell_4f:36:23 (00:08:74:4f:36:23), Dst: Linksys_0a:af:73 (00:06:27:0a:af:73)	0180	4c 61 6e 67 75 61 67 65	3a 20 65 6e 2d 75 73
Internet Protocol Version 4, Src: 192.168.1.102, Dst: 128.119.245.12	0190	20 65 6e 3b 71 3d 30 2e	35 30 0d 0a 41 63 63
Transmission Control Protocol, Src Port: 4247, Dst Port: 80, Seq: 502, Ack: 686, Len: 0	01a0	70 74 2d 45 6e 63 6f 64	69 6e 67 3a 20 67 7a
Hypertext Transfer Protocol	01b0	70 2c 20 64 65 6e 6c 61	74 65 2c 20 63 6f 6d
GET /ethereal-labs/lab2-2.html HTTP/1.1	01c0	72 65 73 73 3b 71 3d 30	2e 39 0d 0a 41 63 63
Host: gaia.cs.umass.edu	01d0	70 74 2d 43 68 61 72 73	65 74 3a 20 49 53 4f
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.0.2) Gecko/200211/09 Firefox/1.0.2	01e0	38 38 35 39 2d 31 2c 20	75 74 66 2d 38 3b 71
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,application/javascript;q=0.7,*/*;q=0.6	01f0	30 2e 36 36 2c 20 2a 3b	71 3d 30 2e 36 36 0d
Accept-Language: en-us,en;q=0.5	0200	4b 65 65 70 2d 41 6c 69	76 65 3a 20 33 30 30
Accept-Encoding: gzip, deflate, compress;q=0.9	0210	0a 43 6f 6e 6e 65 63 74	69 6f 6e 3a 20 6b 65
Accept-Charset: ISO-8859-1, utf-8;q=0.66,*/*;q=0.66	0220	70 2d 61 6c 69 76 65 0d	0a 49 66 2d 4d 6f 64
Keep-Alive: 300	0230	66 69 65 64 2d 53 69 6e	63 65 3a 20 54 75 65
Connection: keep-alive	0240	20 32 33 20 53 65 70 20	32 30 30 33 20 30 35
If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT	0250	33 35 3a 30 20 47 4d	54 0d 0a 49 66 2d 4e
If-None-Match: "1bfef-173-8f4ae900"	0260	6e 65 2d 4d 61 74 63 68	3a 20 22 31 62 66 65
Cache-Control: max-age=0	0270	2d 31 37 33 2d 38 66 34	61 65 39 30 30 2d 0d
[Full request URI: http://gaia.cs.umass.edu/ethereal-labs/lab2-2.html]	0280	43 61 63 68 65 2d 43 6f	6e 74 72 6f 6c 3a 20
[HTTP request 2/2]	0290	61 78 2d 61 67 65 3d 30	0d 0a 0d 0a

Q4.

The HTTP status code and phrase returned from the server in response to the second HTTP GET are "304" and "Not Modified".

The server does not return the contents of the file because "304 Not Modified" means that the resource the client last fetched has not been updated, which means that the version of the file stored on the proxy server can be sent to the client without losing any modifications. The client can use its local cached copy.

13	3.033773	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668 GET /ethereal-labs/lab2-2.html HTTP/1.1	
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.1 304 Not Modified	
16	5.658309	192.168.1.102	128.119.245.12	TCP	54 4247 → 80 [ACK] Seq=1116 Ack=875 Win=63366 Len=0	
17	6.033489	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	
18	6.050941	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4.2.1.2.2.2.1.0	

  

Frame 15: 243 bytes on wire (1944 bits), 243 bytes captured (1944 bits)	0000	00 08 74 4f 36 23 00 06	25 da af 73 08 00
Ethernet II, Src: Linksys_0a:af:73 (00:06:25:da:af:73), Dst: Dell_4f:36:23 (00:08:74:4f:36:23)	0010	00 e5 dc 88 40 00 37 06	2e f8 80 77 f5 00
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.102	0020	01 66 00 50 10 97 81 6a	b6 2e fa 88 05 f0
Transmission Control Protocol, Src Port: 80, Dst Port: 4247, Seq: 686, Ack: 1116, Len: 0	0030	1f 2e 89 37 00 00 48 54	54 50 2f 31 2e f0
Hypertext Transfer Protocol	0040	30 34 20 4e 6f 74 20 4d	6f 64 69 66 69 f0
HTTP/1.1 304 Not Modified	0050	0a 44 61 74 65 3a 20 54	75 65 2c 20 32 f0
Date: Tue, 23 Sep 2003 05:35:53 GMT	0060	65 70 20 32 30 30 33 20	30 35 3a 33 35 f0
Server: Apache/2.0.40 (Red Hat Linux)	0070	20 47 4d 54 0d 0a 53 65	72 76 65 72 3a f0
Connection: Keep-Alive	0080	61 63 68 65 2f 32 2e 30	2e 34 30 20 28 f0
Keep-Alive: timeout=10, max=99	0090	20 48 61 74 20 4c 69 6e	75 78 29 0d 0a f0
Etag: "1bfef-173-8f4ae900"	00a0	6e 65 63 74 69 6f 6e 3a	20 4b 65 65 70 f0
	00b0	69 76 65 0d 0a 4b 65 65	70 2d 41 6c 69 f0
[HTTP response 2/2]	00c0	20 74 69 6d 65 6f 75 74	3d 31 30 2c 20 f0
[Time since request: 0.022826000 seconds]	00d0	3d 39 39 0d 0a 45 54 61	67 3a 20 22 31 f0
[Prev request in frame: 8]	00e0	66 2d 31 37 33 2d 38 66	34 61 65 39 30 f0
[Prev response in frame: 10]	00f0	0a 0d 0a	
[Request in frame: 14]			
[Request URI: http://gaia.cs.umass.edu/ethereal-labs/lab2-2.html]			

Q5.

The value of the Etag field in the second response message is 1bfef-173-8f4ae900. Etag is a field in the HTTP response header. It is a unique identifier generated by the server and is used to identify a specific version of the resource. It can guarantee the uniqueness of resources to a large extent, thereby effectively performing cache control. The second Etag value is the same as the first response.

9	2.355725	128.119.245.12	192.168.1.102	TCP	60 80 → 4247 [ACK] Seq=1 Ack=502 Win=
10	2.357992	128.119.245.12	192.168.1.102	HTTP	739 HTTP/1.1 200 OK (text/html)
11	2.539993	192.168.1.102	128.119.245.12	TCP	54 4247 → 80 [ACK] Seq=502 Ack=686 W
12	3.016744	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4
13	3.033773	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4
14	5.517390	192.168.1.102	128.119.245.12	HTTP	668 GET /etherreal-labs/lab2-2.html HT
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.1 304 Not Modified
16	5.658309	192.168.1.102	128.119.245.12	TCP	54 4247 → 80 [ACK] Seq=1116 Ack=875 W
17	6.033489	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4
18	6.050941	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4
19	9.051213	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4
20	9.068351	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4

  

Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.102	00c0 0a 45 54 61 67 3
Transmission Control Protocol, Src Port: 80, Dst Port: 4247, Seq: 1, Ack: 502, Len: 739	00d0 33 2d 38 66 34 6
Hypertext Transfer Protocol	00e0 65 70 74 2d 52 6
HTTP/1.1 200 OK\r\n	00f0 73 0d 0a 43 6f 6
Date: Tue, 23 Sep 2003 05:35:50 GMT\r\n	0100 68 3a 20 33 37 3
Server: Apache/2.0.40 (Red Hat Linux)\r\n	0110 76 65 3a 20 74 6
Last-Modified: Tue, 23 Sep 2003 05:35:00 GMT\r\n	0120 6d 61 78 3d 31 3
ETag: "1bfef-173-8f4ae900"\r\n	0130 69 6f 6e 3a 20 4
Accept-Ranges: bytes\r\n	0140 0a 43 6f 6e 74 6
Content-Length: 371\r\n	0150 65 78 74 2f 68 7

  

14	5.517390	192.168.1.102	128.119.245.12	HTTP	668 GET /etherreal-labs/lab2-2.html
15	5.540216	128.119.245.12	192.168.1.102	HTTP	243 HTTP/1.1 304 Not Modified
16	5.658309	192.168.1.102	128.119.245.12	TCP	54 4247 → 80 [ACK] Seq=1116 Ack=875 W
17	6.033489	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4
18	6.050941	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4
19	9.051213	192.168.1.102	192.168.1.104	SNMP	92 get-request 1.3.6.1.4.1.11.2.3.9.4
20	9.068351	192.168.1.104	192.168.1.102	SNMP	93 get-response 1.3.6.1.4.1.11.2.3.9.4

  

Frame 15: 243 bytes on wire (1944 bits), 243 bytes captured (1944 bits) on interface 0	0000 00 08 74
Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: Dell_4f:36:23 (00:08:74:4f:36:23)	0010 00 e5 dc
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.102	0020 01 66 00
Transmission Control Protocol, Src Port: 80, Dst Port: 4247, Seq: 686, Ack: 1116, Len: 243	0030 1f 2e 89
Hypertext Transfer Protocol	0040 30 34 20
HTTP/1.1 304 Not Modified\r\n	0050 0a 44 61
Date: Tue, 23 Sep 2003 05:35:53 GMT\r\n	0060 65 70 20
Server: Apache/2.0.40 (Red Hat Linux)\r\n	0070 20 47 4d
Connection: Keep-Alive\r\n	0080 61 63 68
Keep-Alive: timeout=10, max=99\r\n	0090 20 48 61
ETag: "1bfef-173-8f4ae900"\r\n	00a0 6e 65 63
\r\n	00b0 69 76 65
[HTTP response 2/2]	00c0 20 74 69
[Time since request: 0.022826000 seconds]	00d0 3d 39 39

## Exercise 5:

The output is as follows:

File Edit Tabs Help	File Edit Tabs Help
z5382484@vx05: \$ java PingServer 50013	z5382484@vx05: \$ python3 PingClient.py 127.0.0.1 50013
Received from 127.0.0.1: PING 50014 2024-03-05 02:05:41.405	ping to 127.0.0.1, seq = 50014, time out
Reply not sent.	ping to 127.0.0.1, seq = 50015, time out
Received from 127.0.0.1: PING 50015 2024-03-05 02:05:42.408	ping to 127.0.0.1, seq = 50016, rtt = 111 ms
Reply not sent.	ping to 127.0.0.1, seq = 50017, rtt = 12 ms
Received from 127.0.0.1: PING 50016 2024-03-05 02:05:43.409	ping to 127.0.0.1, seq = 50018, rtt = 112 ms
Reply sent.	ping to 127.0.0.1, seq = 50019, time out
Received from 127.0.0.1: PING 50017 2024-03-05 02:05:43.520	ping to 127.0.0.1, seq = 50020, rtt = 147 ms
Reply sent.	ping to 127.0.0.1, seq = 50021, rtt = 194 ms
Received from 127.0.0.1: PING 50018 2024-03-05 02:05:43.532	ping to 127.0.0.1, seq = 50022, rtt = 161 ms
Reply sent.	ping to 127.0.0.1, seq = 50023, rtt = 66 ms
Received from 127.0.0.1: PING 50019 2024-03-05 02:05:43.644	ping to 127.0.0.1, seq = 50024, time out
Reply not sent.	ping to 127.0.0.1, seq = 50025, rtt = 153 ms
Received from 127.0.0.1: PING 50020 2024-03-05 02:05:44.645	ping to 127.0.0.1, seq = 50026, rtt = 161 ms
Reply sent.	ping to 127.0.0.1, seq = 50027, rtt = 127 ms
Received from 127.0.0.1: PING 50021 2024-03-05 02:05:44.792	ping to 127.0.0.1, seq = 50028, rtt = 7 ms
Reply sent.	ping to 127.0.0.1, seq = 50029, rtt = 184 ms
Received from 127.0.0.1: PING 50022 2024-03-05 02:05:44.986	ping to 127.0.0.1, seq = 50030, rtt = 78 ms
Reply sent.	ping to 127.0.0.1, seq = 50031, time out
Received from 127.0.0.1: PING 50023 2024-03-05 02:05:45.147	ping to 127.0.0.1, seq = 50032, time out
Reply sent.	ping to 127.0.0.1, seq = 50033, rtt = 145 ms
Received from 127.0.0.1: PING 50024 2024-03-05 02:05:45.213	ping to 127.0.0.1, seq = 50034, rtt = 51 ms
Reply not sent.	Minimum RTT: 7 ms, Maximum RTT: 194 ms, Average RTT: 113.93 ms
Received from 127.0.0.1: PING 50025 2024-03-05 02:05:46.215	z5382484@vx05: \$
Reply sent.	
Received from 127.0.0.1: PING 50026 2024-03-05 02:05:46.368	
Reply sent.	
Received from 127.0.0.1: PING 50027 2024-03-05 02:05:46.529	
Reply sent.	
Received from 127.0.0.1: PING 50028 2024-03-05 02:05:46.656	
Reply sent.	
Received from 127.0.0.1: PING 50029 2024-03-05 02:05:46.664	
Reply sent.	
Received from 127.0.0.1: PING 50030 2024-03-05 02:05:46.848	
Reply sent.	
Received from 127.0.0.1: PING 50031 2024-03-05 02:05:46.926	
Reply not sent.	
Received from 127.0.0.1: PING 50032 2024-03-05 02:05:47.927	
Reply not sent.	
Received from 127.0.0.1: PING 50033 2024-03-05 02:05:48.928	
Reply sent.	
Received from 127.0.0.1: PING 50034 2024-03-05 02:05:49.073	

Received from 127.0.0.1: PING 50034 2024-03-05 02:05:49.073

Reply sent.

ACz5387484@vx05: ~\$ AC