```
      6 1.535855       100.65.91.96          128.119.245.12        HTTP     405    GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/
1.1
Frame 6: 405 bytes on wire (3240 bits), 405 bytes captured (3240 bits) on interface 0
    Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
    Encapsulation type: Ethernet (1)
    Arrival Time: Jan 19, 2016 18:46:43.113265000 Eastern Standard Time
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1453247203.113265000 seconds
    [Time delta from previous captured frame: 0.000297000 seconds]
    [Time delta from previous displayed frame: 0.000000000 seconds]
    [Time since reference or first frame: 1.535855000 seconds]
    Frame Number: 6
    Frame Length: 405 bytes (3240 bits)
    Capture Length: 405 bytes (3240 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:tcp:http]
    [Coloring Rule Name: HTTP]
    [Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
    Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
        0000 00.. = Differentiated Services Codepoint: Default (0)
        .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
    Total Length: 391
    Identification: 0x1a36 (6710)
    Flags: 0x02 (Don't Fragment)
        0... .... = Reserved bit: Not set
        .1.. .... = Don't fragment: Set
        ..0. .... = More fragments: Not set
    Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xaa15 [validation disabled]
        [Good: False]
        [Bad: False]
    Source: 100.65.91.96
    Destination: 128.119.245.12
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53529 (53529), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 351
    Source Port: 53529
    Destination Port: 80
    [Stream index: 1]
    [TCP Segment Len: 351]
    Sequence number: 1    (relative sequence number)
    [Next sequence number: 352    (relative sequence number)]
    Acknowledgment number: 1    (relative ack number)
    Header Length: 20 bytes
    Flags: 0x018 (PSH, ACK)
        000. .... .... = Reserved: Not set
        ...0 .... .... = Nonce: Not set
        .... 0... .... = Congestion Window Reduced (CWR): Not set
        .... .0.. .... = ECN-Echo: Not set
        .... ..0. .... = Urgent: Not set
        .... ...1 .... = Acknowledgment: Set
        .... .... 1... = Push: Set
        .... .... .0.. = Reset: Not set
        .... .... ..0. = Syn: Not set
        .... .... ...0 = Fin: Not set
        [TCP Flags: *******AP***]
    Window size value: 1024
    [Calculated window size: 262144]
    [Window size scaling factor: 256]
    Checksum: 0xfb53 [validation disabled]
        [Good Checksum: False]
        [Bad Checksum: False]
    Urgent pointer: 0
    [SEQ/ACK analysis]
        [iRTT: 0.031026000 seconds]
        [Bytes in flight: 351]
```

```
Hypertext Transfer Protocol
    GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n
        [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]
            [GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]
            [Severity level: Chat]
            [Group: Sequence]
        Request Method: GET
        Request URI: /wireshark-labs/HTTP-wireshark-file2.html
        Request Version: HTTP/1.1
    Accept: text/html, application/xhtml+xml, image/jxr, */*\r\n
    Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n
    Accept-Encoding: gzip, deflate\r\n
    Host: gaia.cs.umass.edu\r\n
    Connection: Keep-Alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]
    [HTTP request 1/2]
    [Response in frame: 8]
    [Next request in frame: 63]
```

```
      8 1.567314       128.119.245.12        100.65.91.96          HTTP     786    HTTP/1.1 200 OK  (text/html)
Frame 8: 786 bytes on wire (6288 bits), 786 bytes captured (6288 bits) on interface 0
    Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
    Encapsulation type: Ethernet (1)
    Arrival Time: Jan 19, 2016 18:46:43.144724000 Eastern Standard Time
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1453247203.144724000 seconds
    [Time delta from previous captured frame: 0.002422000 seconds]
    [Time delta from previous displayed frame: 0.031459000 seconds]
    [Time since reference or first frame: 1.567314000 seconds]
    Frame Number: 8
    Frame Length: 786 bytes (6288 bits)
    Capture Length: 786 bytes (6288 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:tcp:http:data-text-lines]
    [Coloring Rule Name: HTTP]
    [Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
    Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 100.65.91.96
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
        0000 00.. = Differentiated Services Codepoint: Default (0)
        .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
    Total Length: 772
    Identification: 0xf311 (62225)
    Flags: 0x02 (Don't Fragment)
        0... .... = Reserved bit: Not set
        .1.. .... = Don't fragment: Set
        ..0. .... = More fragments: Not set
    Fragment offset: 0
    Time to live: 48
    Protocol: TCP (6)
    Header checksum: 0x1fbd [validation disabled]
        [Good: False]
        [Bad: False]
    Source: 128.119.245.12
    Destination: 100.65.91.96
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53529 (53529), Seq: 1, Ack: 352, Len: 732
    Source Port: 80
    Destination Port: 53529
    [Stream index: 1]
    [TCP Segment Len: 732]
    Sequence number: 1    (relative sequence number)
    [Next sequence number: 733    (relative sequence number)]
    Acknowledgment number: 352    (relative ack number)
    Header Length: 20 bytes
    Flags: 0x018 (PSH, ACK)
        000. .... .... = Reserved: Not set
        ...0 .... .... = Nonce: Not set
        .... 0... .... = Congestion Window Reduced (CWR): Not set
        .... .0.. .... = ECN-Echo: Not set
        .... ..0. .... = Urgent: Not set
        .... ...1 .... = Acknowledgment: Set
        .... .... 1... = Push: Set
        .... .... .0.. = Reset: Not set
        .... .... ..0. = Syn: Not set
        .... .... ...0 = Fin: Not set
        [TCP Flags: *******AP***]
    Window size value: 237
    [Calculated window size: 30336]
    [Window size scaling factor: 128]
    Checksum: 0x0458 [validation disabled]
        [Good Checksum: False]
        [Bad Checksum: False]
    Urgent pointer: 0
    [SEQ/ACK analysis]
        [iRTT: 0.031026000 seconds]
        [Bytes in flight: 732]
Hypertext Transfer Protocol
```

```
    HTTP/1.1 200 OK\r\n
        [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
            [HTTP/1.1 200 OK\r\n]
            [Severity level: Chat]
            [Group: Sequence]
        Request Version: HTTP/1.1
        Status Code: 200
        Response Phrase: OK
    Date: Tue, 19 Jan 2016 23:46:38 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n
    Last-Modified: Tue, 19 Jan 2016 06:59:01 GMT\r\n
    ETag: "173-529aa678182bb"\r\n
    Accept-Ranges: bytes\r\n
    Content-Length: 371\r\n
        [Content length: 371]
    Keep-Alive: timeout=5, max=100\r\n
    Connection: Keep-Alive\r\n
    Content-Type: text/html; charset=UTF-8\r\n
    \r\n
    [HTTP response 1/2]
    [Time since request: 0.031459000 seconds]
    [Request in frame: 6]
    [Next request in frame: 63]
    [Next response in frame: 64]
Line-based text data: text/html
    \n
    <html>\n
    \n
    Congratulations again!  Now you've downloaded the file lab2-2.html. <br>\n
    This file's last modification date will not change.  <p>\n
    Thus  if you download this multiple times on your browser, a complete copy <br>\n
    will only be sent once by the server due to the inclusion of the IN-MODIFIED-SINCE<br>\n
    field in your browser's HTTP GET request to the server.\n
    \n
    </html>\n
```

9

```
     63 5.388781       100.65.91.96          128.119.245.12        HTTP     491    GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/
1.1
Frame 63: 491 bytes on wire (3928 bits), 491 bytes captured (3928 bits) on interface 0
    Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
    Encapsulation type: Ethernet (1)
    Arrival Time: Jan 19, 2016 18:46:46.966191000 Eastern Standard Time
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1453247206.966191000 seconds
    [Time delta from previous captured frame: 3.559530000 seconds]
    [Time delta from previous displayed frame: 3.700595000 seconds]
    [Time since reference or first frame: 5.388781000 seconds]
    Frame Number: 63
    Frame Length: 491 bytes (3928 bits)
    Capture Length: 491 bytes (3928 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:tcp:http]
    [Coloring Rule Name: HTTP]
    [Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
    Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
        0000 00.. = Differentiated Services Codepoint: Default (0)
        .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
    Total Length: 477
    Identification: 0x1a3e (6718)
    Flags: 0x02 (Don't Fragment)
        0... .... = Reserved bit: Not set
        .1.. .... = Don't fragment: Set
        ..0. .... = More fragments: Not set
    Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xa9b7 [validation disabled]
        [Good: False]
        [Bad: False]
    Source: 100.65.91.96
    Destination: 128.119.245.12
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53529 (53529), Dst Port: 80 (80), Seq: 352, Ack: 733, Len: 437
    Source Port: 53529
    Destination Port: 80
    [Stream index: 1]
    [TCP Segment Len: 437]
    Sequence number: 352    (relative sequence number)
    [Next sequence number: 789    (relative sequence number)]
    Acknowledgment number: 733    (relative ack number)
    Header Length: 20 bytes
    Flags: 0x018 (PSH, ACK)
        000. .... .... = Reserved: Not set
        ...0 .... .... = Nonce: Not set
        .... 0... .... = Congestion Window Reduced (CWR): Not set
        .... .0.. .... = ECN-Echo: Not set
        .... ..0. .... = Urgent: Not set
        .... ...1 .... = Acknowledgment: Set
        .... .... 1... = Push: Set
        .... .... .0.. = Reset: Not set
        .... .... ..0. = Syn: Not set
        .... .... ...0 = Fin: Not set
        [TCP Flags: *******AP***]
    Window size value: 1021
    [Calculated window size: 261376]
    [Window size scaling factor: 256]
    Checksum: 0x7464 [validation disabled]
        [Good Checksum: False]
        [Bad Checksum: False]
    Urgent pointer: 0
    [SEQ/ACK analysis]
        [iRTT: 0.031026000 seconds]
        [Bytes in flight: 437]
```

```
Hypertext Transfer Protocol
    GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n
        [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]
            [GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1\r\n]
            [Severity level: Chat]
            [Group: Sequence]
        Request Method: GET
        Request URI: /wireshark-labs/HTTP-wireshark-file2.html
        Request Version: HTTP/1.1
    Accept: text/html, application/xhtml+xml, image/jxr, */*\r\n
    Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n
    Accept-Encoding: gzip, deflate\r\n
    Host: gaia.cs.umass.edu\r\n
    If-Modified-Since: Tue, 19 Jan 2016 06:59:01 GMT\r\n
    If-None-Match: "173-529aa678182bb"\r\n
    Connection: Keep-Alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]
    [HTTP request 2/2]
    [Prev request in frame: 6]
    [Response in frame: 64]
```

10

```
     64 5.415748       128.119.245.12        100.65.91.96          HTTP     295    HTTP/1.1 304 Not Modified
Frame 64: 295 bytes on wire (2360 bits), 295 bytes captured (2360 bits) on interface 0
    Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
    Encapsulation type: Ethernet (1)
    Arrival Time: Jan 19, 2016 18:46:46.993158000 Eastern Standard Time
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1453247206.993158000 seconds
    [Time delta from previous captured frame: 0.026967000 seconds]
    [Time delta from previous displayed frame: 0.026967000 seconds]
    [Time since reference or first frame: 5.415748000 seconds]
    Frame Number: 64
    Frame Length: 295 bytes (2360 bits)
    Capture Length: 295 bytes (2360 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:tcp:http]
    [Coloring Rule Name: HTTP]
    [Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
    Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 100.65.91.96
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
        0000 00.. = Differentiated Services Codepoint: Default (0)
        .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
    Total Length: 281
    Identification: 0xf312 (62226)
    Flags: 0x02 (Don't Fragment)
        0... .... = Reserved bit: Not set
        .1.. .... = Don't fragment: Set
        ..0. .... = More fragments: Not set
    Fragment offset: 0
    Time to live: 48
    Protocol: TCP (6)
    Header checksum: 0x21a7 [validation disabled]
        [Good: False]
        [Bad: False]
    Source: 128.119.245.12
    Destination: 100.65.91.96
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53529 (53529), Seq: 733, Ack: 789, Len: 241
    Source Port: 80
    Destination Port: 53529
    [Stream index: 1]
    [TCP Segment Len: 241]
    Sequence number: 733    (relative sequence number)
    [Next sequence number: 974    (relative sequence number)]
    Acknowledgment number: 789    (relative ack number)
    Header Length: 20 bytes
    Flags: 0x018 (PSH, ACK)
        000. .... .... = Reserved: Not set
        ...0 .... .... = Nonce: Not set
        .... 0... .... = Congestion Window Reduced (CWR): Not set
        .... .0.. .... = ECN-Echo: Not set
        .... ..0. .... = Urgent: Not set
        .... ...1 .... = Acknowledgment: Set
        .... .... 1... = Push: Set
        .... .... .0.. = Reset: Not set
        .... .... ..0. = Syn: Not set
        .... .... ...0 = Fin: Not set
        [TCP Flags: *******AP***]
    Window size value: 245
    [Calculated window size: 31360]
    [Window size scaling factor: 128]
    Checksum: 0xa819 [validation disabled]
        [Good Checksum: False]
        [Bad Checksum: False]
    Urgent pointer: 0
    [SEQ/ACK analysis]
        [This is an ACK to the segment in frame: 63]
        [The RTT to ACK the segment was: 0.026967000 seconds]
        [iRTT: 0.031026000 seconds]
        [Bytes in flight: 241]
Hypertext Transfer Protocol
    HTTP/1.1 304 Not Modified\r\n
        [Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
            [HTTP/1.1 304 Not Modified\r\n]
            [Severity level: Chat]
            [Group: Sequence]
        Request Version: HTTP/1.1
        Status Code: 304
        Response Phrase: Not Modified
    Date: Tue, 19 Jan 2016 23:46:42 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n
    Connection: Keep-Alive\r\n
    Keep-Alive: timeout=5, max=99\r\n
    ETag: "173-529aa678182bb"\r\n
    \r\n
    [HTTP response 2/2]
    [Time since request: 0.026967000 seconds]
    [Prev request in frame: 6]
    [Prev response in frame: 8]
    [Request in frame: 63]
```