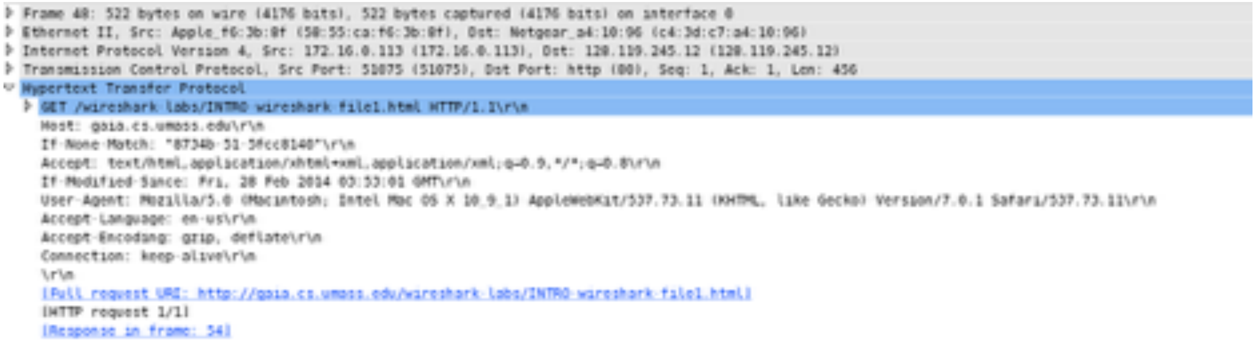
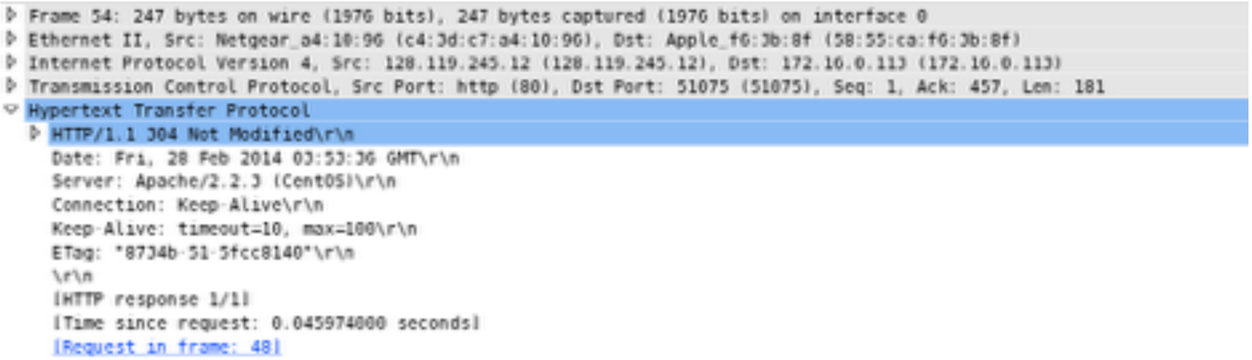
1) Ethernet protocol, TCP, and HTTP
2) 5 ms
3) address of gaia.cs.umass.edu is 128.119.245.12 and mine is 172.16.0.13
4)

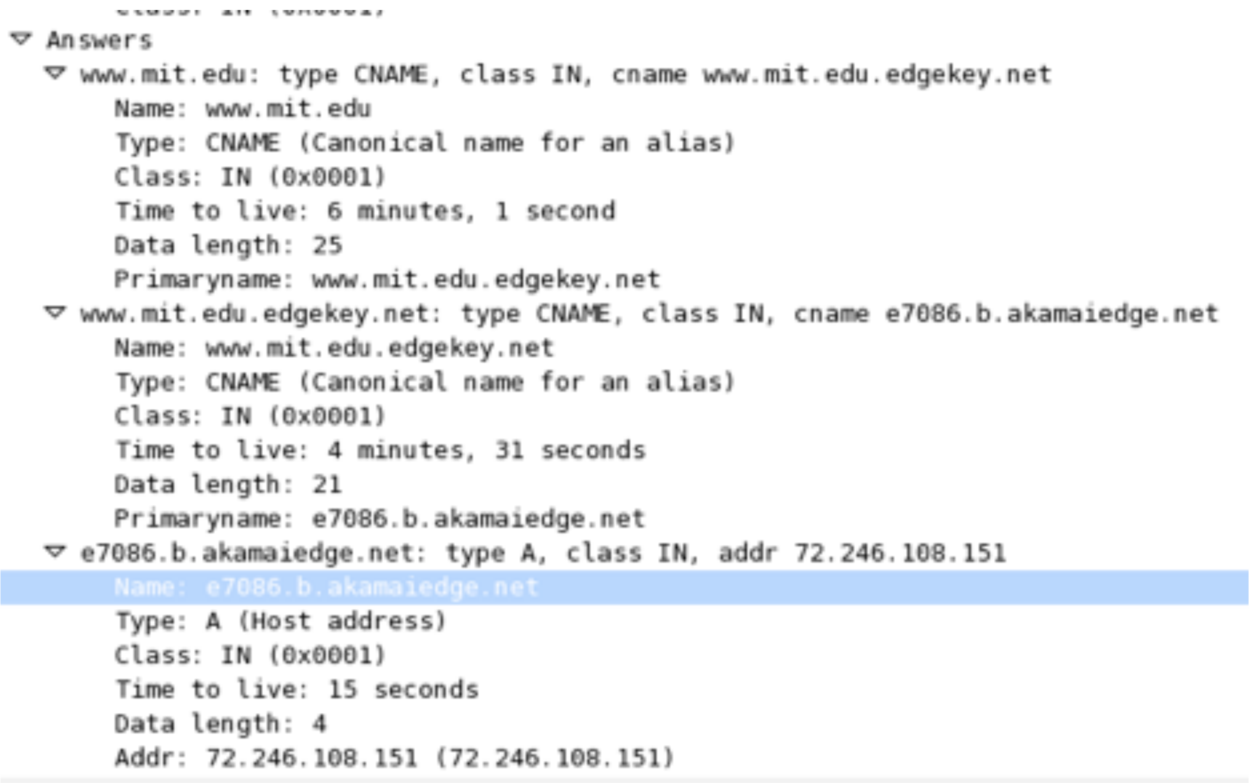


```
▷ Frame 48: 522 bytes on wire (4176 bits), 522 bytes captured (4176 bits) on interface 0
▷ Ethernet II, Src: Apple_f6:3b:8f (58:55:ca:f6:3b:8f), Dst: Netgear_a4:10:96 (c4:3d:c7:a4:10:96)
▷ Internet Protocol Version 4, Src: 172.16.0.113 (172.16.0.113), Dst: 128.119.245.12 (128.119.245.12)
▷ Transmission Control Protocol, Src Port: 51075 (51075), Dst Port: http (80), Seq: 1, Ack: 1, Len: 456
▽ Hypertext Transfer Protocol
  ▷ GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    If-None-Match: "8734b-51-5fcc8140"\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    If-Modified-Since: Fri, 28 Feb 2014 03:53:01 GMT\r\n
    User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_9_1) AppleWebKit/537.73.11 (KHTML, like Gecko) Version/7.0.1 Safari/537.73.11\r\n
    Accept-Language: en-us\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/INTRO-wireshark-file1.html]
    [HTTP request 1/1]
    [Response in frame: 54]
```



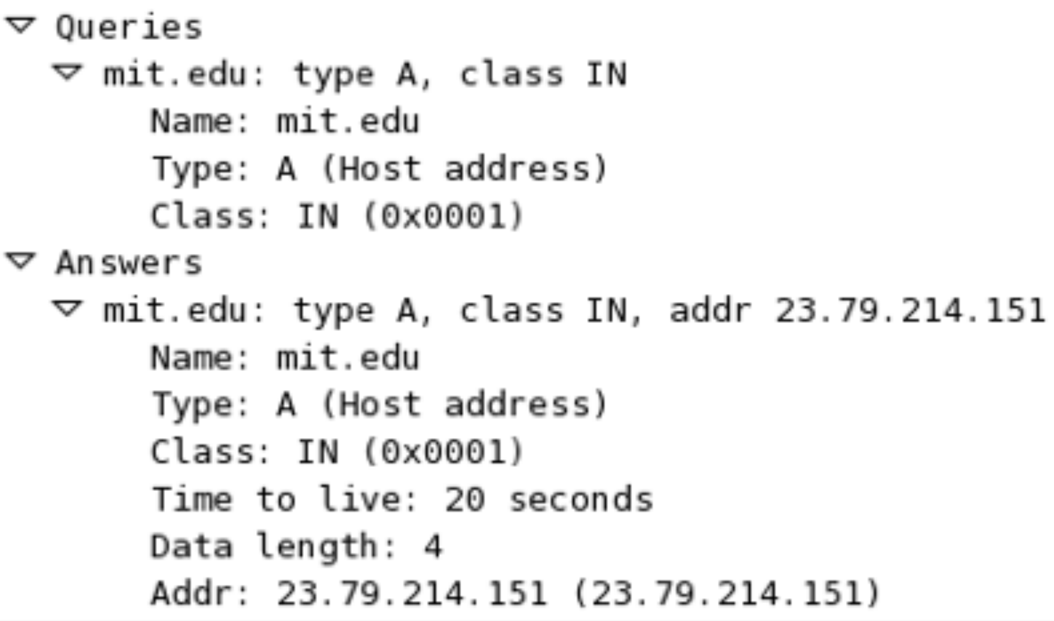
```
▷ Frame 54: 247 bytes on wire (1976 bits), 247 bytes captured (1976 bits) on interface 0
▷ Ethernet II, Src: Netgear_a4:10:96 (c4:3d:c7:a4:10:96), Dst: Apple_f6:3b:8f (58:55:ca:f6:3b:8f)
▷ Internet Protocol Version 4, Src: 128.119.245.12 (128.119.245.12), Dst: 172.16.0.113 (172.16.0.113)
▷ Transmission Control Protocol, Src Port: http (80), Dst Port: 51075 (51075), Seq: 1, Ack: 457, Len: 181
▽ Hypertext Transfer Protocol
  ▷ HTTP/1.1 304 Not Modified\r\n
    Date: Fri, 28 Feb 2014 03:53:36 GMT\r\n
    Server: Apache/2.2.3 (CentOS)\r\n
    Connection: Keep-Alive\r\n
    Keep-Alive: timeout=10, max=100\r\n
    ETag: "8734b-51-5fcc8140"\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.045974000 seconds]
    [Request in frame: 48]
```

1. Address: 27.102.206.87
2. nslookup www.cam.ac.uk
3. Address: 131.111.8.37
4. UDP
5. source: 172.16.0.113 destination: 172.16.0.1
6. 172.16.0.1 is the destination and is also my local dns server.
7. Type A question and does no contain any answers
8. Has one answer of type A, contains address, time to live, and length of the data.
9. Yes, the address in the answer
10. No, speaks directly to this address because it has the same url.
11. Same as before: 172.16.0.1
12. Yes
13. Same as before, Type A question and of course not since it is a question query
14. 3 answers, and they provide type CNAME since www.mit.edu is an alias, another CNAME because www.mit.edu.edgekey.net is also an alias, and finally a type A for e7086.b.akamaiedge.net.
15.



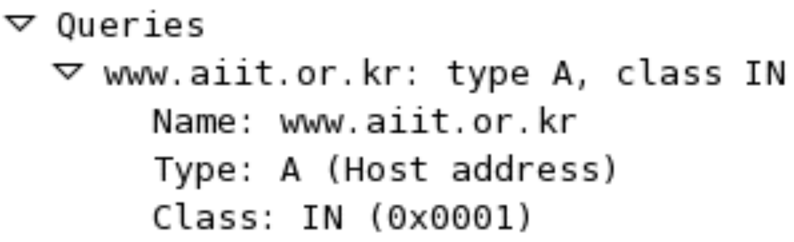
```
▽ Answers
  ▽ www.mit.edu: type CNAME, class IN, cname www.mit.edu.edgekey.net
      Name: www.mit.edu
      Type: CNAME (Canonical name for an alias)
      Class: IN (0x0001)
      Time to live: 6 minutes, 1 second
      Data length: 25
      Primaryname: www.mit.edu.edgekey.net
  ▽ www.mit.edu.edgekey.net: type CNAME, class IN, cname e7086.b.akamaiedge.net
      Name: www.mit.edu.edgekey.net
      Type: CNAME (Canonical name for an alias)
      Class: IN (0x0001)
      Time to live: 4 minutes, 31 seconds
      Data length: 21
      Primaryname: e7086.b.akamaiedge.net
  ▽ e7086.b.akamaiedge.net: type A, class IN, addr 72.246.108.151
      Name: e7086.b.akamaiedge.net
      Type: A (Host address)
      Class: IN (0x0001)
      Time to live: 15 seconds
      Data length: 4
      Addr: 72.246.108.151 (72.246.108.151)
```

16. Sends to ip address 172.16.0.1 which is also my local dns server
17. it is a type A question query and contains no answers
18. does not contain any NS answers only a type A answer with the address of mit.edu
19.



```
▽ Queries
  ▽ mit.edu: type A, class IN
      Name: mit.edu
      Type: A (Host address)
      Class: IN (0x0001)
▽ Answers
  ▽ mit.edu: type A, class IN, addr 23.79.214.151
      Name: mit.edu
      Type: A (Host address)
      Class: IN (0x0001)
      Time to live: 20 seconds
      Data length: 4
      Addr: 23.79.214.151 (23.79.214.151)
```

20. sends query to 18.72.0.3, it is not the same ip and it corresponds to local dns server of bitsy.mit.edu
21. it is a type A question query with no answers
22. connection timed out
23.



```
▽ Queries
  ▽ www.aiit.or.kr: type A, class IN
      Name: www.aiit.or.kr
      Type: A (Host address)
      Class: IN (0x0001)
```

1. HTTP/1.1
2. text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
3. mine is 172.16.0.113 and gaia is 128.119.245.12
4. 200 OK!
5. Fri, 28 Feb 2014 04:17:01 GMT
6. 128
7. No they are all displayed
8. No, no field of that name
9. Yes, because its part of the packet and it sent a 200 OK status
10. Yes, its value is Fri, 28 Feb 2014 04:44:01 GMT
11. 304, not modified
12. 1 HTTP GET request and 7 TCP transmissions
13. the 2nd TCP message
14. 200 Ok
15. 7
16. 4 GET requests, caite.cs.umass.edu, manic.cs.umass.edu, www.pearsonhighered.com, and gaia.cs.umass.edu
17. serially, the requests came at different times and the responses in order as well.