COMPUTER NETWORK
Lab 1b

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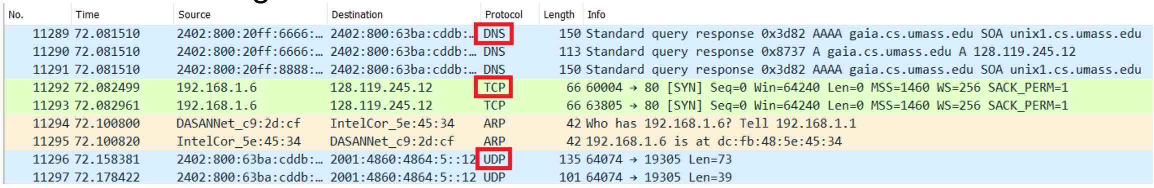
1. List 3 different protocols that appear in the protocol column in the unfiltered packet-listing window in step 7 above.

   DNS: Domain Name System

   TCP: Transmission Control Protocol

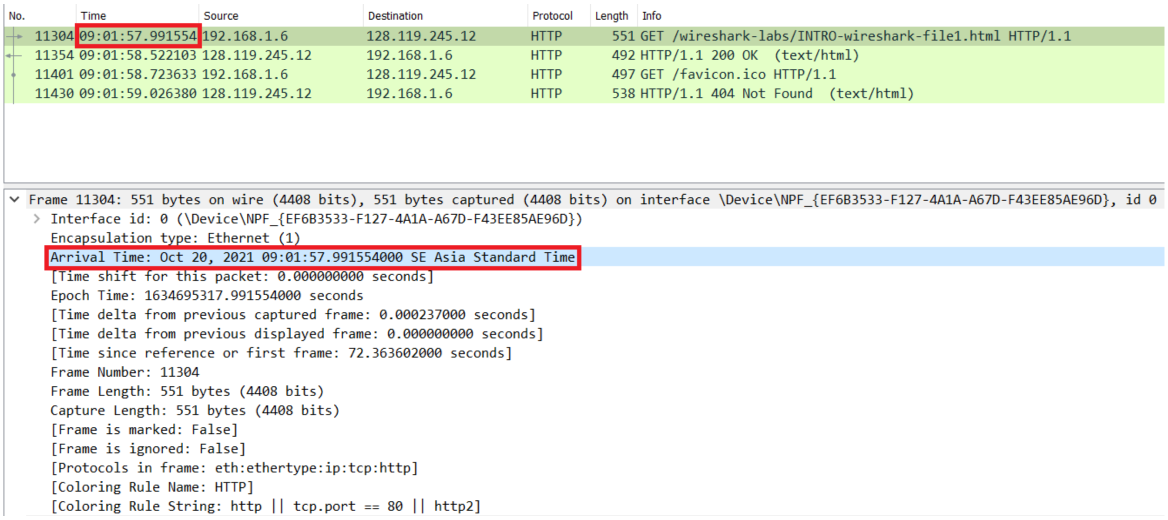
   UDP: User Datagram Protocol



No.	Time	Source	Destination	Protocol	Length	Info
11289	72.081510	2402:800:20ff:6666:…	2402:800:63ba:cddb:…	DNS	150	Standard query response 0x3d82 AAAA gaia.cs.umass.edu SOA unix1.cs.umass.edu
11290	72.081510	2402:800:20ff:6666:…	2402:800:63ba:cddb:…	DNS	113	Standard query response 0x8737 A gaia.cs.umass.edu A 128.119.245.12
11291	72.081510	2402:800:20ff:8888:…	2402:800:63ba:cddb:…	DNS	150	Standard query response 0x3d82 AAAA gaia.cs.umass.edu SOA unix1.cs.umass.edu
11292	72.082499	192.168.1.6	128.119.245.12	TCP	66	60004 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
11293	72.082961	192.168.1.6	128.119.245.12	TCP	66	63805 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
11294	72.100800	DASANNet_c9:2d:cf	IntelCor_5e:45:34	ARP	42	Who has 192.168.1.6? Tell 192.168.1.1
11295	72.100820	IntelCor_5e:45:34	DASANNet_c9:2d:cf	ARP	42	192.168.1.6 is at dc:fb:48:5e:45:34
11296	72.158381	2402:800:63ba:cddb:…	2001:4860:4864:5::12	UDP	135	64074 → 19305 Len=73
11297	72.178422	2402:800:63ba:cddb:…	2001:4860:4864:5::12	UDP	101	64074 → 19305 Len=39

2. How long did it take from when the HTTP GET message was sent until the HTTP OK reply was received?

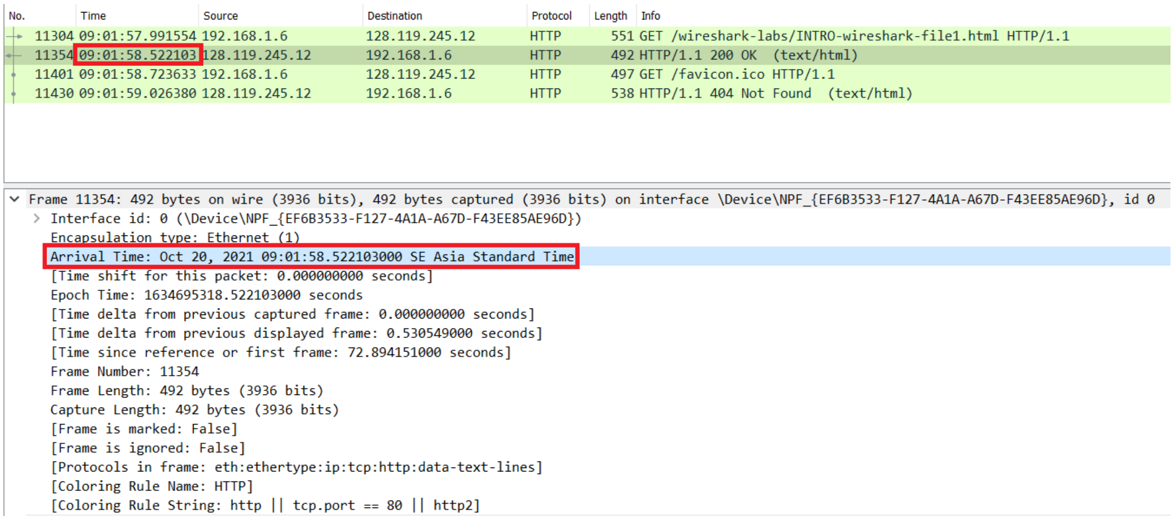
   Arrival time of the HTTP GET message: 09:01:57.991554000



No.	Time	Source	Destination	Protocol	Length	Info
11304	09:01:57.991554	192.168.1.6	128.119.245.12	HTTP	551	GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
11354	09:01:58.522103	128.119.245.12	192.168.1.6	HTTP	492	HTTP/1.1 200 OK (text/html)
11401	09:01:58.723633	192.168.1.6	128.119.245.12	HTTP	497	GET /favicon.ico HTTP/1.1
11430	09:01:59.026380	128.119.245.12	192.168.1.6	HTTP	538	HTTP/1.1 404 Not Found (text/html)

```
Frame 11304: 551 bytes on wire (4408 bits), 551 bytes captured (4408 bits) on interface \Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D}, id 0
  Interface id: 0 (\Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D})
  Encapsulation type: Ethernet (1)
  Arrival Time: Oct 20, 2021 09:01:57.991554000 SE Asia Standard Time
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1634695317.991554000 seconds
  [Time delta from previous captured frame: 0.000237000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 72.363602000 seconds]
  Frame Number: 11304
  Frame Length: 551 bytes (4408 bits)
  Capture Length: 551 bytes (4408 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]
```

Arrival time of the HTTP OK reply was received: 09:01:58.522103000



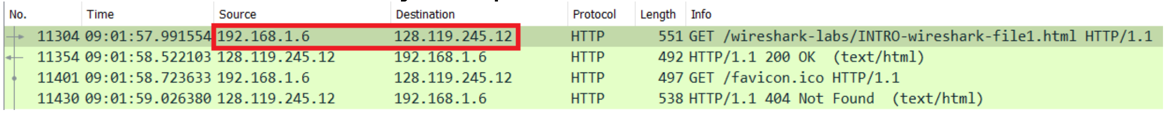
```
No.    Time            Source          Destination     Protocol Length Info
 11304 09:01:57.991554 192.168.1.6     128.119.245.12  HTTP     551 GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
 11354 09:01:58.522103 128.119.245.12  192.168.1.6     HTTP     492 HTTP/1.1 200 OK  (text/html)
 11401 09:01:58.723633 192.168.1.6     128.119.245.12  HTTP     497 GET /favicon.ico HTTP/1.1
 11430 09:01:59.026380 128.119.245.12  192.168.1.6     HTTP     538 HTTP/1.1 404 Not Found  (text/html)

Frame 11354: 492 bytes on wire (3936 bits), 492 bytes captured (3936 bits) on interface \Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D}, id 0
   Interface id: 0 (\Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D})
   Encapsulation type: Ethernet (1)
   Arrival Time: Oct 20, 2021 09:01:58.522103000 SE Asia Standard Time
   [Time shift for this packet: 0.000000000 seconds]
   Epoch Time: 1634695318.522103000 seconds
   [Time delta from previous captured frame: 0.000000000 seconds]
   [Time delta from previous displayed frame: 0.530549000 seconds]
   [Time since reference or first frame: 72.894151000 seconds]
   Frame Number: 11354
   Frame Length: 492 bytes (3936 bits)
   Capture Length: 492 bytes (3936 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]
```

➔ It takes about 0.5 second.

3. What is the Internet address of the gaia.cs.umass.edu? What is the Internet address of your computer?

   The Internet address of the gaia.cs.umass.edu: 192.168.1.6

   The Internet address of my computer: 128.119.245.12



```
No.    Time            Source          Destination     Protocol Length Info
 11304 09:01:57.991554 192.168.1.6     128.119.245.12  HTTP     551 GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
 11354 09:01:58.522103 128.119.245.12  192.168.1.6     HTTP     492 HTTP/1.1 200 OK  (text/html)
 11401 09:01:58.723633 192.168.1.6     128.119.245.12  HTTP     497 GET /favicon.ico HTTP/1.1
 11430 09:01:59.026380 128.119.245.12  192.168.1.6     HTTP     538 HTTP/1.1 404 Not Found  (text/html)
```

4. Print the two HTTP messages (GET and OK) referred to in question 2 above.

   The HTTP GET message:

```
No.     Time               Source                Destination           Protocol Length Info
  11304 09:01:57.991554    192.168.1.6           128.119.245.12        HTTP     551    GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
Frame 11304: 551 bytes on wire (4408 bits), 551 bytes captured (4408 bits) on interface \Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D}, id 0
Ethernet II, Src: IntelCor_5e:45:34 (dc:fb:48:5e:45:34), Dst: DASANNet_c9:2d:cf (9c:65:ee:c9:2d:cf)
Internet Protocol Version 4, Src: 192.168.1.6, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 60004, Dst Port: 80, Seq: 1, Ack: 1, Len: 497
Hypertext Transfer Protocol
    GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    Connection: keep-alive\r\n
    Upgrade-Insecure-Requests: 1\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/94.0.4606.81 Safari/537.36\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-
exchange;v=b3;q=0.9\r\n
    Accept-Encoding: gzip, deflate\r\n
    Accept-Language: vi-VN,vi;q=0.9,en-US;q=0.8,en;q=0.7\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/INTRO-wireshark-file1.html]
    [HTTP request 1/2]
    [Response in frame: 11354]
    [Next request in frame: 11401]
```

   The HTTP OK message:

```
No.     Time               Source                Destination           Protocol Length Info
  11354 09:01:58.522103    128.119.245.12        192.168.1.6           HTTP     492    HTTP/1.1 200 OK  (text/html)
Frame 11354: 492 bytes on wire (3936 bits), 492 bytes captured (3936 bits) on interface \Device\NPF_{EF6B3533-F127-4A1A-A67D-F43EE85AE96D}, id 0
Ethernet II, Src: DASANNet_c9:2d:cf (9c:65:ee:c9:2d:cf), Dst: IntelCor_5e:45:34 (dc:fb:48:5e:45:34)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.6
Transmission Control Protocol, Src Port: 80, Dst Port: 60004, Seq: 1, Ack: 498, Len: 438
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
    Date: Wed, 20 Oct 2021 02:01:57 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.24 mod_perl/2.0.11 Perl/v5.16.3\r\n
    Last-Modified: Tue, 19 Oct 2021 05:59:01 GMT\r\n
    ETag: "51-5ceae5bb1f2f9"\r\n
    Accept-Ranges: bytes\r\n
    Content-Length: 81\r\n
    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: 0.530549000 seconds]
    [Request in frame: 11304]
    [Next request in frame: 11401]
    [Next response in frame: 11430]
    [Request URI: http://gaia.cs.umass.edu/favicon.ico]
    File Data: 81 bytes
Line-based text data: text/html (3 lines)
```