COMP 3203 Wireshark 5

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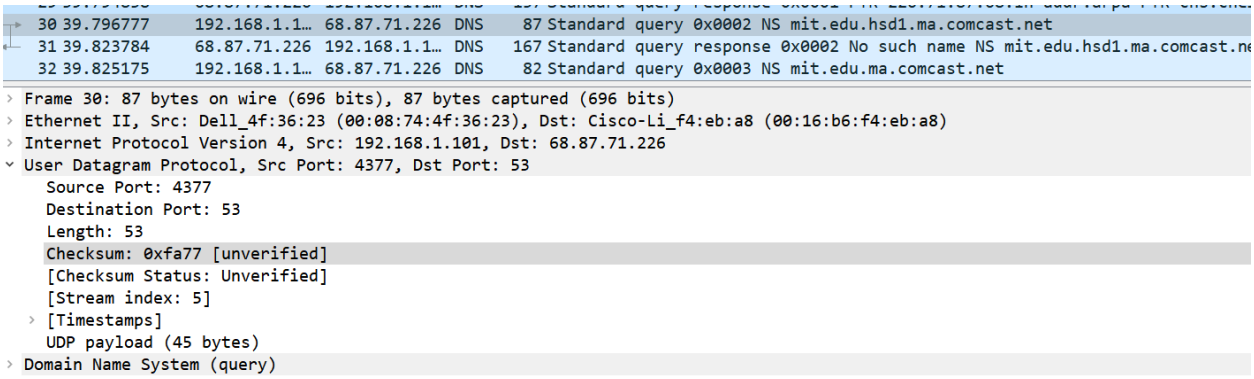
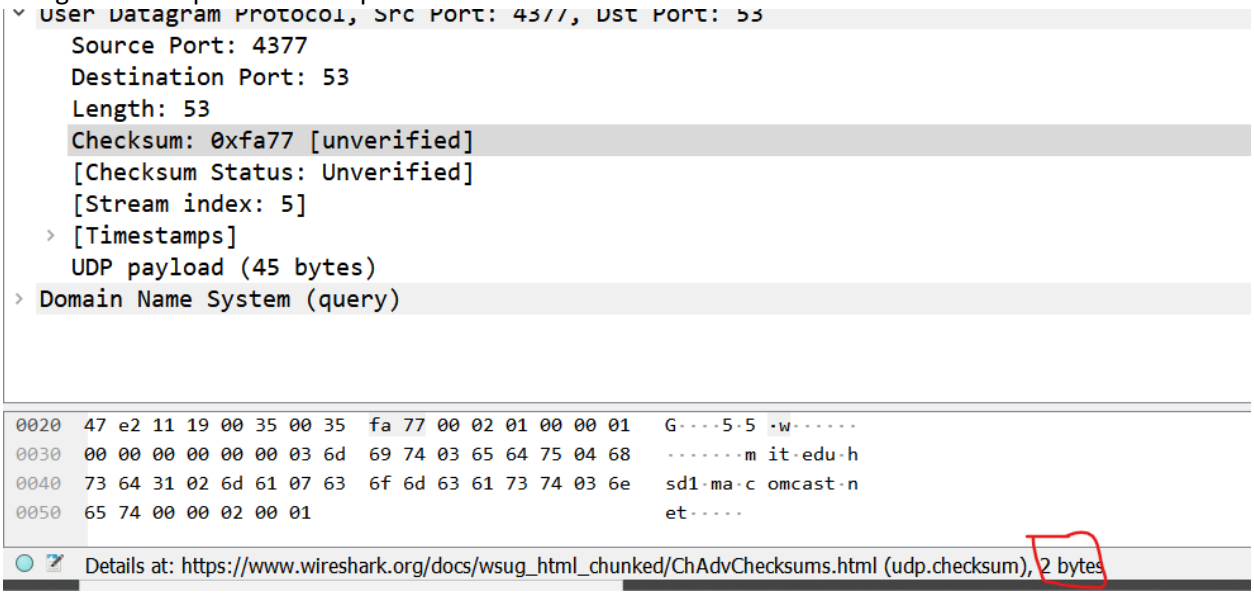
1. Using Professor's downloaded packets



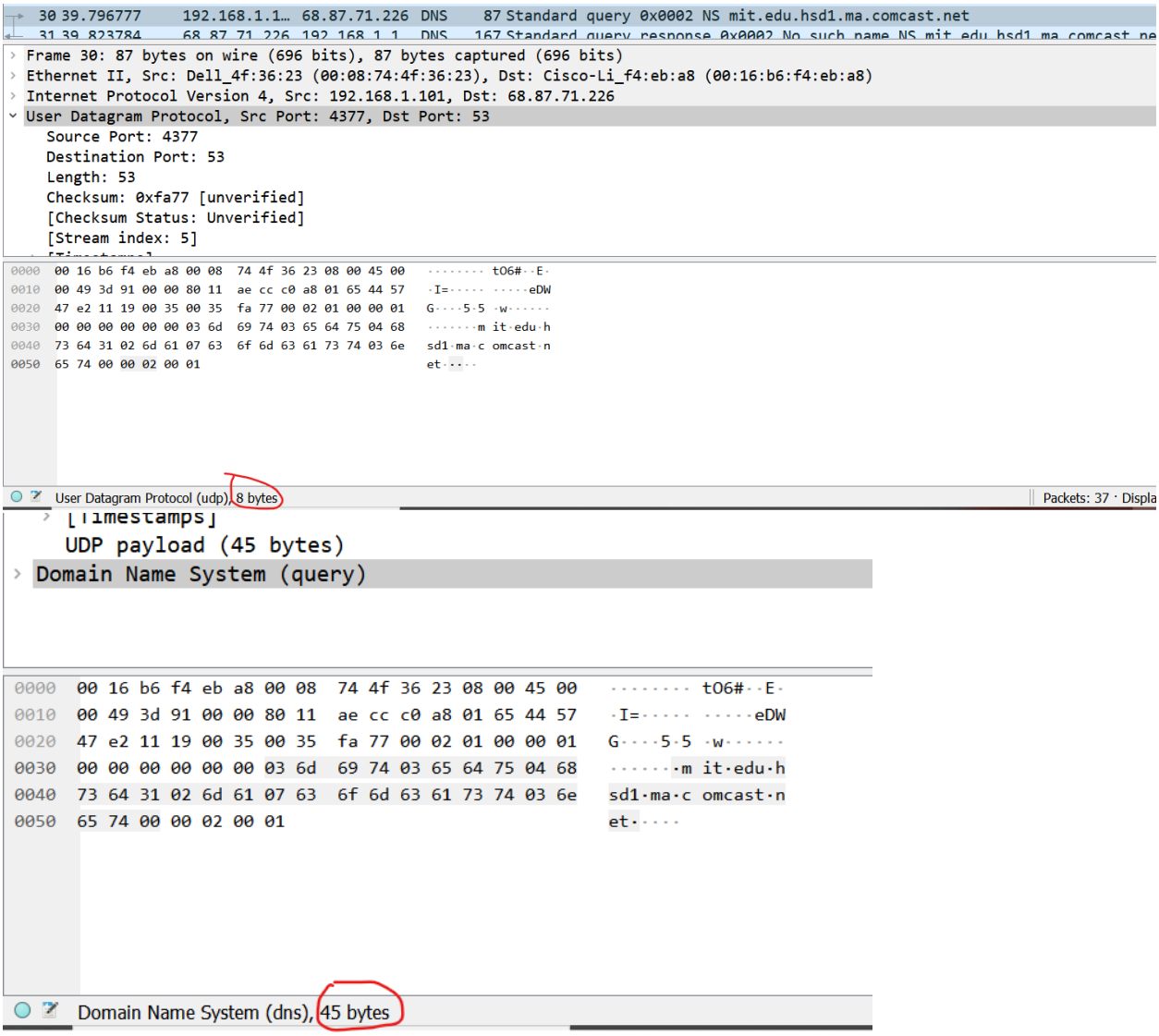
There are 5 Fields: source Port, Destination Port, Length, Checksum and UDP Payload
If we include statuses index and timestamps there will be 8 fields.

2. Using the same packets as in q1



length of each UDP header fields is 2 bytes

3. Using the same packet for reference
   we see that 8 bytes UDP (pic 1 related) is added with 45 bytes payload totaling 53 bytes (pic 2)



4. The largest possible source port number is $2^{16} - 1 = 65536 - 1 = 65535$
   Header bytes is 8 bytes (from q3 pic 1)
   Therefore maximum number of bytes is largest possible – header bytes
   = $65535 - 8 \ = \ 65527 \ bytes$

5. The largest possible source port number is $2^{16} - 1 = 65536 - 1 = 65535$

6. The Protocol number for the UDP for the packet number 30 is 17 annd hexadecimal notation is 0×11

```
30 39.796777     192.168.1.1… 68.87.71.226 DNS     87 Standard query 0x0002 NS mit.edu.hsd1.ma.comcast.net
31 39.823784     68.87.71.226 192.168.1.1… DNS    167 Standard query response 0x0002 No such name NS mit.edu.h
```

```
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 73
    Identification: 0x3d91 (15761)
  > Flags: 0x00
    ...0 0000 0000 0000 = Fragment Offset: 0
    Time to Live: 128
    Protocol: UDP (17)
    Header Checksum: 0xaecc [validation disabled]
    [Header checksum status: Unverified]
    Source Address: 192.168.1.101
    Destination Address: 68.87.71.226
User Datagram Protocol, Src Port: 4377, Dst Port: 53
Domain Name System (query)
```

```
0000  00 16 b6 f4 eb a8 00 08  74 4f 36 23 08 00 45 00   ·····tO6#··E·
0010  00 49 3d 91 00 00 80 11  ae cc c0 a8 01 65 44 57   ·I=·····  ·····eDW
0020  47 e2 11 19 00 35 00 35  fa 77 00 02 01 00 00 01   G····5·5 ·w·····
0030  00 00 00 00 00 00 03 6d  69 74 03 65 64 75 04 68   ·······m it·edu·h
0040  73 64 31 02 6d 61 07 63  6f 6d 63 61 73 74 03 6e   sd1·ma·c omcast·n
0050  65 74 00 00 02 00 01                              et·····
```

7. UDP packet sent by host

```
30 39.796777     192.168.1.1… 68.87.71.226 DNS     87 Standard query 0x0002 NS mit.edu.hsd1.ma.comcast.net
31 39.823784     68.87.71.226 192.168.1.1… DNS    167 Standard query response 0x0002 No such name NS mit.edu
```

```
> Frame 30: 87 bytes on wire (696 bits), 87 bytes captured (696 bits)
> Ethernet II, Src: Dell_4f:36:23 (00:08:74:4f:36:23), Dst: Cisco-Li_f4:eb:a8 (00:16:b6:f4:eb:a8)
> Internet Protocol Version 4, Src: 192.168.1.101, Dst: 68.87.71.226
v User Datagram Protocol, Src Port: 4377, Dst Port: 53
    Source Port: 4377
    Destination Port: 53
    Length: 53
    Checksum: 0xfa77 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 5]
  v [Timestamps]
```

UDP packet reply to host

```
31 39.823784     68.87.71.226 192.168.1.1… DNS    167 Standard query response 0x0002 No such name NS mit.edu.hsd1.ma.comcast.net SOA dns1.inflow.pa.bo.comcast.net
32 39.825175     192.168.1.1… 68.87.71.226 DNS     82 Standard query 0x0003 NS mit.edu.ma.comcast.net
33 39.838373     68.87.71.226 192.168.1.1… DNS     82 Standard query response 0x0003 Server failure NS mit.edu.ma.comcast.net
```

```
> Frame 31: 167 bytes on wire (1336 bits), 167 bytes captured (1336 bits)
> Ethernet II, Src: Cisco-Li_f4:eb:a8 (00:16:b6:f4:eb:a8), Dst: Dell_4f:36:23 (00:08:74:4f:36:23)
> Internet Protocol Version 4, Src: 68.87.71.226, Dst: 192.168.1.101
v User Datagram Protocol, Src Port: 53, Dst Port: 4377
    Source Port: 53
    Destination Port: 4377
    Length: 133
    Checksum: 0x04d3 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 5]
  v [Timestamps]
      [Time since first frame: 0.027007000 seconds]
      [Time since previous frame: 0.027007000 seconds]
    UDP payload (125 bytes)
> Domain Name System (response)
```

The relationship between the port numbers in the two above packets is that the source port sent by host is equal to destination port for the response and the Destination port sent by host is the source port for the reply back to the host.