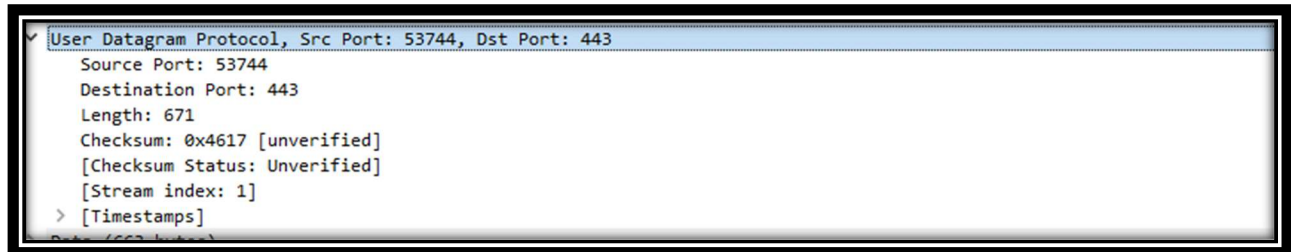Lab 4 UDP

1. Select one UDP packet from your trace. From this packet, determine how many fields there are in the UDP header. (You shouldn't look in the textbook! Answer these questions directly from what you observe in the packet trace.) Name these fields.


2. By consulting the displayed information in Wireshark's packet content field for this packet, determine the length (in bytes) of each of the UDP header fields

fixed length 8 bytes.
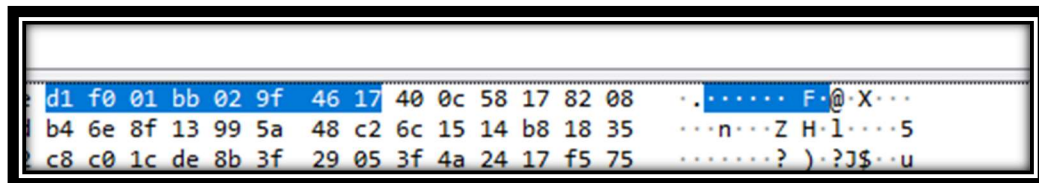
3. The value in the Length field is the length of what? (You can consult the text for this answer). Verify your claim with your captured UDP packet.

length ในที่นี่คือเลขของ byte ทั้งหมดของ header กับ ข้อมูล
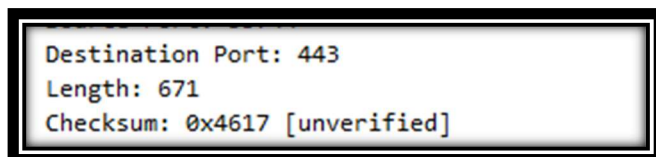
4. What is the maximum number of bytes that can be included in a UDP payload? (Hint: the answer to this question can be determined by your answer to 2. above)

มีทั้งหมด 16 บิท สามารถเก็บได้ถึง $2^{16} - 1 = 65535$ >> รวม header มาแล้วเราต้องลบออก 65535-8 = 65527 bytes

5. What is the largest possible source port number? (Hint: see the hint in 4.)

$2^{16} - 1 = 65535$ ports

6. What is the protocol number for UDP? Give your answer in both hexadecimal and decimal notation. To answer this question, you'll need to look into the Protocol field of the IP datagram containing this UDP

```
> Flags: 0x4000, Don't fragment
  ...0 0000 0000 0000 = Fragment offset: 0
  Time to live: 128
  Protocol: UDP (17)
  Header checksum: 0x0000 [validation disabled]
  [Header checksum status: Unverified]
  Source: 161.246.5.7
  Destination: 216.58.196.46
> User Datagram Protocol, Src Port: 53744, Dst Port: 443
  Source Port: 53744
  Destination Port: 443
0010  02 b3 60 ff 40 00 80 11  00 00 a1 f6 05 07 d8 3a   ··`·@··· ·······:
0020  c4 2e d1 f0 01 bb 02 9f  46 17 40 0c 58 17 82 08   ·.······ F·@·X···
0030  15 bd b4 6e 8f 13 99 5a  48 c2 6c 15 14 b8 18 35   ···n···Z H·l···5
0040  0b d2 c8 c0 1c de 8b 3f  29 05 3f 4a 24 17 f5 75   ·······? )·?J$··u
```

7. Examine a pair of UDP packets in which your host sends the first UDP packet and the second UDP packet is a reply to this first UDP packet. (Hint: for a second packet to be sent in response to a first packet, the sender of the first packet should be the destination of the second packet). Describe the relationship between the port numbers in the two packets.

อันนี้ตอนส่ง:

```
  Internet Protocol Version 4, Src: 161.246.5.7, Dst: 216.58.196.46
> User Datagram Protocol, Src Port: 53744, Dst Port: 443
    Source Port: 53744
    Destination Port: 443
    Length: 671
    Checksum: 0x4617 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 1]
  > [Timestamps]
> Data (663 bytes)
```

อันนี้ตอนรับ:

```
  Internet Protocol Version 4, Src: 216.58.196.46, Dst: 161.246.5.7
  User Datagram Protocol, Src Port: 443, Dst Port: 53744
    Source Port: 443
    Destination Port: 53744
    Length: 29
    Checksum: 0x4a20 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 1]
  > [Timestamps]
  Data (21 bytes)
```