COMPUTER NETWORK
Lab 3a

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1. Select one UDP packet from your trace. From this packet, determine how many fields there are in the UDP header. Name these fields.
   Ans: There are 4 fields in the UDP header: Source Port, Destination Port, Length, Checksum.

2. By consulting the displayed information in Whireshark's packet content field for this packet, determine the length (in bytes) of each of the UDP header fields.
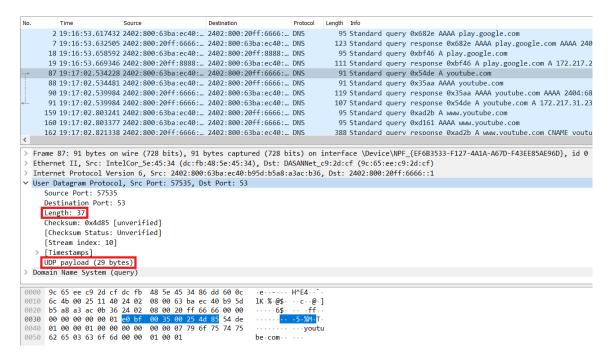   Ans: The UDP header has a fixed length of 8 bytes. Each of 4 header fields is 2 bytes.

3. The value in the Length field is the length of what? Verify your claim with your captured UDP packet.
Ans: The length field specifies the number of bytes in the UDP segment (header plus data). An explicit length value is needed since the size of the data field may differ from one UDP segment to the next.
The length of UDP payload for selected packet is 29 bytes. 37 bytes - 8 bytes = 29 bytes.

4. What is the maximum number of bytes that can be included in a UDP payload?
Ans: The maximum number of bytes that can be included in a UDP payload is $(2^{16} - 1)$ bytes plus the header bytes. This gives 65535 bytes – 8 bytes = 65527 bytes.

5. What is the largest possible source port number?
Ans: The largest possible source port number is $(2^{16} - 1) = 65535$.

6. What is the protocol number for UDP? Give your answer in both hexadecimal and decimal notation.
Ans: The IP protocol number for UDP is 0x11 in hexadecimal, which is 17 in decimal value.

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. Describe the relationship between the port numbers in the two packets.
Ans: The source port of the UDP packet sent by the host is the same as the destination port of the reply packet and vice versa.