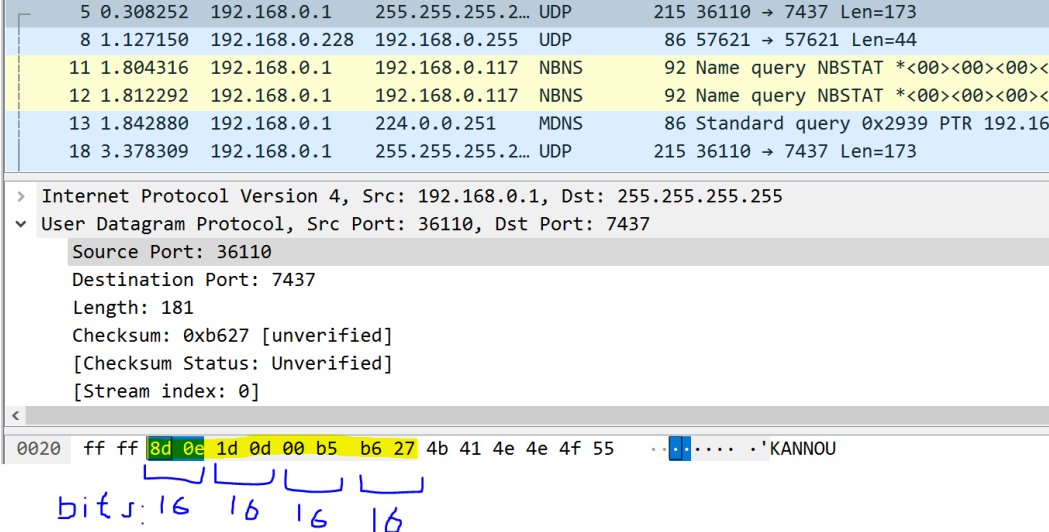
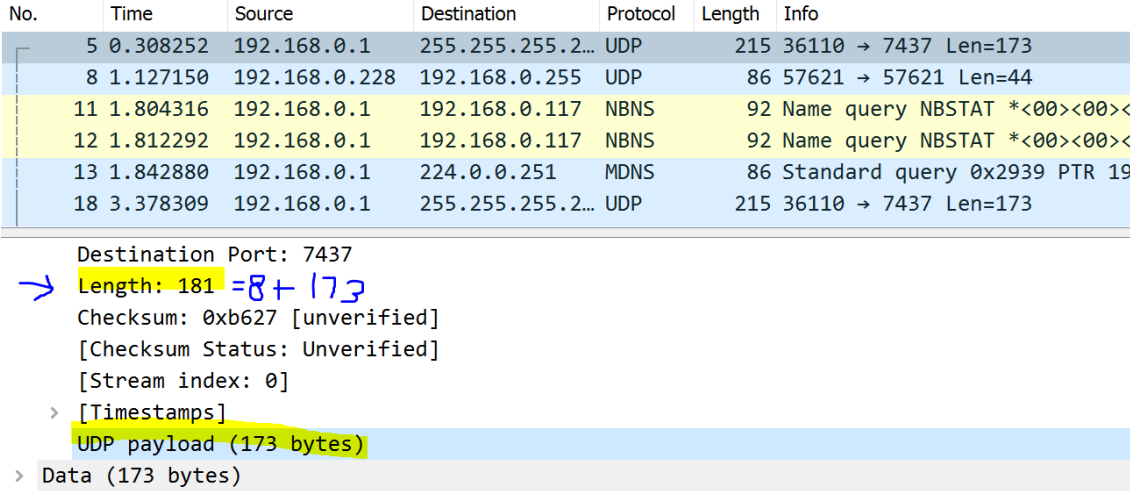


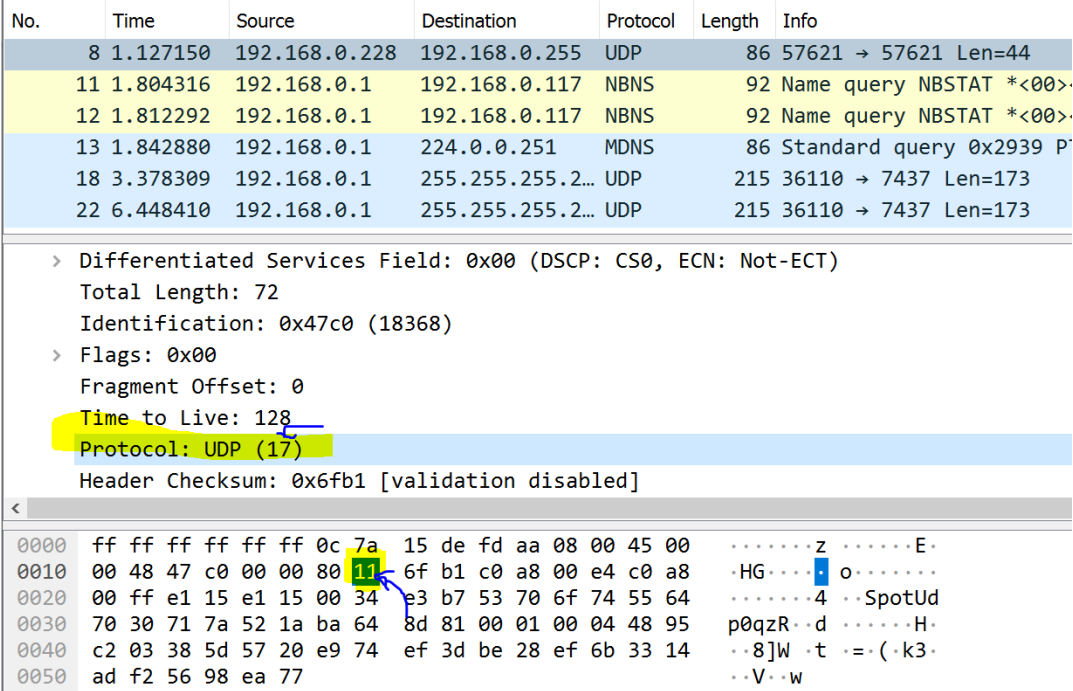
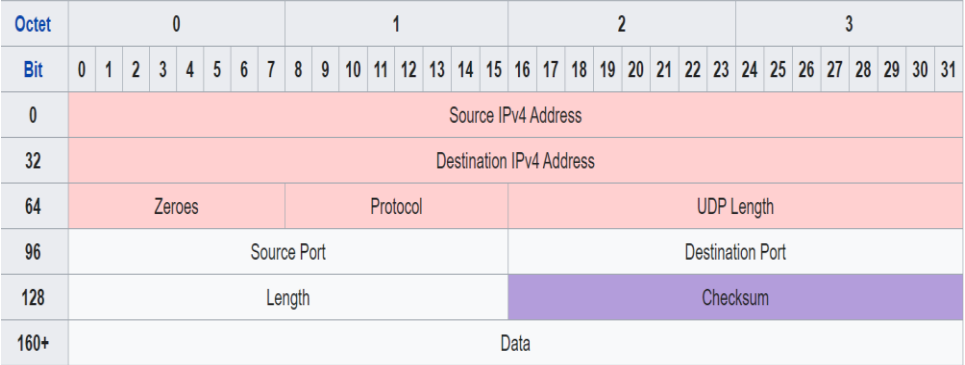
## Wireshark Lab 2: UDP

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**Mark:**

	Question	Answer
1	Select one packet. From this packet, determine how many fields there are in the UDP header. Name these fields.	We observe packet no. 5. It has four fields 1) Source port 2) Destination port 3) Length 4) Checksum
Annotated Screenshots (if needed)	<p>Wireshark packet capture showing packet 5 selected. The packet list shows packet 5 as UDP from 192.168.0.1 to 255.255.255.255. The packet details pane shows the UDP header fields: Source Port: 36110, Destination Port: 7437, Length: 181, Checksum: 0xb627 [unverified].</p>	
2	From the packet content field, determine the length (in bytes) of each of the UDP header fields.	Each field is 2 bytes long (16bits).

Annotated Screenshots (if needed)		
3	The value in the Length field is the length of what? Verify your claim with your captured UDP packet.	This is the length of the headers (8 bytes) plus the size of the data (173bytes) coming to a total of 181bytes.
Annotated Screenshots (if needed)		
4	What is the maximum number of bytes that can be included in a UDP payload.	$(2^{16}) - 1 - 8$
Annotated Screenshots (if needed)		
5	What is the largest possible source port number?	$65535 = 2^{16} - 1$
Annotated Screenshots (if needed)		

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 IP header.)	Dec: 17 Hex: 0x11
Annotated Screenshots (if needed)	 <p>The screenshot shows a Wireshark packet capture. The packet list pane displays several packets, with the selected packet being a UDP packet with source port 57621 and destination port 57621, length 173. The packet details pane shows the UDP header with source port 57621, destination port 57621, and protocol 17 (UDP). The packet bytes pane shows the raw data of the packet, with the UDP header fields highlighted in red: Source IPv4 Address, Destination IPv4 Address, Zeroes, Protocol, and UDP Length.</p>	
7	Search “UDP” in Google and determine the fields over which the UDP checksum is calculated.	UDP checksum is calculated using the fields indicated in red below. Source IPv4 address, Destination IPv4 Address, Zeroes, Protocol, UDP length.
Annotated Screenshots (if needed)	 <p>The diagram illustrates the fields over which the UDP checksum is calculated. The fields are color-coded: red for Source IPv4 Address, Destination IPv4 Address, Zeroes, Protocol, and UDP Length; yellow for Source Port and Destination Port; and purple for Length and Checksum.</p> <p>Source:  <a href="https://en.wikipedia.org/wiki/User_Datagram_Protocol#:~:text=zeros%20if%20unused,-,Checksum%20computation,a%20multiple%20of%20two%20octets.">https://en.wikipedia.org/wiki/User_Datagram_Protocol#:~:text=zeros%20if%20unused,-,Checksum%20computation,a%20multiple%20of%20two%20octets.</a> </p>	
8	Examine a pair of UDP packets in which the first packet is sent by your host and the second packet is a reply to the first packet. Describe the relationship between	The numbers are reversed

	the port numbers in the two packets																																																																
Annotated Screenshots (if needed)	<table><tr><th>No.</th><th>Time</th><th>Source</th><th>Destination</th><th>Protocol</th></tr><tr><td>49</td><td>10.176982</td><td>192.168.0.117</td><td>192.168.0.1</td><td>DNS</td></tr><tr><td>50</td><td>10.180748</td><td>192.168.0.1</td><td>192.168.0.117</td><td>DNS</td></tr><tr><td>149</td><td>17.729326</td><td>192.168.0.117</td><td>192.168.0.1</td><td>DNS</td></tr><tr><td>150</td><td>17.734493</td><td>192.168.0.1</td><td>192.168.0.117</td><td>DNS</td></tr></table>					No.	Time	Source	Destination	Protocol	49	10.176982	192.168.0.117	192.168.0.1	DNS	50	10.180748	192.168.0.1	192.168.0.117	DNS	149	17.729326	192.168.0.117	192.168.0.1	DNS	150	17.734493	192.168.0.1	192.168.0.117	DNS	<table><tr><th>No.</th><th>Time</th><th>Source</th><th>Destination</th><th>Protocol</th><th>L</th></tr><tr><td>49</td><td>10.176982</td><td>192.168.0.117</td><td>192.168.0.1</td><td>DNS</td><td></td></tr><tr><td>50</td><td>10.180748</td><td>192.168.0.1</td><td>192.168.0.117</td><td>DNS</td><td></td></tr><tr><td>149</td><td>17.729326</td><td>192.168.0.117</td><td>192.168.0.1</td><td>DNS</td><td></td></tr><tr><td>150</td><td>17.734493</td><td>192.168.0.1</td><td>192.168.0.117</td><td>DNS</td><td></td></tr></table>					No.	Time	Source	Destination	Protocol	L	49	10.176982	192.168.0.117	192.168.0.1	DNS		50	10.180748	192.168.0.1	192.168.0.117	DNS		149	17.729326	192.168.0.117	192.168.0.1	DNS		150	17.734493	192.168.0.1	192.168.0.117	DNS	
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	<div>&gt; Frame 49: 88 bytes on wire (704 bits), 88 bytes captured on interface 0 &gt; Ethernet II, Src: IntelCor_16:1b:bf (68:ec:c5:16:1b:bf), Dst: 08:00:27:34:49:33 &gt; Internet Protocol Version 4, Src: 192.168.0.117, Dst: 192.168.0.1 v User Datagram Protocol, Src Port: 57545, Dst Port: 53</div> <div>Source Port: 57545 Destination Port: 53 Length: 54</div>					<div>&gt; Frame 50: 88 bytes on wire (704 bits), 88 bytes captured on interface 0 &gt; Ethernet II, Src: IntelCor_16:1b:bf (68:ec:c5:16:1b:bf), Dst: 08:00:27:34:49:33 &gt; Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.117 v User Datagram Protocol, Src Port: 53, Dst Port: 57545</div> <div>Source Port: 53 Destination Port: 57545 Length: 54</div>																																																											