CMPT 371 LAB 1

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Select C:\Windows\system32\cmd.exe

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Microsoft Windows [Version 10.0.15063]
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C:\Users\Andrew>cd\windows\system32

C:\Windows\System32>ipconfig/release

Windows IP Configuration

No operation can be performed on Local Area Connection* 10 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Wireless LAN adapter Local Area Connection* 10:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::c18:690:d63d:e427%11
   Default Gateway . . . . . . . . . :

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

C:\Windows\System32>ipconfig/renew

Windows IP Configuration

No operation can be performed on Local Area Connection* 10 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Wireless LAN adapter Local Area Connection* 10:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : tdl
   Link-local IPv6 Address . . . . . : fe80::c18:690:d63d:e427%11
   IPv4 Address. . . . . . . . . . . : 10.39.149.82
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 10.39.149.1

Ethernet adapter Bluetooth Network Connection:

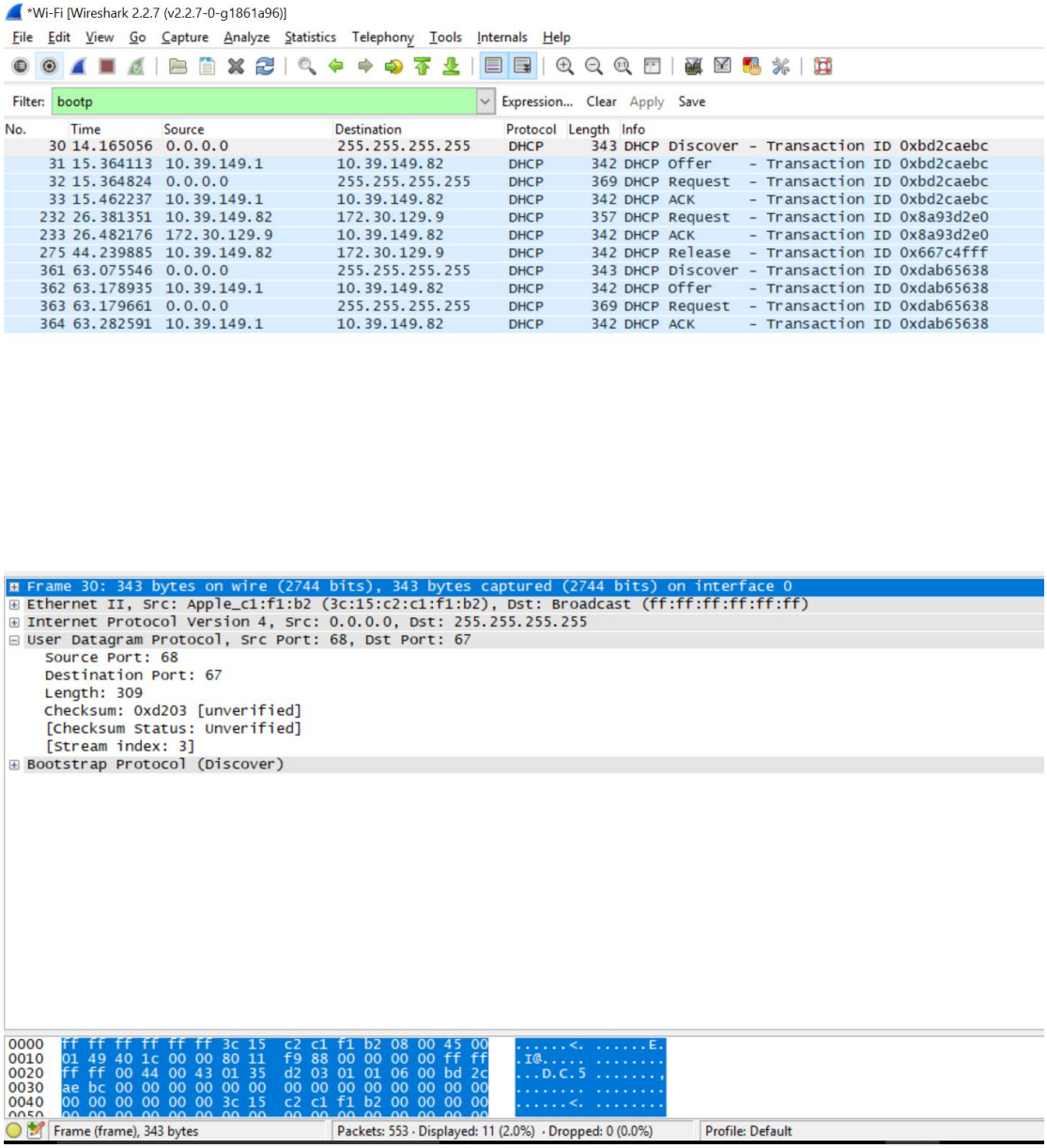
   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

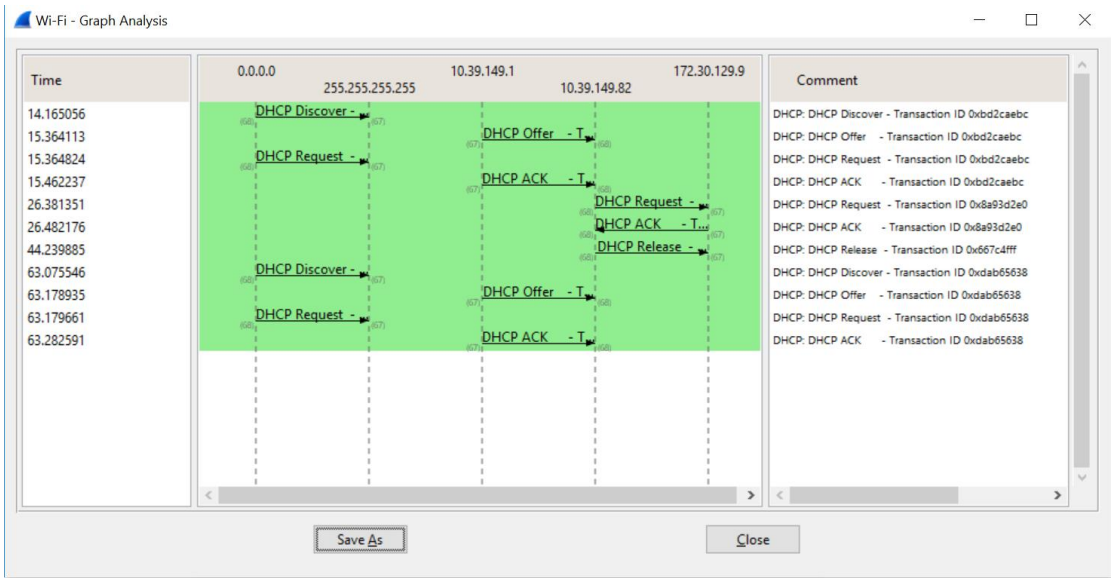

Select C:\Windows\system32\cmd.exe
C:\Windows\System32>ipconfig/renew
Windows IP Configuration
No operation can be performed on Local Area Connection* 10 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.
Wireless LAN adapter Local Area Connection* 10:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Wireless LAN adapter Wi-Fi:
Connection-specific DNS Suffix . : tdl
Link-local IPv6 Address . . . . . : fe80::c18:690:d63d:e427%11
IPv4 Address. . . . . : 10.39.149.82
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.39.149.1
Ethernet adapter Bluetooth Network Connection:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter Teredo Tunneling Pseudo-Interface:
Connection-specific DNS Suffix . :
IPv6 Address. . . . . : 2001:0:4137:9e76:20d7:1afe:f5d8:6aad
Link-local IPv6 Address . . . . . : fe80::20d7:1afe:f5d8:6aad%30
Default Gateway . . . . . : ::
C:\Windows\System32>ipconfig/release
Windows IP Configuration
No operation can be performed on Local Area Connection* 10 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.
Wireless LAN adapter Local Area Connection* 10:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Wireless LAN adapter Wi-Fi:
Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::c18:690:d63d:e427%11
Default Gateway . . . . . :
Ethernet adapter Bluetooth Network Connection:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter Teredo Tunneling Pseudo-Interface:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
C:\Windows\System32>ipconfig/renew

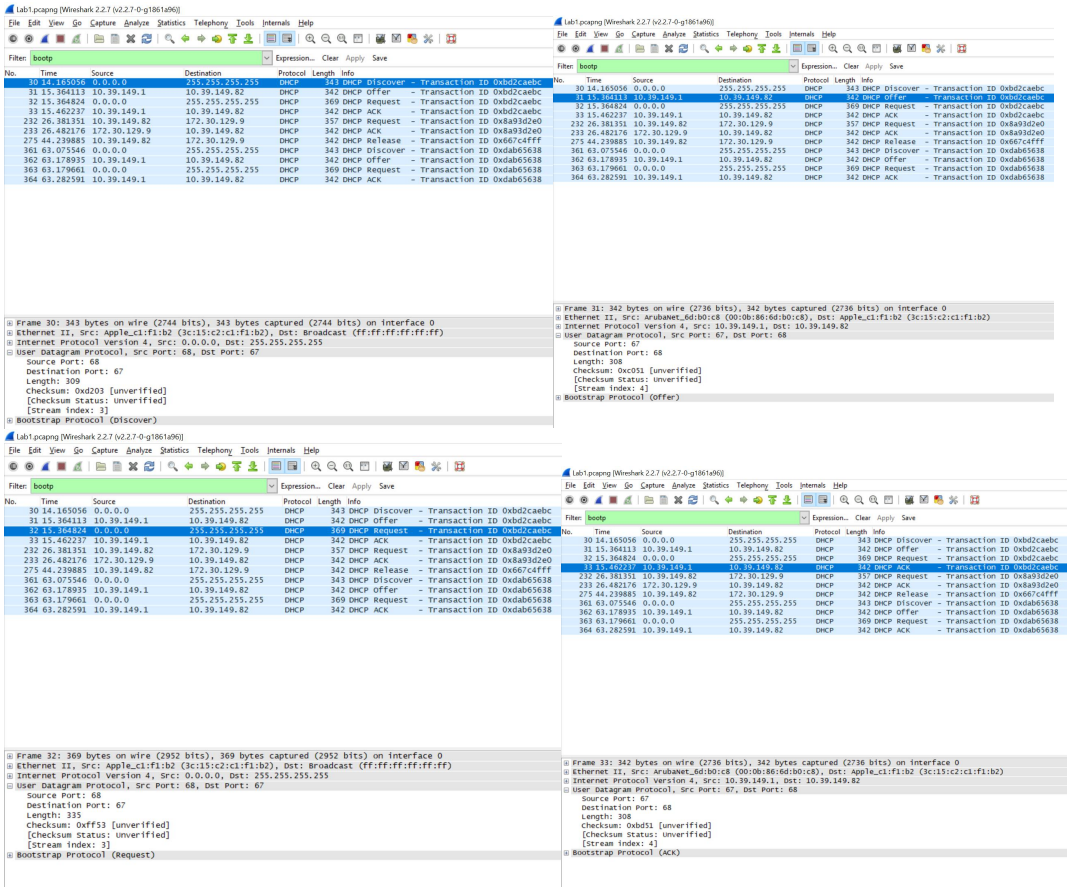
Q1.



As the screen shot shown, the DHCP messages sent over User Datagram Protocol(UDP).

Q2.



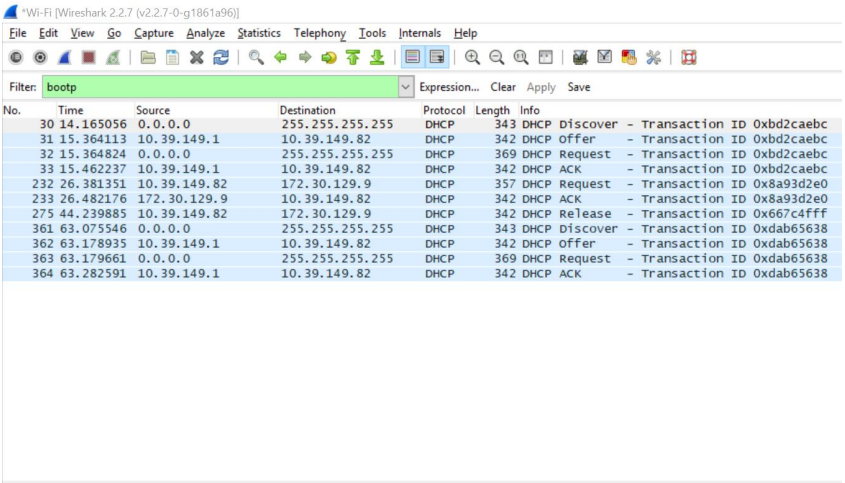


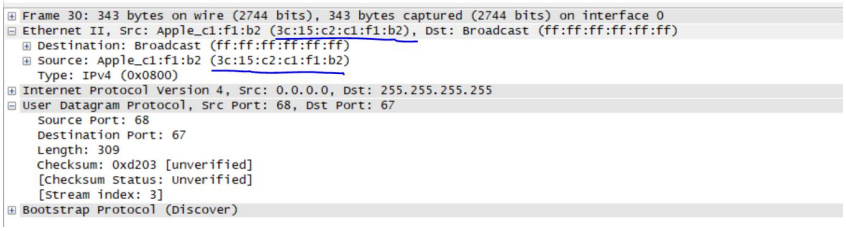
As we can see from the screen shot Q2, the first four packet:

Discover: source port#: 68	dest port#: 67
Offer: source port#: 67	dest port#: 68
Request: source port#: 68	dest port#: 67
ACK DHCP: source port#:67	dest port#: 68

The port numbers are same as in the example given in this lab assignment that are 67 and 68.

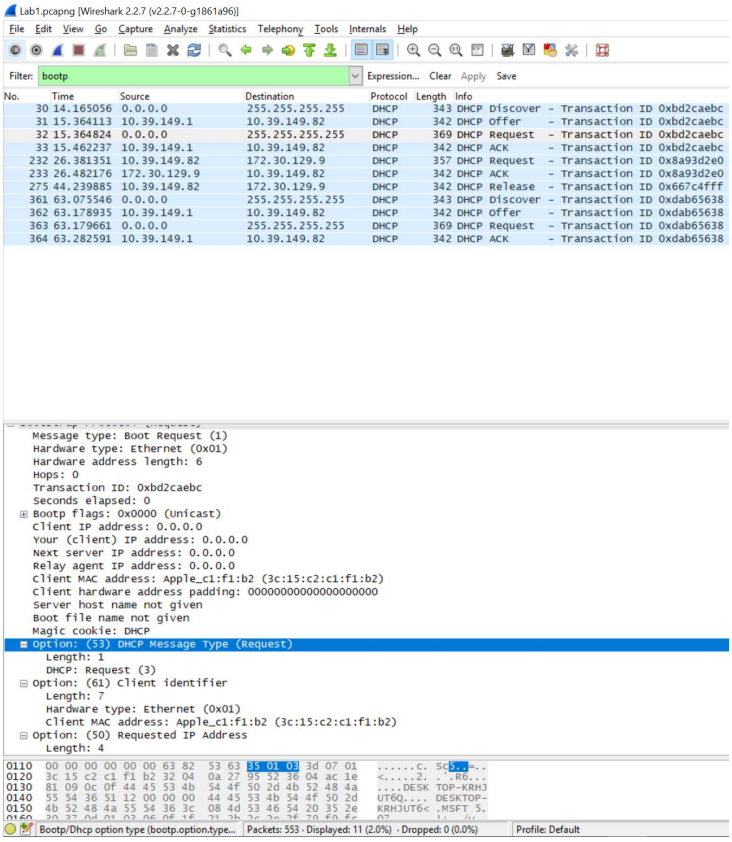
Q3:

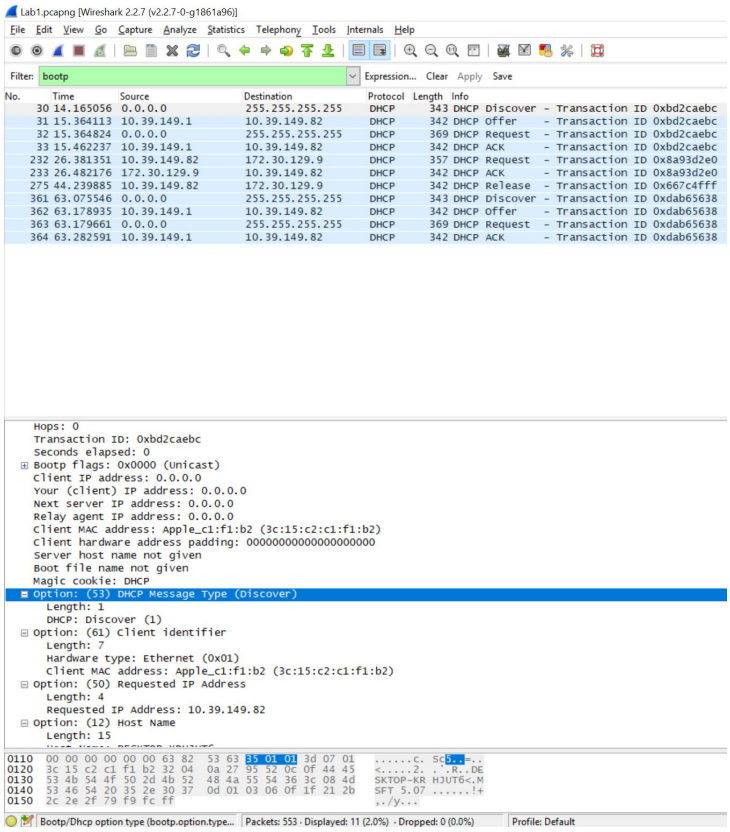




The link-layer address: 3c:15:c2:c1:f1:b2

Q4:





The value in the DHCP discover message differentiate this message from the DHCP request message is: Option(53)

Q5:

No.	Time	Source	Destination	Protocol	Length	Info
30	14.165056	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xbd2caebc
31	15.364113	10.39.149.1	10.39.149.82	DHCP	342	DHCP Offer - Transaction ID 0xbd2caebc
32	15.364824	0.0.0.0	255.255.255.255	DHCP	369	DHCP Request - Transaction ID 0xbd2caebc
33	15.462237	10.39.149.1	10.39.149.82	DHCP	342	DHCP ACK - Transaction ID 0xbd2caebc

The value of the Transaction-ID in the first four DHCP messages is 0xbd2caebc

232	26.381351	10.39.149.82	172.30.129.9	DHCP	357	DHCP Request - Transaction ID 0x8a93d2e0
233	26.482176	172.30.129.9	10.39.149.82	DHCP	342	DHCP ACK - Transaction ID 0x8a93d2e0

The value of the Transaction-Id in the 2nd set of DHCP messages is 0x8a93d2e0

The purpose is that by different transaction-ID, the DHCP server can differentiate between different requests that made by users.

Q6:

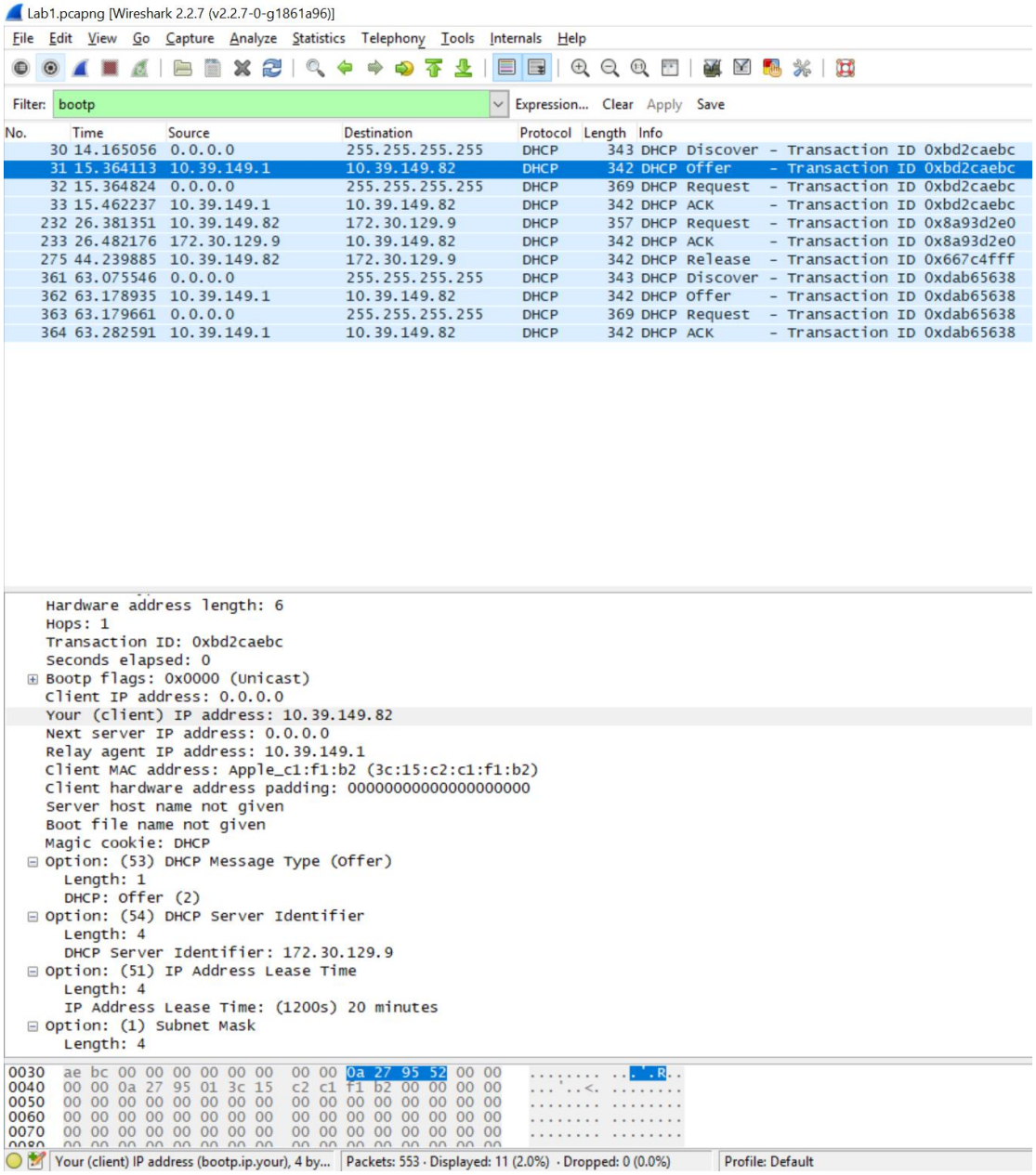
No.	Time	Source	Destination	Protocol	Length	Info
30	14.165056	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xbd2caebc
31	15.364113	10.39.149.1	10.39.149.82	DHCP	342	DHCP Offer - Transaction ID 0xbd2caebc
32	15.364824	0.0.0.0	255.255.255.255	DHCP	369	DHCP Request - Transaction ID 0xbd2caebc
33	15.462237	10.39.149.1	10.39.149.82	DHCP	342	DHCP ACK - Transaction ID 0xbd2caebc

Discover: source IP#:0.0.0.0 dest IP#: 255.255.255.255
Offer: source IP#:10.39.149.1 dest IP#: 10.39.149.82
Request: source IP#:0.0.0.0 dest IP#: 255.255.255.255
ACK DHCP: source IP#:10.39.149.1 dest IP#: 10.39.149.82

Q7:

The IP address if DHCP server is: 10.39.149.1

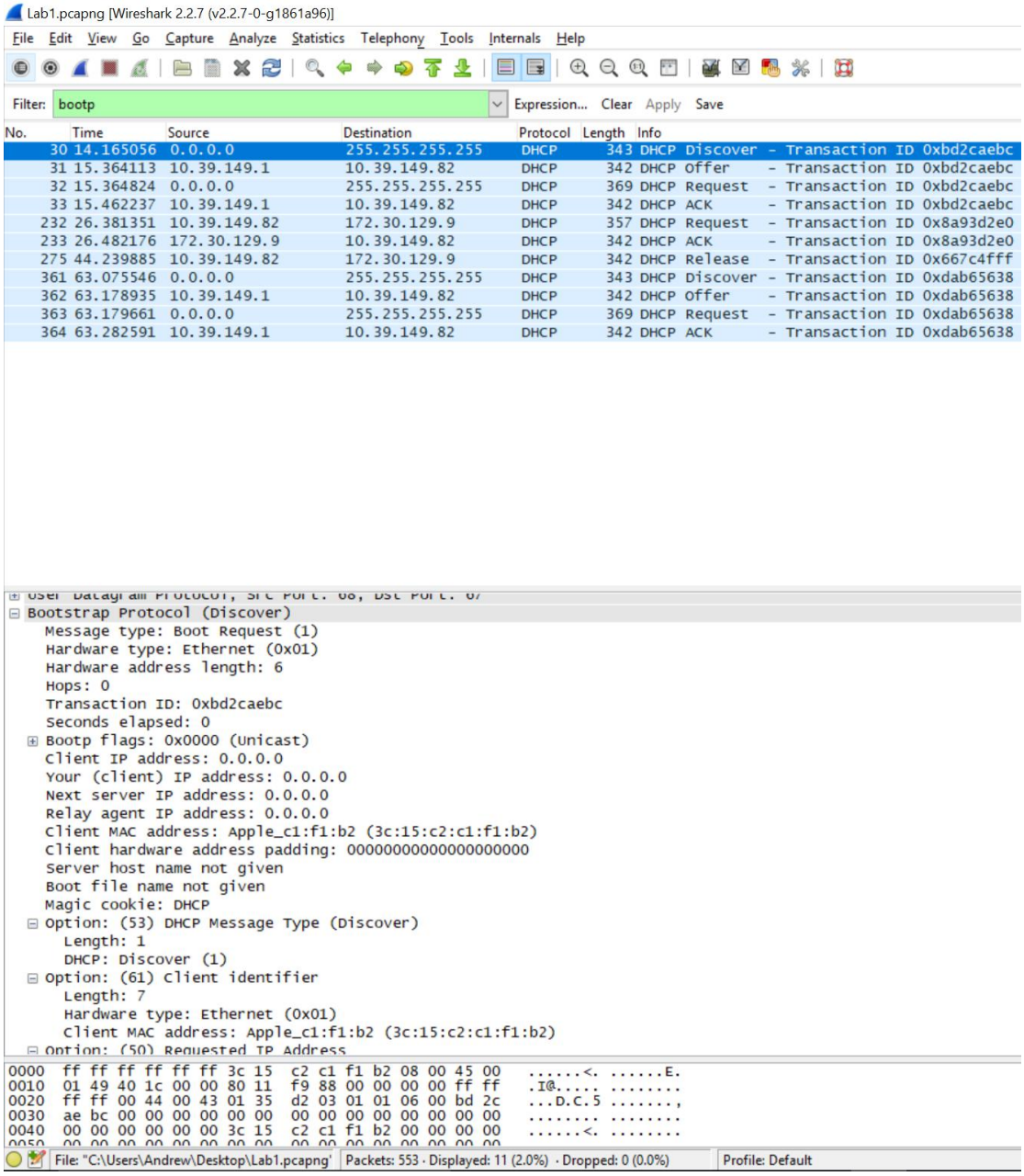
Q8:



The IP address the DHCP server offering to my host in the DHCP Offer message is: 10.39.149.82

The DHCP message with “Option: (53) DHCP Message Type (offer)” contains the offered DHCP address.

Q9:



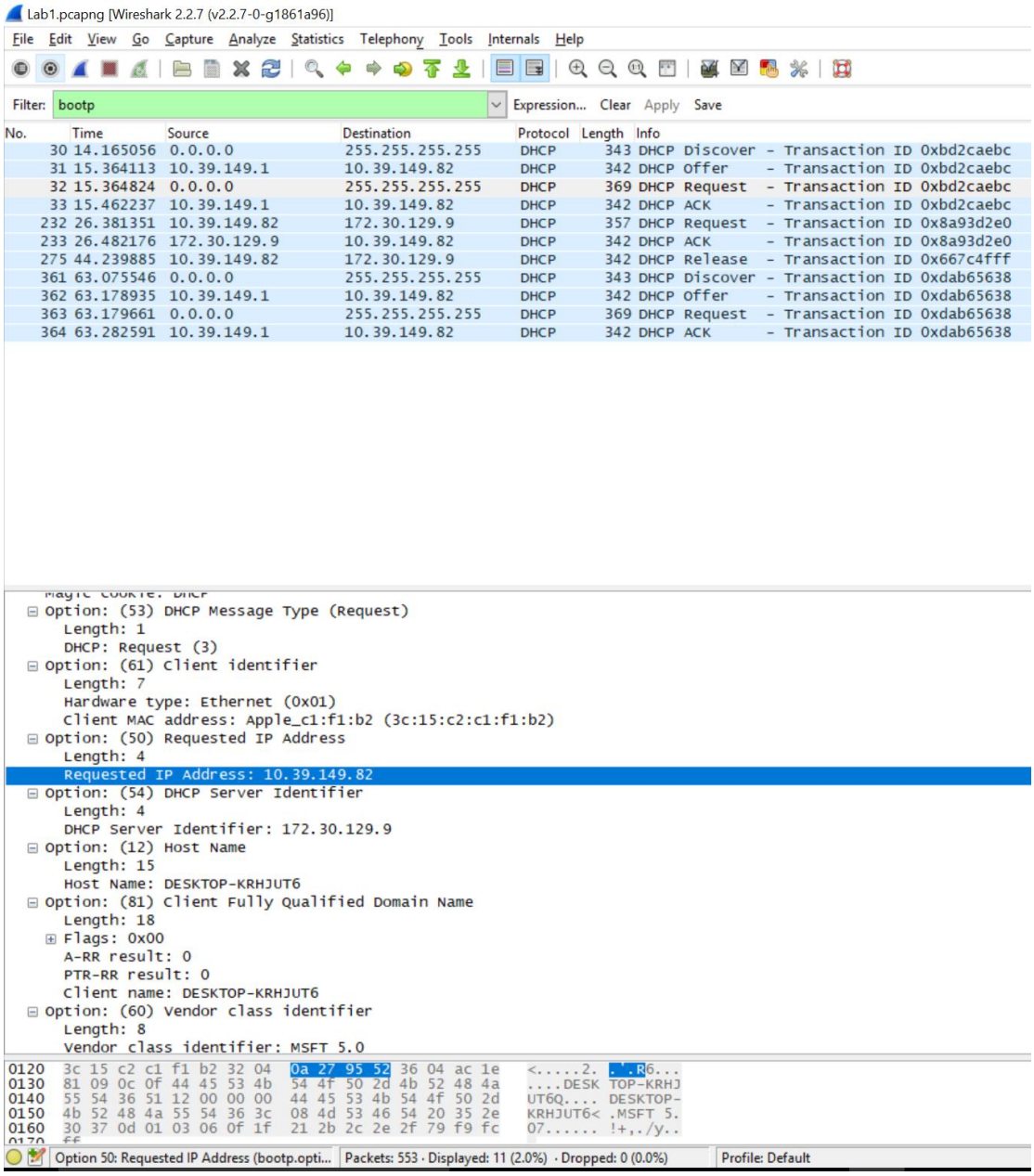
In the example screenshot, the value that indicates there is no relay agent is 0.0.0.0. As the screenshot of my experiment above, there is no relay agent as well.

Q10

The router lines tells where the client should send messages by default

The subnet mask line tells the client which subnet mask should use

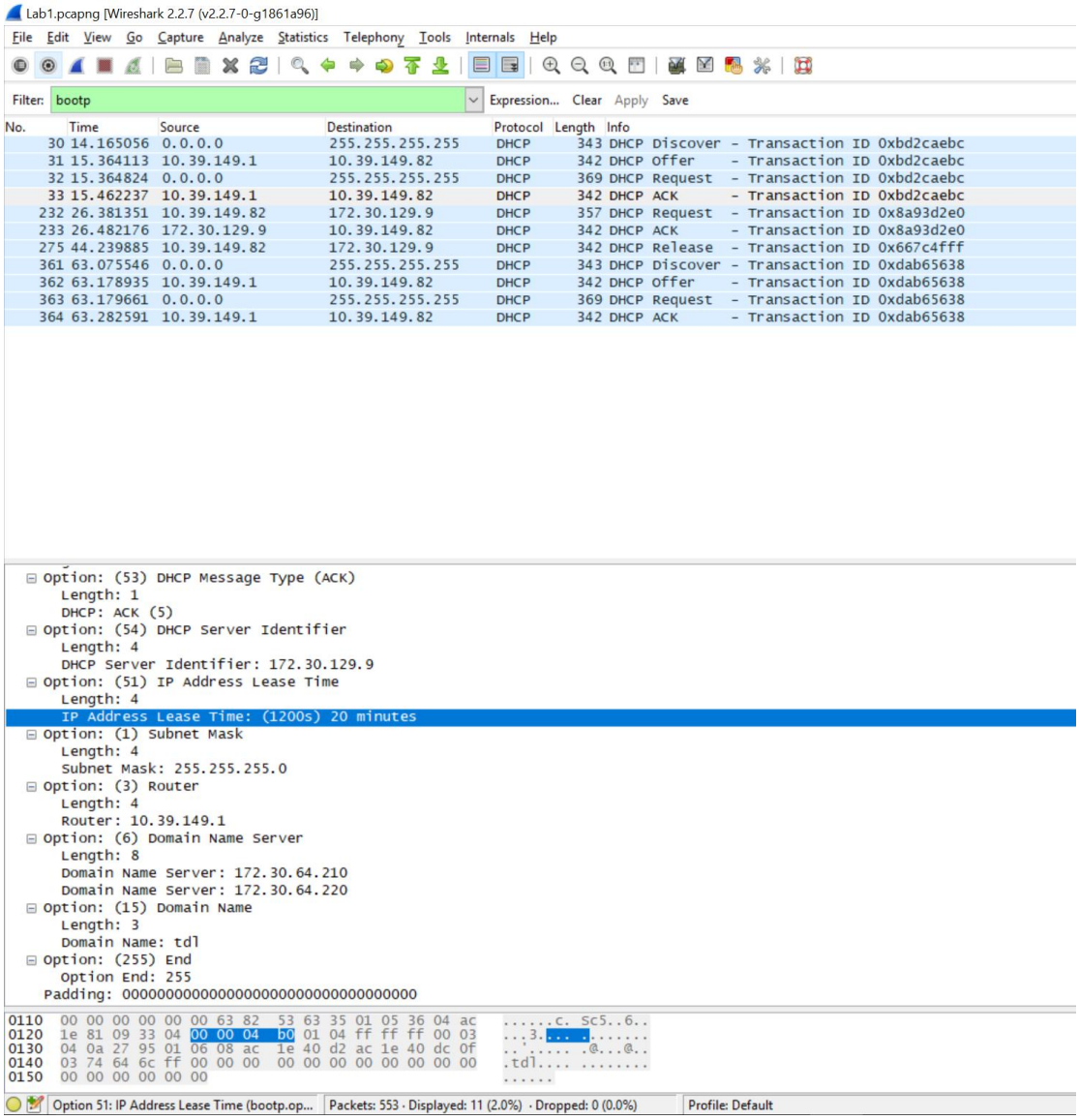
Q11



As we can see from Question8 above, the DHCP offer IP address is: 10.39.149.82 (DHCP Offer)

By looking the screenshot above, the client accept this IP address, and we can see the “Requested IP Address: 10.39.149.82”

Q12



The lease time is the amount of time the DHCP server assigned an IP address to client. Within the lease time, the DHCP server will not assign this specific IP address to another client. After the lease time expired, this IP address can be reused by the DHCP server to give to other client.

As the screenshot above, the lease time is (1200s)=20minutes.

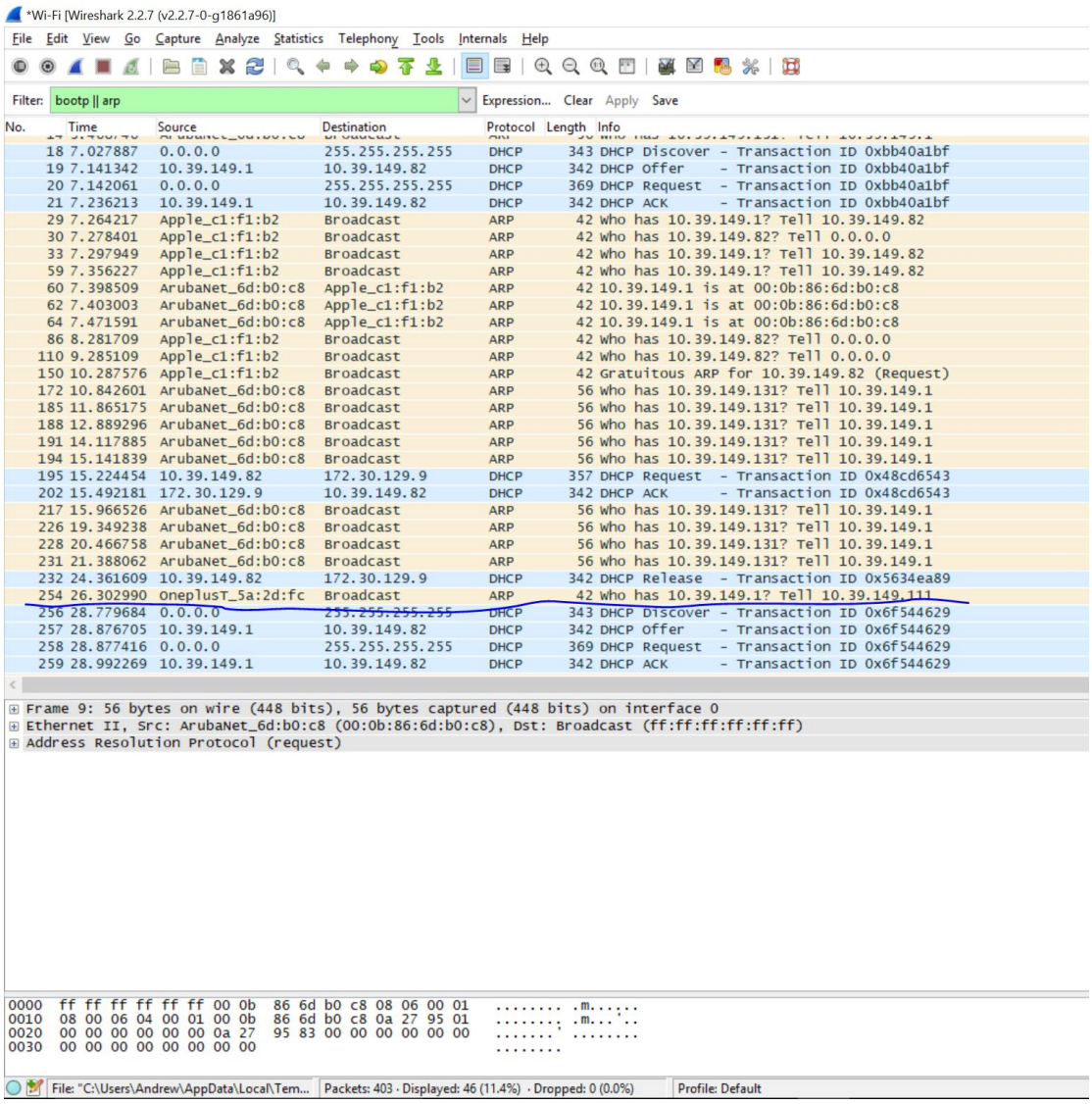
Q13

The DHCP release message is the message that the client sent to cancel the lease of IP address that was given by DHCP server.

There is no acknowledgment of receipt of the client's DHCP request.

If the DHCP release message lost, the client had released the IP address. However, the DHCP server has to wait this specific IP address to be expired before the DHCP server can reassign this IP address.

Q14.



There is ARP request made by the DHCP server.

Since before offer an IP address to a client, the DHCP server send an ARP request for the offered IP address to confirm that this IP address is not used by other client.