CMPT371 Project 2 Lab

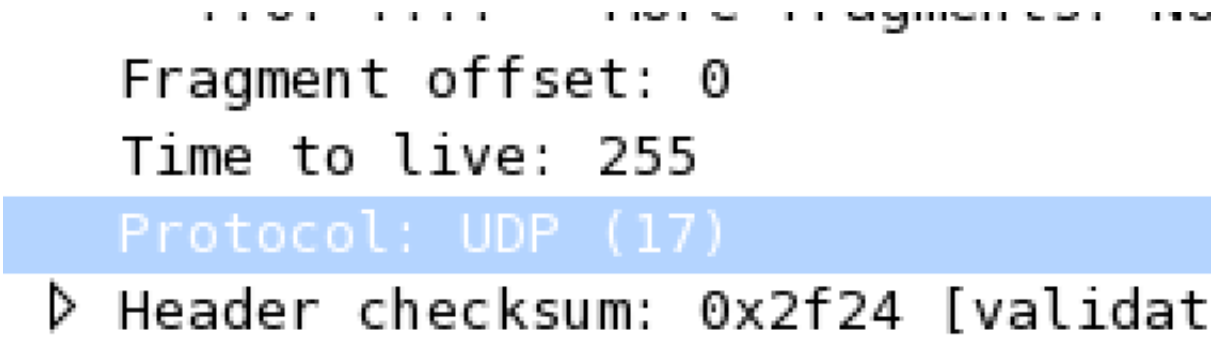
Weida Pan 301295773

DHCP

command:

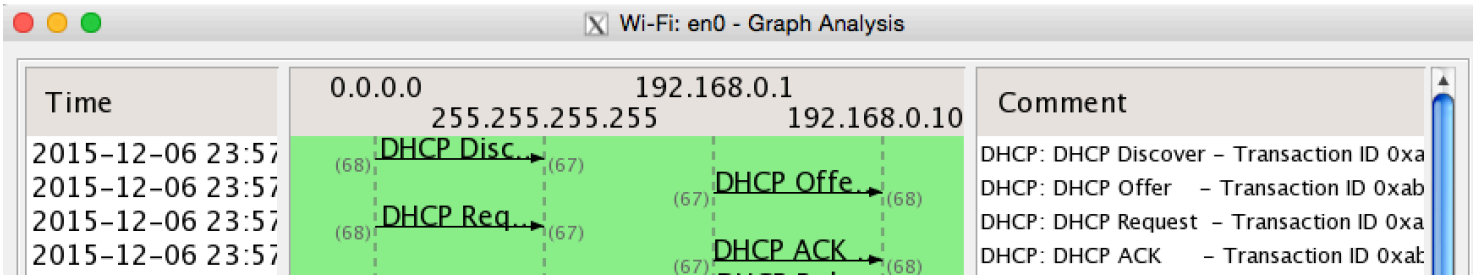
```
iykon@Weidas-MacBook-Pro ~/Documents/iykon/sfu/2015Fall/CMPT371-Networking/project2/w
ireshark lab  master sudo ipconfig set en0 DHCP
iykon@Weidas-MacBook-Pro ~/Documents/iykon/sfu/2015Fall/CMPT371-Networking/project2/w
ireshark lab  master sudo ipconfig set en0 DHCP
iykon@Weidas-MacBook-Pro ~/Documents/iykon/sfu/2015Fall/CMPT371-Networking/project2/w
ireshark lab  master sudo ipconfig set en0 BOOTP
iykon@Weidas-MacBook-Pro ~/Documents/iykon/sfu/2015Fall/CMPT371-Networking/project2/w
ireshark lab  master sudo ipconfig set en0 DHCP
```

1.



Over UDP.

2.



packet 1: source port is 68, destination port is 67.

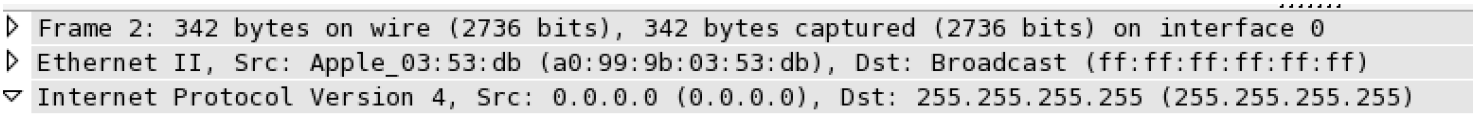
packet 2: source port is 67, destination port is 68.

packet 3: source port is 68, destination port is 67.

packet 4: source port is 67, destination port is 68.

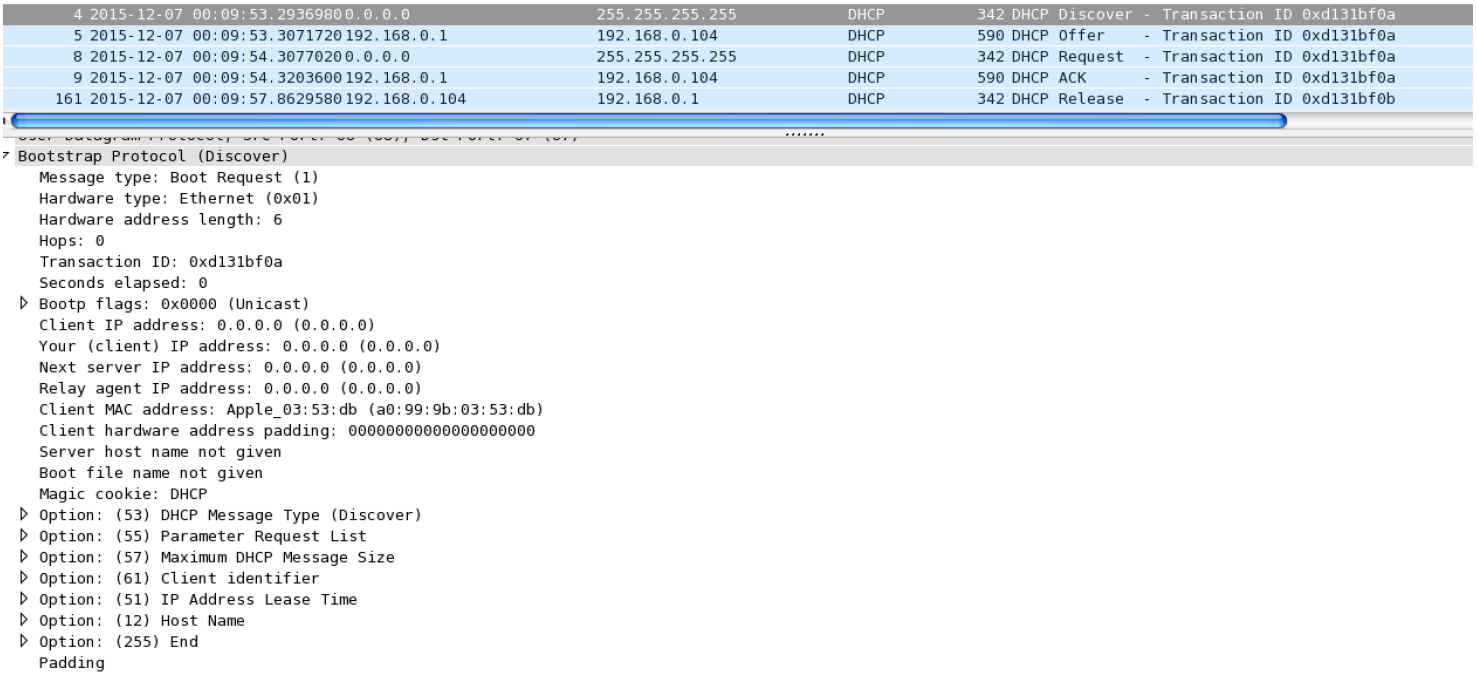
Yes.

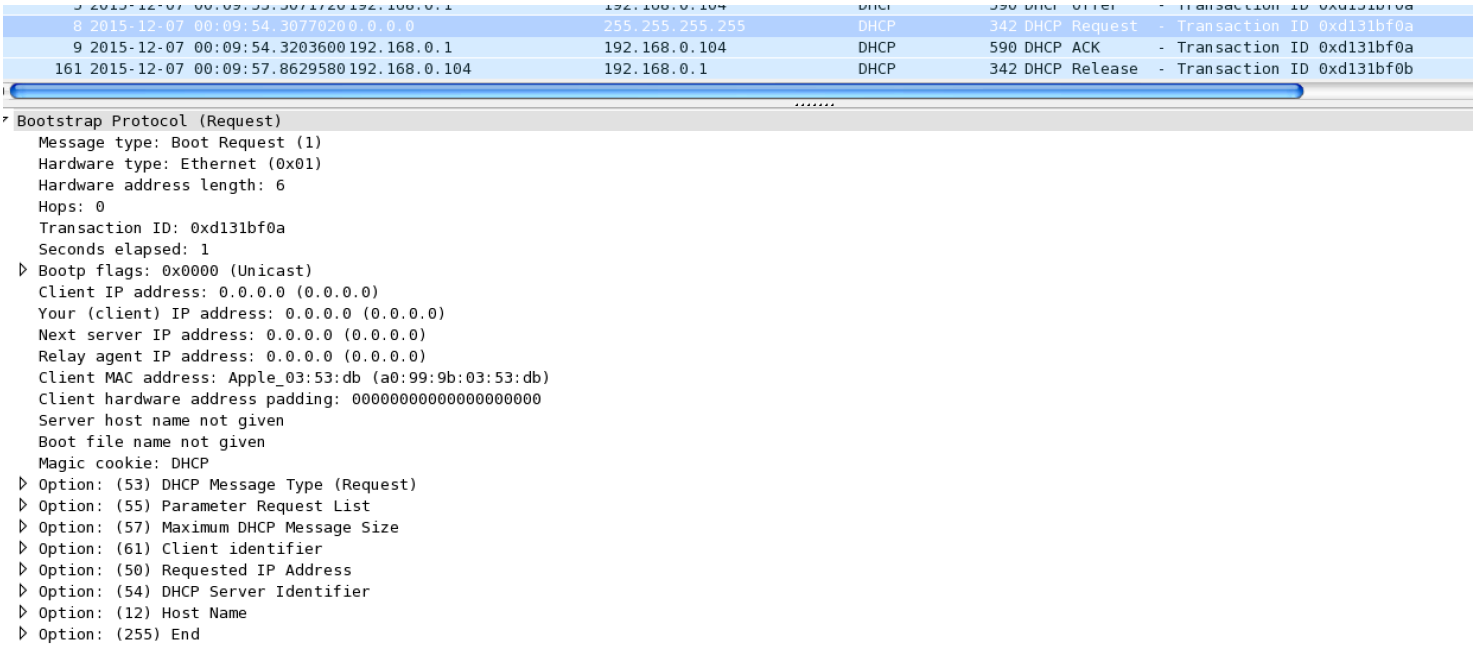
3.



The link-layer address is a0:99:9b:03:53:db.

4.



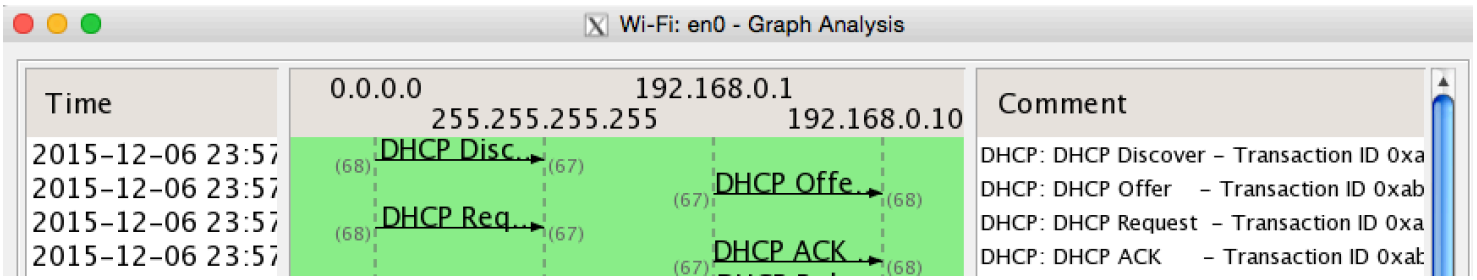


Option 53, one is discover, the other is request.

5.

They are all 0xd131bf0a. The second is 0x20b86883. The purpose is to make four DHCP messages as a serious of segments thus to identify different hosts or different request from one host.

6.



My computer uses 0.0.0.0 as source IP and 255.255.255.255 as destination IP address. The server uses 192.168.0.1 as source IP address and 192.168.0.10 as destination IP address.

7.

Server has IP address 192.168.0.1.

8.

```
    4 2015-12-07 00:09:53.2936980 0.0.0.0          255.255.255.255    DHCP   342 DHCP Discover - Transaction ID 0x
    5 2015-12-07 00:09:53.3071720 192.168.0.1      192.168.0.104      DHCP   590 DHCP Offer    - Transaction ID 0x
    8 2015-12-07 00:09:54.3077020 0.0.0.0          255.255.255.255    DHCP   342 DHCP Request  - Transaction ID 0x
    9 2015-12-07 00:09:54.3203600 192.168.0.1      192.168.0.104      DHCP   590 DHCP ACK      - Transaction ID 0x
  161 2015-12-07 00:09:57.8629580 192.168.0.104    192.168.0.1        DHCP   342 DHCP Release  - Transaction ID 0x
```

```
▷ Frame 5: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits) on interface 0
▷ Ethernet II, Src: D-LinkIn_ac:23:a8 (b8:a3:86:ac:23:a8), Dst: Apple_03:53:db (a0:99:9b:03:53:db)
▷ Internet Protocol Version 4, Src: 192.168.0.1 (192.168.0.1), Dst: 192.168.0.104 (192.168.0.104)
▷ User Datagram Protocol, Src Port: 67 (67), Dst Port: 68 (68)
▽ Bootstrap Protocol (Offer)
    Message type: Boot Reply (2)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 0
    Transaction ID: 0xd131bf0a
    Seconds elapsed: 0
  ▷ Bootp flags: 0x0000 (Unicast)
    Client IP address: 0.0.0.0 (0.0.0.0)
    Your (client) IP address: 192.168.0.104 (192.168.0.104)
    Next server IP address: 0.0.0.0 (0.0.0.0)
    Relay agent IP address: 0.0.0.0 (0.0.0.0)
    Client MAC address: Apple_03:53:db (a0:99:9b:03:53:db)
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
```

Server offers 192.168.0.104 which is in Your (client) IP address field.

9.

```
Next server IP address: 0.0.0.0 (0.0.0.0)
Relay agent IP address: 0.0.0.0 (0.0.0.0)
```

Relay agent IP address being 0.0.0.0 indicates there is no relay agent.

10.

The router information is for cases where client wants to reach network outside the subnet.
The subnet mask is for cases where wants to send request inside subnet.

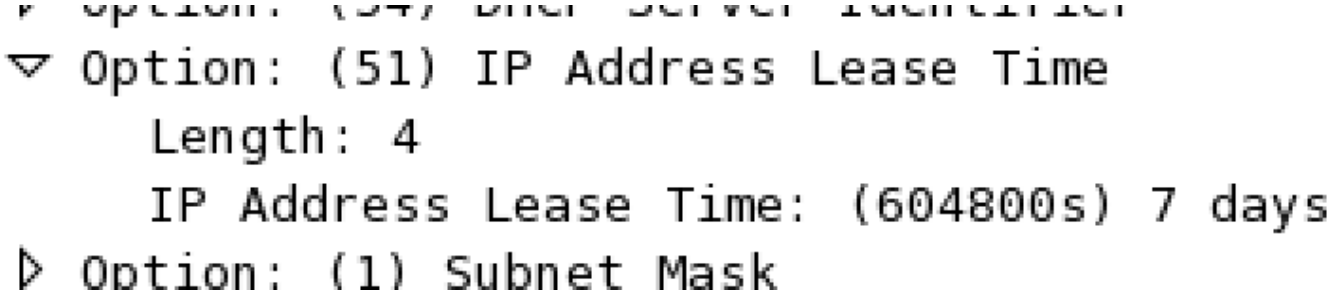
11.

```
    5 2004-08-29 16:57:23.659956 0.0.0.0          255.255.255.255    DHCP   342 DHCP Request  - Transa
    6 2004-08-29 16:57:23.661966 192.168.1.1      255.255.255.255    DHCP   590 DHCP ACK      - Transa
   36 2004-08-29 16:57:35.161011 192.168.1.101    192.168.1.1        DHCP   342 DHCP Request  - Transa
   37 2004-08-29 16:57:35.162763 192.168.1.1      255.255.255.255    DHCP   590 DHCP ACK      - Transa
   41 2004-08-29 16:57:40.100700 192.168.1.101    192.168.1.1        DHCP   342 DHCP Release  - Transa
   42 2004-08-29 16:57:45.895986 0.0.0.0          255.255.255.255    DHCP   342 DHCP Discover - Transa
```

```
▷ Option: (61) Client identifier
▽ Option: (50) Requested IP Address
    Length: 4
    Requested IP Address: 192.168.1.101 (192.168.1.101)
▷ Option: (54) DHCP Server Identifier
▷ Option: (12) Host Name
```

No. It is in packet of Request of request field.

12.



It is the longest time the host can use this IP. After that, the host will have to request for an IP again.
In my experience, the lease time is 7 days.

13.

The purpose of DHCP release message is to tell server this client gives up this IP address so that this IP address can be assigned to other clients. Server doesn't issue an acknowledge. If it is lost, this IP address is not available until lease time is passed.

14.

1	2015-12-07 00:09:51.841808	0D-LinkIn_ac:23:a8	Apple_03:53:db	ARP	42	Who has 192.168.0.104? Tell 192.168.0.1
2	2015-12-07 00:09:52.519399	0.0.0.0	255.255.255.255	BOOTP	342	Boot Request from a0:99:9b:03:53:db (Apple_03:53:db)
3	2015-12-07 00:09:52.859761	0D-LinkIn_ac:23:a8	Apple_03:53:db	ARP	42	Who has 192.168.0.104? Tell 192.168.0.1
4	2015-12-07 00:09:53.293698	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0xd131bf0a
5	2015-12-07 00:09:53.307172	0192.168.0.1	192.168.0.104	DHCP	590	DHCP Offer - Transaction ID 0xd131bf0a
6	2015-12-07 00:09:53.883814	0D-LinkIn_ac:23:a8	Apple_03:53:db	ARP	42	Who has 192.168.0.104? Tell 192.168.0.1
7	2015-12-07 00:09:54.021574	0fe80::a299:9bff:fe03:53db	ff02::fb	MDNS	603	Standard query response 0x0000 TXT, cache flush PTR _ssh.
8	2015-12-07 00:09:54.307702	00.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0xd131bf0a
9	2015-12-07 00:09:54.320360	0192.168.0.1	192.168.0.104	DHCP	590	DHCP ACK - Transaction ID 0xd131bf0a

Yes, there were some ARP messages. The purpose is to make sure there is no other client using a certain IP address before server offers it to one client.