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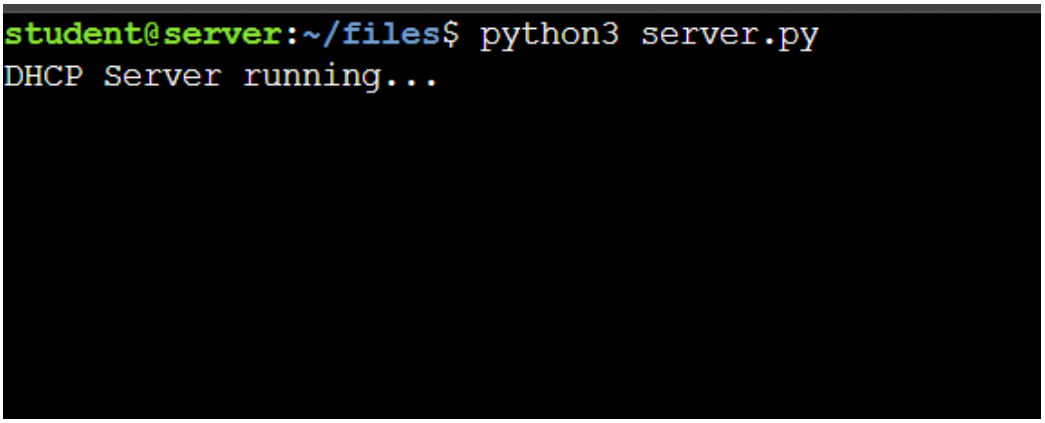
CS 436 DHCP Project

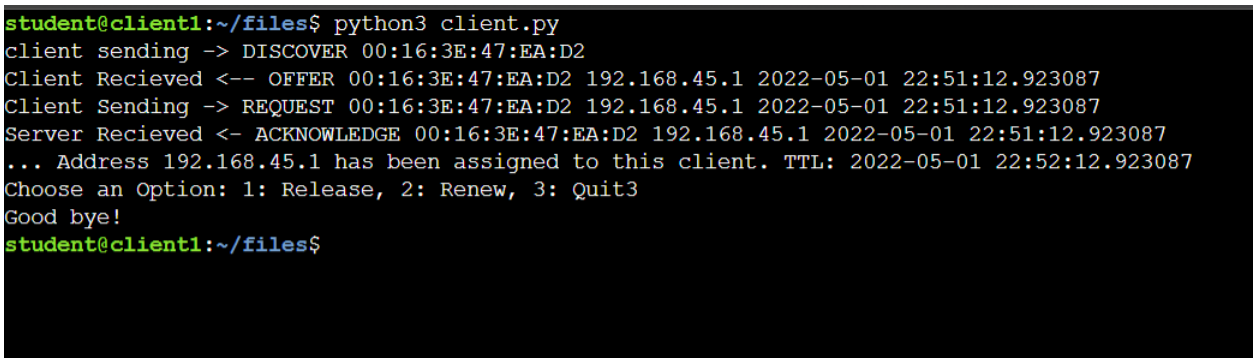
Submitted Files:

- *Server.py*
- *Client.py*
- *Admin.py*

1. Run the server on server.



2. Run the client on client1. Make sure that the client receives the first available IP address. The menu will be displayed for the client. Choose **quit**.



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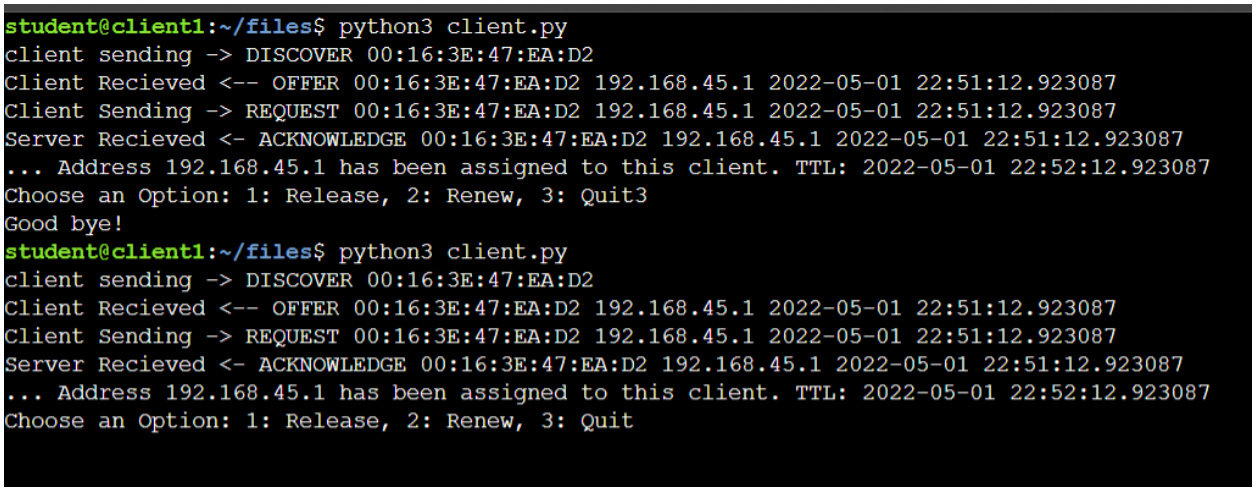
3. Now we want to make sure that the same client cannot receive a new IP address from another terminal. Run the client on client1 again. Make sure that the server verifies that the client already has an IP address x.x.x.x. The menu will be displayed for the client.



4. Run the client on client2. Now make sure that client2 receives the next available IP address. The menu will be displayed for the client. Wait for 10 seconds and then choose **renew**. Make sure the server immediately sends an ACKNOWLEDGE and renews the timestamp. Then, the menu will be displayed again. Wait for 1 minute and then choose **renew**. Make sure that you go over DISCOVER-OFFER-REQUEST-ACKNOWLEDGE, get the same IP address and a new lease time. Then, the menu will be displayed again. Now, choose **quit**.

```
student@client2:~/files$ python3 client.py
client sending -> DISCOVER 00:16:3E:25:3F:A9
Client Recieved <-- OFFER 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:12.503601
Client Sending -> REQUEST 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:12.503601
Server Recieved <- ACKNOWLEDGE 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:12.504045
... Address 192.168.45.3 has been assigned to this client. TTL: 2022-05-01 23:47:12.504045
Choose an Option: 1: Release, 2: Renew, 3: Quit2
Renew Selected
Client sending -> RENEW 00:16:3E:25:3F:A9 10.0.0.100 2022-05-01 23:46:12.504045
Server Recieved <- ACKNOWLEDGE 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:23.174305
... Address 192.168.45.3 has been assigned to this client. TTL: 2022-05-01 23:47:23.174305
Choose an Option: 1: Release, 2: Renew, 3: Quit2
Renew Selected
Client sending -> DISCOVER 00:16:3E:25:3F:A9
Client Recieved <-- OFFER 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:23.174305
Client Sending -> REQUEST 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:46:23.174305
Server Recieved <- ACKNOWLEDGE 00:16:3E:25:3F:A9 192.168.45.3 2022-05-01 23:47:28.652223
... Address 192.168.45.3 has been assigned to this client. TTL: 2022-05-01 23:48:28.652223
Choose an Option: 1: Release, 2: Renew, 3: Quit
```

5. Run the admin client on admin to display the list of current clients. Make sure that the list contains the 2 current clients.

```
student@admin:~/files$ python3 admin.py
Admin Sending -> LIST
Admin Received <- IP: 192.168.45.1 MAC:00:16:3E:47:EA:D2  ACKED: True  EXPIRATION: 2022-05-01 23:01:12.473827

Admin Received <- IP: 192.168.45.3 MAC:00:16:3E:C3:31:73  ACKED: True  EXPIRATION: 2022-05-01 23:01:21.002171
```

6. On client1, choose **release**. client1 will display a proper message and the menu. Make sure that the server has released the client's IP address. The server should display a message on the screen indicating that.

```
student@client1:~/files$ python3 client.py
client sending -> DISCOVER 00:16:3E:47:EA:D2
Client Recieved <-- OFFER 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
Client Sending -> REQUEST 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
Server Recieved <- ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
... Address 192.168.45.1 has been assigned to this client. TTL: 2022-05-01 23:04:43.932882
Choose an Option: 1: Release, 2: Renew, 3: Quit1
Release Selected
Choose an Option: 1: Release, 2: Renew, 3: Quit
```

```
student@server:~/files$ python3 server.py
DHCP Server running...
Server Recieved <- DISCOVER 00:16:3E:47:EA:D2
Server Sending -> OFFER 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
Server Recieved <- REQUEST 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
Server Sending -> ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:03:43.932882
Server Recieved <- RELEASE 00:16:3E:47:EA:D2 10.0.0.100 2022-05-01 23:03:43.932882
Server Sending -> released
```

7. Run the admin client on admin to display the list of current clients. Make sure that the list contains only client2.

```
student@admin:~/files$ python3 admin.py
Admin Sending -> LIST
Admin Received <- IP: 192.168.45.3 MAC:00:16:3E:C3:31:73  ACKED: True  EXPIRATION: 2022-05-01 23:07:39.644719
```

8. On client1, again choose **release**. Client1 will display a proper message and the menu. Make sure that the server verifies that the IP address has already been released. The server should display a message on the screen indicating that.

```
student@server:~/files$ python3 server.py
DHCP Server running...
Server Recieved <- DISCOVER 00:16:3E:47:EA:D2
Server Sending -> OFFER 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:16:33.730333
Server Recieved <- REQUEST 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:16:33.730333
Server Sending -> ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:16:33.73033
Server Recieved <- RELEASE 00:16:3E:47:EA:D2 10.0.0.100 2022-05-01 23:16:33.730333
Server Sending -> released
Server Recieved <- RELEASE 00:16:3E:47:EA:D2 10.0.0.100 2022-05-01 23:16:33.730333
Server Sending -> alreadyreleased
```

9. Run the admin client on admin to display the list of current clients. Make sure that the list contains only the client on client2.

```
student@admin:~/files$ python3 admin.py
Admin Sending -> LIST
Admin Received <- IP: 192.168.45.3 MAC:00:16:3E:C3:31:73  ACKED: True  EXPIRATION: 2022-05-01 23:07:39.644719
```

10. On client1, choose **renew**. Make sure that the server assigns the same IP address as before to client1 and replies to the client. The server should display a message on the screen indicating that. Then client1 displays a proper message and the menu. Choose **quit**.

```
student@client1:~/files$ python3 client.py
client sending -> DISCOVER 00:16:3E:47:EA:D2
Client Recieved <-- OFFER 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
Client Sending -> REQUEST 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
Server Recieved <- ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
... Address 192.168.45.1 has been assigned to this client. TTL: 2022-05-01 23:39:18.631199
Choose an Option: 1: Release, 2: Renew, 3: Quit2
Renew Selected
Client sending -> RENEW 00:16:3E:47:EA:D2 10.0.0.100 2022-05-01 23:38:18.631199
Server Recieved <- ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:22.097833
... Address 192.168.45.1 has been assigned to this client. TTL: 2022-05-01 23:39:22.097833
Choose an Option: 1: Release, 2: Renew, 3: Quit3
Good bye!
student@client1:~/files$
```

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```
student@server:~/files$ python3 server.py
DHCP Server running...
Server Recieved <- DISCOVER 00:16:3E:47:EA:D2
Server Sending -> OFFER 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
Server Recieved <- REQUEST 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
Server Sending -> ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:18.631199
Server Recieved <- RENEW 00:16:3E:47:EA:D2 10.0.0.100 2022-05-01 23:38:18.631199
Server Sending -> ACKNOWLEDGE 00:16:3E:47:EA:D2 192.168.45.1 2022-05-01 23:38:22.097833
```

11. Run the admin client on admin to display the list of current clients. Make sure that the list contains the 2 current clients.

```
Admin Sending -> LIST
Admin Received <- IP: 192.168.45.1 MAC:00:16:3E:47:EA:D2  ACKED: True  EXPIRATION: 2022-05-01 23:44:01.973248

Admin Received <- IP: 192.168.45.3 MAC:00:16:3E:C3:31:73  ACKED: True  EXPIRATION: 2022-05-01 23:44:07.782526
```

12. Release IP addresses of both client1 and client2. Then, run the admin client on admin. Make sure that the list replied by the server indicates that both clients have released their IP addresses.

```
student@admin:~/files$ python3 admin.py
Admin Sending -> LIST
Admin Received <- CLIENTS HAVE RELEASED IPS / NO CLIENTS
```