CNT4007C Computer Networks, Fall 2019
Instructor: Prof. Ahmed Helmy
Lab 2 & 3 (addendum to Hwk 2 & 3)
On UPD and TCP socket programming, MAC and IP addresses, wireshark
Due Date: Nov 21th, 2019 on Canvas *before* **midday** 11:59**am**
Please also provide an exact hard copy (in class or during the TA office hours)

Perform the following experiments with a clear brief description of each experiment and its outcome:

Q1. Write a program in python to open a UDP socket between a client and a server, then use wireshark to monitor the packets sent. [Hint: Write a small program for the UDP client side and another for the server side. Use parts of the code in your book pages 159-164]. Include in the message your name, and the city of your birth place. Use port number that is the last 4 digits of your UFID. Explain the address and port numbers used.

Q2. Write a program in python to open a TCP socket between a client and a server, then user wireshark to monitor the packets sent. [Hint: Write a small program for the TCP client side and another for the TCP server side. Use parts of the code in your book pages 164-170]. Include in the message your name, and the city of your birth place. Use port number that is the last 4 digits of your UFID. Explain the address and port numbers used.

Q3. Show the ARP table of your machine and describe it.

Q4. Show the mac addresses for the interfaces of your machine and the ip addresses using ifconfig (or ipconfig), and the routing tables using netstat (or other) commands.

Q5. Extra points (optional): suggest up to three related 'original' experiments (each with up to three short well-defined tasks) to use networking tools or commands to understand socket programming, UDP, TCP, MAC, IP addresses, or ARP/routing tables. Make them clear, brief and include short sample answers. Label them clearly as well (1. a, b, c. and 2. a, b, c, 3. …). Provide references and/or websites as appropriate.

For all the above questions, please submit your scripts/code and text of the output when possible (or screenshots for wireshark).

Hint: for wireshark please see Lab1 (part of Hwk1) and its published solution, if you have not seen it yet.