Networks   Homework 7 (Due Friday 10/9/2020)

1. True or False.

   (a) The number of IPv4 addresses is greater than the population of the world.

   (b) The class-based system of IP addresses was abandoned in part because there was too much of a gap in size between Class B and Class C networks.

   (c) The Ford Motor Company has a /8 network.

2. In 2014, `python.org` used to be at a different IP address than it is now. Which of the following was it?

   (a) 192.168.5.14   (b) 104.130.43.121   (c) 10.243.197.201   (d) 145.33.347.99

3. You check your IP address at home and it's 192.168.1.19. Your friend at her house checks her IP and it's 192.168.1.109. You send a message to 192.168.1.109. Who will get it?

   (a) Your friend

   (b) A computer on your network, if there is one at that address

   (c) You, because that's a loopback address

4. In the old class-based system of IP addresses, if you had the address range 150.12.0.0 to 150.12.255.255, would that be a class A, B, C, D, or E?

5. Only one of these addresses is an address of a server on the internet that you can access from just about anywhere. Which is it? 0.0.0.5, 10.14.99.104, 172.16.1.14, 192.168.14.99, 208.94.118.181, 251.18.187.5, 304.11.19.9.

6. Suppose we are on the Mount's network and we ping the following addresses: (a) 10.0.3.1, (b) 127.0.0.1, (c) 195.208.1.105. Assuming all three are responding to pings, order them from the likely shortest to longest response times.

7. Write the address range 224.0.0.0 – 239.255.255.255 in CIDR notation.

8. In IPv4 CIDR notation, what is the smallest possible network large enough to accommodate 400 hosts? [Your answer should be of the form "/xx".]

9. Suppose you have a /18 network. You decide to use 6 bits of the host portion of the address to create subnetworks. How many subnetworks are possible this way and how many hosts will there be possible on each?

10. Consider the address 12.144.96.49 on a /18 network.

    (a) How many bits of the addresses are for the network and how many for the host?

    (b) Write the subnet mask in binary.

    (c) Write the subnet mask in decimal.

    (d) Find the lowest possible address on this network in decimal notation.

    (e) Find the highest possible address on this network in decimal notation.

11. A router of mine uses the IP address range starting with 10.0.0.0 with a subnet mask of 255.255.240.0. What is the highest possible address in this range?

12. Suppose we want to break the network 10.0.0.0/8 into subnets of 8192 hosts. List the ranges of addresses in each of the first 3 subnets.