CMPE101 – Fall 2013
Homework for the Hands-On-Activity #4 Part 2 of 2

A network is a group of two or more computer systems linked together to exchange data and share resources, including peripheral devices such as printers and scanners. Typically, computer networks are established for businesses and organizations. There are two major types of networks: Local Area Networks (LAN) and Wide Area Networks (WAN).

With the advancements in Internet technology, establishing networks also became simple. Actually, if you have an internet connection at home, you do have a local area network at home, even if you are not using it with full capability. After all, you should have a router which receives the internet connection from your service provider and at least one computer connected to your router to access internet. This makes a small network!

We discussed in one of our previous lectures that communication through internet is possible through TCP/IP protocol. Each computer connected to internet should have a unique Internet Protocol (IP) address. An IP address is a numerical label assigned to each device (e.g., computer, printer, smart phone) participating in a computer network that uses the Internet Protocol for communication. Your IP address is something you probably rarely think about, but it's vitally important because it makes you connected to internet.

In order to meet the requirements of this assignment, we ask you to analyze the LAN at your home by following these steps:

1. Draw the network topology of your LAN. Example topology drawings are given in Figures 7.8 and 7.9 on page 315 of your text book (also given below). Please do not forget to draw all devices (computers, laptops, smart phones, tablets, printers, scanners, TV, Xbox etc.) that are present in your LAN. Also indicate your service provider on this figure as an access point connected to your modem (or router) at home.
2. Find the IP address of your computer using the web site http://whatismyipaddress.com/. When you enter that web site, your IP address will be displayed directly.
3. Find the IP addresses of each device on your LAN. For a computer with Windows operating system, first open a command prompt window (read http://www.computerhope.com/issues/chdos.htmor watch http://www.youtube.com/watch?v=foYsmpDrYjY to see how you can do this). Then, type "ipconfig" to find out the IP address of that computer. An example screen shot from a computer whose IP address is 10.10.3.24 would look like:

For mobile devices operating with Android or iOS, you should locate the IP address information somewhere under the "Settings".

4. Indicate the IP addresses of your modem and each device on the drawing you produced at step 1.
5. Use the "traceroute" tool to trace your network connection at http://whatismyipaddress.com/traceroute-tool. You should type (or copy and paste) the IP address you found in Step 2 on the text box you will see next to the Treceroute button on this site.
6. Print the page you see after you click on the Traceroute button and bring it to class on Wednesday.
7. Open a command window again and use "ping" command to find out the IP address of a web site that you frequently use (read the explanations that can be accessed at http://compnetworking.about.com/od/workingwithipaddresses/ss/how-to-ping-the-ip-address-of-a-computer_3.htm to get more information about the ping command). Use the traceroute tool to create the network table for this site. Print this page and bring it to class on Wednesday.

Before coming to class on Wednesday November 20, you should complete the above steps and prepare a report consisting of (i) the drawings of your home LAN including the IP number of each device connected (steps 1-4), (ii) traceroute table for your home LAN (the printout you generated at step 5), and (iii) the traceroute table for the web site of your choice (the printout you generated at step 6). We will refer to these reports and examine them during the lecture, and collect them for grading at the end of the lecture. In the second hour, we will form groups for discussing a topic that will be assigned in class. Your group work will also be graded.
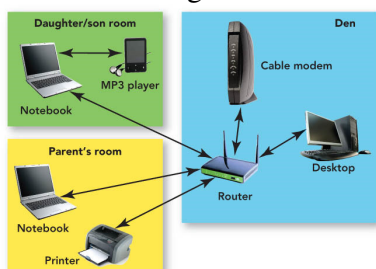
Figure 7.8

Figure 7.9