The idea of this class is to use some of the ideas mentioned in class 37 and to actually hook up two computers together in a LAN (Local Area Network) through a cheap router (e.g. Linksys).

To start with we will concentrate only on wired access but if there is time at the end you can perform the same process to create a wireless network.

For simplicity have each computer fetch an IP address from the DHCP server on the router.

At this point you need to do a quick review of the basic networking concepts (e.g., packets, IP addresses, MAC addresses, DNS, etc)

Messages are passed across a network in packages called packets.
IP addresses uniquely identify a node on the network.
A MAC address is used to uniquely identify the physical device that allows anode to connect to a network
DNS is a service that provides an IP address for a given name.
Briefly go over the in class example of passing packets from a source to a destination to make sure that everyone is back on the same page.

At this point have two students connect their computers to the router using network cables. Once the cables are connected then have the students turn on the router (plug it in) and then after the router has started have them boot up their computers.

After you connect two computers to the router and have booted them have the students determine their IP addresses
       On Mac and Unix flavors
              Open up an xterm window and type 'ifconfig'
       On Windows
              Open up a DOS prompt and type 'ipconfig /all'

Also, have the students test their connections by running the ping command giving the others computer as the destination address.
       On Mac and Unix flavors
               Open up an xterm window and type 'ping <ip>'
       On Windows
              Open up a DOS prompt and type 'ping <ip>'
Where <ip> is the other students computer IP address that they determined above.

Now setup a simple web server on one computer. There are several out there, try the Abyss Web Server by Aprelium (www.aprelium.com). Nice documentation online to set it up. All we are looking for here is a simple webpage to appear, nothing fancy.

Now using the second computer, connect to the web server using the IP address as the URL. Because we do not have a DNS server we cannot use a name in our URL. At this point the second computer should see the web page from the web server on computer one.

Now, setup a firewall on the computer that houses the server. There are several firewalls that are free online to download. I would suggest using ZoneAlarm (www.zonealarm.com) for a Windows machine or iptables on a Unix machine.

Without setting up any blocking test communication again from the second computer. Everything should still work as before. Now block the port that the web server is running on (port 80). Test the communication again. This time it should not work because the computer is blocking the port and not allowing any messages to come through.

If there is still time remaining in the class you can complete the same process only this time using a wireless connection as opposed to wired.