1. **[Join the Slack team.]** You should have received an email invitation to join the Slack team for CMPSC 381. Accept the invitation and log on to Slack. (We will be using Slack for in-class exercises throughout the semester. I will also use this as one way to keep track of attendance.)

2. **[A Simple Chat Room.]**
   
   (a) Choose a partner. (You can’t do this exercise alone—it takes two.) One of you will start the process—choose which one of you it will be.
   
   (b) The initiator must determine his or her IP address and share it with his or her partner. If you don’t know how to do this, look at the following web page:
   
   
   (c) The initiator then opens a terminal window and types the command:
   
   ```
   nc -l 12345
   ```
   
   (That’s the letter “ell,” not the digit “one”)
   
   The partner also opens a terminal window and types the command:
   
   ```
   nc partner’s-IP-address 12345
   ```
   
   Now the two of you just type. When you get bored with this, either person may enter a new line containing just the CTRL-D character to end the process.
   
   (d) In the Slack “General” channel, add a quick note just saying whether you found this example interesting, boring, or whatever other reaction you had to it. What do you think is the significance of the number “12345”?

3. **[Direct Connection to a Web Server.]**
   
   (a) In a terminal window, type the following command and wait for a response:
   
   ```
   telnet cs.allegheny.edu 80
   ```
   
   (b) When you receive a response, type the following commands, followed by a blank line:
   
   ```
   GET /sites/rroos/cs381s2016/ HTTP/1.1
   Host: cs.allegheny.edu
   ```
   
   (c) If you are not a fast or accurate typist, you may find that the connection times out before you have had time to type everything in. In that case, I suggest that you type in the commands (starting with GET) into a separate document, copy those lines into your clipboard, and then paste them into the terminal window when the server responds. Don’t forget the extra blank line!
(d) If you did not see the HTML for this course’s web site, try again! Once you’ve succeeded, try changing the format of the commands (for instance, using “Get” instead of “GET” or adding or removing spaces). What changes “break” the example? Enter your answers in the “General” channel of the Slack page.

4. (a) [HTTP Headers.] Do the same thing, but add one more line after the “Host:” line:

        Range: bytes=1168-1233

(b) In the “General” channel of the Slack team, add a short note containing everything that was printed out in response to the above. If it doesn’t make sense, maybe you did something wrong—try again.

(c) [Optional, if you have time.] What value of the “Range:” header would be needed to display only the words “Office Hours for Spring 2016”? Post your answer to the “General” channel.