CS2105 **Tutorial 3** Semester 2 AY18/19

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1. Launch your browser and open its network diagnostic tool (e.g. press F12 if you use Chrome on Windows, or Cmd + Opt + I for Mac). Then click the "Network" tab to observe network communication.
   Copy-and-paste the following URL in the address bar of your browser:
   http://tiny.cc/nc4xiy

   Enter your choice and press the "Submit" button.

   a) Look at the entry named "formResponse". What is the HTTP request method issued?

   b) Briefly explain when HTTP POST and GET methods are used.

2. **[KR, Chapter 2, P21]** Suppose that your department has a local DNS server for all computers in the department. You are an ordinary user (i.e., not a network/system administrator). Can you determine if an external Web site was likely accessed from a computer in your department a couple of seconds ago? Explain.

3. You are given 4 programs: **TCPEchoServer.py**, **TCPEchoClient.py, UDPEchoServer.py** and **UDPEchoClient.py**. On sunfire,

   a) Suppose you run **TCPEchoClient** before you run **TCPEchoServer**. What happens? Why?

   b) Suppose you run **UDPEchoClient** before you run **UDPEchoServer**. What happens? Why?

4. **[KR, Chapter 3, R7]** Suppose a process in Host C has a UDP socket with port number 6789. Suppose both Host A and Host B each send a UDP segment to Host C with destination port number 6789. Will both of these segments be directed to the same socket at Host C? If so, how will the process at Host C know that these two segments originated from two different hosts?

5. **[Modified from KR, Chapter 3, Problem 4]**

   a) Suppose you have the following 2 bytes: `01011100` and `01100101`. What is the 1s complement of the sum of these 2 bytes?

   b) Suppose you have the following 2 bytes: `11011010` and `01100101`. What is the 1s complement of the sum of these 2 bytes?

   (Note: UDP and TCP use 16-bit words in computing their checksums. For simplicity you are asked to consider 8-bit checksums in this problem).

6. **[Modified from KR, Chapter 3, Problem 5]** Suppose that UDP receiver computes the checksum for the received UDP segment and finds that it matches the value carried in the checksum field. Can the receiver be absolutely certain that no bit errors have occurred? You may use Q5 as an example to explain.

7. Why is it that UDP takes 1's complement of the sum as checksum, i.e., why not just use sum? With the 1s complement scheme, how does the receiver detect errors?

8. Your tutor will discuss Assignment 1 with you. Do you have any question to clear?