CSCI-P 538 Fall 2016 Homework 3

A Deadline

December 3 2016 23:59:59 EST. This is a hard deadline and no extension will be given. Any clarification queries should be sent to `p538fall16-l@list.indiana.edu`.

B Homework Guideline

1. Describe the reasoning process of how you reach your final solution. You receive no credit by only submitting a final answer.
2. Write down the problem number (**Ch*x* P*y***, which means the y-th problem in Chapter x) before each of your solutions.
3. Submit a single document to Canvas before the deadline. Acceptable formats are PDF (preferred), Microsoft Word, and text. Only electronic submission is allowed.
4. Note we are using the 6th edition of the textbook instead of the 7th edition.

C Problem Description

Please work on the following problems in the "Problem" section of Chapter 4 and 5:

- **Ch4 P11** (15 pts).
- **Ch4 P13** (10 pts).
- **Ch4 P21** (15 pts) [You can assign IP addresses and port numbers in any legitimate way].
- **Ch4 P26** (15 pts).
- **Additional Problem** (20 pts).
  Consider the network in Figure 4.31a with three routers x, y, and z. The link costs are $c(x, y) = 4$, $c(y, z) = 1$, and $c(x, z) = 50$. Suppose we now increase $c(y, z)$ from 1 to 100. Note $c(x, y) = 4$ remains the same.
  (a) Demonstrate the count-to-infinity problem by simulating the distance-vector algorithm until the distance vectors reach a stable state. Assume z is the only destination so you only need to keep track of $D_y(z)$ and $D_x(z)$ maintained by x and y.
  (b) Repeat (a) using poisoned reverse. Demonstrate how the count-to-infinity problem is addressed.
- **Ch5 P2** [10pts].

- **Ch5 P5** [5pts, this is about CRC].
- **Ch5 P14** [20pts, You can assign IP and MAC addresses in any legitimate way].
- **Ch5 P15** [21pts].
- **Ch5 P18** [10pts, A minimum-sized frame has 576 bits = 64 bits (preamble) + 96 bits (src/dst MAC addresses) + 16 bits (type field) + 368 bits (data, see Page 471) + 32 bits (CRC)].
- **Ch5 P26** [12pts].

D Honor Code

Students must follow the IU honor code (`http://www.iu.edu/~code/code/responsibilities/academic/index.shtml`). This homework is an individual assignment, and no collaboration among students is allowed. In no case may your solution be copied from another student or a third-party source. Any violations of the honor code will be dealt with strictly, including but not limited to receiving no credit for the entire homework.