CPSC 320 Assignment #7

March 23, 2015

Due date: Wednesday, 2015/04/08 at 5PM

Note the **unusual due date**!

This will be our last **required** assignment. (We'll likely also post some interesting problems to try out over exam period.)

Staple your solution behind the CPSC 320 cover page and submit in our handin box.

We guarantee that we will mark at least one sub-part of each question. (I.e., one of the "places" in the first problem and one of the listed steps of the second problem. Be sure to make the distinctions between these steps clear!)

1. Identify two places where this interesting article's coverage of NP-completeness and computational complexity is either incorrect or incomplete in important (and significantly different) ways. (You can find the article at http://goo.gl/pQ04b3.)

   Be sure to (1) include a quotation from the article that you will critique and (2) explain the problem with the quotation with respect to the concept of NP-completeness or computational complexity. (You should write your critique as if it is to the author and therefore be clear but polite and constructive.)

   Please do not submit critiques of the physics. We're not qualified to assess such critiques except to say they don't fulfill the requirements of the assignment! :)

   WARNING: Commentators have critiqued several aspects of the article already. We ask that you do not read these until you've completed your assignment; copying any of these comments will constitute academic misconduct for this assignment. There are two additional problems with copying these comments. First, many of the critiques are unnecessarily rude. Second, several of the critiques are technically inaccurate.

2. Solve 8.34. Specifically: (1) show this problem is in NP, (2) describe a reduction that shows this problem is NP-complete, (3) justify that your reduction takes polynomial time (not counting solving the underlying problem, of course!), and (4) show that the solution to the original problem is `YES` if and only if the solution to the underlying problem is `YES`.

   This is a tremendously long problem, but most of the text is unnecessary. . . except that this is a keenly relevant and deeply cool problem in modern social networks! (Want to know more? Try searching for "submodular functions and influence maximization".)

   We'll post some suggestions on Piazza.