Take Home Final Exam

due Monday, March 16, 2020

Turn in seven problems as described below.

**greedy - div&con** Do two of questions 1, 2, or 3.

**dynprog** Do two of questions 4 through 7.

- Describe subproblem and recurrence.
- Describe desired output in terms of subproblem (e.g. max\{OPT_A(n), OPT_B(n)\}).
- Typeset recurrence very nicely.
- Do not give code.
- Note the time and space that would be used if you did have code.

**npcomp** Do three of the problems given by questions 8 or 9

1. exercise 4 of chapter 4, pp 190, show correctness of greedy choice
2. exercise 6 of chapter 4, p 191, show correctness of greedy choice
3. exercise 1 of chapter 5, p 246
4. exercise 8 of chapter 6, pp 319-20
5. exercise 9 of chapter 6, pp 320-21
6. exercise 20 of chapter 6, p 329-30
7. exercise 24 of chapter 6, p 331-2
8. Let $B \in NP \cap coNP$. That is, there are short proofs (in the NP-sense) of both membership and non-membership for the set $B$. Show that $NP^B \subseteq NP$.
9. Any of exercises 3, 5, 8, 9, 10, 11 of chapter 8, pp 505-10