

MA/CSSE 473 – Design and Analysis of Algorithms

Homework 10 (37 points total)

These are to be turned in as hard copy. You can write solutions out by hand, or write them on your computer and print them. If there are multiple pages, please staple them together.

When a problem is given by number, it is from the textbook. 1.1.2 means “problem 2 from section 1.1” .

Problems for enlightenment/practice/review (not to turn in, but you should think about them):

How many of them you need to do serious work on depends on you and your background. I do not want to make everyone do one of them for the sake of the (possibly) few who need it. You can hopefully figure out which ones you need to do.

- 5.5.4 (multiplication à la Russe)
- 5.5.7 (Josephus problem for $N=40$)
- 5.5.9 (Prove properties of Josephus solutions)

Problems to write up and turn in:

1. (12) 5.5.3 (fake coin divide-into-three) Levitin made me do it!
2. (5) Which permutation immediately follows 37246510 in lexicographic order?
Show how you use the algorithm from Day 21 class to get your answer.
3. (5) If the permutations are numbered from 0 to $8!-1$, What is the (lexicographic ordering) sequence number of the permutation 37246510?
4. (5) Which permutation of 01234567 is number 25000 in lexicographic order?
5. (10) 5.6.10a (moldy chocolate)

Don't forget to work on the Quickhull implementation problem