

# MA/CSSE 473 – Design and Analysis of Algorithms

## Homework 7 (58 points total) Updated for Winter, 2017

When a problem is given by number, it is from the Levitin 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.

- 4.3.1 [5.4.1] (Reasonableness of generating all permutations, subsets of a 25-element set)
- 4.3.9 [5.4.9] (Generation of binary reflected Gray Code based on bit-flipping)
- 5.1.1 [4.1.1] (divide-and-conquer array max for unsorted array)
- 5.1.2 [4.1.2] (divide-and-conquer array max/min for unsorted array)

### Problems to write up and turn in:

1. ( 6) 5.2.8 [4.2.8] (Negatives before positives)
2. ( 8) 5.2.9a [4.2.9] (Dutch National Flag) [do it with a one-pass algorithm for full credit]
3. ( 5) 4.1.4 [5.1.3] (generate power set)
4. ( 9) 4.3.2 [5.4.2] (Examples of permutation generation algorithms)  
You do not have to write any code, but you can do it that way if you wish.
5. (10) 4.3.10 [5.4.10] (Generation of all k-combinations from an n-element set)
6. (10) 4.3.11 [5.4.11] (Generation of binary reflected Gray code based on Tower of Hanoi moves.)
7. (10) 4.3.12 [not in 2<sup>nd</sup> edition] (Fair attraction) See the "problems" document for details.