Programming Assignment 2
Total marks: 10
Deadline: November 4, 11: 59 pm CSE457

Problem 1: Benchmarking Median Finding by Sampling (10 points)

In this assignment, you will be implementing and analyzing the success probability of the median finding by sampling algorithm you saw in class.

1. Implement the randomized median finding algorithm in your favorite programming language. Use the pseudocode in the textbook as a guide.
2. Put the numbers from 1 to 6561 into a list. Then shuffle this list once. Let this shuffled list be called L.
3. Run the randomized median finding algorithm on L 100 times. Make sure you're running the algorithm on the same list. Every run of the algorithm should receive the exact same list as input.
4. Compile the number of times the algorithm fails to find the median. Call this number k.
5. With at most what probability should the median finding algorithm fail on L? Compare this with the number k. Do the theoretical predictions match with the results of your experiments?
6. Prepare a report containing everything you did in this assignment. In particular, your report should address all of the points above.