CS/DSA ALGORITHM ANALYSIS
HW6 PRACTICE PROBLEMS, Sept 26, 2019.

1. Derive the recurrence for the average case complexity for quick-sort and solve it.
Hint: Refer to the Appendix.

2. Prove that the lower bound on sorting n numbers is $\Omega(nlogn)$

3. Derive a Huffman code for the following: a:1, b:1, c:2, d:3, e:5, f:8, g:13.

4. Derive a recurrence for the number P(n) of ways of parenthesizing an expression with n elements.

5. Find the optimal parenthesis and the optimal cost to multiply.
$A|_{10\times 3}\ B|_{3\times 15}\ C|_{15\times 25}\ D|_{25\times 27}$

6. What happens when all the matrices are of the same size in the above problem?

Note: First-mid term exam is on Oct 10, 2019. It will be a closed book exam, calculators are allowed.