CS6363 Design and Analysis of Computer Algorithms

Homework 2

Assigned: Wednesday 2/16/2022 **Due:** 11:59PM, Thursday, 2/24/2022

Please write your solutions in detail and submit them ".pdf", ".docx" or "doc" format. If it is necessary to design an algorithm for a question, please give only pseudocode; do not provide a computer program implemented in a programming language.

1. Solve the Problem 4.1 (parts b, c, d, e, only) on page 107 from CLRS. **(25 pts)**
2. Exercise 8.1-4 on page 194 from CLRS **(30 pt)**
3. Solve $T(n) = T(n-2) + n^3$ by using the substitution method. **(15 pt)**

   Hint: Use recurrence tree method to make a guess.
4. Design a divide-and-conquer algorithm to compute the factorial of a positive integer n. Set up and solve the recurrence relation for the number multiplications made by your algorithm. **(30 pt)**