CMPT 307 Homework 3
October 7, 2019
Homework is due on Wednesday, October 16, 2019.

1. Practice Problems (Chapter 2 of the text) 2.19, 2.21, 2.22, 2.23, 2.24,2.32

Homework Problems

1. We are given an array A with n integer elements and a number C. Assume that the sum of the elements in A is larger than C.We would like to compute the smallest subset of A whose elements sum to at least C. (For example, if $A = [8, 3, 9, 2, 7, 1, 5]$ and $C = 18$, then the answer is $\{7, 8, 9\}$. Give a linear expected time algorithm for this problem.

2. We are given an array of integers $A[1..n]$. We would like to determine whether there exists an integer x which occurs in A more than $\frac{n}{3}$ times. Give an algorithm which runs in expected $O(n)$ time.

3. We are given two arrays of integers $A[1..n]$ and $B[1..n]$, and a number X. Design an algorithm which decided whether there exist $i, j \in \{1, 2, \ldots, n\}$ such that $A[i] + B[j] = X$. Your algorithm should run in time $O(n \log n)$.

4. Problems 2.17 and 2.24 from the text.