CS222 Homework 2

Exercises for Algorithm Design and Analysis by Li Jiang, 2016 Autumn Semester

1. There are two sorted arrays nums1 and nums2 of size m and n respectively.

   Find the median of the two sorted arrays. The overall run time complexity should be O(log (m+n)).

   Example 1:

   nums1 = [1, 3]

   nums2 = [2]

   The median is 2.0

   Example 2:

   nums1 = [1, 2]

   nums2 = [3, 4]

   The median is (2 + 3)/2 = 2.5

   Input:

   int nums1[]; int m;

   int nums2[]; int n;

   Output:

   double median.

2. Find the contiguous subarray within an array (containing at least one number) which has the largest sum.

   For example, given the array [-2,1,-3,4,-1,2,1,-5,4], the contiguous subarray [4,-1,2,1] has the largest sum = 6.

   Input:

   int A[]: the input array.

   int N: length of A.

   Output:

   return the largest sum.

3. Given a non-empty array containing only positive integers, find if the array can be partitioned into two subsets such that the sum of elements in both subsets is equal.

   Note:

   Each of the array element will not exceed 100.

   The array size will not exceed 200.

Example 1:

Input: [1, 5, 11, 5]

Output: true

Explanation: The array can be partitioned as [1, 5, 5] and [11].

Example 2:

Input: [1, 2, 3, 5]

Output: false

Explanation: The array cannot be partitioned into equal sum subsets.

Input:

int A[]: the input array.

int N: length of A.

Output:

return true or false.