Fall 2021 Rick Ramirez

Computer Science 5300

Advanced Algorithm Design and Analysis

Assignment # 1

Problem 1

Let X(1..n) and Y(1..n) contain two lists of n integers, each sorted in nondecreasing order. Give the best (worst-case complexity) algorithm that you can think for finding
(a) the largest integer of all 2n combined elements.
(b) the second largest integer of all 2n combined elements.
(c) the median (or the nth smallest integer) of all 2n combined elements.
For instance, X = (4, 7, 8, 9, 12) and Y = (1, 2, 5, 9, 10), then median = 7, the nth smallest, in the combined list (1, 2, 4, 5, 7, 8, 9, 9, 10, 12). [Hint: use the concept similar to binary search]

Solution

******* SOLUTION GOES HERE ******* asdf