Q1: You are given two arrays ($A$ and $B$), each of which has $n$ integers sorted in a non-decreasing order. We are interested in finding the integer whose rank is $n$ amongst the $2n$ integers. You can assume that $n = 2^k$, for some positive integer $k$.

a) Give the pseudocode of a brute-force algorithm for this problem. What is the time complexity of your algorithm?

b) Give the pseudocode of a divide-and-conquer algorithm for this problem whose time complexity is $\log n$. 