Assignment #3

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1 Problem 1a

Algorithm for implementing

$$max \sum_{x \in X_1} x, \sum_{x \in X_2} x$$

as specified in the assignment.

1) Choose k largest elements, sorting the elements into two groups in all ways until the most effiecient sorting into two groups (as specified above) is reached. The selection of largest k can be done in $O(k)$. The sorting will take at most $O(2^k)$.

2) For each of the remaining $n-k$ elements, add each element to the group with the lowest sum. This will take $n-k$ steps.

$O(k+2^k)+O(n-k) = O(2^k+n)$