Squares of a Sorted Array

Ke Xu
Electrical and Computing Engineering
Carnegie Mellon University
Pittsburgh, PA 15213
kxu2@andrew.cmu.edu

1 Description

Given an integer array nums sorted in non-decreasing order, return an array of the squares of each number sorted in non-decreasing order.

2 Solution

This problem can be simply solved by sorting. In this case, the time complexity will be O(nlog(n)). We can improve the time complexity by introducing 2 pointers to sort the squared list since the raw list is algready sorted.

1. pointers from the mid point
   Find the index of the minimum element of the squared list. And then use two pointers to read the positive and negative parts of the raw list respectively. Compare the square of the read elements and insert the less one.
2. pointers from the head and tail
   Use two pointers which start from the head and tail of the list respectively to read the positive and negative parts of the list. Campare the square of the read elements and insert the less one to the head of a new list.