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Description Solution Discuss (999+) Submissions

Java Autocomplete

973. K Closest Points to Origin

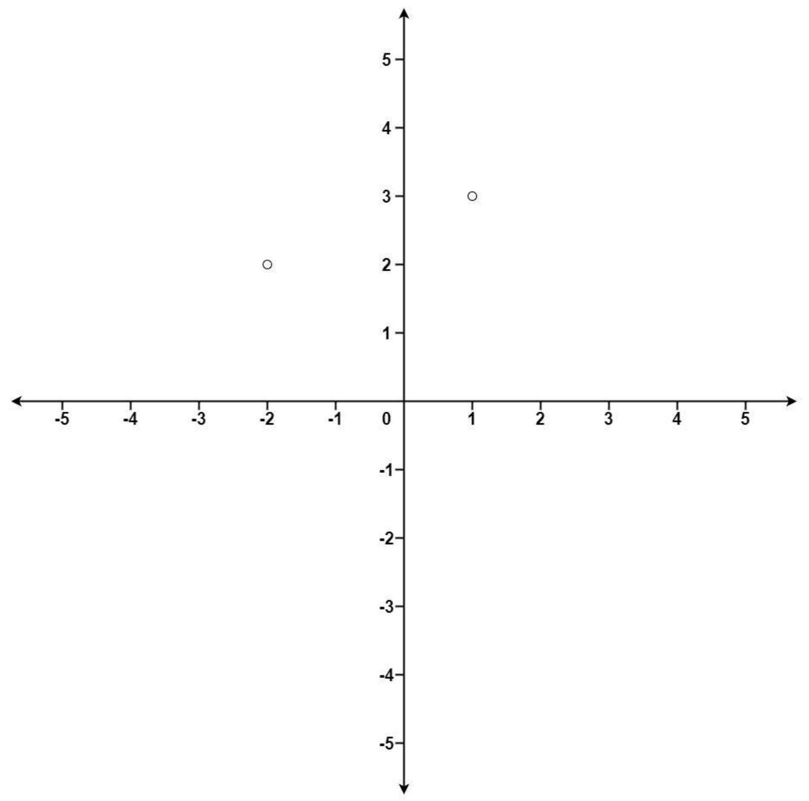
Medium 5145 202 Add to List Share

Given an array of `points` where `points[i] = [xᵢ, yᵢ]` represents a point on the **X-Y** plane and an integer `k`, return the `k` closest points to the origin `(0, 0)`.

The distance between two points on the **X-Y** plane is the Euclidean distance (i.e., $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$).

You may return the answer in **any order**. The answer is **guaranteed** to be **unique** (except for the order that it is in).

Example 1:



```
Input: points = [[1,3],[-2,2]], k = 1
Output: [[-2,2]]
Explanation:
The distance between (1, 3) and the origin is sqrt(10).
The distance between (-2, 2) and the origin is sqrt(8).
Since sqrt(8) < sqrt(10), (-2, 2) is closer to the origin.
We only want the closest k = 1 points from the origin, so the answer is just [[-2,2]].
```

```java
class Solution {

    private double distanceFromRoot( int x, int y ) {
        return Math.sqrt(Math.pow(x, 2) + Math.pow(y, 2));
    }

    public int[][] kClosest( int[][] points, int k ) {

        int[][] kClosestPoints = new int[k][2];
        TreeMap<Double, LinkedList<int[]>> map = new TreeMap<>();

        for (int[] point : points) {
            //Doing this because there can be same key for two different points.
            double distance = distanceFromRoot(point[0], point[1]);
            LinkedList<int[]> list = map.getOrDefault(distance, new LinkedList<>());
            list.add(point);
            map.put(distance, list);
        }

        int count = 0;

        for (Map.Entry<Double, LinkedList<int[]>> entry : map.entrySet()) {

            LinkedList<int[]> list = entry.getValue();

            while (!list.isEmpty() && count < k) {
                kClosestPoints[count] = list.remove(0);
                count++;
            }
        }

        return kClosestPoints;
    }
}
```

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