AlgoExpert Quad Layout C# 12px Sublime Monokai 00:00:00

Prompt Scratchpad Our Solution(s) Video Explanation Run Code

Solution 1

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```
1\, // Copyright @ 2020 AlgoExpert, LLC. All rights reserved.
   using System;
 5 public class Program {
     // Best: O(n) time | O(1) space
      // Average: O(n) time | O(1) space
      // Worst: O(n^2) time | O(1) space
      public static int Quickselect(int[] array, int k) {
10
       int position = k - 1;
11
        return Quickselect(array, 0, array.Length - 1, position);
12
13
      public static int Quickselect(int[] array, int startIdx, int endIdx, int position) {
14
15
16
          if (startIdx > endIdx) {
17
            throw new Exception("Your Algorithm should never arrive here!");
18
          int pivotIdx = startIdx;
19
20
          int leftIdx = startIdx + 1;
          int rightIdx = endIdx;
21
22
          while (leftIdx <= rightIdx) {</pre>
23
            if (array[leftIdx] > array[pivotIdx] &&
24
              array[rightIdx] < array[pivotIdx]) {</pre>
25
              swap(leftIdx, rightIdx, array);
26
27
            if (array[leftIdx] <= array[pivotIdx]) {</pre>
28
              leftIdx++;
29
30
             \textbf{if} \ (\texttt{array}[\texttt{rightIdx}] \ \texttt{>=} \ \texttt{array}[\texttt{pivotIdx}]) \ \{ \\
31
              rightIdx--;
32
33
34
          swap(pivotIdx, rightIdx, array);
          if (rightIdx == position) {
35
            return array[rightIdx];
36
37
          } else if (rightIdx < position) {</pre>
            startIdx = rightIdx + 1;
38
39
40
            endIdx = rightIdx - 1;
41
42
43
44
      public static void swap(int i, int j, int[] array) {
45
46
        int temp = array[j];
47
        array[j] = array[i];
        array[i] = temp;
48
49
50 }
```