AlgoExpert Quad Layout Swift 12px Sublime Monokai 00:00:00

Prompt Scratchpad Our Solution(s) Video Explanation Run Code

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Solution 1
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{\tt 1} {\tt //} Copyright @ 2020 AlgoExpert, LLC. All rights reserved.
 3 class Program {
        // Best: O(nlog(n)) time | O(log(n)) space
        // Average: O(nlog(n)) time | O(log(n)) space
        // Worst: O(n^2) time | O(log(n)) space
        func quickSort(_ array: inout [Int]) -> [Int] {
   quickSortHelper(&array, 0, array.count - 1)
            return array
10
11
        func quickSortHelper(_ array: inout [Int], _ startIndex: Int, _ endIndex: Int) {
12
13
            if startIndex >= endIndex {
14
                return
15
16
17
            let pivotIndex = startIndex
18
            var leftPointer = startIndex + 1
19
            var rightPointer = endIndex
20
21
            while leftPointer <= rightPointer {</pre>
                if array[leftPointer] > array[pivotIndex], array[rightPointer] < array[pivotIndex] {</pre>
22
23
                    swap(&array, leftPointer, rightPointer)
24
25
                if array[leftPointer] <= array[pivotIndex] {</pre>
                    leftPointer += 1
28
29
30
                if array[rightPointer] >= array[pivotIndex] {
31
                    rightPointer -= 1
32
33
35
            swap(&array, pivotIndex, rightPointer)
36
37
            let leftLength = rightPointer - 1 - startIndex
38
            let rightLength = endIndex - rightPointer + 1
39
40
            let leftSubArrayIsSmaller = leftLength < rightLength</pre>
41
42
            if leftSubArrayIsSmaller {
43
                quickSortHelper(&array, startIndex, rightPointer - 1)
44
                quickSortHelper(&array, rightPointer + 1, endIndex)
45
            } else {
                quickSortHelper(&array, rightPointer + 1, endIndex)
46
47
                 quickSortHelper(&array, startIndex, rightPointer - 1)
49
50
51
        func swap(_ array: inout [Int], _ leftPointer: Int, _ rightPointer: Int) {
52
            let temp = array[leftPointer]
53
54
            array[leftPointer] = array[rightPointer]
            array[rightPointer] = temp
56
57 }
```