

Jebot 3.7.2 *

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```
1 import ProgTools.IOTools;
2 import java.util.*;
3
4 public class QuickSortAlgorithm {
5     public static int exchanges;
6
7     public static void main(String[] args) {
8         int array[] = {12,9,4,99,120,1,3,10,23,45,75,69,31,88,101,14,29,91,2,6,77};
9         int i;
10
11         exchanges = 0;
12
13         quickSort(array, 0, 20);
14
15         System.out.println("Sorted Array: ");
16         for (i=0; i<20; i++) {
17             System.out.print(" " + array[i]);
18         }
19         System.out.println(" ");
20         System.out.println("Exchanges: " + exchanges);
21     }
22
23     //
24     // Partition the array into smaller sub-arrays as part of the divide and
25     // conquer strategy of this sort algorithm.
26     //
27     public static int partition(int arr[], int left, int right)
28     {
29         int i = left, j = right;
30         int temp;
31         int pivot = arr[(left + right) / 2];
32
33         while (i <= j) {
34             while (arr[i] < pivot)
35                 i++;
36             while (arr[j] > pivot)
37                 j--;
38             if (i <= j) {
39                 exchanges++;
40                 temp = arr[i];
41                 arr[i] = arr[j];
42                 arr[j] = temp;
43                 i++;
44                 j--;
45             }
46         }
47         return i;
48     }
49
50     public static void quickSort(int arr[], int left, int right) {
51         int index = partition(arr, left, right);
52         if (left < index - 1)
53             quickSort(arr, left, index - 1);
54     }
55 }
```

Method Area

Expression Evaluation Area

Constant and Static Area

Instance and Array Area

CONSTANTS

Sorted Array: 0 1 2 3 4 9 10 12 14 23 29 31 45 69 75 77 88 91 99 101 120
Exchanges: 28

Start

12:41 PM