Online C++ 14 Compiler IDE

Project Name: NP-QuickSort01

```cpp
1   #include <iostream>
2
3   void quickSort(int a[], int first, int last);
4   int pivot(int a[], int first, int last);
5   void swap(int& a, int& b);
6   void swapNoTemp(int& a, int& b);
7   void print(int array[], const int& N);
8
9   using namespace std;
10
11  int main()
12  {
13      int test[] = { 7, -13, 1, 3, 10, 5, 2, 4 };
14      int N = sizeof(test)/sizeof(int);
15
16      cout << "Size of test array :"  << N << endl;
17
18      cout << "Before sorting : " << endl;
19      print(test, N);
20
21      quickSort(test, 0, N-1);
22
23      cout << endl << endl << "After sorting : " << endl;
24      print(test, N);
25
26      return 0;
27  }
28
29
30  void quickSort( int a[], int first, int last )
31  {
32      int pivotElement;
33
34      if(first < last)
35      {
36          pivotElement = pivot(a, first, last);
37          quickSort(a, first, pivotElement-1);
38          quickSort(a, pivotElement+1, last);
39      }
40  }
41
42  /**
43   * Find and return the index of pivot element.
44   * @param a   The array
```

```cpp
44      * @param a - The array.
45      * @param first - The start of the sequence.
46      * @param last - The end of the sequence.
47      * @return - the pivot element
48      */
49     int pivot(int a[], int first, int last)
50     {
51         int  p = first;
52         int pivotElement = a[first];
53
54         for(int i = first+1 ; i <= last ; i++)
55         {
56             /* If you want to sort the list in the other order, change "<=" to ">" */
57             if(a[i] <= pivotElement)
58             {
59                 p++;
60                 swap(a[i], a[p]);
61             }
62         }
63
64         swap(a[p], a[first]);
65
66         return p;
67     }
68
69
70     /**
71      * Swap the parameters.
72      * @param a - The first parameter.
73      * @param b - The second parameter.
74      */
75     void swap(int& a, int& b)
76     {
77         int temp = a;
78         a = b;
79         b = temp;
80     }
81
82     /**
83      * Swap the parameters without a temp variable.
84      * Warning! Prone to overflow/underflow.
85      * @param a - The first parameter.
86      * @param b - The second parameter.
87      */
88     void swapNoTemp(int& a, int& b)
89     {
90         a -= b;
91         b += a;// b gets the original value of a
92         a = (b - a);// a gets the original value of b
93     }
94
95     /**
```

```
 96      * Print an array.
 97      * @param a - The array.
 98      * @param N - The size of the array.
 99      */
100     void print(int a[], const int& N)
101     {
102         for(int i = 0 ; i < N ; i++)
103             cout << "array[" << i << "] = " << a[i] << endl;
104     };
105
106
```

Execute Mode, Version, Inputs & Arguments

CommandLine Arguments

Stdin Inputs

Result

```
Size of test array :8
Before sorting :
array[0] = 7
array[1] = -13
array[2] = 1
array[3] = 3
array[4] = 10
array[5] = 5
array[6] = 2
array[7] = 4


After sorting :
array[0] = -13
array[1] = 1
array[2] = 2
array[3] = 3
array[4] = 4
array[5] = 5
array[6] = 7
```

```
array[7] = 10
```

Note: Please check our documentation, or Youtube channel. for more details

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to execute your program