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1: /*-----Quick Sort(  $O(n^2)$  for worst case(rare),  $O(n\log n)$  for average
2:
3: #include<iostream>
4: using namespace std;
5:
6: void inputArray(int arr[], int n)
7: {
8:     cout << "Enter the elements of your array: \n";
9:     for(int i = 0; i < n; i++)
10:    {
11:        cin >> arr[i];
12:    }
13: }
14:
15: void printArray(int arr[], int n)
16: {
17:     for(int i = 0; i < n; i++)
18:     {
19:         cout << arr[i] << " ";
20:     }
21: }
22:
23: void swap(int arr[], int i, int j)
24: {
25:     int temp = arr[i];
26:     arr[i] = arr[j];
27:     arr[j] = temp;
28: }
29:
30: int partition_(int arr[], int left, int right)
31: {
32:     int i = left;
33:     int j = right;
34:     int pivot = arr[left];
35:
36:     while(i < j)
37:     {
38:         while(arr[i] <= pivot)
39:         {
40:             i++;
41:         }
42:         while(arr[j] > pivot)
43:         {
44:             j--;
45:         }
46:

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47:         if(i < j)
48:         {
49:             swap(arr, i, j);
50:         }
51:
52:     }
53:
54:     swap(arr, j, left);
55:
56:     return j;
57:
58: }
59:
60: void quickSort(int arr[], int left, int right)
61: {
62:     if(left < right)
63:     {
64:         int partition = partition_(arr, left, right);
65:
66:         quickSort(arr, left, partition - 1);
67:         quickSort(arr, partition + 1, right);
68:     }
69: }
70:
71: int main()
72: {
73:     int n;
74:     cout << "Enter the length";
75:     cin >> n;
76:
77:     int arr[n];
78:     inputArray(arr, n);
79:
80:     quickSort(arr, 0, n - 1);
81:
82:     cout << "Sorted array is: \n";
83:     printArray(arr, n);
84:
85:     return 0;
86: }

```