ASSIGNMENT

QUICK SORT

SOURCE CODE:

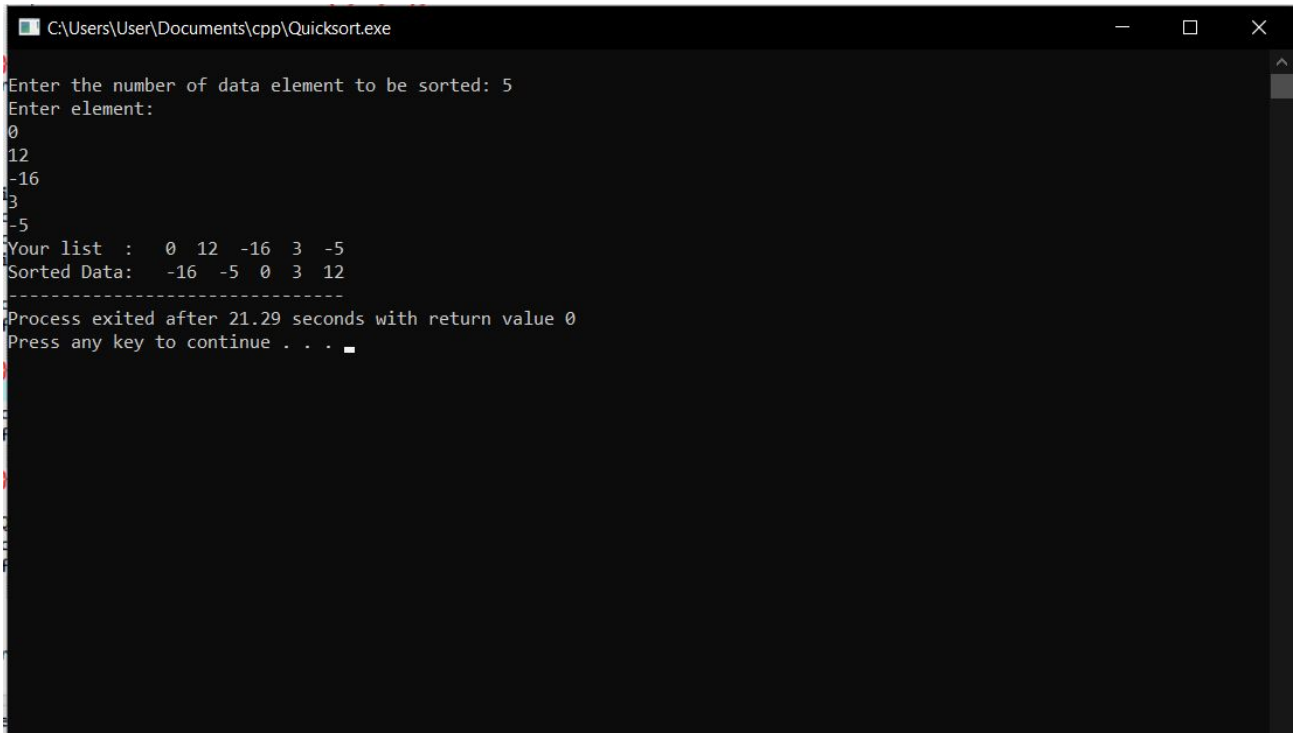
```
#include<iostream>
#include<cstdlib>

using namespace std;

void swap(int *a, int *b) {
   int temp;
   temp = *a;
   *a = *b;
   *b = temp;
}

int Partition(int a[], int l, int h) {
   int pivot, index, i;
   index = l;
   pivot = h;
   for(i = l; i < h; i++) {
      if(a[i] < a[pivot]) {
         swap(&a[i], &a[index]);
         index++;
      }
   }
   swap(&a[pivot], &a[index]);
   return index;
}


int RandomPivotPartition(int a[], int l, int h) {
   int pvt, n, temp;
   n = rand();
   pvt = l + n%(h-l+1);
   swap(&a[h], &a[pvt]);
   return Partition(a, l, h);
}
```

```
int QuickSort(int a[], int l, int h) {
   int pindex;
   if(l < h) {
      pindex = RandomPivotPartition(a, l, h);
      QuickSort(a, l, pindex-1);
      QuickSort(a, pindex+1, h);
   }
   return 0;
}


int main() {
   int n, i;
   cout<<"\nEnter the number of data element to be sorted: ";
   cin>>n;
   int arr[n];

   cout<<"Enter element:\n";
   for(i = 0; i < n; i++) {
      cin>>arr[i];
   }

   cout<<"Your list  :   ";
   for(i = 0; i < n; i++) {
      cout<<arr[i]<<"  ";
   }

   QuickSort(arr, 0, n-1);
   cout<<"\nSorted Data: ";
   for (i = 0; i < n; i++)
      cout<<"  "<<arr[i];


   return 0;
}
```

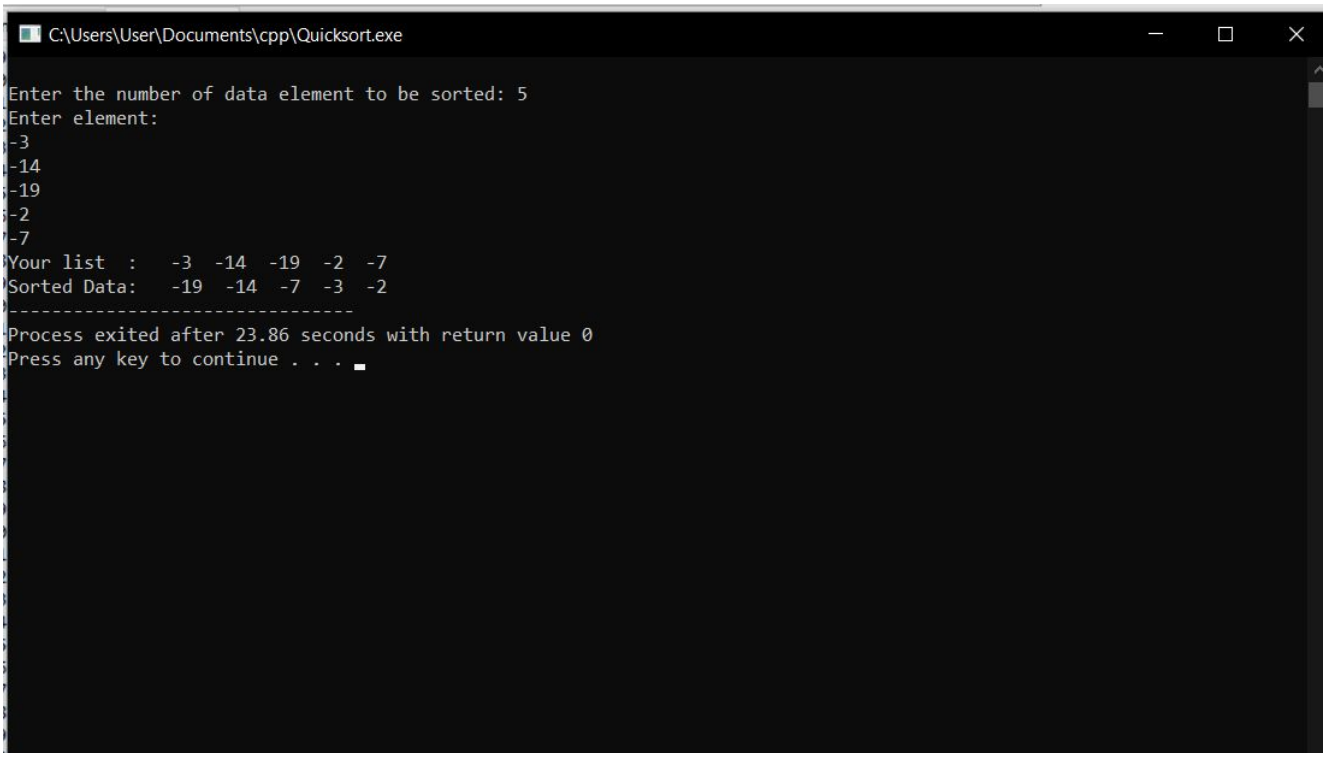
OUTPUT:


C:\Users\User\Documents\cpp\Quicksort.exe
Enter the number of data element to be sorted: 5
Enter element:
4
2
7
5
10
Your list : 4 2 7 5 10
Sorted Data: 2 4 5 7 10

Process exited after 34.08 seconds with return value 0
Press any key to continue . . .


C:\Users\User\Documents\cpp\Quicksort.exe
Enter the number of data element to be sorted: 5
Enter element:
0
12
-16
3
-5
Your list : 0 12 -16 3 -5
Sorted Data: -16 -5 0 3 12

Process exited after 21.29 seconds with return value 0
Press any key to continue . . .


C:\Users\User\Documents\cpp\Quicksort.exe
Enter the number of data element to be sorted: 5
Enter element:
-3
-14
-19
-2
-7
Your list : -3 -14 -19 -2 -7
Sorted Data: -19 -14 -7 -3 -2

Process exited after 23.86 seconds with return value 0
Press any key to continue . . .