

File: oddEvenMergeSort.cpp

```
#include<omp.h>
#include<iostream>
using namespace std;
int n, a[100];

void display() {
    for(int i = 0; i < n; i++) {
        cout<<a[i]<<"\t";
    }
}

void oddEvenMerge(int lo, int hi, int r) {
    int step = r * 2;
    if(step < hi) {
        #pragma omp parallel sections
        {
            #pragma omp section
            {
                oddEvenMerge(lo, hi, step);
            }
            #pragma omp section
            {
                oddEvenMerge(lo+r, hi, step);
            }
        }
        for(int i = lo + r; i < lo + hi - r; i = i + step) {
            if(a[i] > a[i+r]) {
                int t = a[i];
                a[i] = a[i+r];
                a[i+r] = t;
            }
        }
    }
    else {
        if(a[lo] > a[lo+r]) {
            int t = a[lo];
            a[lo] = a[lo+r];
            a[lo+r] = t;
        }
    }
}

void oddEvenMergeSort(int lo, int n) {
    if(n > 1) {
        int mid = n / 2;
        oddEvenMergeSort(lo, mid);
        oddEvenMergeSort(lo + mid, mid);
        oddEvenMerge(lo, n, 1);
    }
}
```

```

int main() {
    cout<<"\nEnter Number of Elements to be Sorted (power of 2): ";
    cin>>n;
    cout<<"\nEnter Elements: ";
    for(int i = 0; i < n; i++) {
        cin>>a[i];
    }
    oddEvenMergeSort(0,n);
    cout<<"\nSorted elements are: ";
    display();
    cout<<"\n\n";
}

```

#OUTPUT:

```

shubham@shubham: ~
student@student:~$ g++ -o oddEvenMergeSort oddEvenMergeSort.cpp -fopenmp
student@student:~$ ./oddEvenMergeSort

Enter Number of Elements to be Sorted (power of 2): 8
Enter Elements: 65 24 48 15 62 27 49 32
Sorted elements are: 15 24      27      32      48      49      62      65
student@student:~$ ./oddEvenMergeSort

Enter Number of Elements to be Sorted (power of 2): 16
Enter Elements: 34 28 51 49 25 37 48 32 17 5 26 9 96 87 72 77
Sorted elements are: 5  9      17      25      26      28      32      34      37
                    48      49      51      72      77      87      96
student@student:~$ █

```