

```

1 #include <iostream>
2 using namespace std;
3
4
5 void mergeSort(int array[], int arraySize) {
6     int fronthalf;
7     int backhalf;
8     if(arraySize % 2 == 0) {
9         fronthalf = arraySize/2;
10        backhalf = arraySize/2;
11    } else {
12        fronthalf = arraySize/2 + 1;
13        backhalf = arraySize/2;
14    }
15
16    int array1[fronthalf];
17    int array2[backhalf];
18    for(int i=0; i < fronthalf; i++){
19        array1[i] = array[i];
20    }
21    for (int i = fronthalf; i < arraySize; i++){
22        array2[i] = array[i];
23    }
24
25    int min1;
26    int Index1;
27    for(int i = 0; i < fronthalf; i++){
28        min1 = array1[i];
29        for (int j = i+1; j < fronthalf; j++){
30            if(array1[j] < min1) {
31                min1 = array1[j];
32                Index1 = j;
33            }
34        }
35        array[Index1] = array[i];
36        array[i] = min1;
37    }
38
39    int min2;
40    int Index2;

```

split array

when min always
bigger than array[j]
is the best case

```
41     for(int i = fronthalf; i < backhalf; i++) {
42         min2 = array2[i];
43         for (int j = i+1; j < fronthalf; j++) {
44             if(array2[j] < min2) {
45                 min2 = array2[j];
46                 Index2 = j;
47             }
48         }
49         array[Index2] = array[i];
50         array[i] = min2;
51     }
52
53     int i1 = 0;
54     int i2 = 0;
55     for (int i=0; i < arraySize; i++) {
56         if (array1[i1] <= array2[i2] && i1 < fronthalf) {
57             array[i] = array1[i1];
58             i1++;
59         } else if (i2 < backhalf) {
60             array[i] = array2[i2];
61             i2++;
62         }
63     }
64 }
65
66
67 void print(int array[], int arraySize) {
68     for (int a = 0; a < arraySize; a++) {
69         cout << array[a] << endl;
70     }
71 }
72
73 int main() {
74     int arraySize;
75     cout << "enter array size: ";
76     cin >> arraySize;
77     int h;
78     h = arraySize;
79     int array[h] = {0};
80     for (int i = 0; i < arraySize; i++) {
```

combine numbers to
finish saving

print func

main func

```
81         cout << "enter " << i + 1 << " number:";
82         cin >> array[i];
83     }
84     mergeSort(array, arraySize);
85     print(array, arraySize);
86     return 0;
87 }
88
89
```