# 归并排序

```cpp
#include <bits/stdc++.h>
using namespace std;

typedef pair<int, int> PII;
const int N = 1e5 + 10, INF = 0x3f3f3f3f;
int a[N], tmp[N];

void merge_sort(int l, int r){
    if(l == r) return;
    int mid = l + r >> 1;
    merge_sort(l, mid);
    merge_sort(mid + 1, r);
    int k = l, i = l, j = mid + 1;
    while(i <= mid && j <= r){
        if(a[i] < a[j]) tmp[k++] = a[i++];
        else tmp[k++] = a[j++];
    }
    while(i <= mid) tmp[k++] = a[i++];
    while(j <= r) tmp[k++] = a[j++];
    for(int i = l; i <= r; i++) a[i] = tmp[i];
}

int main(){
    int n;
    cin >> n;
    for(int i = 1; i <= n; i++) cin >> a[i];
    merge_sort(1, n);
    for(int i = 1; i <= n; i++) cout << a[i] << ' ';
    return 0;
}
```