

MERGE SORT PROGRAM IN C

http://www.tutorialspoint.com/data_structures_algorithms/merge_sort_program_in_c.htm

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Merge sort is a sorting technique based on divide and conquer technique. With worst-case time complexity being *Onlogn*, it is one of the most respected algorithms

Implementation in C

We shall see the implementation of merge sort in c programming language here –

```
#include <stdio.h>
#define max 10

int a[10] = { 10, 14, 19, 26, 27, 31, 33, 35, 42, 44 };
int b[10];

void merging(int low, int mid, int high) {
    int l1, l2, i;

    for(l1 = low, l2 = mid + 1, i = low; l1 <= mid && l2 <= high; i++) {
        if(a[l1] <= a[l2])
            b[i] = a[l1++];
        else
            b[i] = a[l2++];
    }

    while(l1 <= mid)
        b[i++] = a[l1++];

    while(l2 <= high)
        b[i++] = a[l2++];

    for(i = low; i <= high; i++)
        a[i] = b[i];
}

void sort(int low, int high) {
    int mid;

    if(low < high) {
        mid = (low + high) / 2;
        sort(low, mid);
        sort(mid+1, high);
        merging(low, mid, high);
    }else {
        return;
    }
}

int main() {
    int i;

    printf("List before sorting\n");

    for(i = 0; i <= max; i++)
        printf("%d ", a[i]);

    sort(0, max);

    printf("\nList after sorting\n");

    for(i = 0; i <= max; i++)
        printf("%d ", a[i]);
}
```

Output

The output of the program should be as follows –

```
List before sorting  
10 14 19 26 27 31 33 35 42 44 0  
List after sorting  
0 10 14 19 26 27 31 33 35 42 44
```

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