

Q17 write a c program to arrange a series of numbers using merge sort.

Aim: to write a c program to arrange a series of numbers using merge sort.

Algorithm:

- * start.
- * input the size and elements of the array.
- * implement merge sort using recursion.
- * print the sorted array.
- * stop.

program:

```
#include <stdio.h>
void merge(int a[], int l, int m, int r) {
    int i=l, j=m+1, k=0, b[50];
    while (i<=m && j<=r) b[k++] = (a[i] < a[j]) ? a[i++] : a[j++];
    while (i<=m) b[k++] = a[i++];
    while (j<=r) b[k++] = a[j++];
    for (i=0; i<k; i++) a[l+i] = b[i];
}
void mergesort(int a[], int l, int r) {
    if (l < r) {
        int m = (l+r)/2;
        mergesort(a, l, m);
        mergesort(a, m+1, r);
        merge(a, l, m, r);
    }
}
int main() {
    int a[] = {8, 3, 1, 7, 0, 2};
    int n = 6;
    mergesort(a, 0, n-1);
    for (int i=0; i<n; i++) printf("%d", a[i]);
}
```

Output:

0 1 2 3 7 8

Output of the program is 0 1 2 3 7 8
 The output is same as the input.

Result: thus, the program executed successfully