

## MERGE SORT

```
#include <stdio.h>
void merge(int arr[], int left, int mid, int right) {
    int i = left, j = mid + 1, k = 0;
    int temp[right - left + 1];

    while (i <= mid && j <= right) {
        if (arr[i] <= arr[j])
            temp[k++] = arr[i++];
        else
            temp[k++] = arr[j++];
    }
    while (i <= mid)
        temp[k++] = arr[i++];
    while (j <= right)
        temp[k++] = arr[j++];

    for (i = left, k = 0; i <= right; i++, k++)
        arr[i] = temp[k];
}
void mergeSort(int arr[], int left, int right) {
    if (left < right) {
        int mid = (left + right) / 2;
        mergeSort(arr, left, mid);
        mergeSort(arr, mid + 1, right);
        merge(arr, left, mid, right);
    }
}
int main() {
    int arr[100], n, i;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    printf("Enter %d elements: ", n);
    for (i = 0; i < n; i++)
        scanf("%d", &arr[i]);
    mergeSort(arr, 0, n - 1);
    printf("Sorted array: ");
    for (i = 0; i < n; i++)
        printf("%d ", arr[i]);
    return 0;
}
```

OUTPUT:

```
Enter the no of element: 5
Enter the element of the 1 4 6 9 2
The sorted array:1 2 4 6 9
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Process exited after 23.37 seconds with return value 0
Press any key to continue . . .
```