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#include <stdio.h>
void merge(int arr[], int p, int q, int r) {
    int n1 = q - p + 1;
    int n2 = r - q;

    int L[n1], M[n2];

    for (int i = 0; i < n1; i++)
        L[i] = arr[p + i];
    for (int j = 0; j < n2; j++)
        M[j] = arr[q + 1 + j];
    int i, j, k;
    i = 0;
    j = 0;
    k = p;
    while (i < n1 && j < n2) {
        if (L[i] <= M[j]) {
            arr[k] = L[i];
            i++;
        } else {
            arr[k] = M[j];
            j++;
        }
        k++;
    }
    while (i < n1) {
        arr[k] = L[i];
        i++;
        k++;
    }

    while (j < n2) {
        arr[k] = M[j];
        j++;
        k++;
    }
}

void mergeSort(int arr[], int l, int r) {
    if (l < r) {
        int m = l + (r - l) / 2;

        mergeSort(arr, l, m);
        mergeSort(arr, m + 1, r);
        merge(arr, l, m, r);
    }
}

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}  
}
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void printArray(int arr[], int size) {  
    for (int i = 0; i < size; i++)  
        printf("%d ", arr[i]);  
    printf("\n");  
}  
int main() {  
    int arr[] = {6, 5, 12, 10, 9, 1};  
    int size = sizeof(arr) / sizeof(arr[0]);  
  
    mergeSort(arr, 0, size - 1);  
  
    printf("Sorted array: \n");  
    printArray(arr, size);  
}
```