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#include <stdio.h>

void merge(int arr[], int left, int mid, int right) {

int n1 = mid - left + 1;

int n2 = right - mid;

int leftArr[n1], rightArr[n2];

for (int i = 0; i < n1; i++) leftArr[i] = arr[left + i];

for (int j = 0; j < n2; j++) rightArr[j] = arr[mid + 1 + j];

int i = 0, j = 0, k = left;

while (i < n1 && j < n2) {

if (leftArr[i] <= rightArr[j]) arr[k++] = leftArr[i++];

else arr[k++] = rightArr[j++];

}

while (i < n1) arr[k++] = leftArr[i++];

while (j < n2) arr[k++] = rightArr[j++];

}

void mergeSort(int arr[], int left, int right) {

if (left < right) {

int mid = left + (right - left) / 2;

mergeSort(arr, left, mid);

mergeSort(arr, mid + 1, right);

merge(arr, left, mid, right);

}

}

void printArray(int arr[], int size) {

for (int i = 0; i < size; i++) printf("%d ", arr[i]);

printf("\n");

}

int main() {

int arr[] = {4, 2, 9, 6, 5};

int size = sizeof(arr) / sizeof(arr[0]);

printf("Original array: ");

printArray(arr, size);

mergeSort(arr, 0, size - 1);

printf("Sorted array: ");

printArray(arr, size);

return 0;

}