# Assignment 7

Write merge sort algorithm on your own

#include<iostream>

using namespace std;

void swapping(int &a, int &b){ //swap the content of a and b

int temp;

temp = a;

a = b;

b = temp;

}

void display(int \*array, int size){

for(int i = 0; i<size; i++)

cout << array[i] << " ";

cout << endl;

}

void merge(int \*array, int l, int m, int r){

int i, j, k, nl, nr;

//size of left and right sub-arrays

nl = m-l+1; nr = r-m;

int larr[nl], rarr[nr];

//fill left and right sub-arrays

for(i = 0; i<nl; i++)

larr[i] = array[l+i];

for(j = 0; j<nr; j++)

rarr[j] = array[m+1+j];

i = 0; j = 0; k = l;

//marge temp arrays to real array

while(i < nl && j<nr) {

if(larr[i] <= rarr[j]) {

array[k] = larr[i];

i++;

}else{

array[k] = rarr[j];

j++;

}

k++;

}

while(i<nl){ //extra element in left array

array[k] = larr[i];

i++; k++;

}

while(j<nr){ //extra element in right array

array[k] = rarr[j];

j++; k++;

}

}

void mergeSort(int \*array, int l, int r){

int m;

if(l < r){

int m = l+(r-l)/2;

// Sort first and second arrays

mergeSort(array, l, m);

mergeSort(array, m+1, r);

merge(array, l, m, r);

}

}

int main(){

int n;

cout << "Enter the number of elements: ";

cin >> n;

int arr[n]; //create an array with given number of elements

cout << "Enter elements:" << endl;

for(int i = 0; i<n; i++){

cin >> arr[i];

}

cout << "Array before Sorting: ";

display(arr, n);

mergeSort(arr, 0, n-1); //(n-1) for last index

cout << "Array after Sorting: ";

display(arr, n);

}