#include <stdio.h>

/\* Function to merge the subarrays of a[] \*/

void merge(int a[], int beg, int mid, int end)

{

int i, j, k;

int n1 = mid - beg + 1;

int n2 = end - mid;

int LeftArray[n1], RightArray[n2]; //temporary arrays

/\* copy data to temp arrays \*/

for (int i = 0; i < n1; i++)

LeftArray[i] = a[beg + i];

for (int j = 0; j < n2; j++)

RightArray[j] = a[mid + 1 + j];

i = 0; /\* initial index of first sub-array \*/

j = 0; /\* initial index of second sub-array \*/

k = beg; /\* initial index of merged sub-array \*/

while (i < n1 && j < n2)

{

if(LeftArray[i] <= RightArray[j])

{

a[k] = LeftArray[i];

i++;

}

else

{

a[k] = RightArray[j];

j++;

}

k++;

}

while (i<n1)

{

a[k] = LeftArray[i];

i++;

k++;

}

while (j<n2)

{

a[k] = RightArray[j];

j++;

k++;

}

}

void mergeSort(int a[], int beg, int end)

{

if (beg < end)

{

int mid = (beg + end) / 2;

mergeSort(a, beg, mid);

mergeSort(a, mid + 1, end);

merge(a, beg, mid, end);

}

}

/\* Function to print the array \*/

void printArray(int a[], int n)

{

int i;

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

printf("%d ", a[i]);

printf("\n");

}

int main()

{

int a[] = { 12, 31, 25, 8, 32, 17, 40, 42 };

int n = sizeof(a) / sizeof(a[0]);

printf("Before sorting array elements are - \n");

printArray(a, n);

mergeSort(a, 0, n - 1);

printf("After sorting array elements are - \n");

printArray(a, n);

return 0;

}