Experiment 3

#include<stdio.h>

void mergeSort(int arr[], int l, int r);

void merge(int arr[], int l, int m, int r);

int main()

{

int i, n, arr[100];

printf("Enter the number of elements in the array: ");

scanf("%d", &n);

printf("Enter the elements of the array: ");

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

scanf("%d", &arr[i]);

mergeSort(arr, 0, n-1);

printf("The sorted array is: ");

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

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

return 0;

}

void mergeSort(int arr[], int l, int r)

{

if(l<r)

{

int m = (l+r)/2;

mergeSort(arr, l, m);

mergeSort(arr, m+1, r);

merge(arr, l, m, r);

}

}

void merge(int arr[], int l, int m, int r)

{

int i, j, k, n1 = m-l+1, n2 = r-m;

int L[n1], R[n2];

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

L[i] = arr[l+i];

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

R[j] = arr[m+1+j];

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

while(i<n1 && j<n2)

{

if(L[i]<=R[j])

{

arr[k] = L[i];

i++;

}

else

{

arr[k] = R[j];

j++;

}

k++;

}

while(i<n1)

{

arr[k] = L[i];

i++;

k++;

}while(j<n2)

{

arr[k] = R[j];

j++;

k++;

}

}

