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Subject : CSL4403

Lab 03( Que 1)

Write a program to implement Merge Sort Algorithm.

**PROGRAM CODE :**

#include<stdio.h>

#include<stdlib.h>

#define pf printf

#define sf scanf

void Merge(int a[],int low,int mid ,int high){

int i,j,k,t[high-low+1],n=high-low+1;//t is a temporary

// i for indexing t , j & k for indexing purpose

for(i=0,j=low,k=mid+1;j<=mid && k<=high;){

if(a[j]<a[k]){t[i++]=a[j++];}

else {t[i++]=a[k++];}

}

while(j<=mid){t[i++]=a[j++];}

while(k<=high){t[i++]=a[k++];}

i=0,j=low;

while(i<n){

a[j++]=t[i++];

}

}

//Time Complexity O(n(logn)) Auxiiary Memory Depends O(n), is Stable yes

void MergeSort(int a[],int low,int high){

if(low<high){

int mid= (low+high)/2;

MergeSort(a,low,mid);

MergeSort(a,mid+1,high);

Merge(a,low,mid,high);

}

}

void display(int a[],int size){

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

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

}

int main()

{

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int no,i;

pf(" Enter the Elements you want to sort : \n");

sf("%d",&no);

int Ele[no];

for(i=0;i<no; i++)

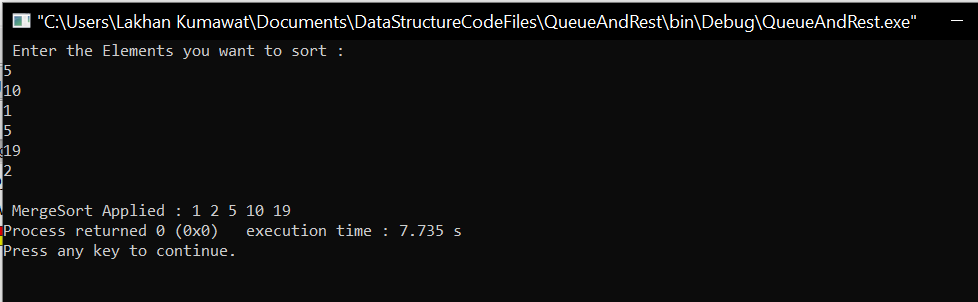
sf("%d",&Ele[i]);

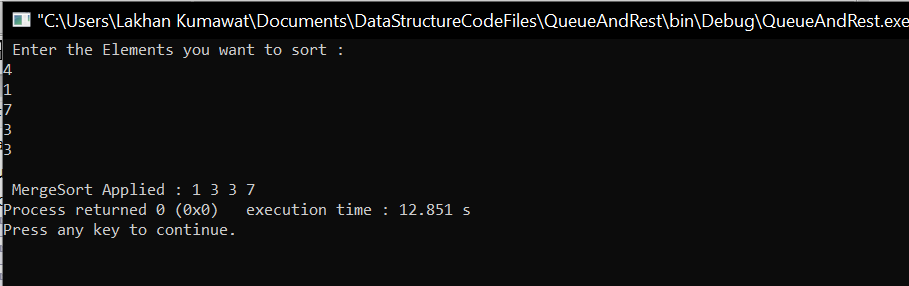
MergeSort(Ele,0,no-1); pf("\n MergeSort Applied : ");

display(Ele,no);

}

**Outputs :**

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