**Merge Sort**

**// Online C++ compiler to run C++ program online**

**#include<iostream>**

**#include<stdlib.h>**

**#include<omp.h>**

**using namespace std;**

**void mergesort(int a[],int i,int j);**

**void merge(int a[],int i1,int j1,int i2,int j2);**

**void mergesort(int a[],int i,int j)**

**{**

**int mid;**

**if(i<j)**

**{**

**mid=(i+j)/2;**

**#pragma omp parallel sections**

**{**

**#pragma omp section**

**{**

**mergesort(a,i,mid);**

**}**

**#pragma omp section**

**{**

**mergesort(a,mid+1,j);**

**}**

**}**

**merge(a,i,mid,mid+1,j);**

**}**

**}**

**void merge(int a[],int i1,int j1,int i2,int j2)**

**{**

**int temp[1000];**

**int i,j,k;**

**i=i1;**

**j=i2;**

**k=0;**

**while(i<=j1 && j<=j2)**

**{**

**if(a[i]<a[j])**

**{**

**temp[k++]=a[i++];**

**}**

**else**

**{**

**temp[k++]=a[j++];**

**}**

**}**

**while(i<=j1)**

**{**

**temp[k++]=a[i++];**

**}**

**while(j<=j2)**

**{**

**temp[k++]=a[j++];**

**}**

**for(i=i1,j=0;i<=j2;i++,j++)**

**{**

**a[i]=temp[j];**

**}**

**}**

**int main()**

**{**

**int \*a,n,i;**

**cout<<"\n enter total no of elements=>";**

**cin>>n;**

**a= new int[n];**

**cout<<"\n enter elements=>";**

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

**{**

**cin>>a[i];**

**}**

**// start=.......**

**//#pragma omp…..**

**mergesort(a, 0, n-1);**

**// stop…….**

**cout<<"\n sorted array is=>";**

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

**{**

**cout<<"\n"<<a[i];**

**}**

**// Cout<<Stop-Start**

**return 0;**

**}**

**OUTPUT**

**enter total no of elements=> 5**

**5**

**enter elements=>10 7 5 15 6**

**sorted array is=>**

**5**

**6**

**7**

**10**

**15**