**/\* 2.Sort a given set of elements using merge sort method and determine the time required to sort the elements \*/**

#include<stdio.h>

#include<conio.h>

#include<time.h>

int a[10],i,j,n,c[10],k;

void merge\_sort(int[],int,int);

void merge(int a[],int L,int m,int h)

{

i=L;

j=m+1;

k=L;

while((i<=m) && (j<=h))

{

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

{

c[k]=a[i];

i++;

k++;

}

else

{

c[k]=a[j];

j++;

k++;

}

}

while(i<=m)

{

c[k]=a[i];

i++;

k++;

}

while(j<=h)

{

c[k]=a[j];

j++;

k++;

}

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

a[i]=c[i];

}

void merge\_sort(int a[],int L,int h)

{

int m;

if(L<h)

{

m=(L+h)/2;

merge\_sort(a,L,m);

merge\_sort(a,m+1,h);

merge(a,L,m,h);

}

}

void main()

{

clock\_t start\_clk,end\_clk;

double time\_used;

clrscr();

start\_clk=clock();

printf("enter the no of elements\n");

scanf("%d",&n);

printf("enter array elements\n");

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

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

merge\_sort(a,0,n-1);

printf("array elements after sorting\n");

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

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

end\_clk=clock();

time\_used=((double)(end\_clk-start\_clk)/CLOCKS\_PER\_SEC);

printf("\n time required is%d",time\_used);

getch();

}

**/\* OUTPUT**

enter the no of elements

5

enter array elements

50

10

30

20

40

array elements after sorting

10

20

30

40

50

time required is20885 **\*/**