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1BM19CS224

Sort a given set of N integer elements using Quick Sort technique and compute its time taken. Run the program for different values of N and record the time taken to sort.

#include<stdio.h>

#include<stdlib.h>

#include<time.h>

int partition(int a[],int low,int high){

int pivot,i,j,temp;

pivot=a[low];

i=low+1;

j=high;

while(1){

while(pivot>a[i]&&i<=high)

i++;

while(paivot<a[j])

j--;

if(i<j)

{

temp=a[i];

a[i]=a[j];

a[j]=temp;

}

else

{

temp=a[j];

a[j]=a[low];

a[low]=temp;

return j;

}

}

}

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

int pivot\_pos;

if(low<high)

{

pivot\_pos=partition(a,low,high);

quicksort(a,low,pivot\_pos-1);

quicksort(a,pivot\_pos+1,high);

}

}

void main(){

int a[1000],i,n;

clock\_t start,end;

double time;

printf("Enter the number of elements\n");

scanf("%d",&n);

printf("The elements are:\n");

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

a[i]=(int)rand()%10000;

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

}

start=clock();

quicksort(a,0,n-1);

end=clock();

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

printf("\nSorted elements:\n");

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

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

}

printf("\nTime taken=%1f\n",time);

}

OUTPUT:



