#include <stdio.h>

#include <stdlib.h>

#include<time.h>

#define MAX 20000

int A[MAX];

void Quicksort( int low , int high);

int Partition(int low , int high);

void swap(int \*p , int \*q);

int main()

{

int n,i,j;

int low , high;

clock\_t s , e ;

double cpu\_exe\_t;

printf("\nPlease enter the size of the array :");

scanf("%d",&n);

/\*printf("\nPlease enter the elements of the array :");\*/

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

{

A[i]=rand()%100; /\*scanf("%d",&A[i]);\*/

}

printf("\nThe array elements are :\n");

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

{

printf("%d\t",A[i]);

}

s=clock();

for(j=0;j<1000;j++) //Delay loops

for(i=0;i<1000;i++)

{

low=0;

high=n-1;

Quicksort(low,high);

}

e=clock();

cpu\_exe\_t=(double)(e-s)/CLK\_TCK;

printf("\nThe sorted array is :\n");

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

{

printf("%d\t",A[i]);

}

printf("\nCPU execution time is %lf",cpu\_exe\_t);

return 0;

}

int Partition( int low , int high)

{

int i,j;

int pivot=A[low];

i=low;

j=high+1;

while(i<j)

{

do

{

++i;

}while(A[i]<=pivot);

do

{

--j;

}while(A[j]>pivot);

if(i<j)

{

swap(&A[i],&A[j]);

/\*t=A[i];

A[i]=A[j];

A[j]=t;\*/

}

}

swap(&A[low],&A[j]);

/\*t=A[low];

A[low]=A[j];

A[j]=t;\*/

return j;

}

void Quicksort( int low , int high)

{

int j;

if(low<high)

{

j=Partition(low,high);

Quicksort(low , j-1);

Quicksort(j+1 , high);

}

}

void swap(int \*a , int \*b)

{

int t;

t= \*a;

\*a=\*b;

\*b=t;

}