**#include <stdio.h>**

**#include <time.h>**

**#include <stdlib.h>**

**void quicksortalgorithm(int a[], int low, int high){**

**if(low<high){**

**int splitpoint;**

**splitpoint=partitionalgorithm(a, low, high);**

**quicksortalgorithm(a, low, splitpoint-1);**

**quicksortalgorithm(a,splitpoint+1, high);**

**}**

**}**

**int partitionalgorithm(int a[],int low, int high){**

**int pivot;**

**pivot=a[low];**

**int i;**

**int j;**

**i=low;**

**j=high+1;**

**int temp;**

**do{**

**do{**

**i=i+1;**

**}**

**while(a[i]<pivot);**

**do{**

**j=j-1;**

**}**

**while(a[j]>pivot);**

**temp=a[j];**

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

**a[i]=temp;**

**}**

**while(i<j);**

**temp=a[i];**

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

**a[j]=temp;**

**temp=a[j];**

**a[j]=a[low];**

**a[low]=temp;**

**return(j);**

**}**

**int main(){**

**clock\_t start;**

**clock\_t end;**

**while(1){**

**int choice;**

**printf("Enter 1 to get input from the user and 2 to calculate time complexity for number of elements from 500 to 14500");**

**scanf("%d",&choice);**

**if(choice==1){**

**printf("Enter the number of elements of the array ");**

**int n;**

**scanf("%d",&n);**

**printf("Enter the elements of the array");**

**int i;**

**int array[n];**

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

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

**}**

**start=clock();**

**quicksortalgorithm(array,0,n-1);**

**for(i=0;i<50000000;i++){**

**int temp;**

**temp=38/300;**

**}**

**end=clock();**

**printf("The sorted array is ");**

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

**printf("%d ",array[i]);**

**}**

**printf("Time taken to sort %d numbers is %f",n,(double)((end-start)/CLOCKS\_PER\_SEC));**

**}**

**else if(choice==2){**

**int n;**

**int array[15000];**

**n=500;**

**int i;**

**while(n<15000){**

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

**array[i]=n-i;**

**}**

**start=clock();**

**quicksortalgorithm(array, 0, n-1);**

**for(i=0;i<50000000;i++){**

**int temp;**

**temp=38/300;**

**}**

**end=clock();**

**printf("\nTime taken to sort %d numbers is %f",n,(double)(end-start)/CLOCKS\_PER\_SEC);**

**n=n+1000;**

**}**

**}**

**else{**

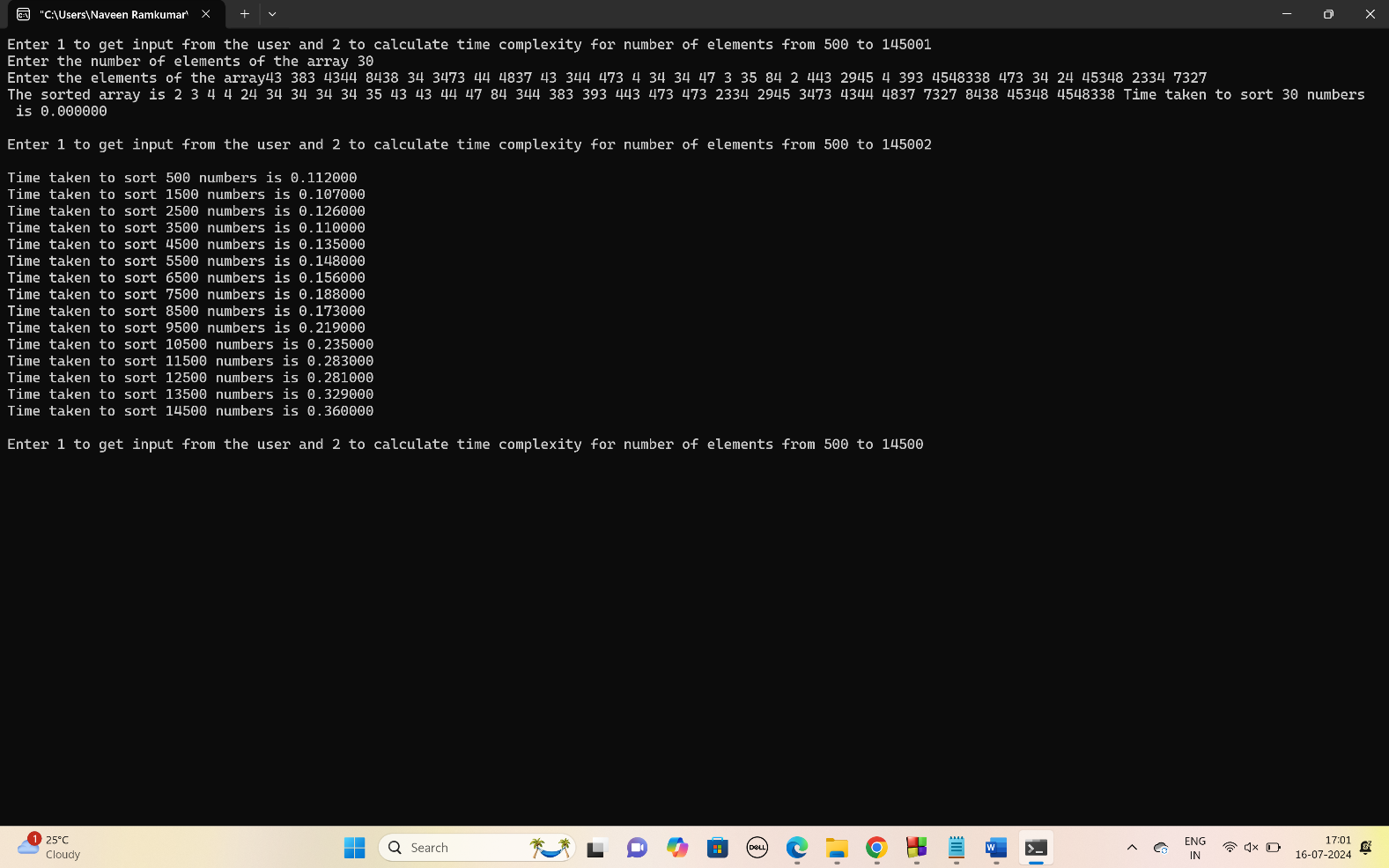
**exit(0);**

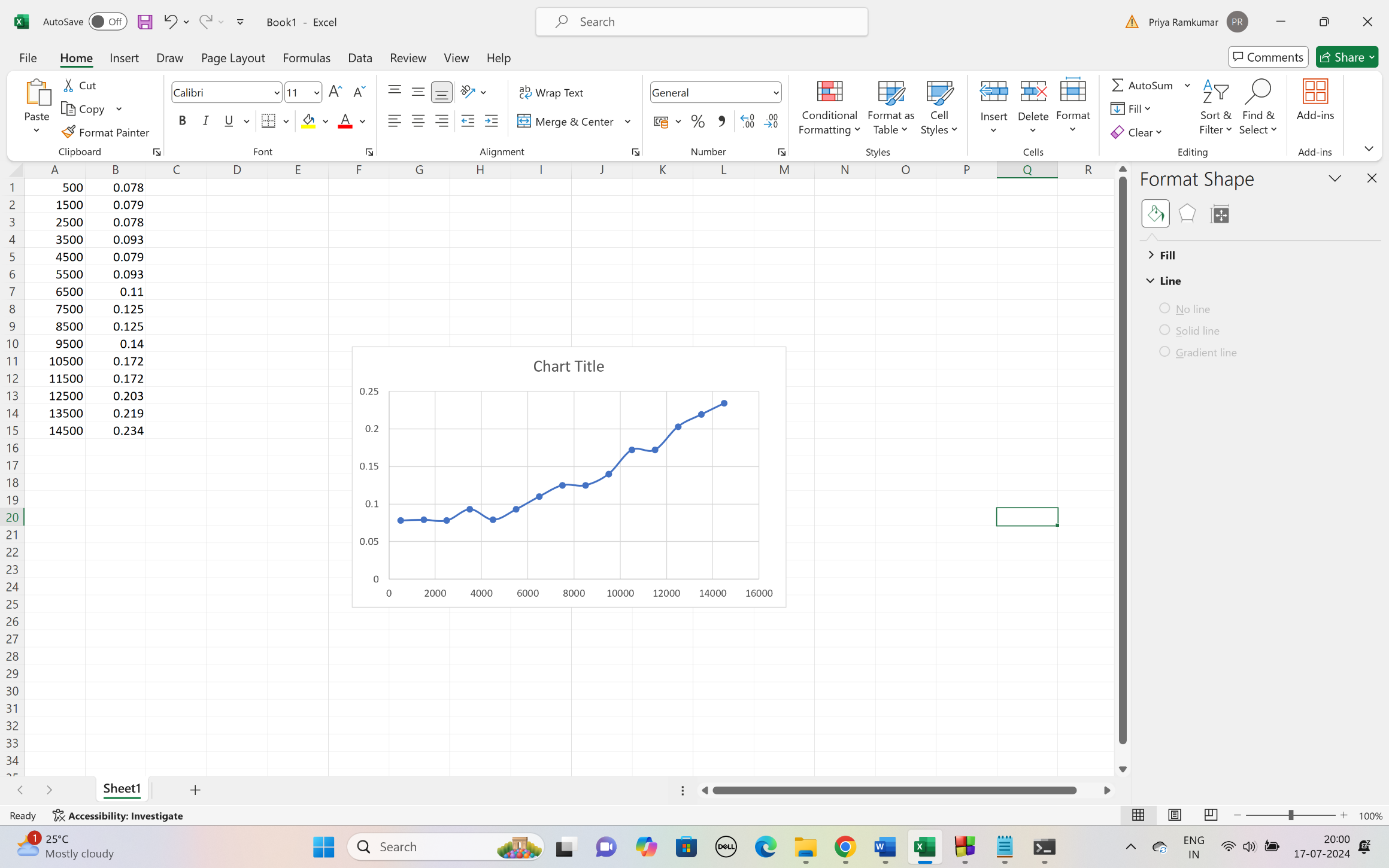
**}**

**printf("\n\n");**

**}**

**}**

****

****