**#include <stdio.h>**

**#include <stdlib.h>**

**#include <time.h>**

**void split(int[], int, int);**

**void combine(int[], int, int, int);**

**void main(){**

**int a[15000],n,i,j,choice,temp;**

**clock\_t start,end;**

**while(1){**

**printf("\n1:For manual entry of N value and array elements");**

**printf("\n2:To display time taken for sorting numbers of elements N in the range 500 to 14500.");**

**printf("\n3:To exit");**

**printf("\nEnter your choice.");**

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

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

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

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

**printf("Enter the array elements\n");**

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

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

**}**

**start=clock();**

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

**end=clock();**

**printf("Sorted array is ");**

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

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

**}**

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

**}**

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

**n=500;**

**while(n<15000){**

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

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

**}**

**start=clock();**

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

**for(j=0;j<500000000;j++){**

**temp=38/600;**

**}**

**end=clock();**

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

**n=n+1000;**

**}**

**}**

**else if(choice==3){**

**exit(0);**

**}**

**}**

**}**

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

**int mid;**

**if(low<high){**

**mid=(low+high)/2;**

**split(a,low,mid);**

**split(a,mid+1,high);**

**combine(a,low,mid,high);**

**}**

**}**

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

**int c[15000],i,j,k;**

**i=k=low;**

**j=mid+1;**

**while(i<=mid && j<=high){**

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

**c[k]=a[i];**

**++k;**

**++i;**

**}**

**else{**

**c[k]=a[j];**

**++k;**

**++j;**

**}**

**}**

**if(i>mid){**

**while(j<=high){**

**c[k]=a[j];**

**++k;**

**++j;**

**}**

**}**

**if(j>high){**

**while(i<=mid){**

**c[k]=a[i];**

**++k;**

**++i;**

**}**

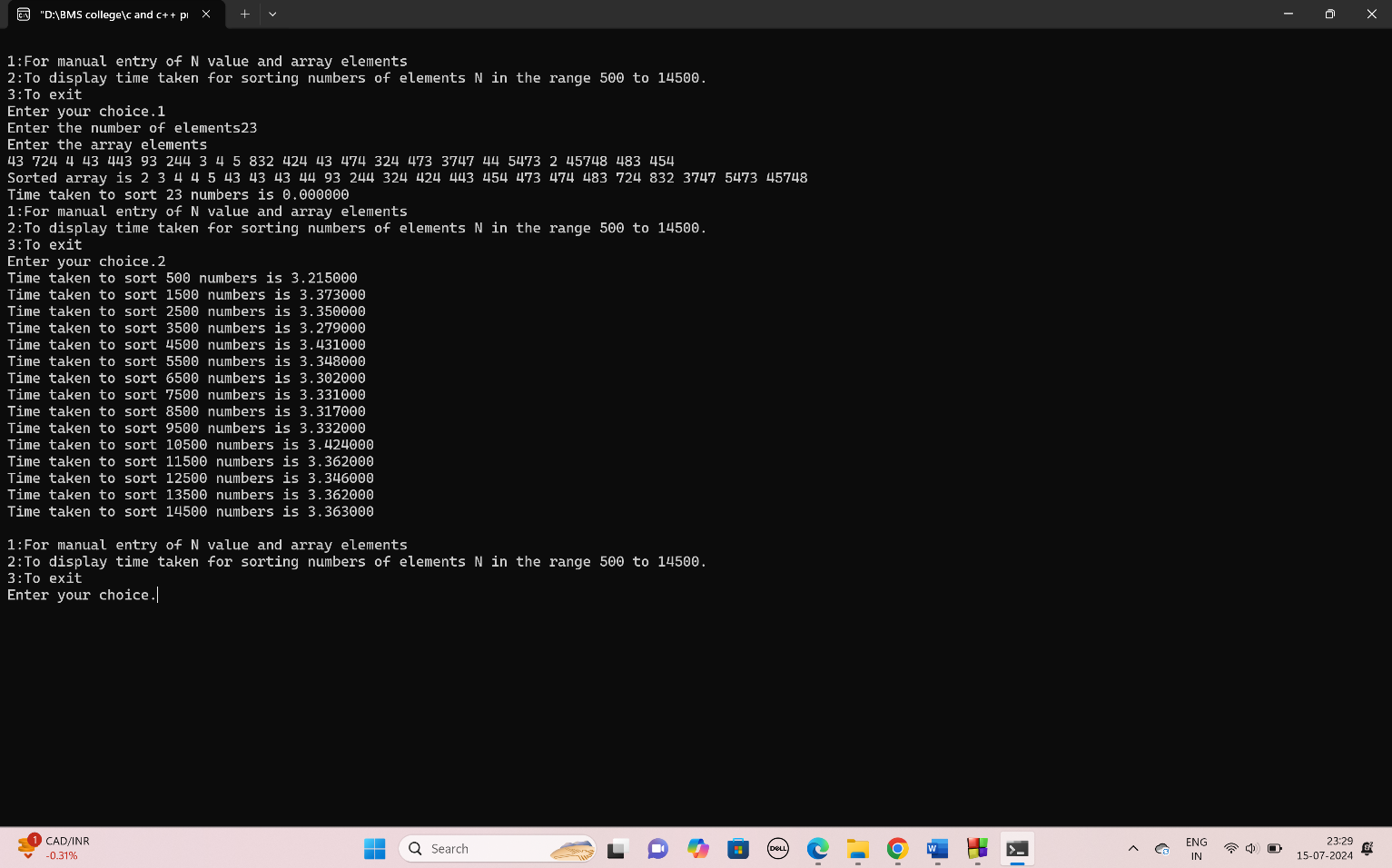
**}**

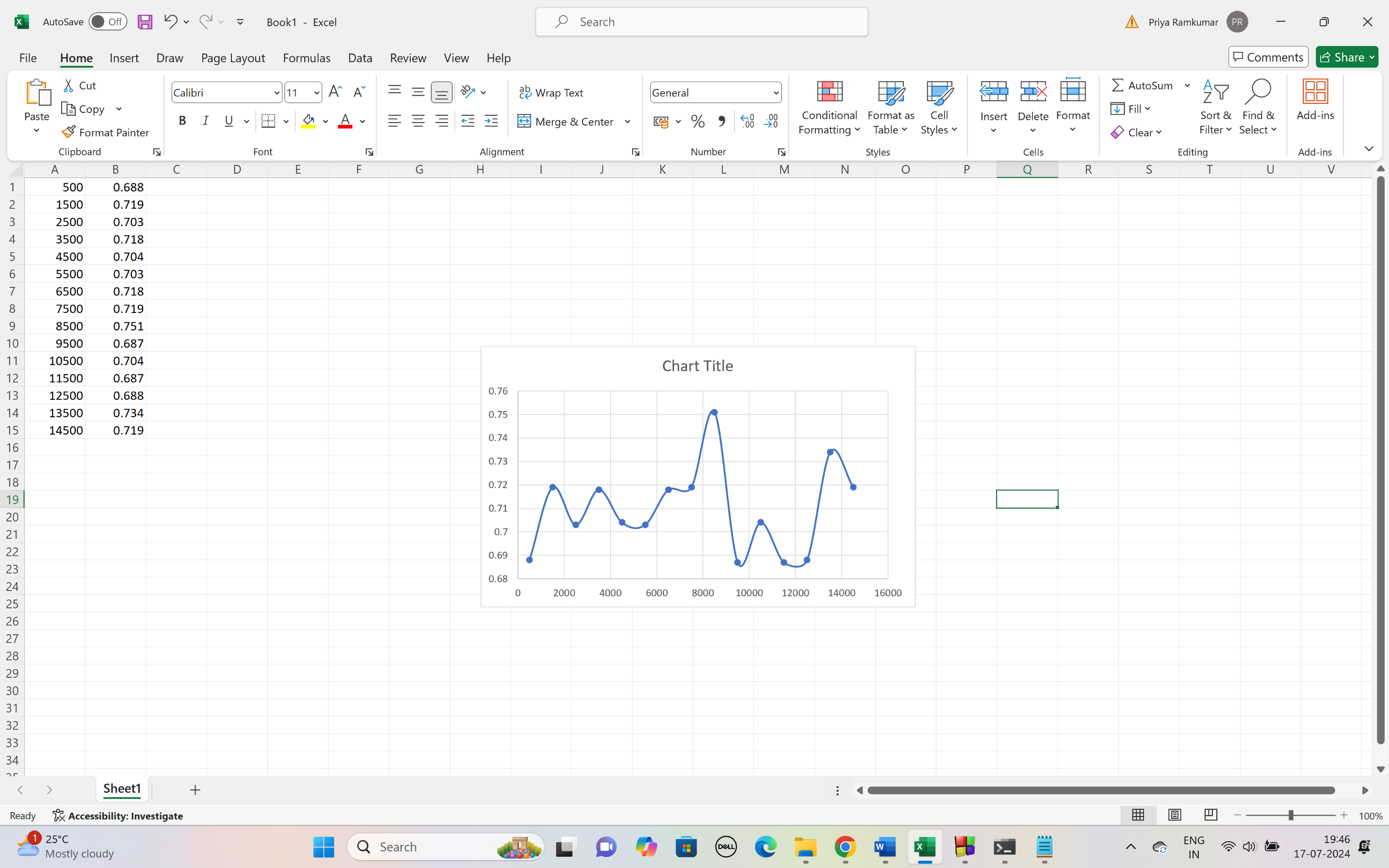
**for(i=low;i<=high;i++){**

**a[i]=c[i];**

**}**

**}**

****

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