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//S Harshini-185001058
#include<stdio.h>
void sort(int a[],int n)
{
   int i,j,temp;
   for(i=0;i<n;i++)
      for(j=i+1;j<n;j++)
         if(a[i]>a[j])
         {
            temp=a[i];
            a[i]=a[j];
            a[j]=temp;
         }
}
int linear(int a[],int n,int k)
{
         for(int i=0;i<n;i++)
                  if(a[i]==k)
                           return i;
         printf("element not found");
   return -1;
}
int binary(int ar[],int n,int k)
{
         int a,b,i,l;
         a=0;
         b=n;
   l=n;
   int c,count=0;
         while(l!=0)
         {
      count++;
      i=(b-a)/2;
      c=a+i;
                  if(ar[a+i]==k)
      {
         printf("\nthe no of times the loop has been run is %d",count);
         return c;
      }
                  else if(ar[a+i]<k)
                           a=a+i+1;
                  else
                           b=a+i-1;
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        l--;
           }
           printf("element not found");
    return -1;
}
void main()
{
           int n,index,e;

           int a[n],k;
                    int ch=1;
    while (1)
    {
        printf("\nenter 1 if you want to search an element else 0");
        scanf("%d",&e);
        if(e==0)
           break;
        printf("\nenter no of elements");
        scanf("%d",&n);
        printf("\nenter the elements of the array");
        for(int i=0;i<n;i++)
        {
           scanf("%d",&a[i]);
        }

        printf("\nenter the element to be searched");
        scanf("%d",&k);
        printf("\nenter your choice 1.linear search 2.binary search ");
        scanf("%d",&ch);
        if(ch==1)
        {
           index=linear(a,n,k);
           printf("\nthe index of searched element is %d ",index+1);
        }
        else
        {
           sort(a,n);
           printf("\nthe sorted array is");
           for(int k=0;k<n;k++)
              printf("%d ",a[k]);
           index=binary(a,n,k);
           if(index!=-1)
              printf("\nthe index of searched element is %d ",index+1);
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    }

  }

/*  SAMPLE I/O
gml8:harshini58 csea68$ ./a.out

enter 1 if you want to search an element else 0
1

enter no of elements9

enter the elements of the array
9 6 13 4 7 5 8 19 56

enter the element to be searched
5

enter your choice 1.linear search 2.binary search 1

the index of searched element is 6
enter 1 if you want to search an element else 0
1

enter no of elements
6

enter the elements of the array
3 6 5 4 8 9

enter the element to be searched
5

enter your choice 1.linear search 2.binary search 2

the sorted array is3 4 5 6 8 9
the no of times the loop has been run is 3
the index of searched element is 3
enter 1 if you want to search an element else 00
*/
```