

Aim:

Write a program to **search** a key element in the given array of elements using `binary search`.

At the time of execution, the program should print the message on the console as:

Enter value of n :

For example, if the user gives the **input** as:

Enter value of n : 3

Next, the program should print the messages one by one on the console as:

Enter element for a[0] :
Enter element for a[1] :
Enter element for a[2] :

if the user gives the **input** as:

Enter element for a[0] : 89
Enter element for a[1] : 33
Enter element for a[2] : 56

Next, the program should print the message on the console as:

Enter key element :

if the user gives the **input** as:

Enter key element : 56

then the program should **print** the result as:

After sorting the elements in the array are
Value of a[0] = 33
Value of a[1] = 56
Value of a[2] = 89
The key element 56 is found at the position 1

Similarly if the key element is given as **25** for the above one dimensional array elements then the program should print the output as "**The Key element 25 is not found in the array**".

Source Code:

BinarySearch.c

```
#include<stdio.h>
void main()
{
    int a[5],i,j,temp,k,n,flag=0;
    printf("Enter value of n : ");
    scanf("%d",&n);
    for(i=0;i<n;i++)
```

```

{
    printf("Enter element for a[%d] : ",i);
    scanf("%d",&a[i]);
}
for(i=0;i<n-1;i++)
{
    for(j=i+1;j<n;j++)
    {
        if(a[j]<a[i])
        {
            temp=a[i];
            a[i]=a[j];
            a[j]=temp;
        }
    }
}
printf("Enter key element : ");
scanf("%d",&k);
printf("After sorting the elements in the array are\n");
for(i=0;i<n;i++)
{
    printf("Value of a[%d] = %d\n",i,a[i]);
}
for(i=0;i<n;i++)
{
    if(k==a[i])
    {
        flag++;
        break;
    }
}
if(flag==1)
printf("The key element %d is found at the position %d\n",k,i);
else
printf("The Key element %d is not found in the array\n",k);
}

```

Execution Results - All test cases have succeeded!

| Test Case - 1 |
|--|
| User Output |
| Enter value of n : 3 |
| Enter element for a[0] : 25 |
| Enter element for a[1] : 15 |
| Enter element for a[2] : 23 |
| Enter key element : 45 |
| After sorting the elements in the array are |
| Value of a[0] = 15 |
| Value of a[1] = 23 |
| Value of a[2] = 25 |
| The Key element 45 is not found in the array |

Test Case - 2

| |
|--|
| User Output |
| Enter value of n : 2 |
| Enter element for a[0] : 80 |
| Enter element for a[1] : 39 |
| Enter key element : 50 |
| After sorting the elements in the array are |
| Value of a[0] = 39 |
| Value of a[1] = 80 |
| The Key element 50 is not found in the array |