

## PROGRAM FOR BINARY SEARCH

```
1    #include<stdio.h>

2    void main()

3    {

4        int i,x,left=0,a[20],n,flag,right,mid,pos,space,time=0;

5        printf("Enter the number of elements: ");

6        time++;

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

8        time++;

9        printf("Enter array elements: ");

10       time++;

11

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

13       {

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

15           time++;

16       }

17

18       right=n-1;

19       printf("Enter the search element: ");

20       scanf("%d",&x);

21       time+=3;

22

23       while (left<=right)

24       {

25           mid = (left+right)/2;
```

```
26         time++;
27         if (x==a[mid])
28         {
29             flag=1;
30             time++;
31             pos = mid;
32             time++;
33             break;
34         }
35
36         else if (x>a[mid]) {
37             left=mid+1;
38             time++;
39         }
40
41         else {
42             right = mid-1;
43             time++;
44         }
45     }
46
47     if (flag==1) {
48         printf("%d is found at position %d\n",x,pos+1);
49         time++;
50     }
51
52     else {
53         printf("%d not found \n",x);
```

```
54         time++;
55     }
56     space = 10*4+(n*4);
57     time++;
58     printf("\n Space complexity: %d\n",space);
59     printf("Time complexity: %d\n",time);
60 }
```