

```

59 //Linear and Binary Search using Recursion
60 #include <stdio.h>
61 #include<stdlib.h>
62 int linear(int a[],int l,int r,int key)
63 {
64     if(r<l)
65         return -1;
66     if(a[l]==key)
67         return l;
68     if(a[r]==key)
69         return r;
70     return linear(a,l+1,r-1,key);
71 }
72 int binary(int a[],int first,int last,int key)
73 {
74     if (last>=first)
75     {
76         int m=first+(last-first)/2;
77         if(a[m]==key){
78             return m;
79         }
80         if(a[m]>key){
81             return binary(a,first,m-1,key);
82         }
83         return binary(a,m+1,last,key);
84     }
85     return -1;
86 }
87 int main()
88 {
89     int a[200],i,choice,key,n,res;
90     printf("Enter the size of the array : ");

```

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90 printf("Enter the size of the array : ");
91 scanf("%d", &n);
92 printf("Enter values of array in ascending order\n");
93 for (i=0;i<n;i++){
94     scanf("%d",&a[i]);
95 }
96 for(;;){
97     printf("\nEnter value to find\n");
98     scanf("%d",&key);
99     printf("1.Linear Search\n2.Binary Search\n3.Exit\n");
100    scanf("%d",&choice);
101    switch(choice){
102        case 1: printf("Linear search :- \n");
103                res=linear(a,0,n-1,key);
104                if(res!=-1){printf("%d is present at location %d",key,(res+1));}
105                else{printf("%d is not present\n",key);}
106                break;
107        case 2: printf("Binary search :- \n");
108                res=binary(a,0,n-1,key);
109                if(res==-1){printf("%d is not present in the list\n",key);}
110                else{printf("%d is found at location %d\n",key,(res+1));}
111                break;
112        case 3: exit(0);
113        default:printf("Proper instruction not provided\n");
114                break;
115    }
116 }
117 return 0;
118 }
119

```


Enter the size of the array : 5

Enter values of array in ascending order

12

45

55

56

89

Enter value to find

89

1.Linear Search

2.Binary Search

3.Exit

1

Linear search :-

89 is present at location 5

Enter value to find

56

1.Linear Search

2.Binary Search

3.Exit

2

Binary search :-

56 is found at location 4

Enter value to find

30

1.Linear Search

2.Binary Search

3.Exit

1

Linear search :-

30 is not present

Enter value to find

45

1.Linear Search

2.Binary Search

3.Exit

3

Process returned 0 (0x0) execution time : 51.240 s

Press any key to continue.