

### Q1.

```
#include<iostream>

#define max 100

using namespace std;

int main()

{

int a[100];

int t,i,key,n,flag,c;

cout<<"enter number of test cases";

cin>>t;

for(int p=0;p<t;p++)

{

flag=0;

c=0;

cout<<"enter the number of elements:";

cin>>n;

cout<<"enter the elements";

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

cin>>a[i];

cout<<"enter the element to be searched";

cin>>key;

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

{
```

```
c++;  
if(a[i]==key)  
{  
    flag=1;  
    break;  
}  
}  
if(flag==1)  
    cout<<"Present ";  
else  
    cout<<"not Present";  
cout<<c<<endl;  
}  
return 0;  
}
```

**OUTPUT-**

enter number of test cases3

enter the number of elements:8

enter the elements34 35 65 31 25 89 64 30

enter the element to be searched89

Present 6

enter the number of elements:5

enter the elements977 354 244 546 355

enter the element to be searched244

Present 3

enter the number of elements:6

enter the elements23 64 13 67 43 56

enter the element to be searched63

not Present6

-----

**Q2.**

```
#include<iostream>
```

```
#define max 100
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int a[100];
```

```
    int t,i,key,n,flag,c;
```

```
    cout<<"enter number of test cases";
```

```
    cin>>t;
```

```
    for(int p=0;p<t;p++)
```

```
    {
```

```
        flag=0;
```

```
        c=0;
```

```
        cout<<"enter the number of elements:";
```

```
        cin>>n;
```

```
        cout<<"enter the sorted array";
```

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

```
        cin>>a[i];
```

```
        cout<<"enter the element to be searched";
```

```
        cin>>key;
```

```
        int l=0,u=n-1,mid;
```

```

while(l<=u)
{
    c++;
    mid=(l+u)/2;
    if(key==a[mid])
    {
        flag=1;
        break;
    }
    else if(key<mid)
        u=mid-1;
    else
        l=mid+1;
}

if(flag==1)
    cout<<"Present ";
else
    cout<<"not Present";
cout<<c<<endl;
}

return 0;    }

```

**OUTPUT-**

enter number of test cases3

enter the number of elements:5

enter the sorted array12 23 36 39 41

enter the element to be searched41

Present 3

enter the number of elements:8

enter the sorted array21 39 40 45 51 54 68 72

enter the element to be searched69

not Present4

enter the number of elements:10

enter the sorted array101 246 438 561 796 896 899 4644 7999 8545

enter the element to be searched7999

Present 3

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**Q3.**

```
#include<iostream>
```

```
#include<cmath>
```

```
#define max 100
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int a[100];
```

```
    int t,i,key,n,flag,c;
```

```
    cout<<"enter number of test cases";
```

```
    cin>>t;
```

```
    for(int p=0;p<t;p++)
```

```
    {
```

```
        flag=0;
```

```
        c=0;
```

```
        cout<<"enter the number of elements:";
```

```
        cin>>n;
```

```
        cout<<"enter the sorted array";
```

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

```
            cin>>a[i];
```

```
        cout<<"enter the element to be searched";
```

```
        cin>>key;
```

```
        int pos=0,k=0;
```

```

for(i=0;i<n;i=pow(2,k))
{c++;

    if(a[i]>=key)
    {
        flag=1;
        break;
    }
    pos=i;
    k++;
}

if(flag==1)
{
    if(a[i]==key)
    cout<<"Present ";
    else
    {

        for(int j=pos;j<i;j++)
        {c++;
            if(key==a[j])

```



```
        {  
            cout<<"Present";  
            break;  
        }  
        else  
            cout<<"not Present";  
    }  
}  
  
}  
  
else  
    cout<<"not Present";  
    cout<<c<<endl;  
}  
return 0;  
}
```

**OUTPUT-**

enter number of test cases3

enter the number of elements:5

enter the sorted array12 23 36 39 41

enter the element to be searched41

Present 3

enter the number of elements:8

enter the sorted array21 39 40 45 51 54 68 72

enter the element to be searched69

not Present3

enter the number of elements:10

enter the sorted array101 246 438 561 796 896 899 4644 7999 8545

enter the element to be searched7999

Present 4

-----