

```
1 #include<stdio.h>
2 int main()
3 {
4     int t;
5     scanf("%d", &t);
6     while(t--)
7     {
8         int n;
9         scanf("%d", &n);
10        int a[n];
11        for(int i=0;i<n;i++)
12            scanf("%d", &a[i]);
13        int k;
14        scanf("%d", &k);
15        int i=0,j=1,found =0;
16        while(i<n&&j<n)
17        {
18            int diff=a[j]-a[i];
19            if(i!=j&&diff==k)
20            {
21                found=1;
22                break;
23            }
24            else if(diff<k)
25                j++;
26            else
27                i++;
28        }
29        printf("%d\n",found);
30    }
31    return 0;
32 }
```

```
1 #include<stdio.h>
2 void calculate(int arr[],int t)
3 {
4     for (int i=0;i<t;i++)
5     {
6         long long n=arr[i];
7         long long k=(n+1)/2;
8         printf("%lld\n",k*k);
9     }
10 }
11 int main()
12 {
13     int t;
14     scanf("%d",&t);
15     int arr[t];
16     for(int i=0;i<t;i++)
17     {
18         scanf("%d",&arr[i]);
19     }
20     calculate(arr,t);
21     return 0;
22 }
```

```
1 include<stdio.h>
2 include<stdlib.h>
3 int compare(const void *a,const void *b)
4 {
5     return (*(int *)a-*(int *)b);
6 }
7 int upper(int arr[],int n,int key)
8 {
9     int low=0,high=n;
10    while(low<high)
11    {
12        int mid=(low+high)/2;
13        if(arr[mid]<=key)
14            low=mid+1;
15        else
16            high=mid;
17    }
18    return low;
19 }
20 int main()
21 {
22     int n,m;
23     scanf("%d",&n);
24     int nums[n];
25     for(int i=0;i<n;i++)
26         scanf("%d",&nums[i]);
27     scanf("%d",&m);
28     int maxes[m];
29     for(int i=0;i<m;i++)
30         scanf("%d",&maxes[i]);
31     qsort(nums,n,sizeof(int),compare...);
32     for(int i=0;i<m;i++)
33     {
34         int count=upper(nums,n,maxes[i]);
35         printf("%d\n",count);
36     }
37     return 0;
38 }
```