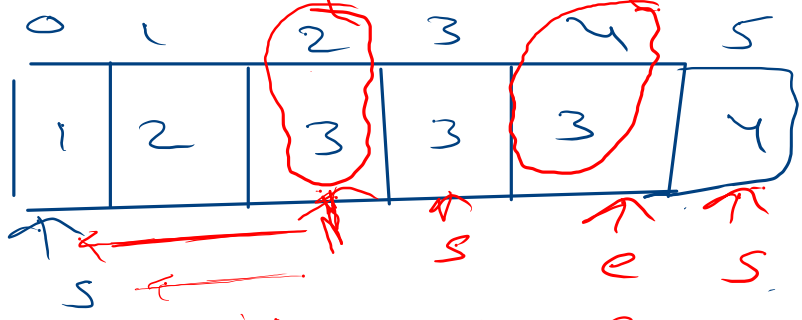
```
6
1 2 3 3 3 4
3
```



possible ans :- 1

possible ans :- 2

3 → 5 = 8/2 = 4

0 + 5 / 2 = 2

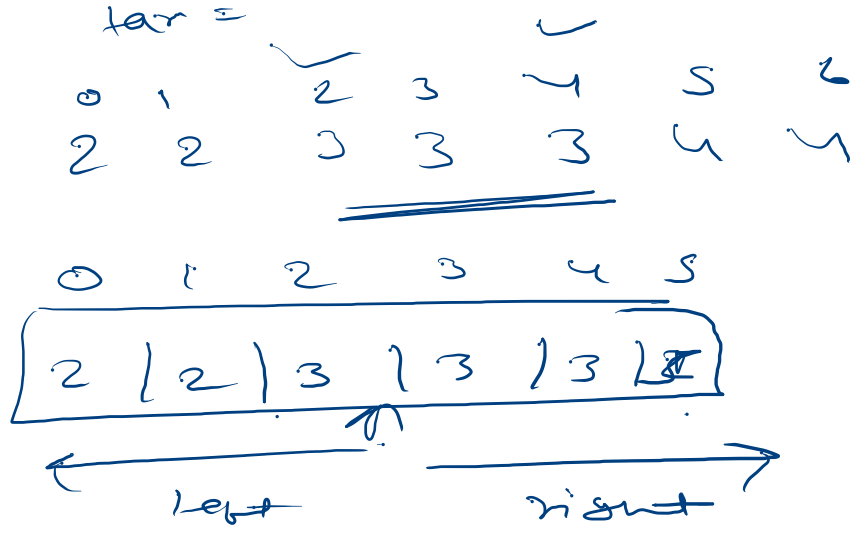
5 + 5

ans :- 2

ans :- 4

```
if (arr[mid] == tar) {
}
else if (arr[mid] < tar) {
    s = mid + 1;
} else {
    e = mid - 1;
}
```

```
    }
    int tar = sc.nextInt();
    int first = lastOccurance(arr,tar,true);
    int last = lastOccurance(arr,tar,false);
    System.out.println(first);
    System.out.println(last);

ublic static int lastOccurance(int[] arr,int tar,boolean
){
    int start=0,end = arr.length-1;
    int ans=-1;
    while(start<=end){
        int mid = (start+end)/2;
        if(arr[mid]==tar){
            ans=mid;
           if(check){
               end = mid-1;
           }else{
               start = mid+1;
           }
        }
        else if(arr[mid]<tar){
            start=mid+1;
        }else{
            end = mid-1;
        }
    }
```

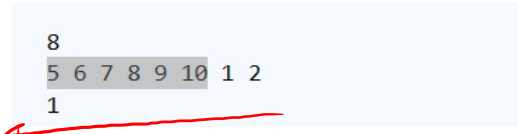


Find Last Occurrence

Language: Java 7

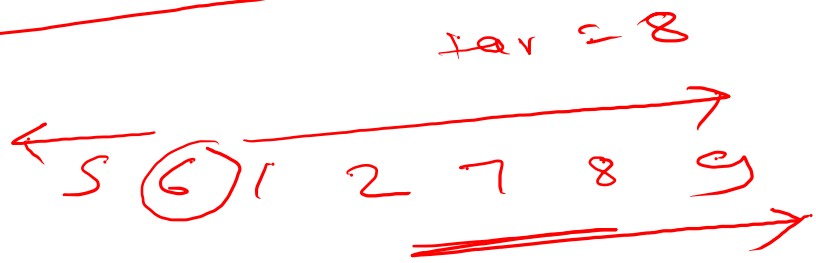
Open in editor

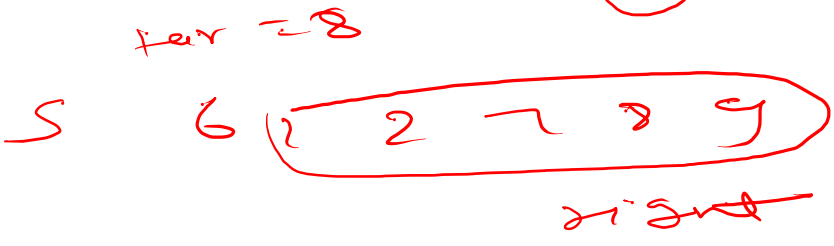
```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int[] arr = new int[n];
        for(int i=0;i<n;i++){
            arr[i] = sc.nextInt();
        }
        int tar = sc.nextInt();
        int ans = lastOccurance(arr,tar);
        System.out.println(ans);
    }
    public static int lastOccurance(int[] arr,int tar){
        int start=0,end = arr.length-1;
        int ans=-1;
        while(start<=end){
            int mid = (start+end)/2;
            if(arr[mid]==tar){
                ans=mid;
                start=mid+1;
            }
            else if(arr[mid]<tar){
                start=mid+1;
            }else{
                end = mid-1;
            }
        }
        return ans;
    }
}
```


8
5 6 7 8 9 10 1 2
1


5 6 7 8 9 10 1 2


5 6 7 8 9 10
left


var = 8
5 6 1 2 7 8 9


var = 8
5 6 1 2 7 8 9
right

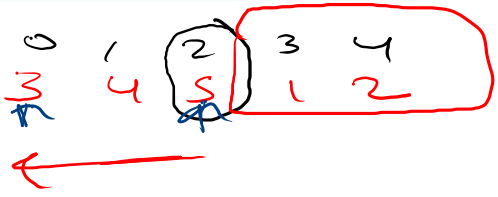
HW_Find Element in Rotated Array

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
         Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int[] arr = new int[n];
        for(int i=0;i<n;i++){
            arr[i] = sc.nextInt();
        }
        int tar = sc.nextInt();
        System.out.println(findElement(arr,tar));
    }
    public static int findElement(int[] arr,int tar){
        int start=0, end = arr.length-1;
        while(start<=end){
            int mid = (start+end)/2;
             if(arr[mid]==tar){
                 return mid;
             }
            else if(arr[start]<=arr[mid]){
                if(arr[start]<=tar && arr[mid]>tar){
                    end = mid-1;
                }else{
                    start = mid+1;
                }
            }
            else{
                if(arr[end]>=tar && arr[mid]<tar){
                     start = mid+1;

                }else{
                   end = mid-1;
                }
            }
        }
        return -1;
```

```
5
5 1 2 3 4
```

Sample Output 0

```
0
```

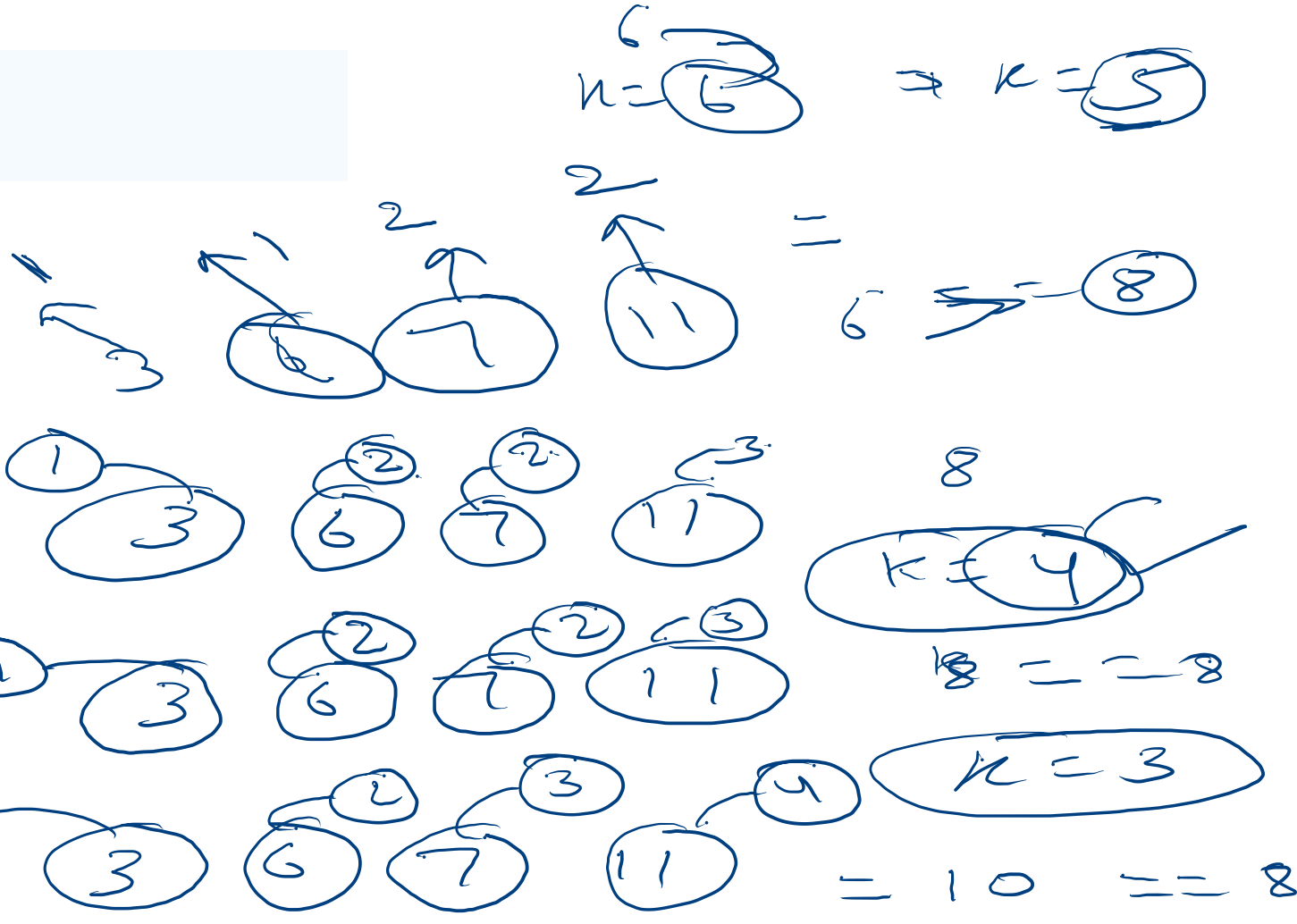



```
while (s<=end) {
int mid = (s+end)/2
if (arr[mid]<arr[mid+1]) {
return mid;
}
else if (arr[mid]>=arr[0])
{
start = mid+1;
}
else {
end = mid-1;
}
```

Find The Index of Rotation

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your
         Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int[] arr = new int[n];
        for(int i=0;i<n;i++){
            arr[i] = sc.nextInt();
        }
        System.out.println(findIndex(arr));
    }
    static int findIndex(int[] arr){
        int start=0, end = arr.length-1;
        while(start<=end){
            int mid = (start+end)/2;
            if(arr[mid]>arr[mid+1]){
                return mid;
            }else if(arr[mid]>= arr[0]){
                start = mid+1;
            }
            else{
                end = mid-1;
            }
        }
        return -1;
    }
```

```
4
3 6 7 11
8
```


6
n = 6
⇒ k = 5
2
2
1
=
3
6
7
11
6
8
1
3
2
6
2
7
3
11
8
k = 4
8 = = 8
1
3
2
6
2
7
3
11
k = 3
1
3
2
6
3
7
4
11
= 10 = = 8