Problems on Array-1

Assignment Solutions

PW SKILLS

Q1 - Given an array sorted in increasing order of size n and an integer x, find if there exists a pair in the array whose absolute difference is exactly x.(n>1) (Medium)

Input:

N = 5

Arr[] = [5,10,15,20,26]

x= 10

Expected Output:

Yes

Explanation:

- Traverse the array and consider every element as a possible part of the pair to be found.
- Traverse the array again for further indices and look for the given difference.
- If two numbers have a difference equal to x, then the pair is complete, return yes.
- Else print no after the loops which will only run if you do not find a pair.

Code:

```
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    System.out.print(“Enter the length of the array: ”);
    int n = scn.nextInt();
    int[] arr = new int[n];
    for(int i = 0; i < n; i++){
     arr[i] = scn.nextInt();
    }
    int x = scn.nextInt();
    for(int i = 0; i < n; i++){
      for(int j = i+1; j < n; j++){ //check for pair with all elements 1 by 1
        if(arr[j] - arr[i]== x){
          System.out.print("Yes");
          return;
        }
      }
    }
    System.out.print("No");
  }
}
```

```
5
5 10 15 20 26
10
Yes
Process finished with exit code 0
```

Q2 - Given an array of size n, find the total number of occurrences of given number x. (Easy)

Input:

n = 7

arr[] = [3, 5, 0, 7, 8, 3, 0]

x = 0

Expected Output:

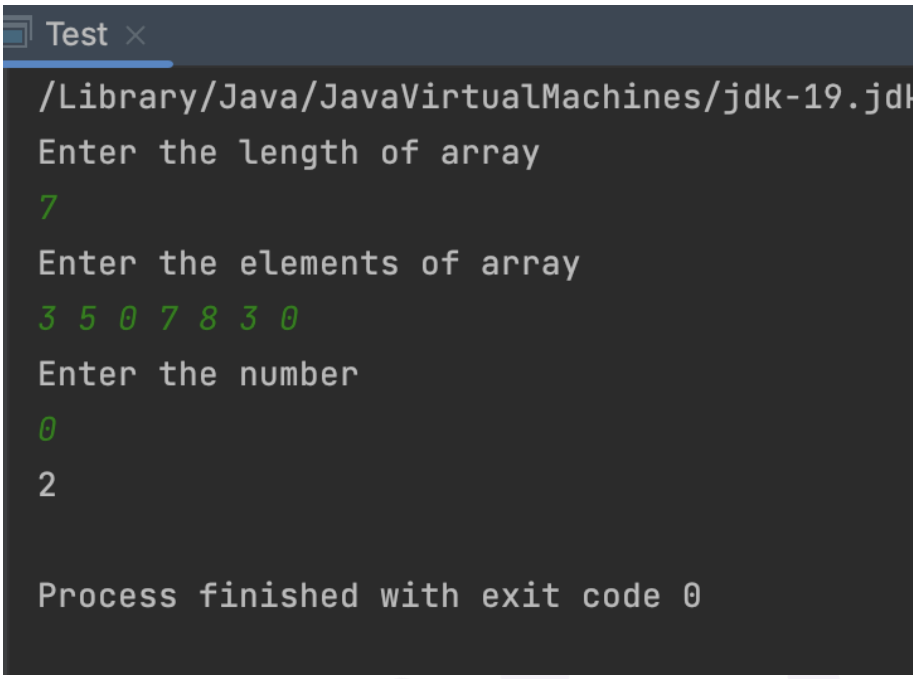
2

Explanation:

- Keep a pointer count, and traverse the array, and check for each element being equal to x
- If current element equals z, increment count
- Print count in the end.

Code:

```
import java.util.Scanner;
public class Test{
  public static void main(String[] args){
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of array");
    int n = scn.nextInt();
    int[] arr = new int[n];
    System.out.println("Enter the elements of array");
    for(int i = 0; i < n; i++){
      arr[i] = scn.nextInt();
    }
    System.out.println("Enter the number");
    int x = scn.nextInt();
    int count = 0;
    for(int i = 0; i < arr.length; i++){
      if(arr[i] == x){
        count++;
      }
    }
    System.out.println(count);
  }
}
```



Q3 - Given an array arr[] of size N-1 with integers in the range of [1, N], the task is to find the missing number from the first N integers. There are no duplicates in the list. (Medium)

Input:

n = 7

arr[] = {1, 2, 4, 6, 3, 7, 8}

Expected Output:

5

Explanation:

- Logic is to mark the element at the current element as index, negative. So, whichever element would be missing, the element at the missing element as index would be positive.
- Traverse the given array, if the absolute value of current element is greater than size of the array, then continue, else multiply the (absolute value of (current element) – 1)th index with -1.
- Initialize a variable ans = size + 1.
- Traverse the array and if the value is positive assign ans = index + 1, print and return
- Print n+1 in the end, this will run only when no element is missing from 1 to n.

Code:

```
import java.util.Scanner;
public class Test{
  public static void main(String[] args){
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of array");
    int n = scn.nextInt();
    int[] arr = new int[n];
    System.out.println("Enter the elements of array");
    for(int i = 0; i < n; i++){
      arr[i] = scn.nextInt();
    }
    for (int i = 0; i < n; i++) {
      if (Math.abs(arr[i]) - 1 == n) {
          continue;
      }
      int ind = Math.abs(arr[i]) - 1;
      arr[ind] *= -1;
    }
    int ans = 0;
    for(int i = 0; i < n; i++) {
      if (arr[i] > 0){
          ans = i + 1;
          System.out.println(ans);
          return;
      }
    }
    System.out.println(n+1);
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jdk/
Enter the length of array
7
Enter the elements of array
1 2 4 6 3 7 8
5

Process finished with exit code 0
```