Aim:

To compare the scores of Alice and Bob in three categories and calculate the total points scored by each person.

Algorithm:

1.Accept two lists a and b each containing three integers

2.Initialize aliceScore and bobScore to zero

3.Set index to zero

4.Compare a at index with b at index

5.If a is greater than b then increase aliceScore by one

6.If a is less than b then increase bobScore by one

7.Increase index by one

8.Repeat steps four to seven until index becomes two

9.Store aliceScore and bobScore in a list

10.Return the result list

Procedure:

1.Read the first list of integers for Alice

2.Read the second list of integers for Bob

3.Start comparing values from the first position

4.Award one point to the person whose value is higher

5.Do not award any point if both values are equal

6.Continue comparison for all three positions

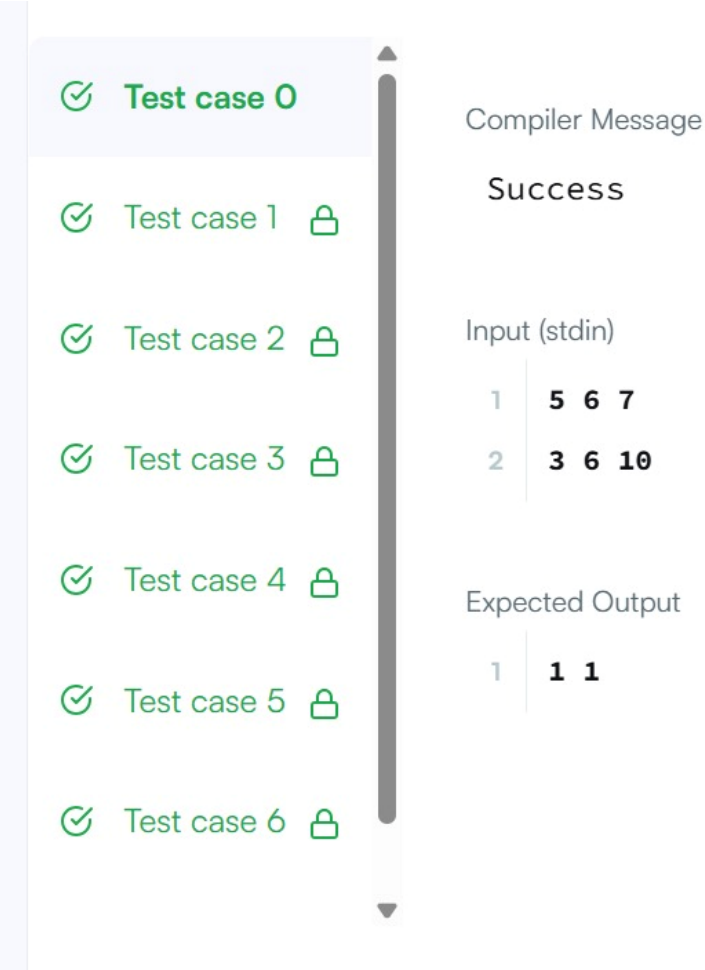
7.Store the final scores in a list

8.Display the result

Program:

```
public static List<Integer> compareTriplets(List<Integer> a,
List<Integer> b) {


    int alice = 0;
    int bob = 0;


    for (int i = 0; i < 3; i++) {
        if (a.get(i) > b.get(i)) {
            alice++;
        } else if (a.get(i) < b.get(i)) {
            bob++;
        }
    }


    List<Integer> result = new ArrayList<>();
    result.add(alice);
    result.add(bob);


    return result;
}
```

Output:



Result:

The program successfully compares the three scores of Alice and Bob. For each position one point is awarded to the person with the higher value. After all comparisons are completed the final scores are stored in a list and returned as output. The output correctly displays the total points scored by Alice and Bob.

Aim:

To determine whether an integer array contains any duplicate elements.

Algorithm:

1. Create an empty set to store visited numbers.
2. Traverse each element in the array one by one.
3. If the current element is already present in the set then return true.
4. Otherwise add the element to the set.
5. If the loop finishes without finding duplicates then return false.

Procedure:

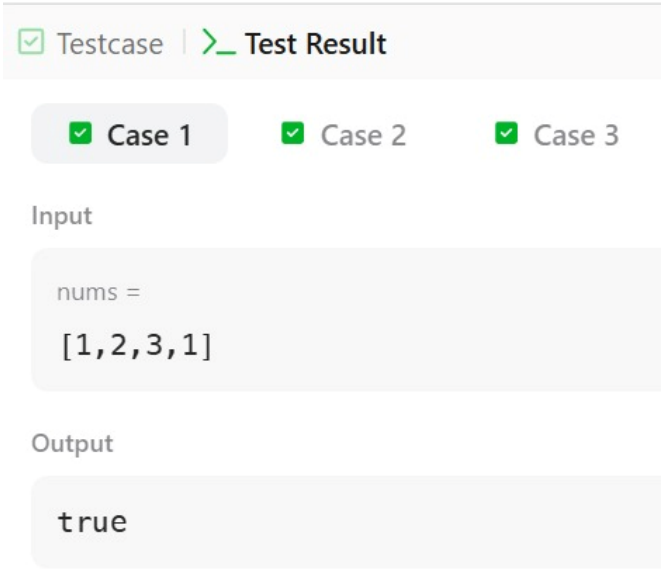
1. Start the program.
2. Read the array of integers.
3. Initialize an empty set.
4. For each number in the array check whether it exists in the set.
5. If it exists output true and stop.
6. If not add the number to the set and continue.
7. After checking all elements output false.
8. Stop the program.

Program:

```
class Solution {
    public boolean containsDuplicate(int[] nums) {
        Arrays.sort(nums);

        for (int i = 1; i < nums.length; i++) {
            if (nums[i] == nums[i - 1]) {
                return true;
```

```
            }
        }

        return false;
    }
}
```

Output:



Result:

If any number appears more than once in the array the output is true.

If all numbers are unique the output is false.