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Day 14: Scope

by [blondiebytes](#)

Tutorial

Problem

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Objective

Today we're discussing *scope*. Check out the [Tutorial](#) tab for learning materials and an instructional video!

The *absolute difference* between two integers, a and b , is written as $|a - b|$. The *maximum absolute difference* between two integers in a set of positive integers, *elements*, is the largest absolute difference between any two integers in *elements*.

The *Difference* class is started for you in the editor. It has a private integer array (*elements*) for storing N non-negative integers, and a public integer (*maximumDifference*) for storing the maximum absolute difference.

Task

Complete the *Difference* class by writing the following:

- A class constructor that takes an array of integers as a parameter and saves it to the *elements* instance variable.
- A *computeDifference* method that finds the maximum absolute difference between any 2 numbers in N and stores it in the *maximumDifference* instance variable.

Input Format

You are not responsible for reading any input from stdin. The locked *Solution* class in your editor reads in 2 lines of input; the first line contains N , and the second line describes the *elements* array.

Constraints

- $1 \leq N \leq 10$
- $1 \leq elements[i] \leq 100$, where $0 \leq i \leq N - 1$

Output Format

You are not responsible for printing any output; the *Solution* class will print the value of the *maximumDifference* instance variable.

Sample Input

```
3
1 2 5
```

Sample Output

```
4
```

Explanation

The scope of the *elements* array and *maximumDifference* integer is the entire class instance. The class constructor saves the argument passed to the constructor as the *elements* instance variable (where the *computeDifference* method can access it).

To find the maximum difference, *computeDifference* checks each element in the array and finds the maximum difference between any **2** elements:

$$|1 - 2| = 1$$

$$|1 - 5| = 4$$

$$|2 - 5| = 3$$

The maximum of these differences is **4**, so it saves the value **4** as the *maximumDifference* instance variable. The locked stub code in the editor then prints the value stored as *maximumDifference*, which is **4**.

Easy

Submitted 44933 times Max Score 30

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Current Buffer (saved locally, editable)

Java 8



```
1 ▶ import java.util.*;
6
7
8 class Difference {
9     private int[] elements;
10    public int maximumDifference;
11
12    // Add your code here
13
13 ▼ Difference(int[] elements) {
14     this.elements = elements;
15 }
16
17 ▼ public void computeDifference() {
18     // compute max difference
19 ▼     for (int i = 0; i < elements.length; i++) {
20 ▼         for (int j = 0; j < elements.length; j++) {
21 ▼             Math.abs(elements[i] - elements[j]);
22 ▼             if (Math.abs(elements[i] - elements[j]) > maximumDifference) {
23 ▼                 maximumDifference = Math.abs(elements[i] - elements[j]);
24 ▼             }
25         }
26     }
27 }
28
29 } // End of Difference class
30
31 ▼ public class Solution {
```

```
32
33 public static void main(String[] args) {
34     Scanner sc = new Scanner(System.in);
35     int n = sc.nextInt();
36     int[] a = new int[n];
37     for (int i = 0; i < n; i++) {
38         a[i] = sc.nextInt();
39     }
40     sc.close();
41
42     Difference difference = new Difference(a);
43
44     difference.computeDifference();
45
46     System.out.print(difference.maximumDifference);
47 }
48 }
```

Line: 40 Col: 20

 [Upload Code as File](#)☐ Test against custom input

Run Code

Submit Code

Testcase 0 Testcase 1 Testcase 2 **Congratulations, you passed the sample test case.**Click the **Submit Code** button to run your code against all the test cases.**Input (stdin)**

```
3
1 2 5
```

Your Output (stdout)

```
4
```

Expected Output

```
4
```

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