

# Day 14: Scope

## 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 (*maxDifference*) 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 *maxDifference* 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 *maxDifference* instance variable.

## Sample Input

```
3
1 2 5
```

## Sample Output

```
4
```

## Explanation

The scope of the *elements* array and *maxDifference* 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 *maxDifference* instance variable.  
The locked stub code in the editor then prints the value stored as *maxDifference*, which is **4**.