EXERCISE 10 – FindMaxElement

In this assignment, you will create a program that given an array of Integers return the highest value in the array.

Problem

To achieve your objective, you just need to complete one method. Such method receives as input parameter an array of integer values. It then searches for the highest value in the array and returns as output such value.

Find below the skeleton of the class you will get to get started, which includes the method you must complete:

```java
/**
 * This class provides functions to search in arrays.
 *
 */

public class Finder {

    /**
     * Finds the maximum element in an integer array.
     * @param input the array to search in
     * @return the maximum element of input
     */
    public int findMaximumElement(int[] input) {

        // Your task:
        // - Check if this function works for all possible integers.
        // - Throw an Error object with message "Array is empty."
        // if the input array is empty.

        int maxElement = 5;

        // ADD YOUR CODE HERE

        return maxElement;
    }

}
```

Fig. 1. Finder class skeleton

Testing Instructions

In order to run and test your program, the TestFinder class shown below is provided.
Find below the Main class provided:

```java
/**
 * Class to test the findMaximumElement method
 * of Finder class
 */

import java.util.*;

public class TestFinder {

    public Map<int[], Integer> getArrays() {

        // create the finder and call the function to find the maximum element
        Map<int[], Integer> testInputs = new HashMap<int[], Integer>();

        testInputs.put(new int[] {2, 3, 42, 12, 7}, 42);
        testInputs.put(new int[] { -11, -55, -1, -12 }, -1);
        testInputs.put(new int[] { 5, 4, 3, 2, 1 }, 5);

        return testInputs;
    }
}
```

Fig. 2. TestFinder class

Once you think you have reached a solution, you could try if it works properly just by hitting the Run button. As a result, your program will be run using as inputs the 3 arrays included in the testInputs shown in the previous figure and compared against the values you indicated as valid outputs. In other words:

- The output of findMaximumElement({2, 3, 42, 12, 7}) will be compared against the 42 value.
- The output of findMaximumElement({ -11, -55, -1, -12 }) will be compared against the -1 value.
- The output of findMaximumElement({ 5, 4, 3, 2, 1 }) will be compared against the 5 value.

The system will inform then about the result of those executions, as the following figure illustrates.

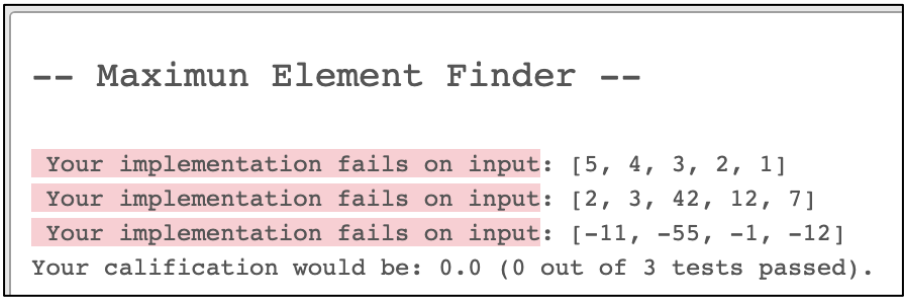

Fig. 3. Running output

Apparently, the solution provided has failed to get the maximum element of the 3 arrays used as input. The solution provided has consequently passed 0 out 3 tests and its mark would have been consequently 0.0 points.

You can change the testInputs and/or add more testInputs, just by copy/paste the correspondence sentence. For each sentence you should just provide an array of Integer values along with an Integer value that should be the output method.

Submission Instructions

Once you have finished submit your solution using the Submit button of Codeboard