# Exam "Fundamentals of programming with C#" – 21 January 2018

## Problem 1. Underground Waters

## History

You just love the rain and you have the amazing opportunity to examine the underground waters that were formed from the last rainy month. You are in search of something unordinary. **Your job is to understand if there is something that is worth a further investigation or not.**

## Description

### You are going to receive two input lines. Each one consists of integer numbers separated by a single space which you must parse to an Integer array. For more information, read the Input section.

Those two input lines represent two arrays: **Air Array** and **Raindrops Array**.

**Air Array**: You have almost nothing to do with this array except to understand the number of **\*local maximum values.**

**Raindrops Array:** You must **subtract** the count of **\*local maximum values (of Air Array)** from **each element** and then discard all elements which are less than or equal to 0 (<= 0).

**\*Local Maximum Value:** A value in an array which is **greater than** its left and its right neighbor. If there is no left or right neighbor count their values as 0. Examples: [1, 10, 8] -> 10 (because 10 is bigger than 1 and 8)

[18, 2, 4, 1, 15, 15] -> 18 (because left neighbor is 0) and 4

[1] -> 1 (because it is bigger than 0 on the left and 0 on the right)

When you finish the work with the **Raindrops Array** you must find the **biggest value** out **of** the **local maximum values** from both the **Air Array** and the edited **Raindrops Array.** If there are **no local maximum values** for any of the arrays, consider the **biggest value** to be **0**.

Finally, you must compare the **two** **biggest values** from the **two arrays** and print an output with the format described in the **Output section**.

Example: [18, 2, 4, 1, 15, 15] -> Two local maximum values [18, 4] -> 18 is the **Biggest Local Maximum Value**.

### Input

Exactly two input lines:

1. **Air Array –** a string containing integers separated by a single space**. May be an empty string („“).**
2. **Raindrops Array** – a string containing integers separated by a single space**. May be an empty string („“).**

### Output

**If** the Total Maximum Value from the Air Array and the one from the Raindrops array **are equal,** you must print the following **two strings (the second one must be on a new line):**

“**Something interesting was found!**”

“**Sum: {0}**” ({0} is the **sum** of the two **biggest local maximums**)

If the **biggest value** out of thelocal maximum values from the Air Array and the one from the Raindrops array **are NOT equal,** you must print the following **two strings (the second one must be on a new line):**

**“There is nothing unordinary!”**

**“Difference: {0}”** ({0} is the **Absolute Difference** of the **biggest local maximums**)

Examples:

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Description** |
| 4 8 2 3 1 10 5  13 2 0 | Something interesting was found!  Sum: 20 | **There are 3 local max values from the Air Array – 8, 3, 10.**  **You have 3 elements in the Raindrops Array and you subtract the value 3 from each Raindrop Array element. So the transformation looks like this:**  **13, 2, 0 -> 10, -1, -3 -> 10.**  **You discard all numbers which are <= 0 and you are left with the number 10.**  **The total local maximum element from the Air Array is 10 and the total local maximum element from the Raindrops Array is 10.**  **10 is equal to 10 and the sum is 20.** |
| **Input** | **Output** | **Description** |
| 1 8 2 10 10 15 1  2 3 12 8 | There is nothing unordinary!  Difference: 5 | **There are 2 local max values from the Air Array – 8, 15.**  **You have 4 elements in the Raindrops Array and you subtract the value 2 from each Raindrop Array element. So the transformation looks like this:**  2, 3, 12, 8 **-> 0, 1, 10, 6 -> 1, 10, 6.**  **You discard all numbers which are <= 0 and you are left with the array 1, 10, 6.**  **The total local maximum element from the Air Array is 15 and the total local maximum element from the Raindrops Array is 10.**  **15 is NOT equal to 10 and the absolute difference is 5.** |
| **Input** | **Output** |
| 10 2 10  12 | Something interesting was found!  Sum: 20 |