Assignment Java Cast Group

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**Maximum Difference in an Array**

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You are given an array of integers and must compute the maximum difference between any item and any lower indexed smaller item for all the possible pairs, i.e., for a given array a find the maximum value of a[j] - a[i] for all i, j where 0 ≤ i < j < n and a[i] < a[j]. If there are no lower indexed smaller items for all the items, then return -1.

For example, given an array [ 1, 2, 6, 4], you would first compare 2 to the elements to its left. 1 is smaller, so calculate the difference 2 - 1 = 1. 6 is bigger than 2 and 1, so calculate the differences 4 and 5. 4 is only bigger than 2 and 1, and the differences are 2 and 3. The largest difference was 6 - 1 = 5.

**============================Function Description==============================**

Complete the function maxDifference that must return an integer representing the maximum difference in a.

// Complete the maxDifference function below.

static int maxDifference(int[] a) {

}

maxDifference has the following parameter(s):

a[a[0],a[1],...a[n-1]]: an array of integers

Constraints

1 ≤ n ≤ 2 × 105

−106 ≤ a[i] ≤ 106 ∀ i ∈ [0, n − 1]

**=====================Input Format For Custom Testing===========================**

Input from stdin will be processed as follows and passed to the function:

The first line contains a single integer, n, denoting the number of elements in the array a.

Each of the n subsequent lines contains a single integer describing element a[i] where 0 ≤ i < n.

**=============================Sample Case 0==================================**

**Sample Input 0**

7

2

3

10

2

4

8

1

**Sample Output**

8

**Explanation**

n = 7, a = [2, 3, 10, 2, 4, 8, 1]

**Differences are calculated as:**

3 - [2] = [1]

10 - [3, 2] = [7, 8]

4 - [2, 3, 2] = [2, 1, 2]

8 - [4, 2, 3, 2] = [4, 6, 5, 6]

The maximum is found at 10 - 2 = 8.

=============================Sample Case 1=================================

**Sample Input 1**

6

7

9

5

6

3

2

**Sample Output**

2

Explanation

n = 6, a = [7, 9, 5, 6, 3, 2]

Differences are calculated as:

9 - [7] = 2

6 - [5] = 1

The maximum difference is 2.