Fullstack Engineer Test

54m : 11s
to test end

☆ Maximum Difference in an Array

The *maximum difference* between elements in some array, *a*, is defined as the largest difference between any *a[i]* and *a[j]* where $i < j$ and $a[i] < a[j]$. For example, if $a = [4, 1, 2, 3]$, the maximum difference would be $a[3] - a[1] = 3 - 1 = 2$ because this is the largest difference between any two elements satisfying the aforementioned criteria.

Complete the *maxDifference* function in the editor below. It has *1* parameter: an array of integers, *a*. It must return an integer denoting the maximum difference between any pair of elements in *a*; if no such number exists (e.g., if *a* is in descending order and all $a[j] < a[i]$), return -1 instead.

Input Format

Locked stub code in the editor reads the following input from stdin and passes it to the function:
The first line contains a single integer, *n*, denoting the number of elements in array *a*.
Each line *i* of the *n* subsequent lines (where $0 \le i < n$) contains a single integer describing element *a[i]*.

Constraints

- $1 \le n \le 2 \times 10^5$
- $-10^6 \le a[i] \le 10^6 \ \forall i \in [0, n-1]$

Output Format

The function must return an integer denoting the maximum difference in *a*. This is printed to stdout by locked stub code in the editor.

Sample Input 0

```
7
2
3
10
2
4
8
1
```

Sample Output 0

```
8
```

As *a[2] = 10* is largest element in the array, we must find the smallest *a[i]* where *0 ≤ i < 2*. This ends up being *2* at index *i = 0*.
We then calculate the difference between the two elements: *a[2] − a[0] = 10 − 2 = 8*, and return the result (*8*).

Note: While the largest difference between any two numbers in this array is *9* (between *a[2] = 10* and *a[6] = 1*), this cannot be the maximum difference because the element having the smaller value (*a[6]*) must be of a lesser index than the element having the higher value (*a[2]*). As *j = 2* is not less than *i = 6*, these elements cannot be used to calculate the maximum difference.

Sample Input 1

```
6
7
9
5
6
3
2
```

Sample Output 1

```
2
```

Explanation 1

n = 6, a = [7, 9, 5, 6, 3, 2]
The maximum difference returned by the function is *a[1] − a[0] = 9 − 7 = 2*, because *2* is the largest difference between any *a[i]* and *a[j]* satisfying the conditions that *a[i] < a[j]* and *i < j*.

YOUR ANSWER

Draft saved 08:13 am Original code Python 2

```
1  #!/bin/python
2
3  import sys
4  import os
5
6
```

Fullstack Engineer Test

54m : 11s
to test end

```
        "Aim": "To print of max difference in pairs"
        "Coded by": "Rishikesh Agrawani"
    }
"""

def  maxDifference(a):
    max_diff = 0
    exists = False

    i = 0
    while i < len(a):
        j = i + 1
        while j < len(a):
            diff = a[i] - a[j]
            if diff < 0:
                exists = True
                if abs(diff) > max_diff:
                    max_diff = abs(diff)
            j = j + 1
        i = i + 1

    if exists:
        return max_diff

    return -1


```

```
f = open(os.environ['OUTPUT_PATH'], 'w')


_a_cnt = 0
_a_cnt = int(raw_input())
_a_i=0
_a = []
while _a_i < _a_cnt:
    _a_item = int(raw_input());
    _a.append(_a_item)
    _a_i+=1


res = maxDifference(_a)
f.write(str(res) + "\n")

f.close()

```

Line: 18 Col: 5

Fullstack Engineer Test

54m : 11s
to test end

Download sample test cases *The input/output files have Unix line endings. Do not use Notepad to edit them on windows.*

Compiled successfully. 7/14 test cases passed.

Tip: Debug your code against custom input

Test Case #1:	✔
Test Case #2:	✔
Test Case #3:	✔
Test Case #4:	✔
Test Case #5:	✔
Test Case #6:	✔
Test Case #7:	✔
Test Case #8:	🕒
Test Case #9:	🕒
Test Case #10:	🕒
Test Case #11:	🕒
Test Case #12:	🕒
Test Case #13:	🕒 Terminated due to timeout
Test Case #14:	🕒

Testcase 1: *Success*

Input [Download]

```
7
2
3
10
2
4
8
1
```

Your Output

```
8
```

Testcase 2: *Success*

Input [Download]

```
6
7
9
5
6
3
2
```

Your Output

```
2
```

Expected Output [Download]

```
2
```

Testcase 3: *Success*

Input [Download]

```
5
10
8
7
6
5
```

Your Output

```
-1
```

Expected Output [Download]

```
-1
```

Testcase 4: *Success*

Your Output

```
Output hidden
```

Testcase 5: *Success*

Your Output

Testcase 6: *Success*

Your Output

```
Output hidden
```

Testcase 7: *Success*

Your Output

```
Output hidden
```

Testcase 8: *Terminated due to timeout*

Your Output

```
Output hidden
```

Testcase 9: *Terminated due to timeout*

Your Output

```
Output hidden
```

Testcase 10: *Terminated due to timeout*

Your Output

```
Output hidden
```

Testcase 11: *Terminated due to timeout*

Your Output

```
Output hidden
```

Testcase 12: *Terminated due to timeout*

Your Output

```
Output hidden
```

Testcase 13: *Terminated due to timeout*

Your Output

Fullstack Engineer Test

54m : 11s
to test end

Testcase 14: *Terminated due to timeout*

Your Output

```
Output hidden
```