Largest banner

1 second, 256 MB

There are **N** poles on a straight line. For 1 <= **i** <= **N**, pole **i** is of height $\mathbf{H_i}$. To set up a banner, you want two poles of the same height such that there is no other pole of that height in between. (Formally, to attach a banner you want two indices **a** and **b** (**a** < **b**) such that $\mathbf{H_a} = \mathbf{H_b}$ and for every **c** such that **a** < **c** < **b**, $\mathbf{H_c}$ is not equal to $\mathbf{H_a}$.)

You want to attach the largest possible banner. That is, you want to find two indices **a** and **b** that maximize |**b** – **a**|.

Consider the following example, where N = 10. The following table lists poles' heights.

i	1	2	3	4	5	6	7	8	9	10
$\mathbf{H_i}$	10	1	10	3	2	2	10	7	3	9

Note that you can attach a banner using many pairs of poles. For example, poles 1 and 3 (with banner size 3-1=2), or poles 4 and 9 (with banner size 9-4=5). But you cannot attach a banner using poles 1 and 8 (because they are of different heights) or using pole 1 and 7 (because pole 3 is of height 10 as well). For this example, attach a banner using pole 4 and 9 gives you the largest banner of size 5.

Input

First line of the input contains an integer **N** (2<=N<=100,000). There are 10% of test cases where **N** <= 100. There are other 30% of test cases where **N** <= 2,000.

The next **N** lines describe poles' heights. More specifically, for 1 <= **i** <= **N**, line 1+**i** contains an integer $\mathbf{H_i}$, the height of pole i (1 <= $\mathbf{H_i}$ <= 1,000,000,000). There are 70% of test cases that $\mathbf{H_i}$ <= 100,000.

Output

There is one line of output containing the size of the largest banner that you can attach to poles under the described condition. If you cannot attach any banner, your program should output `-1`.

Example 1

Input	Output
10 10 1 10 3 2 2 10 7 3 9	5

Example 2

Input	Output
4 1 2 3 4	-1