Server Room Safety

You are appointed as a system admin in a firm, and it is your responsibility to check the safety of the server racks in one of the server rooms. The server racks are arranged in an array. If any rack reaches another rack when it falls, it will cause the other rack to fall. Safety rules require that at least some of the racks should remain standing if one of the ends falls toward the others.

Your task is to determine whether either or both ends will cause all racks to fall should one be tipped. To determine if a rack will knock over another rack, use the following two rules*:

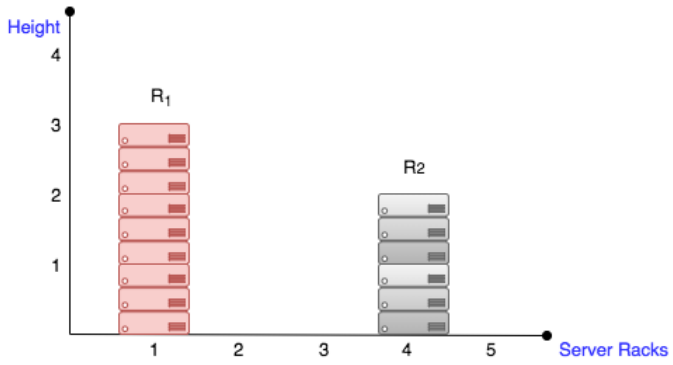
1. Left rack falls: i + $h[i]$ >= *index of next rack to the right*
2. Right rack falls: i - $h[i]$ <= *index of next rack to the left*

* Assume the position of a rack is $i$and its height is $h[i]$.

The test is based on a single event. In other words, if it takes toppling both the left and right ends to knock down all the servers, you still pass the safety inspection.

An example follows:

In the image shown below, rack $R1$ can trigger the fall of rack $R2$ since $1 + 3 \geq 4$, but rack $R2$ can't trigger the fall of rack $R1$ since $4 - 2 \not\leq 1$.



Complete the function checkAll, which takes the positions and heights of the server racks as input, and return $string \in [' LEFT', ' RIGHT', ' BOTH', ' NONE']$ representing which of the ends is unsafe.

Input Format

In the first line, the number of racks, n, will be given. In the second line, the position of each rack, x_i, will be given. In the third line, the height of each rack, h_i, will be given.

Constraints

- $0 < n \leq 100$
- $0 < x_i \leq 1000$
- $0 < h_i \leq 1000$

Output Format

If the racks fall over no matter from which end it gets triggered, then return BOTH. If the racks fall over due to rack at leftmost or rightmost, then return LEFT or RIGHT respectively. If the racks don't fall over no matter what, then return NONE.

Sample Input 0

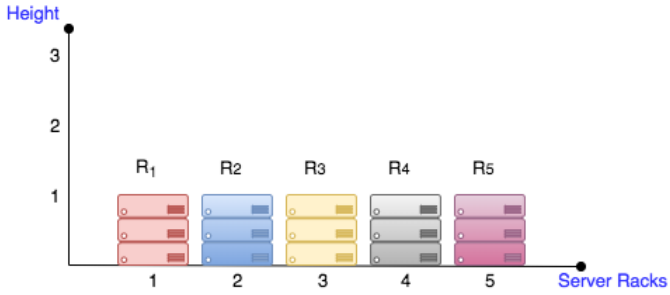
```
5
1 2 3 4 5
1 1 1 1 1
```

Sample Output 0

```
BOTH
```

Explanation 0

Each of the piles in this case are situated 1 unit away from each other, and the height of each pile is also 1 unit. All of the piles will fall over regardless of the side which is pushed over.



Sample Input 1

```
5
1 2 3 4 8
1 1 1 1 1
```

Sample Output 1

```
NONE
```

Explanation 1

If the leftmost pile is pushed over, only the first four piles will fall over. The last pile will remain untouched, as none of the previous ones can reach it. Similarly, if the rightmost pile is pushed over, it can't reach any of the others.