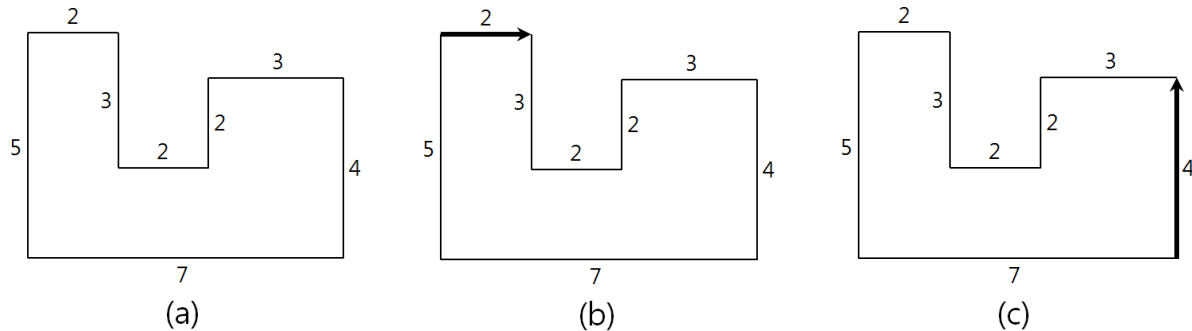


Right-Angled Polygon

We call a polygon a **right-angled polygon** if the internal angle at each corner is either 90° or 270° , no two sides share points other than at most one corner, and no two corners are at the same location.



For example, consider a right-angled polygon with 8 corners shown in (a) above. The numbers near the sides indicates the lengths of the sides. One way to represent this right-angled polygon is to start at an arbitrary corner, move in arbitrary direction on the sides and indicate the lengths of the sides along with the turning direction at the corners. For example, if we start at the left corner of the thick side in (b) and move in the direction indicated by the arrow, the representation would be as shown below. In below, an L indicates a left turn and an R indicates a right turn.

(2, R), (3, L), (2, L), (2, R), (3, R), (4, R), (7, R), (5, R)

If we build a representation as shown in (c), then the resulting representation would be as follows:

(4, L), (3, L), (2, R), (2, R), (3, L), (2, L), (5, L), (7, L)

Of course these two different representations actually represent an identical right-angled polygon. Let's consider *len* to represent some length and if we shorten (*len*, L) to *len* (a positive number) and (*len*, R) to $-len$ (a negative number), then the above representations can be respectively transformed into sequences of integers like the following:

(-2, 3, 2, -2, -3, -4, -7, -5), (4, 3, -2, -2, 3, 2, 5, 7)

Write a program, given two sequences of integers S_1 and S_2 , to determine if the two sequence represent an identical right-angled polygon or not.

[Input]

In the first line of the input file is given the number T of test cases in the file. ($T \leq 65$) Each test case consists of 3 lines, of which the first line contains the number N of corners of the right-angled polygon(s). The second line contains N integers which make up the first of the given representations. The third line contains the second representation. The absolute values of all integers will be between 1 and 100, inclusive. Any given representation is guaranteed to be the representation of a right-angled polygon.

There are two sets of inputs as follows:

- Set 1: $4 \leq N \leq 1,000$

- Set 2: $4 \leq N \leq 100,000$

[Output]

For each of the given test cases, you have to print either 1 or 0 in a line. Print a 1 if the two representations are for an identical right-angled polygon. Print a 0 otherwise.

[I/O Example]

Input

```
5
8
-2 3 2 -2 -3 -4 -7 -5
4 3 -2 -2 3 2 5 7
20
-3 1 1 -1 -3 3 -1 -1 1 -3 -3 1 1 -1 -3 3 -1 -1 1 -3
-3 1 1 -1 3 -3 1 1 -1 3 -3 1 1 -1 3 3 -1 -1 1 3
18
1 3 2 -1 1 -1 -1 2 1 3 -1 2 -1 1 1 -1 1 -2
-3 -1 2 1 -1 1 -1 -2 -3 1 -2 1 -1 -1 1 -1 2 -1
18
1 -2 1 3 2 -1 1 -1 -1 2 1 4 -1 1 -1 1 1 -1
1 -1 -1 1 -1 1 -1 -4 -1 2 1 -1 1 -1 -2 -3 1 -2
18
1 3 2 -1 1 -1 -1 2 1 3 -1 2 -1 1 1 -1 1 -2
1 -2 1 3 2 -1 1 -1 -1 2 1 4 -1 1 -1 1 1 -1
```

Output

```
1
0
1
1
0
```