Domino's effect

Original problem statement (in Polish) can be found [here](#).

Dominik "Domino" Domański is a scientist. He's conducting research on quantum physics. Lately, he started taking a closer look at certain very interesting effect, which can be observed when some quantum objects interact.

In his next experiment, he placed **n** infinitely thin lines on the table, perpendicularly to the surface, in a row. Lines have different heights, distances between the lines can also differ. (Dominik calls these lines "domino tiles"). Looking from the front, they look like **n** segments, standing vertically on the X axis of the Cartesian coordinate system.

Domino tiles can be toppled. If a tile has a height of **h**, it will topple other tiles at most **h** units away. More precisely, if tile is placed at the position **x**, and is knocked over to the right, it will topple the tiles placed at positions **x**+1, **x**+2, ..., **x**+**h**. If this tile is knocked over to the left, it will topple the tiles at positions **x**-1, **x**-2, ..., **x**-**h**.

Dominik observed a very interesting phenomenon, which he called "Domino's effect" - toppling one domino tile can cause other tiles to topple, which can in turn topple other tiles. He started to wonder how to take advantage of this effect in a best possible way. What is the minimum number of tiles that need to be toppled, in order for all the dominoes to fall?

Input

The first line contains a single integer **t**, denoting the number of testcases. Then, testcases follow.

The description of a single testcase begins with a single integer **n** (1 <= **n** <= 1000) - the number of domino tiles in an arrangement.

It is followed by **n** integers $\mathbf{h_i}$ - heights of subsequent tiles.

It ends with **n**-1 integers $\mathbf{d_i}$ - distances between neighboring tiles.

(1 <= $\mathbf{h_i}$, $\mathbf{d_i}$ <= 10^6).

Output

For every testcase you should find a sequence of domino tiles, that will knock down the whole arrangement. It should begin with an integer **k** (1 <= **k** <= **n**), denoting the number of tiles to be pushed. Then, descriptions of moves should follow. One move is described by one integer $\mathbf{x_i}$ (1 <= $\mathbf{x_i}$ <= **n**) and one letter (either L or P). It means that during the **i**-th move, we topple a tile number $\mathbf{x_i}$ (counting from 1, according to original arrangement). L means that we knock it over to the left, P means knocking over to the right.

The sequence should knock over all the tiles, while using as few moves as possible.

Example

Input:

```
1
6
1 5 1 1 1 1
2 1 2 1 1
```

Output:

```
2
2 P
1 L
```

Explanation

First we topple the domino tile number 2 (of length 5) to the right, which knocks over everything to the right of that tile. Then, we topple tile number 1 - the only one that remains.