C: Generating Polygons

Memory limit: **128 MB**

Johnny has learned many new things about triangles and quadrangles in geometry class, including how to compute their perimeter and area. He isn't so good at computing these things but he really started to like drawing different polygons. Due to both aesthetic and practical reasons he does so in the following way:

- he draws an edge along one of the grid lines (horizontal or vertical) in such a way that the endpoints lie on lines perpendicular to it; this means that edges have integer lengths and are parallel to grid lines (and to axes),
- he never lifts his pencil off, so that his polygon has no "holes", and terminates at the starting point,
- each point lies on at most two edges; moreover, when a point lies on exactly two edges it is an endpoint of both of them (so it is a vertex of the polygon).

Johnny quickly noticed that computing perimeter and area of this type of polygons is very easy, so now he is wondering how to draw such polygons that would have a given perimeter p and area a.

Can you help him by providing an instruction how to draw it?

Input

The first and only line of input contains two integers p and a, separated by single space ($4 \le p \le 10^6$, $1 \le a \le 10^{12}$). They denote respectively the perimeter and area of a polygon Johnny wants to draw.

Output

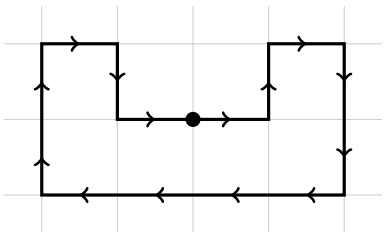
The output should consist of exactly one line. If a polygon with aforementioned properties of perimeter p and area a exists the line should contain a description of such polygon. The description should consist of p letters `L`, `B`, and `P`. They denote respectively: rotate 90 degrees left (counterclockwise), no rotation, and rotate 90 degrees right (clockwise). After performing the rotation (if any) specified by the character, a segment of length 1 will be drawn in the current direction. The starting direction is facing up.

In the opposite case, when such polygon does not exist, the only output line should contain the word `NIE`.

Example

Input	Output
`14 6`	`PLPPBPBBBPBPPL`

The instruction describes the following figure which has perimeter 14 and area 6. The starting point is marked with a dot.



Input	Output
`20 26`	`NIE`

It is easy to see that the polygon with perimeter 20 and maximum area is a 5×5 square.