

Problem C. Chalk Outline

Input file: *standard input*
 Output file: *standard output*
 Time limit: 2 seconds
 Memory limit: 512 mebibytes

Your friend Grace has an assignment. She has to draw a simple polygon. It must have exactly n vertices. It must not intersect or touch itself. No three consecutive vertices of the polygon must be collinear. All coordinates of its vertices must be integers between -10^9 and 10^9 , inclusive. Easy, right?

There is one more small restriction, though.

A *diagonal* of a polygon is a line segment connecting two non-neighboring vertices. We'll call a diagonal *internal* if every point lying on the diagonal (excluding vertices) lies **strictly inside** the polygon.

The number of internal diagonals of the polygon must be equal to k .

Grace has been trying to solve this problem for three days with no success. You are much more time-restricted, but have to help her anyway.

Input

The only line of the input contains two integers n and k ($4 \leq n \leq 100$; $0 \leq k \leq \frac{n(n-3)}{2}$).

Output

If it's impossible to draw a polygon satisfying the requirements, output a single word "No".

Otherwise, output "Yes" followed by n pairs of integers x_i and y_i ($-10^9 \leq x_i, y_i \leq 10^9$) — coordinates of polygon vertices in clockwise or counterclockwise order.

The polygon must not intersect or touch itself. No two vertices must coincide. No three consecutive vertices must lie on the same line.

Examples

standard input	standard output
5 4	Yes 0 0 3 0 2 1 3 2 0 2
5 2	Yes 0 0 2 0 1 1 2 2 0 2
4 0	No

Note

In the second example test case, diagonals connecting vertices 1 and 4 and vertices 2 and 5 are not internal.