Contest Analysis

Questions asked 2

Submissions

Testrun

| 0pt | Not attempted **0/6 users** correct (0%) |

kolakoski

| 8pt | Not attempted **5/7 users** correct (71%) |
| 17pt | Not attempted **2/5 users** correct (40%) |

necklace

| 16pt | Not attempted **10/10 users** correct (100%) |
| 29pt | Not attempted **9/10 users** correct (90%) |

rocks

| 7pt | Not attempted **2/2 users** correct (100%) |
| 53pt | Not attempted **0/1 users** correct (0%) |

shipping

| 26pt | Not attempted **2/6 users** correct (33%) |
| 44pt | Not attempted **0/1 users** correct (0%) |

Top Scores

bmerry	103
Marcin.Smulewicz	71
shik	70
MiSawa	60
ZbanIlya	53
WJMZBMR	45
simonlindholm	45
mk.al13n	45
wan92hy	45
dreamoon	24

Problem D. **rocks**

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the **Quick-Start Guide** to get started.

| small 7 points 2 minute timeout | The contest is finished. |
| large 53 points 10 minute timeout | The contest is finished. |

Problem

You own an almond farm in a region which for the last few years has been experiencing an extreme, record-breaking drought. Reservoirs are drying up, mandatory water rationing is in effect, and you are facing pressure to do something about this farm of yours that is consuming 4 liters of water per almond.

As you survey the regular grid-like arrangement of your farm, a brilliant idea strikes you. You should turn the land into a giant board where people can play life-sized versions of their favorite grid-based board games! So you take out all the almond trees and turn your farm into an amusement park by sectioning your land into a square **N**-by-**N** grid.

Unfortunately, the region you are in is also known for its earthquakes, and soon after you convert your land, an earthquake strikes, triggering a landslide that drops giant rocks onto your grid, each rock conveniently occupying the space of exactly one of the cells. No cell contains more than one rock.

You are now trapped in the bottom left corner (the cell with coordinates (0, 0)), and you need to get to the exit at the top right corner (the cell with coordinates (**N**-1, **N**-1)). You can move only up or to the right 1 cell at a time and cannot squeeze past any rocks or climb over them, so if you want to move into a cell that is occupied by a rock, you have to push it into next cell in the same direction as you are moving. If there is already a rock in that cell, it will also get pushed in the same direction, and so on, until finally there is a square without rocks. After every push, each rock occupies exactly one cell. You can push up to **K** rocks at the same time in this manner, but you cannot push rocks off the grid. Is it possible to reach the exit?

Input

The input library is called "rocks"; see the sample inputs below for examples in your language. It defines three methods:

- GetN(), which returns the number of rows of the grid (which is equal to the number of columns);
- GetK(), which returns the maximum number of rocks you can push in front of you; and
- IsRock(x, y), which returns true if there is a rock in the cell with coordinates (x, y).

A single call to IsRock() will take approximately 0.05 microseconds.

Output

Output one line containing the word "YES" if it is possible to reach the exit, or the word "NO" if it is impossible.

Limits

Each node will have access to 600MB of RAM, and a time limit of 4 seconds.
IsRock(0, 0) and IsRock(GetN() - 1, GetN() - 1) will return false.
$0 \leq$ GetK() $\leq$ GetN()
Your solution will run on 100 nodes in both inputs.

Small input

$2 \leq$ GetN() $\leq 2,000$

Large input

$2 \leq$ GetN() $\leq 10,000$

Sample

Input	Output
See input files below.	For sample input 1: YES

```
                                  For sample input 2:
                                  NO
                                  For sample input 3:
                                  NO
```

Sample input libraries:
Sample input for test 1: rocks.h [CPP] rocks.java [Java]
Sample input for test 2: rocks.h [CPP] rocks.java [Java]
Sample input for test 3: rocks.h [CPP] rocks.java [Java]