Beehive Numbers

A beehive is an enclosed structure in which some honey bee species live and raise their young. In this problem we consider a two-dimensional sketch of the beehives. Each beehive is composed of a certain number of cells, where each cell is a regular hexagon. Each cell may have some neighbors, which are other cells that share a side with that cell. A cell with exactly 6 neighbors is an internal cell, while a cell with fewer neighbors is an external one. Notice that an external cell can always be changed to internal by adding some neighbor cells.

We are interested in a particular class of beehives. This class of valid beehives is defined recursively as follows: a) a single cell is a valid beehive; and b) given a valid beehive B, if we add the minimum number of cells such that each external cell of B becomes an internal cell, the result is a valid beehive.

The number of cells in a valid beehive is called a beehive number. Given an integer N, you must decide whether it is a beehive number.

Input

Each test case is described using a single line. The line contains an integer N ($1 \leq N \leq 10^9$). The end of input is indicated with a line containing a single –1.

Output

For each test case, output a single line containing an uppercase "Y" if N is a beehive number, or an uppercase "N" otherwise.

Example

Input:
```
43
1
7
19
15
-1
```

Output:
```
N
Y
Y
Y
N
```