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Magical stones

Famous stones Xi-n-k can only be found in Wonderland. Such a stone is simply a granite board with an inscription consisting only of letters `X` *and* `I`*. Each board contains exactly n letters. There are not more than k positions in each board where letters* `X` *and* `I` *are next to each other.*

The top and bottom sides of the stones are not fixed, so the stones can be rotated upside-down. For instance two figures below depict exactly the same stone:

`IXXIIXXX` `XXXIIXXI`

Fig. 1: Two ways of looking at the same stone. This stone is of type Xi-8-3, but also Xi-8-4 (and also of any type Xi-8-k for $k \geqslant 3$).

No two magic stones in Wonderland are the same, i.e. no two stones contain the same inscription (remember that the upside-down rotation of a stone is allowed).

If it is possible to read the inscription of some stone in two different ways (using the upside-down rotation) then the **canonical representation** *of the stone is defined as the lexicographically less*[1] *of these two ways of reading the inscription.*

If a stone's inscription is symmetrical, i.e. the upside-down rotation does not change it, then its canonical representation is defined as the unique way of reading this inscription.

Example: *There are exactly 6 stones of type Xi-3-2. Their canonical representations written in lexicographical order are:* `III`*,* `IIX`*,* `IXI`*,* `IXX`*,* `XIX` *and* `XXX`*.*

Alice is a well-known expert on the Xi-n-k stones from Wonderland. She would like to create a lexicographical index of the canonical representations of

[1] We say that inscription A is lexicographically less than B (assuming that lengths of A and B are the same) if A contains letter `I` and B contains letter `X` at the first position where the inscriptions differ.

all stones of type Xi-n-k (for some specific values of n and k). What inscription should be written at position i of the index, for a given value of i?

Task

Write a programme which:

- *reads numbers n, k and i from the standard input,*
- *determines the i-th (in the lexicographical order) canonical representation of a Xi-n-k stone,*
- *writes the result to the standard output.*

Input

The first and only line of the standard input contains three integers n, k and i ($0 \leqslant k < n \leqslant 60$, $0 < i < 10^{18}$) separated by single spaces.

Output

The first and only line of the standard output should contain the i-th (in the lexicographical order) canonical representation of a Xi-n-k stone.

If the number of Xi-n-k stones is less than i then the first and only line of output should contain expression `NO SUCH STONE`.

Example

For the input data:	*the correct result is:*
`3 2 5`	`XIX`
and for the input data:	*the correct result is:*
`3 2 7`	`NO SUCH STONE`