Waterloo 2016 Fall C - Wizard of Odds

Time limit: 1.0s   **Memory limit:** 64M

You have just completed a brave journey to see *The Wizard of Odds*, who agrees to grant you any wish, so long as you can complete the following puzzle:

The Wizard starts by telling you two integers: N and K. He then secretly selects a number from 1 to N (inclusive), and does not tell you this number.

Your goal is to correctly guess the secret number. Before guessing, you are allowed to ask K "true/false" questions about the number, for example, *"Is the number even?"* or *"Is the number between 7 and 10?"*, or *"Is the number 17 or 22?"*, or *"Is the number prime?"*. And the Wizard will answer with "true" or "false" to each question. The Wizard will always answer honestly. After answering the K questions, you must guess the number. If you win (guess the number correctly), you will be granted your wish; but if the Wizard wins (you guess incorrectly), you will be turned into a flying monkey.

(Formally, you can think of a "question" as a function from $\{1, 2, \ldots, N\}$ to $\{\text{true}, \text{false}\}$, and the Wizard will answer by telling you whether the value of the function is *true* or *false* for his secret number.)

Assuming that you have been told N and K, can you always exactly determine the Wizard's secret number (and guarantee that you win) using only K questions?

Input Specification

The input consists of a single line containing two integers N and K ($2 \leq N \leq 10^{100}$, $0 \leq K \leq N$), separated by a single space.

Note: These inputs might NOT fit into a 64-bit integer.

Output Specification

Output `Your wish is granted!` if it is possible for you to guarantee that you win the game (regardless of the number the Wizard picks). Otherwise, print `You will become a flying monkey!` if it is not possible.

Sample Input 1

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8 3
```

Sample Output 1

```
Your wish is granted!
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Sample Input 2

```
1234567890987654321 2
```

Sample Output 2

```
You will become a flying monkey!
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