

Can You Guess My Sequence?

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 1024 megabytes

This is a communication problem.

Alice has a sequence a_1, a_2, \dots, a_n with the following properties.

- $a_1 < a_2 < \dots < a_n$
- $0 \leq a_i < 20$, for all $1 \leq i \leq n$.

Alice wants to transfer her sequence to Bob. To do that, she can transfer an integer x within $[0, 10^9]$ to Bob. Help them to find any strategies!

Interaction Protocol

In this problem, your solution will be run twice in each test.

First Run

In the first run, your solution will play the role of Alice. You should read the sequence from the input, and output a single integer to indicate the number you would like to transfer.

Input

The first line of the input contains a single string `Alice`, indicating the role of this run.

The next line of the input contains a single integer n , indicating the length of the sequence.

The next line of the input contains n integers a_1, a_2, \dots, a_n , indicating the sequence.

It is guaranteed that $a_1 < a_2 < \dots < a_n$ and $0 \leq a_i < 20$ for all $1 \leq i \leq n$.

Output

Output a single line with a single integer x ($0 \leq x \leq 10^9$), indicating the number Alice should transfer to Bob.

Second Run

In the second run, your solution will play the role of Bob. You should read the number x from the input, and output the sequence you recovered.

Input

The first line of the input contains a single string `Bob`, indicating the role of this run.

The next line of the input contains a single integer x ($0 \leq x \leq 10^9$), indicating the number Alice transferred to Bob.

Output

The first line of the output contains a single integer n , indicating the length of the sequence you recovered.

The next line of the output contains n integers a_1, a_2, \dots, a_n , indicating the sequence you recovered.

Examples

standard input	standard output
Alice 6 2 3 5 8 10 15	1024
Bob 1024	6 2 3 5 8 10 15