Ambar and Negative Base

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Bored with standard binary representation, Ambar is trying to represent numbers in base (-2).
In order to do that, he has a binary string corresponding to representation of a number N in base (-2), and now inductively wants to find the representation of $N + 1$ in base (-2). Help him do that.
Note: The right-most digit is the least significant bit, i.e. corresponding to $(-2)^0$, and the left-most digit corresponds to $(-2)^{|s|-1}$.

Input

The first and only line of input contains a binary string s ($1 \leq |s| \leq 10^5$), the given number N in base (-2). It is guaranteed that the string doesn't contain leading zeros, incase $|s| > 1$.

Output

Output a single line, consisting a binary string of representing $(N+1)_{-2}$, which does not contain leading zeros incase the length of the string is > 1.

Examples

standard input	standard output
0	1
1	110
11	0
101	11010