

Problem D. Infinite Pattern Matching

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 256 mebibytes

Consider the infinite binary string I formed by concatenating the binary representations of all the strictly positive integers in increasing order: $I = "11011100\dots"$.

You are given a binary string A . Your task is to find the smallest integer L such that A is a suffix of $I[1\dots L]$.

Input

The only line of input contains the binary string A , $1 \leq |A| \leq 55$.

Output

Print a single line with a single integer: the number L .

Examples

standard input	standard output
11	2
011011	42