

Another Divisibility Problem

You are given a positive base-2 integer of at most 100 digits and a base-10 integer in the range $[1, 10^6]$. You are to find the minimum number of bit switch operations to perform in the first number in order to make it divisible by the second. Available operations are:

- Make a '0' turn to '1'.
- Make a '1' turn to '0'.

Input

Input consists of exactly two lines. The first one contains a binary number and the second contains a decimal number as described above.

Output

Print the minimum number of operations required on a single line.

Example

Input:

111000111

9

Output:

2

Turning the leftmost and the rightmost digit (both 1) into 0 is one of the possible solutions for the example.

111000111 -> 011000110

$011000110_2 \bmod 9_{10} = 0$

Scoring

Solving this problem you score 10 points.