Problem A. Heretical . . . Möbius

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Rikka was walking around the school building curiously until a strange room with a door number of 404 caught her eyes.

It seemed like a computer room — there were dozens of computers lying orderly, but papers, pens, and whiteboards everywhere built up a nervous atmosphere. Suddenly, Rikka found some mysterious codes displayed on a computer which seemed to have nothing different from others — is this a message from *inner world*?

Excited Rikka started her exploration. The message was generated by a program named *for_patterns_in_mobius* which outputted a string s of length 10^9, containing the value of $|\mu(x)|$ for $x = 1, 2, \dots, 10^9$ in order.

Suddenly, Rikka heard footsteps outside. She quickly took a screenshot and left. The screenshot recorded a string t of length 200, perhaps a substring of s. Now Rikka wonders if it is really a substring of s, and if so, where it first appears in s.

Could you help her to decipher the codes?

Input

There are 10 lines in total. Each line contains 20 characters, each of which is either "0"or "1". t is the concatenation of them — the result of concatenating them in order.

Output

Output a single integer in the only line. If t is a substring of s, output the first position it appears in s, that is, the minimum positive integer p such that all the digits $|\mu(p + i)|$ for $i = 0, 1, \dots, 199$ form the string t. Otherwise output -1.

Examples

standard input	standard output
11101110011011101010 11100100111011101110 11100110001010101110 11001110111011001110 01101110101011101000 11101110111011100110 01100010111011001110 11101100101001101110 10101110010011001110 11101110011011101010	1
01010101010101010101 10101010101010101010 01010101010101010101 10101010101010101010 01010101010101010101 10101010101010101010 01010101010101010101 10101010101010101010 01010101010101010101 10101010101010101010	-1

Note

The definition of $\mu()$ is as follows:

For any positive integer x, let $x = \prod_{i=1}^{k} {p_i}^{c_i}$ be the regular factorization of x, where p_i is a unique prime, c_i is a positive integer, and if $x = 1$ then $k = 0$. Consequently, $\mu(x)$ is defined as

$$\mu(x) = \begin{cases} 0 & \exists c_i > 1, \\ (-1)^k & \text{otherwise} \end{cases}$$