

Problem M. Sum of Cyclic Shifts

Input file: `sum.in`
Output file: `sum.out`
Time limit: 3 seconds
Memory limit: 256 megabytes

Let A be an integer and $a_1 a_2 \dots a_n$ be its decimal notation. Let us define $\text{Shift}(a_1 a_2 \dots a_n) = a_2 a_3 \dots a_n a_1$.
Let $A_1 = A$ and $A_i = \text{Shift}(A_{i-1})$ for $i = \overline{2, n}$. Your task is to find a minimal divisor $d \neq 1$ of $\sum_{i=1}^n A_i$.

Input

A single line contains $1 < A < 10^{1\,000\,000}$. A does not contain zero digit.

Output

Print the required number d .

Example

<code>sum.in</code>	<code>sum.out</code>
12345	3