ICPC NEERC 2010 B - Binary Operation

Time limit: 1.0s **Memory limit:** 64M

Consider a binary operation $\odot$ defined on digits 0 to 9, $\odot : \{0, 1, \ldots, 9\} \times \{0, 1, \ldots, 9\} \rightarrow \{0, 1, \ldots, 9\}$, such that $0 \odot 0 = 0$.

A binary operator $\otimes$ is a generalization of $\odot$ to the set of non-negative integers, $\otimes : \mathbb{Z}_{0+} \times \mathbb{Z}_{0+} \rightarrow \mathbb{Z}_{0+}$. The result of $a \otimes b$ is defined in the following way: if one of the numbers a and b has fewer digits than the other in decimal notation, then append leading zeroes to it, so that the numbers are of the same length; then apply the operation $\odot$ digit-wise to the corresponding digits of a and b.

$$\otimes \begin{array}{r} 5566 \\ 239 \\ \hline ???? \end{array} \longrightarrow \otimes \begin{array}{r} 5566 \\ 0239 \\ \hline ???? \end{array} \longrightarrow \odot \begin{array}{c} 5 \\ 0 \\ \hline 0 \end{array} \odot \begin{array}{c} 5 \\ 2 \\ \hline 0 \end{array} \odot \begin{array}{c} 6 \\ 3 \\ \hline 8 \end{array} \odot \begin{array}{c} 6 \\ 9 \\ \hline 4 \end{array} \longrightarrow \otimes \begin{array}{r} 5566 \\ 0239 \\ \hline 0084 \end{array} \longrightarrow \otimes \begin{array}{r} 5566 \\ 239 \\ \hline 84 \end{array}$$

Example. If $a \odot b = ab \bmod 10$, then $5566 \otimes 239 = 84$.

Let us define $\otimes$ to be left-associative, that is, $a \otimes b \otimes c$ is to be interpreted as $(a \otimes b) \otimes c$.

Given a binary operation $\odot$ and two non-negative integers a and b, calculate the value of $a \otimes (a+1) \otimes (a+2) \otimes \cdots \otimes (b-1) \otimes b$.

Input Specification

The first ten lines of the input contain the description of the binary operation $\odot$. The i^{th} line of the input contains a space-separated list of ten digits - the j^{th} digit in this list is equal to $(i-1) \odot (j-1)$.
The first digit in the first line is always 0.
The eleventh line of the input contains two non-negative integers a and b ($0 \leq a \leq b \leq 10^{18}$).

Output Specification

Output a single number - the value of $a \otimes (a+1) \otimes (a+2) \otimes \cdots \otimes (b-1) \otimes b$ without extra leading zeroes.

Sample Input

```
0 1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9 0
2 3 4 5 6 7 8 9 0 1
3 4 5 6 7 8 9 0 1 2
4 5 6 7 8 9 0 1 2 3
5 6 7 8 9 0 1 2 3 4
6 7 8 9 0 1 2 3 4 5
7 8 9 0 1 2 3 4 5 6
8 9 0 1 2 3 4 5 6 7
9 0 1 2 3 4 5 6 7 8
0 10
```

Sample Output

```
15
```