Ating

Winter Workshops, Day 5. Memory limit: 512 MB. *08.01.2020*

A binary ating operation @ defined on digits 0 to 9, @ : $\{0, 1, ..., 9\}$ x $\{0, 1, ..., 9\} \to \{0, 1, ..., 9\}$, such that 0 @ 0 = 0. A binary operation @ is a generalization of @ to the set of non-negative integers, @ : $Z_{0+} x Z_{0+} \to Z_{0+}$. The result of a @ 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 @ digit-wise to the corresponding digits of a and b.

Example. If a @ $b = a \cdot b \pmod{10}$, then 5566 @ 239 = 84. Let us define @ to be left-associative, that is, a @ b @ c is to be interpreted as (a @ b) @ c. Given a binary operation @ and two non-negative integers a and b, calculate the value of a @ $(a+1)$ @ $(a+2)$ @ . . . @ $(b-1)$ @ b.

Constraints

- All values in the input are integers.
- $1 \leqslant a \leqslant b \leqslant 10^{18}$

Input

```
0@0 0@1 0@2 0@3 0@4 0@5 0@6 0@7 0@8 0@9
1@0 1@1 1@2 1@3 1@4 1@5 1@6 1@7 1@8 1@9
2@0 2@1 2@2 2@3 2@4 2@5 2@6 2@7 2@8 2@9
3@0 3@1 3@2 3@3 3@4 3@5 3@6 3@7 3@8 3@9
4@0 4@1 4@2 4@3 4@4 4@5 4@6 4@7 4@8 4@9
5@0 5@1 5@2 5@3 5@4 5@5 5@6 5@7 5@8 5@9
6@0 6@1 6@2 6@3 6@4 6@5 6@6 6@7 6@8 6@9
7@0 7@1 7@2 7@3 7@4 7@5 7@6 7@7 7@8 7@9
8@0 8@1 8@2 8@3 8@4 8@5 8@6 8@7 8@8 8@9
9@0 9@1 9@2 9@3 9@4 9@5 9@6 9@7 9@8 9@9
a b
```

Output

In the first line of output, write down the result of ating – value of a @ $(a+1)$ @ . . . @ $(b-1)$ @ b.

Scoring

Subtask	Constraints	Points
1	$b \leq 10^5$	15
2	$b \leq 10^8$	17
3	$b \leq 10^{12}$	37
4	no additional constraints	31

Example

Input	Output
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	15
0 42 566	0
0 7 0 3 6 9 2 5 8 1 6 9 2 5 8 1 4 7 0 3 8 1 4 7 0 3 6 9 2 5 0 3 6 9 2 5 8 1 4 7 2 5 8 1 4 7 0 3 6 9 4 7 0 3 6 9 2 5 8 1 6 9 2 5 8 1 4 7 0 3 8 1 4 7 0 3 6 9 2 5 0 3 6 9 2 5 8 1 4 7 2 5 8 1 4 7 0 3 6 9 25088 80252	76