Another Contest 9 Problem 4 - Alchemy

Time limit: 1.0s **Memory limit:** 256M

Nick only likes numbers with exactly K distinct digits. Through a mysterious process that he has coined *alchemy*, he can convert a positive integer N to $N+1$, though it is a tiring process.

For a given integer N, compute the smallest integer greater than or equal to N with exactly K distinct digits.

Constraints

$1 \leq T \leq 10^5$

$1 \leq K \leq 10$

$1 \leq N \leq 10^{18}$

Input Specification

The first line contains a single positive integer, T, the number of test cases. T test cases follow.

Each test case consists of a single line that contains two space-separated positive integers, N and K.

Output Specification

Output the answers for the T test cases in order. There should be no blank lines in your output.

The answer for the ith test case should be on the ith line. Output the smallest integer greater than or equal to N with exactly K distinct digits.

Sample Input

```
6
1 1
1 2
1 3
11 1
11 2
11 3
```

Sample Output

```
1
10
102
11
12
102
```