Problem F. Memory Limit

IUT servers are struggling with memory limit problems. Hence decided to compress their data. In order to do that, they want to represent numbers (in decimal format) with at most k different digits. For that, they need a program to estimate these numbers with the minimum error.

You are given an integer n. Find the minimum integer $x \geq 0$ such that $x + n$ has at most k different digits.

Input

The first line contains one integer $t (1 \leq t \leq 5 \times 10^5)$ — the number of test cases. Then t test cases follow.

Each test case consists of one line containing two integers n and k $(1 \leq n \leq 10^9, 1 \leq k \leq 10)$.

Output

For each test case output on a separate line x.

Examples

test	answer
5 2023 3 455830 2 78952 3 998345262 1 123456789 10	0 8614 25 1654737 0