

Problem Nines

Input file `stdin`
Output file `stdout`

You are given an integer $N > 0$ and a number K . We first define, for any natural number x , the number

$$P_K(x) = \max(\text{(the number of appearances of the digit 9 in } x) - K, 0)$$

We then define the *value* of an integer x , denoted by $\text{value}_K(x)$, by

$$\text{value}_K(x) = x + 10^{P_K(x)}$$

Given N and K , what is the maximum value of any integer less than N ? In other words, what is

$$\text{answer}(N, K) = \max_{0 \leq x < N} \text{value}_K(x).$$

Input data

The first line in the input data contains the number of test cases T . The $2T$ lines that follow contain the test cases we are interested in. The first line of a test case contains D , the number of digits of N , and K . The second line of a test case contains the integer N .

Output data

Output T lines, the answers for the T values of N and K you are given.

Restrictions

- Let $\sum D$ be the sum of D for all test cases in a file.
- $1 \leq T \leq 100\,000$.
- $1 \leq \sum D \leq 1\,000\,000$.
- $-1 \leq K \leq D$.

#	Points	Restrictions
1	7	$T \leq 1\,000, D \leq 4$.
2	3	$K = -1, D \leq 9$.
3	6	$K = 0, D \leq 9$.
4	6	$D \leq 9$.
5	4	$K = D$
6	26	$T \leq 200, D \leq 200$.
7	48	No further restrictions.

Examples

Input file	Output file
2	199
3 0	10979999999999999999
100	
18 0	
998877665544332211	

Explanation

For the first example, the optimum is given by $\text{value}_0(99) = 199$.

For the second example, the optimum is given by

$$\text{value}_0(997\ 999\ 999\ 999\ 999\ 999) = 10979999999999999999.$$