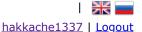
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C. Binary String Reconstruction

time limit per test: 2 seconds memory limit per test: 256 megabytes input: standard input output: standard output

Consider the following process. You have a binary string (a string where each character is either 0 or 1) w of length n and an integer x. You build a new binary string s consisting of ncharacters. The i-th character of s is chosen as follows:

- if the character w_{i-x} exists and is equal to 1, then s_i is 1 (formally, if i > x and $w_{i-x} =$ 1, then $s_i = 1$;
- if the character w_{i+x} exists and is equal to 1, then s_i is 1 (formally, if $i+x \leq n$ and $w_{i+x} = 1$, then $s_i = 1$);
- if both of the aforementioned conditions are false, then s_i is 0.

You are given the integer x and the resulting string s. Reconstruct the original string w.

Input

The first line contains one integer t ($1 \le t \le 1000$) — the number of test cases.

Each test case consists of two lines. The first line contains the resulting string s ($2 \le |s| \le 10^5$, each character of s is either 0 or 1). The second line contains one integer x ($1 \le x \le |s| - 1).$

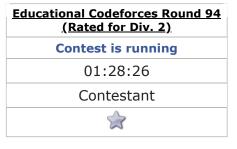
The total length of all strings s in the input does not exceed 10^5 .

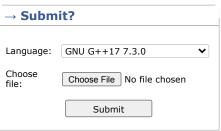
For each test case, print the answer on a separate line as follows:

- if no string w can produce the string s at the end of the process, print -1;
- otherwise, print the binary string w consisting of |s| characters. If there are multiple answers, print any of them.

Example







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