Appending String

You are given a string S, you need to build another string T by expanding S according to the steps below (traversing left to right):

1. If current character is an alphabet, append it to T.

2. If current character is a digit, suppose the digit is N, then do $T = N*T$. Here $N*T$ means appending T N times. See sample for better understanding.

3. Go to next character if exists then restart from step 1.

Upon expanding S, you will be given Q queries. For each query you have to print the i_{th} character of the string T.

Hint : After expanding the string S="a3b2c1" T will be = "aaabaaabc"

Input

The first line will be the test case number(t<=10).

In the first line of each test you will be given a string consisting of lowercase letters and digits. And it is guaranteed that length of T will be no more than 1000.

Next line will contain an integer Q(<=100000) denoting total numbers of queries. Following Q lines each contains an integer X.

Output

For each query X, you have to print the X_{th} character of T in a line. If X is greater than the length of T, print -1.

Example

Input:

1

a3b2c1

2

4

5

Output:

b

a