

Given a  $k$ -symbol alphabet and a length  $n$ , a De Bruijn string is a string over the alphabet that contains exactly one occurrence of each of the  $k^n$  distinct substrings of length  $n$ . For example, a De Bruijn string over the alphabet  $\{0, 1, 2\}$  of size  $k=3$  containing one occurrence of all  $3^2$  substrings of length  $n=2$ , i.e. those in  $\{00, 01, 02, 10, 11, 12, 20, 21, 22\}$  is the following:

0022120110

### *Input Format*

Each line of input contains two positive numbers  $0 < k \leq 10$  and  $n > 0$  separated by one or more blanks, representing an alphabet  $\{0, 1, \dots, k-1\}$  of size  $k$  and a substring length  $n$ . The alphabet symbols are considered to be ordered  $0 < 1 < \dots < k-1$  when used in your program.

### *Output Format*

For each line of input containing numbers  $k$  and  $n$ , output the De Bruijn string over the alphabet  $\{0, 1, \dots, k-1\}$  containing one occurrence of all  $k^n$  substrings of length  $n$  formed by the following algorithm. Starting with a string of  $n$  zeroes, while possible append the greatest alphabet symbol such that the resulting string has a suffix of length  $n$  not occurring elsewhere within the string.

### *Input Sample*

```
2 2
2 3
2 4
3 2
3 3
4 2
10 1
```

### *Output Sample*

```
00110
0001110100
0000111101100101000
0022120110
00022212202112102012001110100
00332313022120110
0987654321
```