

# Text Generator II

[HL](#), [HJ](#) and [FGD](#) set problem for [ZMY](#) everyday. The title of each problem bores them very much. The title is a string which consists only lower case letters. It's length is  $L$ , and, of course, the title must contain their names(hl, hj, fgd) as consecutive substrings. More apparently,  $N$  evil consecutive substrings should not appear in the title. Any string satisfying the two conditions above is OK.

The task ZMY is to do today is: if they give ZMY 8 problems every week, and the title of each problem should not be repeated, how many (complete) weeks can they set problems?

## Input

Multiple test cases. Input terminates by EOF.

For each test case:

The first line contains two space-separated integers  $L$  ( $0 \leq L \leq 10^9$ ) and  $N$  ( $0 \leq N \leq 20$ ).  $N$  lines follow, each contains a string (contains only lowercase letters), which is evil. You can assume the total length of the  $N$  evil strings is no more than 20.

## Output

For each test case output one line contains the answer modulo 1000.

## Example

**Input:**

10 1

zmy

**Output:**

245