
String concatenation

P52564_en

Quinzè Concurs de Programació de la UPC - Semifinal (2017-06-29)

How many different words of length exactly ℓ can you build by concatenating m given words? You can use any word as many times as you wish.

Input

Input consists of several cases, each with ℓ and m , followed by m different words. Assume that ℓ is between 1 and 10^{18} , that m is at least 1, that the words only have lowercase letters, and that the sum of their lengths is at most 50.

Output

For every case, print the result modulo $10^9 + 9$.

Sample input

```
1 3 a deu hol
4 3 a deu hol
100 2 a aa
4 3 a ab ac
8 3 hola lola la
10 3 ab abb bb
10 4 x y yy xyy
32 4 wo lo wolo wololo
3 4 ab c a bc
1000000000000000000 4 ab c a bc
```

Sample output

```
1
5
1
11
11
56
1024
65536
15
382802655
```

Problem information

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