

WORDS



SEASON 2021/2022 – SIXTH ROUND

After Harry finished his 256th game of **Wordle**, he began to see 5-letter words made from the first 10 letters of the English alphabet (the words don't have to be actual English words). He didn't have much to do (an absolute slacker) and decided to make a homemade orientation graph with them. In the time he was babbling, Harry managed to come up with **N** words, respectively the vertices of the graph. The words are numbered from **1** to **N**. The edges are constructed as follows: we have a directed edge from vertex **i** to vertex **j** if the last letter of word number **i** is the same as the first letter of word number **j** (**i** and **j** can match). Here are examples of pairs of words that have a directed edge between them: **bread** and **dance**, **above** and **evoke**, **dread** and **dread**.

Harry's creativity does not end there. After building this huge graph, he is bored again and now wants to find all the paths in it that go through exactly **K** vertices. Unfortunately for you, Harry is not just bored, but also very lazy, so he asks you to write a program `words.cpp` that, given **N** words, finds the number of paths of length **K**.

Input

The first line of `words.in` gives the numbers **N** and **K**. On the next **N** lines are given the words.

Output

On the single line of `words.out`, output the number of paths you are looking for. Since, the answer may be very large, output its remainder when divided by $10^9 + 7$.

Constraints

$$1 \leq N \leq 10^5$$

$$1 \leq K \leq 10^4$$

Each letter in the words is from the set $\{a, b, c, d, e, f, g, h, i, j\}$.

Time limit: 2.0 sec.

Memory limit: 256 MB.

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Sample testcases:

Input (words.in)	Output (words.out)
5 6 adaba debab bacea aghi acdhd	37
3 3 jedai idabi iada	8