COCI '19 Contest 6 #5 Trener

Time limit: 2.0s **Memory limit:** 1G

At this point, we already know that students love to sleep. Patrik is a record holder in this category. He wakes up only when he needs to eat or if he wishes to play *FIFA 20*. Therefore, his dreams usually revolve around football. In his last dream, he found himself in the role of a football manager of his favourite team – GNK Dinamo Zagreb.

His job is to select N players that will defend the blue colours in the next season, but the board has some peculiar requests. They are:

- All players must have surnames of distinct lengths.
- Surname of a player must appear as a continuous subsequence of surnames of all players whose surnames are longer.

To make his job easier, Patrik divided the potential players into N buckets such that players in i-th bucket have exactly i letters in their surname. In each of these buckets, there are exactly K players. Patrik wants to know in how many distinct ways (modulo $10^9 + 7$) can he choose the players for his squad while also conforming to the given requests.

Input

The first line contains two integers N $(1 \leq N \leq 50)$ and K $(1 \leq K \leq 1\,500)$.

Each of the next N lines contains K not necessarily distinct surnames of players. The surnames of players in i-th of those lines consist of exactly i lowercase letters from the English alphabet.

Output

In the only line, you should output the answer from the task description.

Scoring

Subtask	Score	Constraints
1	22	$N \leq 5$ and $K \leq 10$
2	33	$N \leq 50$ and $K \leq 100$
3	55	No additional constraints.

Sample Input 1

```
3 2
a b
ab bd
abc abd
```

Sample Output 1

```
5
```

Explanation of Sample Output 1

Patrik can choose the following teams: (a, ab, abc), (a, ab, abd), (b, ab, abc), (b, ab, abd) and (b, bd, abd).

Sample Input 2

```
3 3
a b c
aa ab ac
aaa aab aca
```

Sample Output 2

```
6
```

Sample Input 3

```
3 1
a
bc
def
```

Sample Output 3

```
0
```