Problem Rio de Janeiro. Latin Squares

Input file:	`input.txt` or standard input
Output file:	`output.txt` or standard output
Time limit:	10 seconds
Memory limit:	1024 megabytes

Chris is a fan of puzzles. Recently he learned about Sudoku puzzles, that are based on Latin squares. A $k \times k$ table is called a *Latin square* if the number of distinct elements in the table is k, and there are no two equal elements in the matrix that share the same row or the same column.

For example,

A	B
B	A

,

S	P	R
R	S	P
P	R	S

and

Q

are Latin squares, while

A	B	C
C	C	A
C	A	B

,

A	B	C
D	C	A
C	A	B

and

A	B	C
C	A	B

are not.

Chris wants to make a new Latin square puzzle. However, he only has an old template, which is an $n \times m$ table. Chris wants to cut a contiguous Latin square fragment from the template. In how many ways can he do this? Two ways to cut a square are considered different if there is a cell that is present in one square, but not present in the other.

Input

The first line contains two integers n and m — dimensions of the template ($1 \le n, m \le 2\,000$).

The next n lines contain strings s_i that describe the template. Each string s_i contains $2 \cdot m$ characters with ASCII codes between 33 and 126. The cell in row i and column j of the template contains a pair of characters $s_{i,2\cdot j-1}$ and $s_{i,2\cdot j}$ ($1 \le i \le n$, $1 \le j \le m$). Two cells of the template contain equal elements if their ordered character pairs are equal. See the Notes section for further explanation.

Output

Print a single integer — the number of ways to cut a Latin square from the template.

Examples

input	output
4 5 AABBAAAACC BBAABBCCAA AABBCCAABB BBCCAABBCC	26
5 10 !"#$%&'()*+,-./01234 56789:;<=>?@ABCDEFGH IJKLMNOPQRSTUVWXYZ[\ ]^_`abcdefghijklmnop qrstuvwxyz{\|}~!"#$%&	50

Note

In the first sample there are 20 ways to cut a 1×1 Latin square, as well as 6 other ways:

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(a) Way 1

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(b) Way 2

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(c) Way 3

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(d) Way 4

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(e) Way 5

AA	BB	AA	AA	CC
BB	AA	BB	CC	AA
AA	BB	CC	AA	BB
BB	CC	AA	BB	CC

(f) Way 6