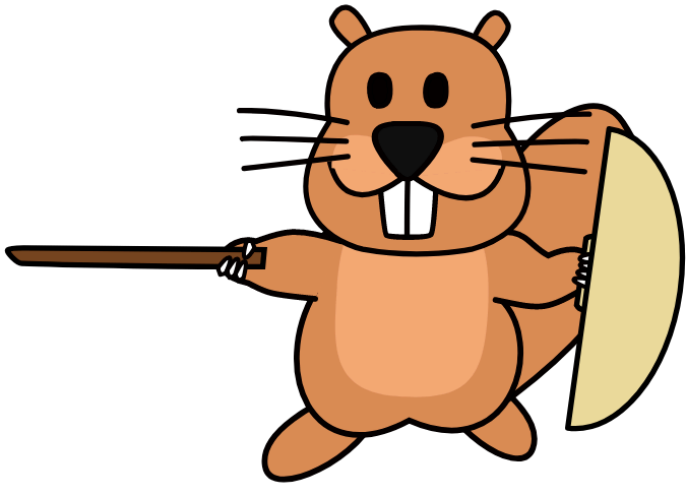
1 Bitaro the Brave



Bitaro the Brave faces the Devil.

Bitaro is going to attack the Devil by arranging jewels, orbs and ingots on an H times W grid and casting a spell. The square at the i-th row ($1 \leq i \leq H$) from the top and the j-th column ($1 \leq j \leq W$) from the left is denoted by (i, j).

Now, Bitaro has arranged one of these three types on each square. Bitaro is going to cast a spell, the power of which is determined by the arrangement of jewels, orbs and ingots. Specifically, the power equals to the number of quadruplets of integers (i, j, k, ℓ) ($1 \leq i < k \leq H$, $1 \leq j < \ell \leq W$) satisfying the following condition.

> Condition: Bitaro has arranged a jewel on the square (i, j), an orb on the square (i, ℓ) and an ingot on the square (k, j).

Bitaro is wondering the power of the spell.

Write a program which, given the arrangement of jewels, orbs and ingots, calculates the power of the spell Bitaro casts.

Input

Read the following data from the standard input.

> H W
> S_1
> :
> S_H

S_i ($1 \leq i \leq H$) is a string of length W. The item arranged on the square (i, j) ($1 \leq j \leq W$) is a jewel if the j-th character of S_i is `J`, an orb if it is `O` and an ingot if it is `I`.

Output

Write one line to the standard output. The output should contain the power of the spell Bitaro casts.

Constraints

- $2 \leq H \leq 3\,000$.
- $2 \leq W \leq 3\,000$.
- S_i is a string of length W ($1 \leq i \leq H$).
- Each character of S_i is `J`, `O`, or `I` ($1 \leq i \leq H$).

Subtasks

1. (20 points) $H \leq 100$, $W \leq 100$.
2. (30 points) $H \leq 500$, $W \leq 500$.
3. (50 points) No additional constraints.

Sample Input and Output

Sample Input 1	Sample Output 1
3 4 JOIJ JIOO IIII	3

In this sample, 3 quadruplets $(i, j, k, \ell) = (1, 1, 3, 2), (2, 1, 3, 3), (2, 1, 3, 4)$ satisfy the condition, so you should output 3.

Sample Input 2	Sample Output 2
4 4 JJOO JJOO IIJO IIIJ	17