Problem C. Catch The Flea

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

You have placed glues on each cell of an $n \times m$ grid to create a rectangular flea trap. Each glue has a *weak direction*; if a flea on the glue jumps towards its *weak direction*, the flea can jump out of the glue.

More precisely, each glue is represented by `U`, `D`, `L`, or `R`, meaning up, down, left, and right respectively.

In a single jump, a flea can move any distance up to k cells in the weak direction. If a flea jumps out of the rectangle, we say that the flea has *escaped*.

You became curious about how efficient your trap is. If a flea that is placed on a cell of the trap can escape after consecutive jumps, we call the cell an *escapable cell*. Your task is to count the number of escapable cells.

Input

The first line of input contains three integers: the trap sizes n and m and the jump limit k ($1 \le n, m, k \le 2000$).

Each of the next n lines contains a string of length m consisting of letters `U`, `D`, `L`, and `R`. These lines indicate the *weak direction* of each glue.

Output

Print the number of escapable cells.

Example

standard input	*standard output*
5 5 2 DDDRD DDDDD RDLUL UURUU UUUUU	14

Note

Fleas which start from $(1, 3)$, $(1, 4)$, $(1, 5)$, $(2, 3)$, $(2, 4)$, $(2, 5)$, $(3, 4)$, $(3, 5)$, $(4, 3)$, $(4, 4)$, $(4, 5)$, $(5, 3)$, $(5, 4)$, and $(5, 5)$ can escape. For example:

- A flea at $(1, 3)$ can escape by jumping along the following path:
  $(1, 3) \to (2, 3) \to (4, 3) \to (4, 4) \to (3, 4) \to (1, 4) \to$ out of the trap
- A flea at $(1, 4)$ can escape by jumping two cells to the right.