

GIFT

0.5s | 128 MB

Khanh Dan's birthday is approaching, and Scratch decided to make a handmade item to give as a gift. Specifically, Scratch personally made a large wooden block of size $p \times q \times r$ (assembled from pqr unit blocks). However, due to Scratch's lack of experience, some of the unit blocks in the big block were peculiar (cracked, hollow inside, etc.). Scratch cannot directly give such a gift.

Therefore, Scratch plans to carve a sub-block $a \times a \times b$ from the big block (requiring that the rectangular block to be carved must have two adjacent sides equal). Naturally, this sub-block must not contain any error unit blocks.

To maximize the number of samples the block can contain, Scratch wants to choose the solution with the largest possible value of $4ab$ from all possible alternatives. But just checking to see which part of the block has the problem exhausted Scratch. As Scratch's good friend, can you help him?

INPUT

The first line contains three positive integers separated by spaces: p, q, r ($1 \leq p, q, r \leq 150$).

Each line in the following line pq contains r characters, where each character is 'P' (Peculiar) or 'N' (Normal), indicating whether the corresponding unit block is peculiar or intact. Specifically, the z th character in the $(1 + (y + x - p))$ row describes the condition of the block at coordinates (x, y, z) . ($1 \leq x \leq p, 1 \leq y \leq q, 1 \leq z \leq r$)

OUTPUT

Print an integer representing the optimal $4ab$ value.

Sample Input	Sample Output
4 3 5 NNNNP NPNP PNPPN NNNNN NNNNN NNNNN NNNNP NNPPN NNPPN PNNNN NNNNN NNPNN	24

EXPLANATION

Ước gì được như ngài!!