

Video game combos

Bessie is playing a video game! In the game, the three letters 'A', 'B', and 'C' are the only valid buttons. Bessie may press the buttons in any order she likes. However, there are only N distinct combos possible ($1 \leq N \leq 20$). Combo i is represented as a string S_i which has a length between 1 and 15 and contains only the letters 'A', 'B', and 'C'.

Whenever Bessie presses a combination of letters that matches with a combo, she gets one point for the combo. Combos may overlap with each other or even finish at the same time! For example if $N = 3$ and the three possible combos are "ABA", "CB", and "ABACB", and Bessie presses "ABACB", she will end with 3 points. Bessie may score points for a single combo more than once.

Bessie of course wants to earn points as quickly as possible. If she presses exactly K buttons ($1 \leq K \leq 1,000$), what is the maximum number of points she can earn?

Input description

- * Line 1: Two space-separated integers: N and K .
- * Lines 2.. $N+1$: Line $i+1$ contains only the string S_i , representing combo i .

Output description

- * Line 1: A single integer, the maximum number of points Bessie can obtain.

Example

Input:

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3 7
ABA
CB
ABACB
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Output:

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4
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Example details

The optimal sequence of buttons in this case is ABACBCB, which gives 4 points: 1 for ABA, 1 from ABACB, and 2 from CB.