

Solitaire

Input file: `stdin`
Output file: `stdout`
Time limit: 1 second
Memory limit: 128 megabytes

«N-T solitaire» is a card game for one player. There are $4N$ ($3 \leq N \leq 15$) cards in the game and each card corresponds to a unique pair of its value (an integer in the range $1..N$) and suit (\spadesuit , \clubsuit , \heartsuit or \diamondsuit). In the initial position all cards are laid out in T ($4 \leq T \leq 12$) piles; moreover, each of $(4N)\%T$ first piles has $(4N/T) + 1$ cards, others have $4N/T$ cards each (here “/” and “%” — integer division and remainder of division, respectively). If the sum of the values of upper cards of two piles is $N + 1$, then these two cards can be moved to discard pile (irrespective of their suits). This is the only way to move the cards.

Write a program that will determine the maximum number of cards that one can move to the discard pile.

Input

The first line contains two integers N and T , then there are T lines with descriptions of the corresponding piles. Each card is described as its value (an integer) and a suit (the char with ASCII-code 03(\heartsuit), 04(\diamondsuit), 05(\spadesuit), or 06(\clubsuit)) without space between. Descriptions of the cards inside the same pile are single-space separated. Description's direction from left to right corresponds to the order of cards from bottom to up.

Output

Your program should print a single integer — the maximum number of cards that can be moved to the discard pile.

Examples

stdin	stdout
3 5 2 \spadesuit 2 \clubsuit 2 \heartsuit 2 \diamondsuit 3 \diamondsuit 1 \heartsuit 3 \clubsuit 1 \spadesuit 1 \clubsuit 3 \heartsuit 1 \diamondsuit 3 \spadesuit	10