Unfolding the Solitaire

Input file:	`stdin`
Output file:	`stdout`
Time limit:	1 second
Memory limit:	64 megabytes

«N-T solitaire» is a card game for one player. There are $4N$ ($3 \le N \le 15$) cards in the game and each card corresponds to a unique pair of it's value (an integer in the range $1..N$) and suit (♠, ♣, ♡ or ♢). In the initial position all cards are laid out in T ($4 \le T \le 12$) 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 and how to do this.

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(♡), 04(♢), 05(♠), or 06(♣)) 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 in the first line a single integer — the maximum number of cards that can be moved to the discard pile. Then $S/2$ pairs of integers, one pair per line: the numbers of piles, from which cards should be removed.

Examples

stdin	stdout
3 5 2♠ 2♣ 2♡ 2♢ 3♢ 1♡ 3♣ 1♠ 1♣ 3♡ 1♢ 3♠	10 2 4 2 3 1 2 4 5 3 5

Note

If there are multiple ways to unfold (with the same maximum quantity of cards in discard pile), output any one.