Mohan tries to break in a safe. He knows that a code consists of n numbers and every number is a 0 or a 1. Mohan has made m attempts to enter the code. After each attempt the system told him in how many position stand the right numbers. It is not said in which positions the wrong numbers stand. Mohan has been so unlucky that he hasn't entered the code where would be more than 5 correct numbers. Now Mohan is completely bewildered: he thinks there's a mistake in the system and it is self-contradictory. Help Mohan — calculate how many possible code variants are left that do not contradict the previous system responses.

Input

The first input line contains two integers n and m ($6 \le n \le 35, 1 \le m \le 10$) which represent the number of numbers in the code and the number of attempts made by Mohan. Then following m lines, each containing space-separated si and ci which correspondingly indicate Mohan's attempt (a line containing n numbers which are 0 or 1) and the system's response (an integer from 0 to 5 inclusively).

Output

Print the single number which indicates how many possible code variants that do not contradict the m system responses are left.

Examples

Input	6 2 000000 2 010100 4
Output	6