Problem J. Switches

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

Little Zina dreams of becoming a robotics engineer. She already downloaded a simulation program, and dived into the world of computer-generated puzzles for robots.

In one of the problems, the robot stands in front of an infinite wall which has a straight line of switches on it going one after another from left to right. Each switch has a width of one centimeter. Initially, all switches are turned off.

The robot can have several manipulators. Each manipulator is a line of one or more sockets for fingers, each socket has a width of one centimeter, and each one either is empty or has a finger installed. For example, the current Zina's robot has two manipulators: one with five sockets and fingers in the first, middle, and last sockets, and another with three sockets and fingers in each of the three.

When a robot touches the wall such that the positions of fingers coincide with the positions of some switches, the switches touched by fingers change their state to the opposite one (a turned-off switch is turned on, a turned-on switch is turned off). Each manipulator can freely move to the left and to the right, but can not be rotated. Each manipulator can be used to touch the wall an arbitrary number of times in arbitraty positions.

As soon as the switches arrive to a state when the distance between the leftmost edge of a turned-on switch and the rightmost edge of such switch is exactly k centimeters, a passage opens in the wall, so that the robot can proceed to the next task. For example, the wall Zina sees right now has $k = 5$. If the condition about k centimeters is no longer satisfied, the passage closes again.

Zina solved this problem and some others, but one of them just did not crack. The girl went to read the forum and learned that, indeed, because of a bug in the simulator program, some problems have no solution at all, but some other problems have more than one possible configuration of switches between the leftmost and the rightmost turned-on switches. Zina pondered: given a particular problem, how to find the number of solutions it has?

Solve a generalized version of Zina's problem. Given a list of available manipulators and the number k, find the number of possible final configurations of switches such that the passage is open.

Input

The first line of input contains two integers n and k: the number of manipulators for the robot and the required distance between the edges of turned-on switches ($1 \le n, k \le 50$).

The next n lines describe the manipulators. Each of them consists of zeroes and ones and lists the sockets from left to right: zero corresponds to an empty socket, and one corresponds to a socket with a finger. It is guaranteed that the length of each of these lines is between 1 and 50 characters, and also that the first and the last characters of each of these lines are ones.

Output

Print one integer: the number of different configurations of switches which can be obtained using the available manipulators, such that the distance between the leftmost edge of a turned-on switch and the rightmost such edge is exactly k centimeters. If two configurations are obtained in different ways, but the states of switches are the same, they are considered equal. The configurations which can be obtained from each other by shifting to the left or to the right are also considered equal.

Example

standard input	standard output	configurations
2 5 10101 111	2	1: 10101 => ...*.*.*... 2: 10101 111 => ...**.**... There are other ways to get the same configurations.

2 3
1001
100011
	1	1: 1001
		  100011
		=> ......***...
		
		Another way:
		  1001
		100011
		  1001
		=> ...***......