

## 12937 Internet of Lights and Switches

You are a fan of “Internet of Things”(IoT), so you build a nice Internet of Lights and Switches in your huge mansion. Formally, there are  $n$  lights and  $m$  switches, each switch controls one or more lights, i.e. pressing that switch flips the status of those lights (on  $\rightarrow$  off, off  $\rightarrow$  on).



Initially, all the lights are on. Your task is to count the number of ways to turn off all the lights by pressing some *consecutive* switches. There is only one restriction: the number of switches you pressed should be between  $a$  and  $b$  (inclusive).

### Input

There will be at most 20 test cases. Each test case begins with a line containing four integers  $n, m, a, b$  ( $2 \leq n \leq 50, 1 \leq a \leq b \leq m \leq 300000$ ). Each of the following  $m$  lines contains a 01 string of length  $n$ . The  $i$ -th character is ‘1’ if and only if that switch controls the  $i$ -th light. The size of the whole input file does not exceed 8MB.

### Output

For each test case, print the case number, and the number of ways to turn off all the lights.

### Sample Input

```
2 4 1 4
01
10
11
00
2 4 3 3
01
10
11
00
6 3 1 3
101001
010110
101001
```

### Sample Output

Case 1: 3

Case 2: 0

Case 3: 2