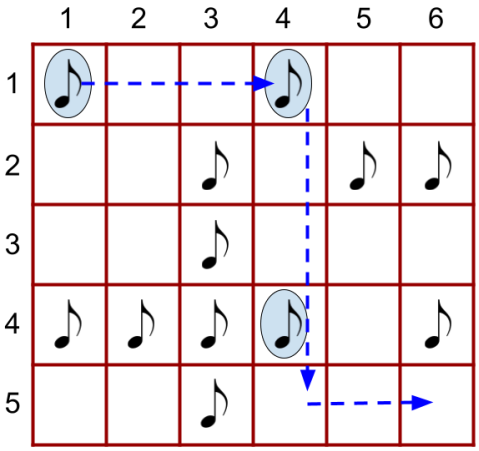
PROBLEM M **MUSIC FESTIVALS** **100 POINTS**

It is the end of winter and music festivals are popping up all over New Zealand. You want to travel from Auckland to Invercargill and visit exactly K festivals along the way.

For the purpose of this task, we model New Zealand as an $N \times M$ grid of towns. Some of the towns are hosting a music festival. Starting from the top-left town (Auckland) at the position $(1,1)$ and moving only down and right, is it possible to reach the bottom-right town (Invercargill) in position (N, M) such that you visit exactly K towns hosting music festivals along the way?

Formally, you can move from town (i,j) down to $(i+1,j)$ if $i < N$, or right to $(i,j+1)$ if $j < M$. These are the only two possible moves from town (i,j).

In the following example, New Zealand is modelled as a 5×6 grid. If $K = 3$, then by moving three times to the right, then four times down, then twice to the right, we reach Invercargill and visit exactly 3 festivals.



Input

The first line of the input contains three integers N, M, and K ($1 \le N, M \le 1500$ and $0 \le K \le 3000$). Each of the next N lines contains a string of length M. The j-th character of the i-th string is '1' if the town (i,j) is hosting a festival, and '0' otherwise.

Output

Output `1` if it is possible to go from $(1,1)$ to (N, M) by only moving down or to the right, such that along the way you visit exactly K towns which host a festival. Output `0` if it is not possible. Note that if Auckland or Invercargill are hosting a festival, they are also counted.

Turn over for sample input and output.

Sample Input 1

```
5 6 3
100100
001011
001000
111101
001000
```

Output for Sample Input 1

```
1
```

Sample Input 2

```
5 6 2
000100
001011
001010
001101
001110
```

Output for Sample Input 2

```
0
```

Sample Input 3

```
4 4 1
0000
0100
1110
0010
```

Output for Sample Input 3

```
1
```

Explanation

The first sample corresponds to the example discussed earlier. In the second sample, it is not possible to reach Invercargill and visit exactly two festivals. In the third sample, we can go twice to the right, twice down, once to the right and finally once down. This visits only the festival hosted by the town *(3,3)*.