Annoying painting tool

Maybe you wonder what an annoying painting tool is? First of all, the painting tool we speak of supports only black and white. Therefore, a picture consists of a rectangular area of pixels, which are either black or white. Second, there is only one operation how to change the colour of pixels:

Select a rectangular area of **r** rows and **c** columns of pixels, which is completely inside the picture. As a result of the operation, each pixel inside the selected rectangle changes its colour (from black to white, or from white to black).

Initially, all pixels are white. To create a picture, the operation described above can be applied several times. Can you paint a certain picture which you have in mind?

Input Specification

The input contains several test cases. Each test case starts with one line containing four integers **n**, **m**, **r** and **c**. (*1 ≤ r ≤ n ≤ 100, 1 ≤ c ≤ m ≤ 100*), The following **n** lines each describe one row of pixels of the painting you want to create. The **ith** line consists of **m** characters describing the desired pixel values of the **ith** row in the finished painting ('0' indicates white, '1' indicates black).

The last test case is followed by a line containing four zeros.

Output Specification

For each test case, print the minimum number of operations needed to create the painting, or -1 if it is impossible.

Sample Input

```
3 3 1 1
010
101
010
4 3 2 1
011
110
011
110
3 4 2 2
0110
0111
0000
0 0 0 0
```

Sample Output

```
4
6
-1
```