2007/2008 ACM International Collegiate Programming Contest   
University of Ulm Local Contest

**Problem A: Annoying painting tool**

Source file: annoying.(c|cc|hs|java|pas)   
Input file: annoying.in

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