



TRAINING COMPETITION OF THE BULGARIAN EXTENDED NATIONAL TEAM

Bankya, 17 June 2025

group G

Task GT1. STAIRS

 0.3 sec.  20 MB

At the educational center "Champion", the favorite gathering and informal meeting place for students is various staircases. However, due to a significant increase in participants, the existing staircases are no longer sufficient. Therefore, the management decided to build a new staircase using a special template.

The template is a table with h rows and w columns, numbered from top to bottom and from left to right, respectively. Each cell in the table contains a number – zero or one. The staircase can only be constructed from those cells of the table that contain ones.

The resulting staircase consists of a set of cells with ones, located in several consecutive rows of the table. The set of selected cells in each row of the staircase must form a continuous sequence of cells. Furthermore:

- In each subsequent row included in the staircase, the number of selected cells must be no less than in the row immediately above it;
- The leftmost selected cell in each row must be in the **same column**.

The figure below provides an example of a staircase:

1		
1	1	
1	1	
1	1	1

Write the program **stairs** that finds the maximum number of cells forming a "staircase" in the given table of zeros and ones, according to the described rules.

Input

The first line of the standard input contains two integers h and w – the number of rows and columns of the table, respectively.

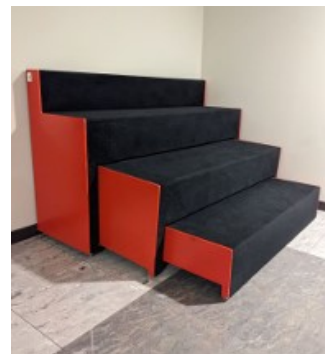
Each of the following h lines contains w characters, each of which is 0 or 1 – the numbers written in the cells of the table.

Output

The only line of the standard output should contain a single integer – the maximum number of cells that form a staircase.

Constraints

- $1 \leq h, w \leq 2 \times 10^5$
- $h \times w \leq 4 \times 10^6$





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Subtasks

Subtask	Points	Required subtasks	h, w
1	20	—	$h, w \leq 50$
2	25	1	$h, w \leq 400$
3	25	1 – 2	≤ 200000
4	30	1 – 3	$\leq 4 \times 10^6$

Examples

Input	Output	Explanation of the example																								
6 4 0011 1101 0111 1110 0111 0100	8	<div>The staircase consisting of the maximum possible number of cells is marked with gray color.</div> <table><tr><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr></table>	0	0	1	1	1	1	0	1	0	1	1	1	1	1	1	0	0	1	1	1	0	1	0	0
0	0	1	1																							
1	1	0	1																							
0	1	1	1																							
1	1	1	0																							
0	1	1	1																							
0	1	0	0																							