

#### logs

#### 100 points

Source code:	logs.c, logs.cpp, logs.pas
Input files:	logs.in
Output files:	logs.out
Time limit:	0.6 s
Memory limit:	64 MB

## Task

Given an  $N \times M$  binary matrix, find the area of the biggest rectangle consisting entirely of values of 1, knowing that you can permute the **columns** of the matrix.

### Constraints

- $1 \leq N \leq 15000$
- 1 ≤ M ≤ 1500
- 30% of the test cases will have  $N,M \leq 1024$
- In C/C++, it is recommended that you use **fgets()** to read the input. In Pascal, it is recommended to use **readln()** on a text file that has a large buffer. The following sample code shows how to do this:

C/C++	Pascal
#define MAXM 1500	<pre>var buf:array[165536] of char;</pre>
	s:array[11505] of char;
<pre>FILE *f = fopen("logs.in", "r");</pre>	f:text;
<pre>char s[MAXM + 3];</pre>	
fscanf(f,"%d %d n", &n, &m);	<pre>assign(f, 'logs.in');</pre>
fgets(s, MAXM + 2, f);	<pre>settextbuf(f, buf, 65536);</pre>
	<pre>reset(f);</pre>
	<pre>readln(f, n, m);</pre>
	<pre>readln(f, s);</pre>

At the end of these two pieces of code,  $\mathbf{s}$  will contain the first line of the matrix.

## Input

The first line of the input file **logs.in** will contain two integers separated by one space: **N** and **M**. The following **N** lines will contain **M** characters of **0** or **1**, describing the matrix.

# Output

The only line of the output file **logs.out** will contain the area of the largest rectangle.



#### Central European Olympiad in Informatics Tîrgu Mureş, România July 8 – 14, 2009 Contest Day 2

## Example

logs.in	logs.out	Explanation
logs.in 10 6 001010 111110 011110 011110 111110 111111 110111 110111 000101 010101	logs.out 21	Explanation By permuting the columns such that columns 2, 4 and 5 are adjacent you have a rectangle of area 21 (rows 2-8 and columns 2, 4, 5).
010101		