Continuous Fractions Again

A simple continuous fraction has the form:

$$a_1 + \cfrac{1}{a_2 + \cfrac{1}{a_3 + \cfrac{1}{\ddots + \cfrac{1}{a_n}}}}$$

where the ai's are integer numbers.

The previous continuous fraction could be noted as [a1, a2, ..., an]. It is not difficult to show that any rational number p / q, with integers p > q > 0, can be represented in a unique way by a simple continuous fraction with n terms, such that p / q = [a1, a2, ..., an–1, 1], where n and the ai's are positive natural numbers.

Now given a simple continuous fraction, your task is to calculate a rational number which the continuous fraction most corresponds to it.

Input

Input for each case will consist of several lines. The first line is two integer m and n, which describe a char matrix, then followed m lines, each line cantain n chars. The char matrix describe a continuous fraction The continuous fraction is described by the following rules:

- Horizontal bars are formed by sequences of dashes '-'.
- The width of each horizontal bar is exactly equal to the width of the denominator under it.
- Blank characters should be printed using periods '.'
- The number on a fraction numerator must be printed center justified. That is, the number of spaces at either side must be same, if possible; in other case, one more space must be added at the right side.

The end of the input is indicated by a line containing 0 0.

Output

Output will consist of a series of cases, each one in a line corresponding to the input case. A line describing a case contains p and q, two integer numbers separated by a space, and you can assume that 10^20 > p > q > 0.

Example

Input:
9 17
.....1.....
2.+.----------
.....1....

....4.+.---------
..............1..
.........1.+.-----
...............1
.............5.+.-
...............1
5 10
.......1...
1.+.------
.........1
....11.+.-
.........1
0 0

Output:
75 34
13 12