Problem A

From Rational to Factorial

A factorial number $\mathbf{N}$ denoted by $\mathbf{N} = [\sigma, \mathbf{a}, \mathbf{b}]$ consists of three parts:

- the sign part σ which is either 0 or 1,
- the whole part $\mathbf{a} = [a_n, \ldots, a_1, a_0]$, where $a_k = 0, 1, \ldots, k+1$, for $k = 0, 1, \ldots, n$ and,
- the fractional part $\mathbf{b} = [b_1, b_2, \ldots, b_m]$, where $b_k = 0, 1, \ldots, k$ for $k = 1, 2, \ldots, m$

such that $\mathbf{N}$ is equivalent to the decimal number

$$\mathbf{N} = (-1)^\sigma \times \left(\sum_{k=0}^{n} a_k (k+1)! + \sum_{k=1}^{m} \frac{b_k}{(k+1)!} \right).$$

For example, the factorial number $[1, [3, 2, 1, 1, 1, 0], [0, 0, 2, 2]]$ is equivalent to

$$(-1)^1 \times \left(3(6!) + 2(5!) + 1(4!) + 1(3!) + 1(2!) + 0(1!) + \frac{0}{2!} + \frac{0}{3!} + \frac{2}{4!} + \frac{2}{5!} \right) = -2432.1$$

which is equivalent to the rational number $-24321/10$ or $24321/-10$.

It can be shown that any rational number can be represented uniquely by a factorial number of the form $[\sigma, \mathbf{a}, \mathbf{b}]$ where $\mathbf{a}$ and $\mathbf{b}$ are of finite lengths.

Write a program that converts a rational number to a factorial number.

INPUT

One line of input per case. The line represents a rational number $\mathbf{R}$ in the form n/d where n and d are integers with d not equal zero.

OUTPUT

One line of output per test case. The line represents the factorial number that corresponds to the rational number in the input. It must have the form

“`Case #N:` $[\sigma, [a_n, \ldots, a_1, a_0], [b_1, b_2, \ldots, b_m]]$”

Sample Input	Sample Output
-24321/10	Case #1:[1,[3,2,1,1,1,0],[0,0,2,2]]
1/3	Case #2:[0,[0],[0,2]]
54/-100	Case #3:[1,[0],[1,0,0,4,4,5,4,7,2]]
-100/1	Case #4:[1,[4,0,2,0],[0]]