

Problem F Find Problem

Input: solution.in
Output: standard output

Normally for a given problem you are asked to find the solution. Here you are required to write a program to find the problem for which the solution is given.

Let $f = m/n$ be a proper fraction and $F = \{f_1, f_2, \dots, f_k\}$ be a set of k distinct unit fractions $f_i = 1/n_i$, $i = 1, 2, \dots, k$, where n_i (not equal to 1 or n) is a factor of n and k is a suitable integer. Recall that a proper fraction f is a number of the form α/β , where the numerator α and the denominator β are positive integers and $1 \leq \alpha < \beta$. A unit fraction is a proper fraction with $\alpha = 1$ and $\beta > 1$. Since the numerator of each element of F is 1, the set F may be identified also by the set $D = \{n_1, n_2, \dots, n_k\}$ of denominators appearing in the elements of F .

Consider the problem: given the set F , find the sum of elements of F and its solution: the sum f , where k is a nonnegative integer as large as possible.

Given a solution f you are required to write a program to find F or equivalently find D . It should be noted that for a given solution there may exist no problem, exactly one problem or more than one distinct problem. Let p be the total number of distinct problems for a given solution.

For example if $f = \frac{13}{24}$ then $p = 2$, $F = \{\frac{1}{3}, \frac{1}{8}, \frac{1}{12}\}$ or $\{\frac{1}{4}, \frac{1}{6}, \frac{1}{8}\}$ and $D = \{3, 8, 12\}$ or $\{4, 6, 8\}$.
Again if $f = \frac{13}{18}$ then $p = 0$ since no F or D exists for the given f .

Input

The input may contain multiple test cases.

For each test case there are two input lines. The first line contains the case number c and the second line gives the numerator m and the denominator n .

The input terminates with an input 0 for c . The input is illustrated in sample input.

Output

For each test case print c , k and p in one line, where c is the test case number, k is the largest possible number of distinct unit fractions in F and p is the total number of distinct problems.

In each of the next p lines, print a problem represented by k elements of D . The elements of D are printed in increasing order of magnitude. The problems are to be arranged in lexicographic order of the elements of D .

Print a blank line between two successive test cases.

Sample Input

```
1
13 18
2
13 24
0
```

Sample Output

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1 0 0

2 3 2
3 8 12
4 6 8
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