2658   PCM Frame Construction

Telemetry is often sent as pulse code modulated (PCM) data. The sensed values are digitized into binary words, then sent as a stream of ones and zeros. This stream of binary data is broken up into repeating frames. Within a frame, the stream is conceptualized as a series of subframes containing one or more words of data. Hence a frame is a rectangular table of words, where the subframe is viewed as a row address, and the word within a subframe is the column address. See Figure 3-1. Even to this day, the construction of the frame (that is, the assignment of measured values to particular subframe and word locations) is often done by hand. Your team is to write a program that constructs a PCM frame.

Given a list of parameters (digitized, measured values) and their frequency of updates (in updates per frame), you are to assign these parameter updates to subframe and word locations to produce the smallest possible frame. Each parameter update consumes exactly one word. The number of subframes must be equal to the highest update rate. All parameter update frequencies will be integer divisors of the highest update rate.

While assigning parameter updates to subframes and words, the update rate must be uniform. Another way of viewing uniform updates is to think of all updates for a single parameter, P_i, as starting at a particular word offset into the whole frame. The updates repeat with a stride of

$$\frac{S \times W}{r_i}$$

where S is the number of subframes per frame, W is the number of words per subframe, and r_i is the update rate of P_i. Figure 3-1 contains one possible frame construction for the sample input.

	w_0	w_1	w_2
sf_0	X	Z	Y
sf_1	X	Acceleration	
sf_2	X		Y
sf_3	X	Z	
sf_4	X		Y
sf_5	X		

Figure 3-1. One possible smallest frame produced from the sample input.

Input

Input to the program consists of one or more lines containing parameter name and update frequency pairs. The first token on the line is the parameter name, which contains only letters and numbers, and does not exceed 16 characters. The update frequency is a decimal integer, separated by one or more blank spaces.

Output

Output is two values, separated by a single space, followed by end-of-line. The first value is the number of subframes and the second value is the number words per subframe.

Sample Input

```
Y           3
X           6
Acceleration 1
Z 2
```

Sample Output

```
6 3
```