

Cute Animals

Village life is not for everyone! But young, motivated, work-from-home C++ developers love the recreational, calm, and clean environment where they can manage working from home for 12 hours per day!

You just moved in, and you are still getting used to the village noises. They come at random times, but you suspect there's a pattern! So, you create a program to record the time of each noise for further evaluation.

Unfortunately, due to a severe consumption of robust and homemade rakia last night, you overwrote one or more of your core files, and you must recreate it in the morning. Fortunately, all the rest, together with your testing friend "Judge", is here to help you.

Your task is to restore the damaged skeleton of your program to its working functionality.

Input

The input format is "+TTTT noiseword", where:

- "+TTTT" is the time of the noise, calculated in minutes from 03:00 am
- "noiseword" is the noise, which your program heard at that time
- There is one specific "noiseword", "TheEnd" (case sensitive!), which tells the program that the input flow ends.

Output

- Information after each noise: how many, and with what frequency (how many minutes between each, in average, as int)
- After **TheEnd**: statistical information about all noises, as per the example below.
 - o If there were no noises at all, the output should be "No noises."

Restrictions

Time limit: 250ms (0.255s)

Memory limit: 16 MB

Example 1:

Input	Output
+0000 cuckoo	cuckoo: 1
+0000 cuckoo	cuckoo: 2, each minute
+0006 cuckoo	cuckoo: 3, each 2 minutes
+0020 cock-a-doodle-doo	cock-a-doodle-doo: 1
+0025 cock-a-doodle-doo	cock-a-doodle-doo: 2, each 2 minutes
+0030 cock-a-doodle-doo	cock-a-doodle-doo: 3, each 3 minutes
+0066 cuckoo	cuckoo: 4, each 16 minutes
+0090 baaaah	baaaah: 1
+0090 cock-a-doodle-doo	cock-a-doodle-doo: 4, each 17 minutes
+0090 baaaah	baaaah: 2, each minute
+0090 baaaah	baaaah: 3, each minute
+0095 squeak	squeak: 1
+0100 TheEnd	---- baaaah: 3, from 90 till 90, each minute cock-a-doodle-doo: 4, from 20 till 90, each 17 minutes cuckoo: 4, from 0 till 66, each 16 minutes squeak: 1 at 95

Example 2:

Input	Output
+0000 THEEND	---- No noises.