Countdown Clock

problem 26

15 points

You're going skiing in Nagano! You created a countdown clock so you can see just how long you have to wait until your trip. Now your friends have seen your coundown clock, and they want their own! You decide to generalize your countdown clock code to pull the start and end date from a configuration file, so anyone can use it and put in their own custom dates and times.

Formatting

Your program needs to handle a dataset of dates and times, with one beginning date/time and ending date/time per line. The lines will be in the format of:

```
yyyy-MM-dd HH:mm:ss yyyy-MM-dd HH:mm:ss DHMS
```

The leftmost date and time should be taken together to be the "start" date, and the rightmost date and time are the "end" date. The DHMS tell you how to output the remaining time. You are guaranteed to receive at least one "D" or "H" or "M" or "S" (possibly up to all 4 together). The D,H,M,S output format flags may be listed in any order.

```
D = output total remaining whole days (ignoring hours, minutes, seconds)
H = output total remaining hours (ignoring days, minutes, seconds)
M = output total remaining minutes (ignoring days, hours, seconds)
S = output total remaining seconds (ignoring days, hours, minutes)
```

The output formats can also be combined (in which case they need to subtract from the output any time already output as part of a larger "unit". E.G. if 49 hours are remaining, and the output asks for DH output:

```
2 days 1 hour, taking into account the 24 hours/day when outputting the hours
```

Other combinations:

```
DH = output total remaining days + total remaining hours (less the time output as days)
DHM = output total remaining days + total remaining hours (less the time output as days) + total remaining
minutes (less the time output as hours)
DHMS = output total remaining days hours minutes and seconds, each taking into account prior time already
accounted for

Any output not asked for being output as a whole number (E.G. if there are 61 seconds to output, but the format
only calls for minutes, leaving 1 second left over) discard the remainder of non whole-number time units
```

Input

Here are some sample input lines from a dataset (note, your program will only ever receive 5 lines at a time, except for the example file showing all 12 combinations of output types)

```
2019-01-01 00:00:00 2019-02-01 01:01:01 D
2019-01-01 00:00:00 2019-02-01 01:01:01 H
2019-01-01 00:00:00 2019-02-01 01:01:01 M
2019-01-01 00:00:00 2019-02-01 01:01:01 S
2019-01-01 00:00:00 2019-02-01 01:01:01 DHMS
2019-01-01 00:00:00 2019-02-01 01:01:01 HMS
2019-01-01 00:00:00 2019-02-01 01:01:01 MS
2019-01-01 00:00:00 2019-02-01 01:01:01 DH
2019-01-01 00:00:00 2019-02-01 01:01:01 DM
2019-01-01 00:00:00 2019-02-01 01:01:01 DS
2019-01-01 00:00:00 2019-02-01 01:01:01 HM
2019-01-01 00:00:00 2019-02-01 01:01:01 HS
```

Output

Output the remaining time until the countdown finishes, taking care to output the largest units first, and subtract those units of time from the remaining units output, in sequence.

```
there are 31 days remaining until 2019-02-01 01:01:01
there are 745 hours remaining until 2019-02-01 01:01:01
there are 44701 minutes remaining until 2019-02-01 01:01:01
there are 2682061 seconds remaining until 2019-02-01 01:01:01
there are 31 days 1 hours 1 minutes 1 seconds remaining until 2019-02-01 01:01:01
there are 745 hours 1 minutes 1 seconds remaining until 2019-02-01 01:01:01
there are 44701 minutes 1 seconds remaining until 2019-02-01 01:01:01
there are 31 days 1 hours remaining until 2019-02-01 01:01:01
there are 31 days 61 minutes remaining until 2019-02-01 01:01:01
there are 31 days 3661 seconds remaining until 2019-02-01 01:01:01
there are 745 hours 1 minutes remaining until 2019-02-01 01:01:01
there are 745 hours 61 seconds remaining until 2019-02-01 01:01:01
```