Mayan Calendar

Problem #12
Novice / Advanced
15 points

Task Description

The calendar of the Maya is different from our calendar. The Mayan "Long Count" is a calendar system that consists of 5 numeric values written as follows: 12.19.1.17.5. Moving from right to left, the definitions of each component of the Mayan Long Count follow:

- The first (rightmost) is a kin, which represents a single day.
- The second is a uinal. There are 20 kin in 1 uinal.
- The third is a tun. There are 18 uinal in 1 tun.
- The fourth is a katun. There are 20 tun in 1 katun.
- The fifth (leftmost) is a baktun. There are 20 katun in 1 baktun.

Thus, 12.19.1.17.5 is read, "12 baktun, 19 katun, 1 tun, 17 uinal, 5 kin.

Given that 12/23/2012 is the date 13.0.0.0.0, write a program that reads a "normal" calendar date from standard input and outputs that date to standard output in Mayan Long Count format. Your program will not have to handle any data inputs that might result in a negative Long Count. Thus, the minimum output date your program might produce is 0.0.0.0.0. Finally, the input date will be between 01/01/0001 and 12/23/2012, inclusive. Input date formats will always be mm/dd/yyyy, padded with zeroes wherever necessary.

Hint #1: The maximum value for each component is equal to the number of units in its collection minus 1. Thus, there will never be more than 17 uinal or 19 tun, for example. One more of either turns the number over to the next highest component.

Hint #2: To calculate a leap year in our calendar, do the following: every year divisible by 4 contains an extra day (Feb. 29) except a century year that is not evenly divisible by 400. Thus, the years 1700, 1800, 1900 and 2100 are not leap years, but 1600, 2000, and 2400 are. Other leap years include 1200 and 800 but not 1400 or 1300, and so on.

Program Input
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12/22/2012
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Program Output
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12.19.19.17.19
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