
Many Dates

Problem Description

A colleague, who has now left your company for a better-paid job, had just been given a data-processing task which now falls into your hands. The program is intended to perform the following:

1. Read a line of input and determine whether or not it is a valid date between the years 1753 and 3000.

2. Either

- state that the input date is invalid and why it is invalid

e.g.

03/06/3004 - INVALID: Year out of range.

or

- output a valid date in the following format:

dd<space><first three chars of month name><space>yyyy

e.g.

02 Apr 1996

Valid input:

Unfortunately, our colleague didn't tell us the date storage format. They might be:

*day / month / year, or day / year / month, or
month / day / year, or month / year / day, or
year / month / day, or year / day / month*

and acceptable input may be in any of the following formats

day: dd or d or 0d

month: mm or m or 0m

year: yy or yyyy

separator: /

Example dates following these specifications are:

4/6/92
04/18/04

In this case, you can deduce that the format must be month / day / year as these dates are not valid under any other possible format (92 must be a year, and 18 must be a day). However, in the case of

09/09/09
09/18/09

There are multiple interpretations, and under any of those the dates are correct. But, in the case of

05/20/30
01/01/2009
28/02/30
31/03/30

The most probable ordering is day / month / year and so the first date has a month number that is too large, so your program would output:

```
05/20/30 - INVALID: Month out of range.  
01 Jan 2009  
28 Feb 2030  
31 Mar 2030
```

Notes:

1. 29th of February is only considered a valid date in leap years.
2. If the year is written with only two digits, the date lies between 1950 and 2049, so 65 means 1965 and 42 means 2042.

Task

Write a computer program that runs according to the specifications above. It should read the dates from `stdin` and output to `stdout`. You should test the program thoroughly before submitting it.

Relates to Objectives

1.1 1.2 1.3 2.2 2.7 2.8 3.4 3.5 4.1 4.5

(2 points, Pair)

The following information may be helpful

Gregorian Calendar

The Gregorian calendar is the calendar in current use in the Western world, both as the civil and Christian ecclesiastical calendar. Instituted by Pope Gregory XIII in 1582, the calendar has 365 days with an extra day every four years (the leap year) except in years divisible by 100 but not divisible by 400. Thus, the calendar year has an average length of 365.2425 days. The Gregorian calendar replaced the Julian calendar, which had become 10 days out of synchrony with the solar cycle. In October, 1582, 10 days were dropped from the calendar. England and the American colonies were late in adopting the calendar. In 1752, they dropped 11 days.

Selected Links

L. E. Doggett's essay on Calendars¹ is reprinted from the *Explanatory Supplement to the Astronomical Almanac* and describes the Western calendar system as well as the Hebrew, Islamic, and Chinese calendars. For even more information, see Calendar Zone², which includes a collection of links to many calendar-related sites.

¹<http://astro.nmsu.edu/~lhuber/leaphist.html>

²<http://www.calendarzone.com/>