Assignment 0205 Part 2: Time

Time and money, get it?

Outcomes

This assignment will affect your proficiency measures for outcomes 1a–1c, 2a–2c, and 3a–3f.

Not for Submission

At this point you will probably transition from reading the Java Tutorials through to using them primarily for reference:

http://docs.oracle.com/javase/tutorial/

Definitely feel free to do so, and consider using other documentation on that site to help you do your work, particularly the API documentation.

For Submission

Define a class called DateCounter and give it the following methods:

- public static boolean isLeapYear(int year) returns true if and only if the specified year is a leap year. Do the requisite research to find the precise definition of a leap year in the Gregorian calendar.
- public static int daysInMonth(int year, int month) returns the number of days in the specified month.
- public static boolean isValidDate(int year, int month, int day) returns true if and only if the arguments constitute a valid date (examples of invalid dates include 2010-00-15, 2012-01-negative 5, 1700-02-29, 2001-03-32, 2014-04-31, etc.).
- public static int daysBetween(int year0, int month0, int day0, int year1, int month1, int day1) returns the absolute number of days between the two given dates. For example, daysBetween(2000, 3, 1, 1999, 3, 1) should return 366 and daysBetween(1999, 3, 2, 2001, 5, 1) should return 791. The order in which the dates are specified is irrelevant.
- public static boolean hasLeapSecond(int year) returns true if and only if the specified year has a leap second. Do the requisite research to find the years with leap seconds thus far—2013 is one.

• public static boolean hasLeapSecond(int year, int month, int day) returns true if and only if the specified date has a leap second (i.e., when a year has one or more leap seconds, those leap seconds are assigned to particular dates).
• public static void main(String[] args) displays the absolute number of days between two given dates (args[0] to args[5] in year-month-day order).

- If the user does not supply any arguments, display the message:
  Usage: java DateCounter <year0> <month0> <day0> <year1> <month1> <day1>
- If the user enters anything invalid, whether non-numbers, missing arguments, or just invalid dates, display the message:
  One or more of the supplied dates is not valid.
- Ignore all other arguments, if any.
- If the entered amount is valid, display the absolute number of days between the dates:
  791
  …that would be the output for:
  java DateCounter 1999 3 2 2001 5 1

Note that the main program does not need to use the leap second methods, but will certainly use the other ones.

To assist you in development, a test program is available on the course website. The test program tests the supporting methods but not the full command line invocation.

How to Turn It In

Upload your code to your GitHub repository. Don’t forget to commit as you go.