6.149 Homework 1, Optional Problems

`http://web.mit.edu/6.149/www/materials.html`

OPTIONAL!- Some problem sets will have optional exercises at the end. Feel free to work on these problems if you have time at the end of the assignment, but you certainly don't have to do them. However, you will get excellent practice in Python, and we will give you feedback on any optional work you turn in.

Exercise OPT.1 – Zeller's Algorithm

Zeller's algorithm computes the day of the week on which a given date will fall (or fell). In this exercise, you will write a program to run Zeller's algorithm on a specific date. You will need to create a new file for this program, `zellers.py`. The program should use the algorithm outlined below to compute the day of the week on which the user's birthday fell in the year you were born and print the result to the screen.

Start with the program in Exercise 1.4, but ask for the month as a number between 1-12 where March is 1 and February is 12. If born in Jan or Feb, enter previous year (see the notes below). In the end, print out the name of the user and on what they of the week they were born.

Zeller's algorithm is defined as follows:

Let A, B, C, D denote integer variables that have the following values:

```
A = the month of the year, with March having the value 1, April the
value 2, . . ., December the value 10, and January and February being
counted as months 11 and 12 of the preceding year (in which
case,subtract 1 from C)
B = the day of the month (1, 2, 3, . . . , 30, 31)
C = the year of the century (e.g. C = 89 for the year 1989)
D = the century (e.g. D = 19 for the year 1989)
```

Note: if the month is January or February, then the preceding year is used for computation. This is because there was a period in history when March 1st, not January 1st, was the beginning of the year.

Let W, X, Y, Z, R also denote integer variables. Compute their values in the following order using integer arithmetic:

```
W = (13*A - 1) / 5
X = C / 4
Y = D / 4
Z = W + X + Y + B + C - 2*D
R = the remainder when Z is divided by 7
```

The value of R is the day of the week, where 0 represents Sunday, 1 is Monday, 2, is Tuesday, ... , 6 is Saturday. If the computed value of R is a negative number, add 7 to get a non negative number between 0 and 6 (you don't need to do this in the code). Print out R. You can check to be sure your code is working by looking at `http://www.timeanddate.com/calendar/`.

Run some test cases- try today's date, your birth date, and whatever else interests you!

Feel free to show your `zellers.py` code to a staff member (although if it's close to a checkoff due date, or the lab is really busy, we may ask you to come back later), and we'll look it over with you!