DATA 200 Spring 2020 Homework 7

Due April 10, 2020 at 11:59pm

Note: Please only use python standard libraries covered in class lectures (i.e. json, csv, urllib etc). Other libraries such as pandas, numpy are *not* allowed in your work.

1. Write a python class **MySmartCalendar** which provides the following member functions to compute the date of special days for a given year:

   - __init__() – constructor to initialize a MySmartCalendar object with a specified year.
   - is_leap_year() – check if the year is a leap year and returns True or False
   - get_memorial_day() – returns the date for Memorial Day as a Date object.
   - get_labor_day() – returns the date for Labor Day as a Date object.
   - get_thanksgiving_day() – returns the date for Thanksgiving Day as a Date object.
   - print_calendar() – print out the year calendar.

   Here are sample usage and output for MySmartCalendar:

```
smart = MySmartCalendar(2020)
smart.is_leap_year()        # returns True
smart.get_memorial_day()    # returns datetime.date(2020, 5, 20) object
```

   (15 points)

2. Use regular expressions to extract out information from the output of the command "ls -l" in Linux or MacOS (which is really BSD or another unix flavor behind the scene). This listing output contains in detailed information about the files in a directory (one file per line). Below is a sample listing. The quantities of interests for this problem are the file size, the last modified date and the filename (red, purple and green color, respectively).

```
-rwxrwxrwx 1 user user 163483 Sep  8 03:29 DATA200 HW1.pdf
-rwxrwxrwx 1 user user  78995 Sep 15 23:03 DATA200 HW2.pdf
-rwxrwxrwx 1 user user 114964 Sep 29 02:10 DATA200 HW3.pdf
-rwxrwxrwx 1 user user 108137 Oct  7 23:00 DATA200 HW4.pdf
-rwxrwxrwx 1 user user  82301 Oct 13 17:13 DATA200 HW5.pdf
```

   Write Python code that takes as input the listing output from the "ls -l" command and computes the total file size of all the files in the listing, the earliest and the latest modified files and their times of modifications. Note: you must use regular expressions (not string manipulation functions) to extract the required information from the listing output.

   (10 points)