CSCI 1112 Algorithms and Data Structures

Lab 7 - OOP and File IO

Part 1: Object-Oriented Programming:

Class Day

1. Create a Java class called *Day*. The class should include three private fields for the year, month, and day.
2. Add setters and getters for the three private fields
3. Add a constructor that takes 3 arguments for: *year*, *month*, and *day*.
4. Add a public method called *printDate(),* which prints the date in the following format "MM/DD/YYY". For example, "02/18/2016"

Class DailyWeather

5. Create a second java class called *DailyWeather*. This class should extend *Day*.
6. Define a constructor that also takes 3 arguments: year, month, and day. Use the super(…) method to set these values.
7. Add the following variables for the class DailyWeather:
    - maxTemp
    - minTemp
    - meanTemp
    - meanHumidity
    - maxWind
    - meanWind

8. Add setters and getters for all the variables above.

Part 2: File IO

1. Download the file "weather2015.txt". This file is a comma-delimited table that includes daily weather information for the year 2015. The first line specifies the meaning of each column:

Day	Month	MaxTemp	MeanTemp	MinTemp	MeanHumidity	MaxWind	MeanWind

2. In a new Java class with a main method, create an ArrayList of type DailyWeather.
3. Read the file one line at a time, and for each day in the file, create a DailyWeather object with the values specified in the file. When you are done reading the file, you should have 365 objects in your ArrayList.
4. Using a for loop, find which dailyWeather object has the highest meanTemp value. Print the date corresponding to the hottest day in 2015. If there is more than one object with the same highest meanTemp value, only print the first one.
5. Find and print the date corresponding to the most humid day in 2015
6. Find and print the date corresponding to the maximum wind speed (maxWind). What was the mean temperature in that day?