**HW 7 – Weather Report Data**

**Instructions**: For this assignment, you need to write a program that **reads the data from the two files and processes that data in several different ways using lists. Also, the program should write a report to a different file.**

**Data File Format**

File [temperature.txt](http://facweb.northseattle.edu/nyrusina/CSC110%20(Fall%202016)/Hw/HW7/temperature.txt)

|  |
| --- |
| 2016 January 31 44  0  44  0  39  2  ...  February  29  45  1  50  1  48  1  48  1  … |

The temperature measurements you will work with is stored in a simple text file. The file format is highly structured.

* The first line contains the year during which the measurements were taken (only once).
* The next two lines contain a month and the number of days in this month.
* Next lines store information about the air temperature and rainy days for the month. The number of rows corresponds to the number of days in the month:
  + The first line – the temperature
  + The second line - 0 – no rain was on this day, 1 – it was raining on this day, 2 – it was snow
* This sequence is repeated for each month.

**Program Specification**

Write a program that does the following:

* Reads the data from the file and creates several lists for storing them.

Look at the following output data that will help you to better understand what kind of lists and variables should be used.

Weather Report for 2016

Month Maximum Minimum Average Rain

January 57 39 48.94 18

February 62 48 53.79 23

March 73 48 56.58 22

April 89 55 66.17 10

May 87 57 69.03 5

June 91 60 72.63 13

July 88 68 75.87 5

August 95 70 79.32 2

September 79 64 69.87 12

October 68 52 61.52 28

November 71 50 58.70 16

* Displays this information in the shell window and writes it in the report file.
  + The name of the output file should be **'REPORT-**' and the year of measurements that you can read from the file **temperature.txt**. So, if you read from the file '2016', then the output file should be named **'REPORT-2016.txt'**.
* Finally, show the following information in the Python shell window in a nicely-formatted, easy to understand report:
  + the maximum temperature during the period and the name of the month
  + the minimum temperature during the period and the name of the month
  + the minimum **number** of rainy days and the name of the month
  + the maximum **number** of rainy days and the name of the month

Here is an example of what the report would look like:

|  |
| --- |
| The maximum temperature=95F was in August  The minimum temperature=39F was in January  The maximum of rainy days was 28 in October  The minimum of rainy days was 2 in August |

**Development Tips:**

1. Use lists to save information about names of the months, min, max, and average temperature, and the number of rainy days for every month.
2. Since you don’t know how many months are stored in the file, you need to create empty lists and add items while reading data from the file.
3. After you read the data about the number of days in a month, you can use a loop to read the data for the current month from the file **temperature.txt** in the same loop.
4. In this program, you need to use only two loops.
5. Use the **accumulators** to add up the number of rainy days and calculate the average temperature for every month.
6. Remember that counters and accumulators always need to be **initialized** before the beginning of the loop.
7. Use different variables for determining max and min temperature in each month and for the whole period of measurement.
8. Plan your program carefully on paper before you start writing code.

**Testing** -- Be sure to carefully test your program with existing files. As always, be sure to document your testing in comments at the end of the program.  Your comments should also say if you think any part of the assignment requirements have not been met.