HOMEWORK 15

CS 125

due at 11:45apm (classtime) on Tuesday, October 20

This homework requires you to use Python to analyze weather data from a file. First, go to this Minnesota Dept. of Natural Resources web page, which displays weather data for Minneapolis on each day of the year 2000. Click the **CSV** link to download a file containing the data. The file is a "comma-separated values" text file of weather data. The first few lines look like this:

```
"Date","Maximum Temperature degrees (F)","Minimum Temperature…
"2000-01-01","35.0","24.0","T","0.00","0.00"
"2000-01-02","35.0","29.0","0.04","0.50","0.00"
"2000-01-03","29.0","24.0","T","T","0.00"
```

The first line of the file contains column headings, and each of the remaining lines contain weather data for one specific day. These lines contain a date followed by the high temperature, low temperature, precipitation, snowfall, and snow depth recorded on that day. A value of "T" indicates a "trace" amount of precipitation or snowfall, which you can regard as zero.

Write some Python code to load the data from the file into one or more NumPy arrays. Then compute the following:

1. Compute the average high and low temperatures for each month. For example, the average high temperature for January is the average of the high temperatures for all 31 days in January.

2. Compute the number of days each month that received no precipitation. (Regard a "trace" amount of precipitation as zero precipitation.)

3. Compute the total snowfall for each month. (Again, regard a "trace" amount as no snowfall.)

4. Find the day that had the greatest *difference* between the high and low temperature for that day.

Submit your work to the Homework 15 assignment on Moodle. You may submit either submit a Python file containing your code together with a file showing your output that answers #1 – 4 above, or a link to a Google Colab notebook showing your code and output. If you submit a Colab notebook, be sure to share your notebook with Prof. Wright and with the grader.