ENGR 0012 – Spring 2019 – HW9

Acceptable behaviors for this assignment include:	Unacceptable behaviors for this assignment include:
• Consulting your textbook or other written material • Asking your team members • Asking your professor or TA Note that consulting materials and asking others is only acceptable as long as they do not provide you with the solutions – you have to come to the solution on your own!	• Copying the solution(s) from a solution manual, book, or other written material • Copying the solutions(s) from assignments submitted in previous semesters • Providing the solutions to a classmate, student in other section, student in future section, or online solution banks • Asking someone to complete the assignment for you

This assignment is to get you familiar with mathematical operations, looping and branching, and reading in a text file in C. Ensure your math operations take into account the data type (int vs float).

The data file "1930_2001.txt" is in the Courseweb assignment folder. It consists of two columns and 365 rows. The first column contains the daily high temperatures in Pittsburgh in 1930 and the second column contains the daily high temperatures in Pittsburgh in 2001.

Write a C code that

1. Displays the following statement: "We in Team *Team Number*, *Your Names*, certify that we have completed this assignment in an honest manner." Your assignment will not be graded if this statement is missing.
2. Ask the user for a filename. Assume correct file name entry.
3. Read the provided text file into a two-dimensional array (size = number of rows in file vs number of columns in file).
4. Perform the following operations:
    a. Properly display the data in the format shown in the sample output on the next page.
    b. Find the mean and standard deviation of both columns and displays them to the screen.
    c. Find the mean and standard deviation of both columns and write this data to a file named "results.dat".
    d. Find the min and max of both columns and displays them to the screen.
    e. Find the min and max of both columns and append this data to the results file.
    f. Make a new one-dimensional array that contains the difference between the 1930 and 2001 data for each day.
    g. Find the max and min differences between the two years and display them to the screen and append this data to the results file.
    h. Find the median of both columns and display them to the screen.
    i. Find the median of both columns and append to the results.dat file.

Verify your results in excel or MATLAB. Ensure your results match the verification.
View the sample output provided on the next page to match formatting of display and format of results.dat

Remember that your program must be mathematically correct and include comments, liberal use of whitespace, and proper indentation. In addition, the program should include prompts for the input data, and should display the output in a manner that is clearly labeled and unambiguous.

This is a team assignment. You need to submit the .c or .cpp file. Name you file Instructor_Time_HW9_TeamNumber (e.g. Mena_10am_HW9_Team33.c) and upload the file through your class computer using the official file submission link (found on the desktop of class computers in GSCC 138 or BEH 229 at the beginning of the class when this assignment is due).

Note the top of the output is cropped. It should start with integrity statement and data starting at Day 1. The same format is used in the results.dat file.

```
Temperatures on Day 330 in 1930 = 31    2001 = 62
Temperatures on Day 331 in 1930 = 24    2001 = 57
Temperatures on Day 332 in 1930 = 22    2001 = 65
Temperatures on Day 333 in 1930 = 42    2001 = 54
Temperatures on Day 334 in 1930 = 56    2001 = 68
Temperatures on Day 335 in 1930 = 55    2001 = 67
Temperatures on Day 336 in 1930 = 28    2001 = 49
Temperatures on Day 337 in 1930 = 54    2001 = 54
Temperatures on Day 338 in 1930 = 55    2001 = 63
Temperatures on Day 339 in 1930 = 48    2001 = 69
Temperatures on Day 340 in 1930 = 43    2001 = 74
Temperatures on Day 341 in 1930 = 43    2001 = 60
Temperatures on Day 342 in 1930 = 39    2001 = 54
Temperatures on Day 343 in 1930 = 46    2001 = 48
Temperatures on Day 344 in 1930 = 52    2001 = 42
Temperatures on Day 345 in 1930 = 50    2001 = 53
Temperatures on Day 346 in 1930 = 46    2001 = 58
Temperatures on Day 347 in 1930 = 36    2001 = 58
Temperatures on Day 348 in 1930 = 35    2001 = 65
Temperatures on Day 349 in 1930 = 33    2001 = 71
Temperatures on Day 350 in 1930 = 22    2001 = 44
Temperatures on Day 351 in 1930 = 29    2001 = 48
Temperatures on Day 352 in 1930 = 31    2001 = 61
Temperatures on Day 353 in 1930 = 39    2001 = 43
Temperatures on Day 354 in 1930 = 34    2001 = 56
Temperatures on Day 355 in 1930 = 37    2001 = 39
Temperatures on Day 356 in 1930 = 33    2001 = 38
Temperatures on Day 357 in 1930 = 28    2001 = 46
Temperatures on Day 358 in 1930 = 26    2001 = 52
Temperatures on Day 359 in 1930 = 40    2001 = 35
Temperatures on Day 360 in 1930 = 42    2001 = 27
Temperatures on Day 361 in 1930 = 39    2001 = 30
Temperatures on Day 362 in 1930 = 31    2001 = 29
Temperatures on Day 363 in 1930 = 32    2001 = 33
Temperatures on Day 364 in 1930 = 31    2001 = 25
Temperatures on Day 365 in 1930 = 32    2001 = 20
**************

The average temp for 1930 is:  65.5260
The average temp for 2001 is:  63.5233
The min temp for 1930 is: 20
The min temp for 2001 is: 20
The max temp for 1930 is: 102
The max temp for 2001 is: 93
The min difference between 1930 and 2001 is: 0
The max difference between 1930 and 2001 is: 47
The standard deviation for 1930 is:  19.7110
The standard deviation for 2001 is:  18.0108
The median temp for 1930 is: 68
The median temp for 2001 is: 67



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(program exited with code: 0)
Press return to continue
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