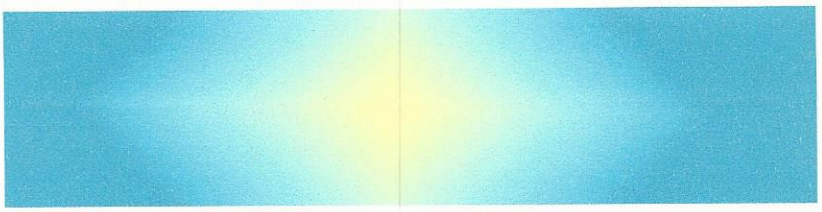
Software Development



IPC144 Assignment 1
Version 1.0

Due October 16, at 23:59 CST

Completion of this assignment is a requirement for passing this course

Your first assignment is to write a simple weather data analysis tool.

LEARNING OUTCOME

Upon successful completion of this assignment, you will have demonstrated the abilities to:

- code program logic using sequence, selection
- perform arithmetic operations
- read user input
- write program output
- design an algorithm to solve a small problem

INTRODUCTION

You will write a program that reads in weather data provided by the user, and provides a summary of the data entered.

GENERAL SPECIFICATIONS

Your program will ask how many days of weather the user wishes to enter. If the user enters anything less than or equal to zero, keep asking them again until they enter a positive number. Other than this, you may assume that the user enters valid input as required. Once the user enters a valid number of days, prompt the user for weather data for the number of days that the user indicated. For each day, ask the user what the high and low temperatures were that day. Also ask what the weather conditions were. The user can enter any one of the following characters to indicate conditions:

- s - sunny
- c- cloudy
- p - precipitation

After each dayâ€™s weather data is entered, print the high and low temperature for that day, as well as the average temperature that day. Before asking what the next dayâ€™s weather is, print out a simple graphical display as follows:

- sunny: @@@@@@@@@@@@@@@@@@@@
- cloudy: ~~~~~~~~~~~~~~~~~~~~
- precipitation and average temperature that day is 0 degrees celsius or less: ********************
- precipitation and average temperature that day is more than 0 degrees celsius: ;;;;;;;;;;;;;;;;;;;;;;;;

After data for the indicated number of days is entered, the program will compute the average temperature over all the days entered and display it to the user.

Your program should have a constant value that a programmer can change, that determines how many symbols are printed to depict each weather condition. By default, leave this as 20.

Hint: when accepting a character as input using scanf use the format " %c" (note the space before the c - this will consume/ignore whitespace such as new lines for you).

MINIMUM REQUIREMENTS FOR ASSIGNMENT TO BE CONSIDERED COMPLETE

- program must compile without errors on matrix and produce an executable
- program must run without crashing
- Using data listed in the table below, program produces the desired output (also listed below)
- NOTE: faking of output to produce desired result without actually calculating result does not meet the minimum requirements

Number of days:	7			
Day	High Temperature	Low Temperature	Conditions	Average Temperature
1	15.3	10.8	s	13.05
2	11.5	5.0	c	8.25
3	9.9	3.3	p	6.60
4	5.6	-0.8	p	2.40
5	3.4	-6.5	p	-1.55
6	-1.1	-11.0	p	-6.05
7	-3.4	-8.2	c	-5.80

Sample output for values in table:

```
Weather Analyzer
==========
please enter a positive number of days: 7
Enter today's high: 15.3
Enter today's low: 10.8
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): s
Today's average temperature is: 13.05
@@@@@@@@@@@@@@@@@@@@
Enter today's high: 11.5
Enter today's low: 5.0
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): c
Today's average temperature is: 8.25
~~~~~~~~~~~~~~~~~~~~
Enter today's high: 9.9
Enter today's low: 3.3
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): p
Today's average temperature is: 6.60
;;;;;;;;;;;;;;;;;;;;
Enter today's high: 5.6
Enter today's low: -0.8
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): p
Today's average temperature is: 2.40
;;;;;;;;;;;;;;;;;;;;
Enter today's high: 3.4
Enter today's low: -6.5
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): p
Today's average temperature is: -1.55
********************
Enter today's high: -1.1
Enter today's low: -11.0
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): p
Today's average temperature is: -6.05
********************
Enter today's high: -3.4
Enter today's low: -8.2
Enter today's conditions (s: sunny, c: cloudy, p: precipitation): c
Today's average temperature is: -5.80
~~~~~~~~~~~~~~~~~~~~
```

```
average for all 7 days is: 2.41 degrees
```

Hint: in order to display 2 decimal places of a float use the format "%.2f"

NOTE: meeting this standard does not guarantee that your assignment will receive 100%. It only means it will be considered completed and will not need to be resubmitted

SUBMISSION REQUIREMENTS

Test your program on the C platforms that your instructor has specified. For submission purposes, your program must work on matrix, our Linux cluster. For detailed submission requirements follow your instructor's assignment submission guidelines.

Student Oath

A signed declaration of honesty must be included with your assignment submission.

```
I declare that the attached assignment is wholly my
own work in accordance with Seneca Academic Policy.  No part of this
assignment has been copied manually or electronically from any
other source (including web sites) or distributed to other students.
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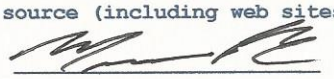
Name  Student ID 031028095

GRADING

This assignment is worth 6% of your final grade. Marks will be awarded for correct results, coding style, clear documentation. For more on documentation and coding style, please see the style guide. Late assignments are penalized at 10% per business day (does not count weekends and statutory holidays). NOTE that once an assignment is late, it is late and there is a late penalty. If you submit on the Saturday it is 10% because it is late. However, it is 10% until Monday night. In other words, you can wait till Monday to make sure it is perfect. You do not get further penalized on weekends but once the deadline is passed... you will have a late penalty applied.

Non-working assignments (assignments that do not meet the minimum requirements for completion detailed above) will need to be resubmitted. These assignments are considered incomplete and need to be redone before they are considered to be completed, with a 50% grade penalty.

Please note that you must complete all assignments in order to pass this course.

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