TCSS 360 Software Development and Quality Assurance Techniques
(Spring 2020 - Section A)

Project Assignment #01
(PRJ#01-W03Sun)

Revision History
Revision 0 – posted on Sun, March 29th , and to be presented in the class on Mon, March 30th, 2020.

Submit PRJ#01C by 11:59 pm on Sun April 19th, 2020
You will have three (3) days of grace period for this assignment.

General Information

- You can go with the randomly assigned group leader (or moderator) or choose somebody else who will volunteer for assuming the responsibilities of this position.
    - The group leader will be responsible for coordinating the group meetings, task assignments, and collecting and submitting the project deliverables at the end.
    - The group leader will be awarded +5 bonus points for her/his services for completing this assignment.
- You are going to develop a single software as a group in the specified period of the assignment.
    - You can make up to three (3) submissions for each assignment before it is closed, and only the last submission will be graded.
    - If you want to resubmit, please do so. You do not need to notify me.

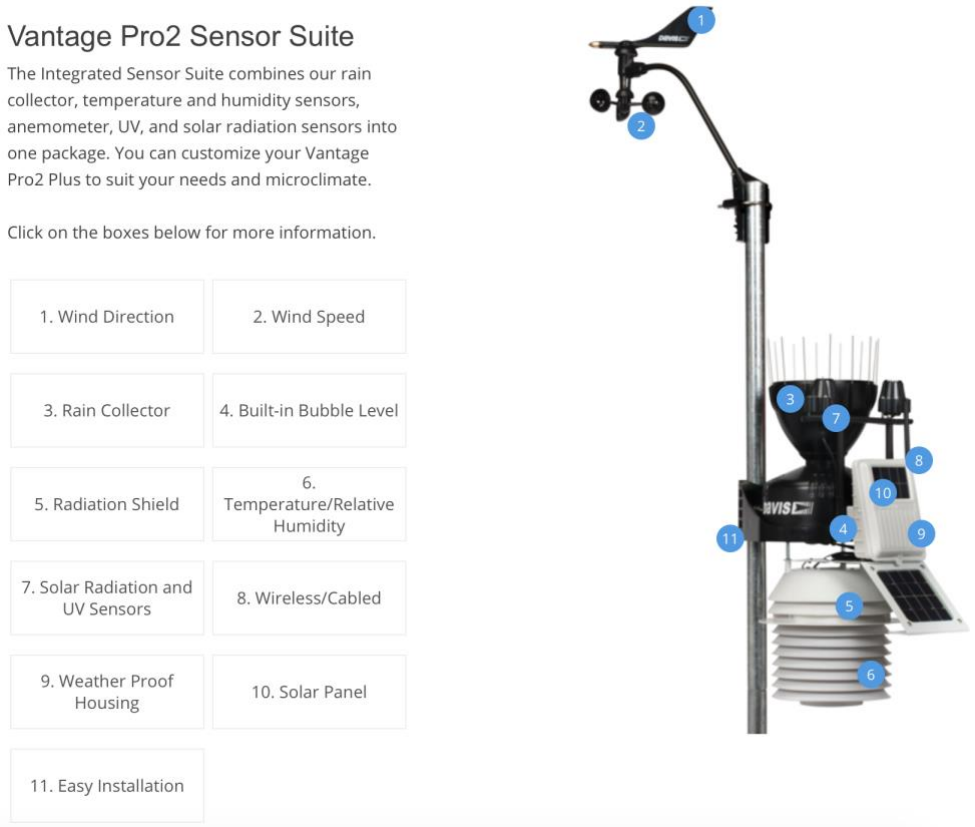
PRJ#01A (W01-Sun) due to 11:59 pm on Sun April 5th, 2020 **and**
PRJ#01B (W02-Sun) due to 11:59 pm on Sun April 12th, 2020

- These are interim checkpoints where you will individually answer questions about the progress of your project in the previous week.
- These questions will include personal questions such as:
    - What did you plan to do last week?
    - How did you do last week?
    - What went wrong/right the previous week?
    - What are you planning to do next week?
    - How was the performance of your group last week?
    - What are the risks that may cause the group to miss the deadline?
- Your answers will help me to monitor your progress closely and to share some advice with your group in some cases that may (or may not) help your group do perform better.

PRJ#01C (W03-Sun): due to 11:59 pm on Sun April 19th, 2020

- You will individually answer questions about your project experience and report the lessons you learned during this group assignment. You will also do a peer review of your group members.
  - Only one person from your group should submit your group project on behalf of all group members.
  - Your group should submit the following artifacts as a group:

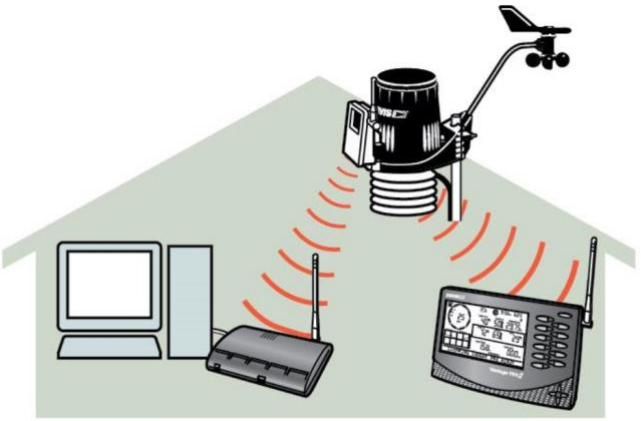
- All submitted files will be named prefixed with specially "PRJ#01-GroupNN", where NN is the group number when you upload your file onto Canvas.
  o PRJ#01-GroupNN-src.zip: Your zipped Eclipse project folder that includes all your source codes, JUnit test codes, other required files (such as image and data files), and a README that explains how to run your software.
  o PRJ#01-GroupNN-testcases.pdf: The list of all test cases with a short definition of the test procedure and the expected results.
  o PRJ#01-GroupNN-testvideo.mp4: (*or a link to some other location*): You should shoot a 5 min video where you introduce your source and test codes, you compile and execute your program to prove that it compiles and runs without error, and run your test suites to show the test coverages of your units.
  o PRJ#01-GroupNN-demovideo.mp4: (*or a link to some other location*): You should shoot a 3-5 min video where you present all the functions and capabilities provided by your software.



I. Problem Definition:

You are going to develop the core software for the Wireless Vantage Pro2 Integrated Sensor Suite (ISS) (Product number: 6322) manufactured by Davis Instruments.

The ISS software shall



- collect data measurements from all attached sensors of the device according to the device specifications (provided on the website),
- process the sensor data properly to serve (or send) it to the data monitoring devices. These include Wireless Vantage Pro2 Console Receivers (Product number: 6316) and Wireless Weather Envoy (Product number: 6316) that transfers the incoming data to a stand-alone weather monitoring application running on your computer.
- transfer the data between the weather station and receiver or envoy devices on a (wireless) IP network by serializing the data.

You should develop the essential ISS software in Java and its unit tests using JUnit 5 to test your ISS software with a test coverage of 90% or above.

Since you do not have the actual sensors that can provide data to the ISS, you will also need to implement proxy sensors by following their specifications. For the sake of this assignment, you should implement all sensors collectively as "a single stand-alone application" or "a single driver class running on its own thread" separate from your ISS software and interchanging data with the ISS by serialized sensor and control data.

Hint: The textbook includes a case study on a wilderness weather station where you can benefit while you work on this project. Please see Chapters 5, 6, and 7 for relevant information.

II. Programming Guidelines:

1. You *should* include Javadoc comments at the beginning of each file, class with some necessary descriptive information, as well as some comments to the complicated parts of your code.
2. Please try to eliminate as many of the warnings displayed by Eclipse, and optionally other Eclipse plug-ins (*like CheckStyle, FindBugs, and PMD)* to improve the quality of your codes before submitting them.
3. You should code defensively. You should test setters and constructors for invalid values, as well as null values and thrown exceptions, or handle the error cases properly so that your program will not crash during its execution. //