Query 6

Query overview
The final submission has two major elements:

1. Clarify descriptions and processes to collect and analyze data. For assigned systems, update the Data Manual to describe:
   - Point list and point attributes, modifying the v2 Data Manual to add a set of useful point attributes to the existing point list.
   - Functional intent and operationalizing rules for points and systems, based on content of the Sequence of Operations and your understanding.
   - Deliver: updated data manual, links to point database(s)

2. Assess point and system performance given functional intent. For your systems:
   - Assess point and system and building energy system status given SEE IT data, based on your operationalized assessment rules. Show detailed assessment of data for a month of your choice and for a year.

Deliverable for this query:
Q6 wiki submission that will first draft of updates to the online Data Manual, focused on the content of (1) that you add. We will review this draft in the final week prior to entering the revised content to the Data Manual as a final class deliverable.

Due Date
Thursday, May 24 before the start of class. Please submit your analysis through your wiki page and reference your updates to the Data Manual.

Background
Class wiki and data manual: https://www.stanford.edu/group/CLFE/cgi-bin/energy/index.php/Main_Page
Y2E2 point list: http://www.stanford.edu/class/cee243/Data/Y2e2PointListSortedV2.xlsx

Task: create update Data Manual content
The Data Manual now has lots of information. Our goal is to help make it a central, updated and actionable source of information. Please review the Data Manual given your current understanding of system design and operation, copy segments of the Data Manual that apply to your system to your query content and place them in your personal section of the class wiki, and then update the content.

- (4 points) Create a clear and editable point list and point attributes. Based in the current v2 Data Manual, add a set of useful point attributes to the existing point list. Replace the current point description tables, which typically are uneditable .jpg images, with references to specific tables available on the Internet and that are editable. Elaborate the content of these tables with both point attributes that may be helpful, i.e., data columns, and values of these new attributes that you have learned from other sources such as the Sequence of Operations or inferred by looking at data or appealing to engineering judgment.
CEE243 Query 6: Update the Data Manual to summarize your understanding of the system, assumptions and methods

- (2 points) Resolve changed and ambiguous references, e.g.,
  - Reconcile or cross-reference different names for the same thing. The Sequence of Operations, Data Manual and SEE IT all reference points with names, which sometimes are inconsistent. A simple possibility is to include the point number when referring to point names that different sources might or do reference inconsistently.
  - Update the content with any new clarifications that we have learned from analysis or discussions with Tim Troxell.
  - Add reference to specific tables in discussions when the reference is not now explicit. For example, replace “For the AHUs there are ten measurements ...” with something like “As shown in Table 1, AHUs have ten ...”

**Comment**

Please consider the following possible point attributes:

- Alarm condition, e.g., if differential pressure exceeds a certain threshold
- Comments
- Correction, i.e., the manipulation of sensed data in engineering units prior to storage as an integer in the BMS, e.g., divide by 10
- Deadband, e.g., +2 °F occupied hours; -4 °F unoccupied hours; N/A
- Impact of increased value (for controls), e.g., flow rate increases
- Low and high normal operating ranges, e.g., 50 - 80 °F
- Minimum and maximum normal values, e.g., 60 °F and 180 °F
- Mode, i.e., constant, variable or N/A
- Mode rate of change: e.g., +1%/10-minutes, N/A
- Setpoint value or values, e.g., 74 °F summer hours
- Source, i.e., Sensor or Control
- System diagram that includes your component or system and annotate it to highlight the point(s) on which you focus
- Units, e.g., °F

**ORID Analysis**

7. ORID analysis (1 point). In the wiki, please briefly summarize

- Objective: What facts did you see this quarter? What factual statements can you make based on the data?
- Reflective: What surprised you? What encouraged or discouraged you?
- Interpretive: What sense to you make of what you did this quarter?
- Decisional: What are our proposed next steps? What is your action plan for next steps?