Geog 496/596: Lab Assignment Week 3

Purpose We will compare the `for` loop and list comprehensions in this assignment. We will also use lists and the python interpreter in a typical task in data science of trying out a hypothesis over manually generated data sets. We then leverage our findings to improve the system.

1. The data for this example is in file a3.py. We want to implement functions that compute average and standard deviation for the values. We want to implement the functions in two different ways:
   (a) Using the `for`-loop.
   (b) Using list comprehension.
2. In this task, we look at the HVAC example again.
   (a) The code currently is not documented and does not have docstrings. A documentation is a short descriptions of what each function achieves as comments and what its input parameters and output are. Can you write documentation (simply as a comment or as a docstring) for each function?
   (b) What happens when the value fluctuates around the threshold?
   (c) We want to write a new test sensor that reads items from a list of data points instead of producing random values to test our hypothesis. You can generate the list manually or use the python interpreter to help you generate a list of suitable values.
   (d) Can you improve our system to be less sensitive? Add an optional sensitivity parameter with a default value to the list of parameters in the `actuatortrigger` function and use this parameter to adjust the sensitivity.