Validere Coding Assessment

Please create a git repository and use commits to act as a chronological record of your implementation. If you have any questions, please let us know. When finished, please tarball/zip the repo or send a github link and email it back for review.

Distillation Profile of a Blend

When blending two different kinds of oil together, each of the oil's properties (e.g.: sulphur content, density, etc.) are combined via specific rules. One property of particular importance is the Distillation Profile; usually given as a table of the form:

05% : 45°C
10% : 95°C
20% : 101°C
30% : 140°C
40% : 179°C
50% : 210°C
60% : 225°C
70% : 260°C
80% : 310°C
90% : 330°C
95% : 360°C
99% : 381°C

What this represents is the temperature in °C at which X % of the oil has evaporated; e.g.: for the above table, 50% of the oil has evaporated at 210°C. In essence, this is a discrete snapshot of a function that takes in percentage, and returns the temperature.

- Given any two crude oils with their given distillation profiles, create a model which will give an approximate distillation profile of the mixture of the two oils with specified volumes. (Note: thinking of the distillation profiles as snapshots of functions is the recommended view.) The percentages to use (and get at the end) are the same as the ones in the above example, namely: [5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, 99].
- Explain any assumptions or simplifications made.
- Collect data from Crude Monitor for a couple of real crudes, and cleaning recent data, run the distillation profiles through your program with volumes of your choosing.
- Write tests
- Include documentation about your implementation and assumptions.
- Use frequent commits to act as chronological records for your implementation.

Program in Python (preferably Python 3), and submit as a .py file or a Jupyter notebook. Use any numerical/data packages you may think are useful, such as NumPy, SciPy, Scikit-Learn, Pandas, etc.