



March 13, 2017

RE: CANUE Programmer/Developer Position

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Hello again! As promised, here is a programming task and a few questions for you to consider in advance of our interview on Monday March 20<sup>th</sup>. If you have not already done so, please let us know your general availability on that date (pacific time).

**Programming Task:** The attached csv files contain data collected on three different days, each one contains GPS data from a mobile air quality monitor and associated values for a VOC (volatile organic compound). Please do the following:

1. Use python to process each file:



- Simplify the headers
- Add a data flag column
- Fill the data flag column with 1 (valid data) 2 (negative value) or 3 (missing value, noted as -999 in the raw data)

2. Use python to create a summary table with statistic for each of the above input files:

- Total records
- Number and percent of valid records
- Number and percent of records with negative values
- Number and percent of records with missing values
- Minimum, 10<sup>th</sup> 50<sup>th</sup> and 90<sup>th</sup> percentile, and maximum of valid values

3. Append all the files into a single file and visualize using leaflet.js (or another approach of your choice). Use different colours for each day, and different sized symbols to show changes in VOC levels.

**Please email all documented code before March 20<sup>th</sup>.**

#### Interview Questions:

1. Discuss the programming test.
2. What programming languages do you prefer?
3. Expand on your experience providing support to researchers and peers.
4. What aspects of this position/the CANUE project do you find most interesting?
5. What are your career goals and how will CANUE help you on the path?
6. What do you think makes you a good programmer?