

Python Developer Interview Task

We would like you to undertake a short task to demonstrate your skills in data manipulation using Python. You may complete the task whenever you like between now and the deadline (6th July) but we expect you to spend no more than three hours in total working on it.

Background

The Western Channel Observatory (WCO) is an oceanographic time-series and marine biodiversity reference site in the Western English Channel. In situ measurements are undertaken weekly at coastal station L4, approximately 7 nautical miles south of Plymouth, by the Plymouth Marine Laboratory research vessel.

A CTD instrument is used to take measurements of several variables over depth for the study of seasonal and annual trends. The data for the past 19 years are available to download as a text file from https://www.dropbox.com/s/nz2xotqglrl0wy/L4_CTDf_ODV_format.txt?dl=0 (you do not need a Dropbox account for this, and you don't need to sign in – please ignore or skip the prompts to sign in or create an account).

Task

We would like you to transform these data from their original format to a format where they can be queried and/or divided into subsets for further analysis. As part of this process, please also provide examples of how a colleague could extract statistics or information from the data; for example:

- the highest surface temperature in any given year,
- whether there is a link between depth and salinity,
- seasonal changes to temperature over depth

The code you write should be well-structured, clear and concise, and be in Python 3. You can make use of Python libraries to assist you, and please specify which libraries are required to run your code.

We would like you to prepare a short presentation on your code which should last no more than 10 minutes. You will be asked to give this presentation at the interview, and it should describe the approach you took and why, explain how to extract data (beyond the examples), and details of how you might develop it further, given time.

You should submit your final code by adding it to a GitHub repository and sending a link to bac@pml.ac.uk before midday on Wednesday 6 July. The code will be available on a screen during the interview, and if you wish to use any additional resources, e.g. PowerPoint slides, please also include these in the repository.

Scoring

Total points available: 50

Code quality – 20 points: well structured, commented code, conforming to Pep8; good use of libraries, efficient data handling

Application quality – 20 points: ease, efficiency and accuracy of data extraction

Presentation – 10 points: clarity and conciseness of presentation, with clear explanations for choices



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