R developer – job application exercises

Thank you for your interest in our position R developer. Before we meet in person, we would like to ask you to do these exercises at home, in your comfortable environment. This is going to be used as a basis for evaluating a level of your coding skills and habits, so please focus not only on the result but also on the way how to get to the result. Write the code with the expectation that the experienced developer should be able to understand it.

The preferred programing language to be used is R. If you are not familiar with the language at all and don't think you would be able to get sufficient knowledge within the given timeframe, another programming language is acceptable as well (e.g. Python, Java, C).

1.1 Average annual wages

Read the 'Dataset annual wages.xlsx' data from the file attached.

Output a file, which will contain for each Country only rows 'Current prices in NCU' and columns 'Country', Years ('2000' … '2017'). All wages should be converted to EUR currency using the FX rates from the file 'FXrates.csv' attached.

Source: FX rates were downloaded from here: https://data.oecd.org/conversion/exchange-rates.htm

Hint: To get the FX rate for EUR/USD in the years 2000 – 2017, Germany was using EUR currency.

1.2 Minimum wages

Read the 'Dataset minimum wages.xlsx' data from the file attached.

Output a file, which contains the same information as the input file, converted from local currency to EUR using the same FX rates as in the first exercise.

1.3 Statistics about wages

Read outputs from both previous exercises.

Output two tables:

- Table 1:

  For common years in both inputs, calculate the ratio between minimum wages and annual wages (minimum/annual). At the end of the table, add 2 additional rows:

  - Row 1: minimum ratio for each year
  - Row 2: maximum ratio for each year

- Table 2:

  Calculate the exponential moving average of annual wages (EMA7) of the salary per country for years 2000 - 2016 and calculate the ratio between EMA7 and wage in the Year 2017. Do not provide the EMA7 in the table.