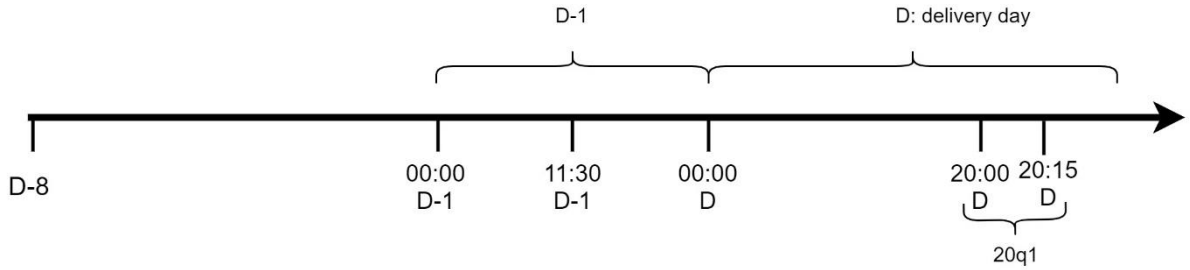
Problem description:

In economic terms, electricity is a commodity capable of being bought, sold, and traded. However, unlike other commodities electricity is not storable in large scale. Hence, in order to maintain security of supply at a high level, there must always be a balance between production and consumption in the electricity supply system. With the ever-increasing share of variable renewable energy in the electricity system, it is become more challenging (and expensive) to balance supply and demand of electricity at all the time. Hence, to avoid high cost of balancing energy, market participants always attempt to use best forecast available to them to trading their renewable energy (wind and solar) production during each hours of a day.

In this task you are provided with small dataset of German wind power forecast which has a frequency update of 15 minutes and provides forecast for each 15 minutes of a day. Pay attention to the following example to better understand how this time series looks like. Let's assume we are talking about the delivery period between 20:00 and 20:15 in the delivery day of D. In the provided dataset, the forecast for this period may start from 8 days before that day (so D-8) and every 15 minutes a new forecast updates arrives.



Task 1: data cleaning

Preprocess the dataset in the way that for each delivery period, the first forecast starts at 11:30 the day before delivery (so 11:30 D-1).

Task 2:

Generate a new column in the preprocessed data frame, and name it "ID Position". This value of this column is generated in the following manner. For each delivery product (in the previous example 20q1) this column contains the difference between the new forecast update and the update that came at 11:30 in D-1.

Pay attention: important points for me

1. You should avoid using "for" loops.
2. Running time of your code
3. Whether your code generate the correct results.
4. Coding style. Meaning, I like to see how to do you divide your code to different functions, how do you comment your code, etc.