Assessment of coding skills in Python

Objectives. Evaluate your coding skills using the python computer language on a temporal dataset.

Dataset. You will work on the data contained into the file export_2021.txt. It is about meteorological data collected each 15 minutes in the station of Barcelonnette (Alpes de Hautes Provence, France) during the year 2021. The different columns are identified in the following table:

Date	Time	Temperature	Pressure	Rain	Solar_radiation	Wind_speed
d/m/y	h:s	°C	hPa	mm	W/m²	km/h

1. Load the data in your python script and check that you correctly imported it by printing the first 5 lines and last 5 lines.

Expected results:

```
                     Temperature Pressure  Rain solar_rad  wind_speed
Date_Time
2021-01-01 00:15:00         -3.8   1014.4   0.0         0         0.0
2021-01-01 00:30:00         -3.8   1014.2   0.0         0         0.0
2021-01-01 00:45:00         -3.8   1013.8   0.0         0         0.0
2021-01-01 01:00:00         -3.5   1013.5   0.0         0         0.0
2021-01-01 01:15:00         -3.5   1013.4   0.0         0         0.0
```

2. From the data, perform some calculation:
3.
    a. The median temperature for each month

Expected results:

```
Median temperature by month :
Date_Time
2021-01-31     1.4
2021-02-28     4.5
2021-03-31     4.6
2021-04-30     7.7
2021-05-31     9.8
2021-06-30    15.1
2021-07-31    14.9
2021-08-31    14.1
2021-09-30    11.8
2021-10-31     7.3
2021-11-30     3.2
2021-12-31     0.7
```

b. The total rainfall by month and for the entire year 2021

Expected results:

```
Total rainfall over 2021 (in mm) :  546.5999999999999
```

c. The number of no windy days during 2021 (we will consider a day to be windy as soon as the wind speed is over 0)

Expected results:

```
Number of days without wind :  9
```

4. Display the data on a plot divided into 4 subplots:

   a. Subplot 1: raw rainfall data
   b. Subplot 2: cumulative daily rainfall
   c. Subplot 3: monthly median temperature and the cumulative monthly rainfalls (x-axis : time, y_axis1 : median temperature, y-axis 2 : monthly rainfall – bar chart plot)
   d. Subplot 4: days without wind

Expected results: