File name:-> wind.data

Q 1.**. Assign it to a variable called data and replace the first 3 columns by a proper datetime index.**

|  | **Yr\_Mo\_Dy** |  | **RPT** | **VAL** | **ROS** | **KIL** | **SHA** | **BIR** | **DUB** | **CLA** | **MUL** | **CLO** | **BEL** | **MAL** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | 2061-01-01 |  | 15.04 | 14.96 | 13.17 | 9.29 | NaN | 9.87 | 13.67 | 10.25 | 10.83 | 12.58 | 18.50 | 15.04 |
| **1** | 2061-01-02 |  | 14.71 | NaN | 10.83 | 6.50 | 12.62 | 7.67 | 11.50 | 10.04 | 9.79 | 9.67 | 17.54 | 13.83 |
| **2** | 2061-01-03 |  | 18.50 | 16.88 | 12.33 | 10.13 | 11.17 | 6.17 | 11.25 | NaN | 8.50 | 7.67 | 12.75 | 12.71 |
| **3** | 2061-01-04 |  | 10.58 | 6.63 | 11.75 | 4.58 | 4.54 | 2.88 | 8.63 | 1.79 | 5.83 | 5.88 | 5.46 | 10.88 |
| **4** | 2061-01-05 |  | 13.33 | 13.25 | 11.42 | 6.17 | 10.71 | 8.21 | 11.92 | 6.54 | 10.92 | 10.34 | 12.92 | 11.83 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Q2. Year 2061? Do we really have data from this year? Create a function to fix it and apply it.

|  | **Yr\_Mo\_Dy** | **RPT** | **VAL** | **ROS** | **KIL** | **SHA** | **BIR** | **DUB** | **CLA** | **MUL** | **CLO** | **BEL** | **MAL** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | 1961-01-01 | 15.04 | 14.96 | 13.17 | 9.29 | NaN | 9.87 | 13.67 | 10.25 | 10.83 | 12.58 | 18.50 | 15.04 |
| **1** | 1961-01-02 | 14.71 | NaN | 10.83 | 6.50 | 12.62 | 7.67 | 11.50 | 10.04 | 9.79 | 9.67 | 17.54 | 13.83 |
| **2** | 1961-01-03 | 18.50 | 16.88 | 12.33 | 10.13 | 11.17 | 6.17 | 11.25 | NaN | 8.50 | 7.67 | 12.75 | 12.71 |
| **3** | 1961-01-04 | 10.58 | 6.63 | 11.75 | 4.58 | 4.54 | 2.88 | 8.63 | 1.79 | 5.83 | 5.88 | 5.46 | 10.88 |
| **4** | 1961-01-05 | 13.33 | 13.25 | 11.42 | 6.17 | 10.71 | 8.21 | 11.92 | 6.54 | 10.92 | 10.34 | 12.92 | 11.83 |

Q3. Compute how many values are missing for each location over the entire record.

RPT 6

VAL 3

ROS 2

KIL 5

SHA 2

BIR 0

DUB 3

CLA 2

MUL 3

CLO 1

BEL 0

MAL 4

dtype: int64

Q4. Compute how many non-missing values there are in total.

Ex Ans:-

RPT 6568

VAL 6571

ROS 6572

KIL 6569

SHA 6572

BIR 6574

DUB 6571

CLA 6572

MUL 6571

CLO 6573

BEL 6574

MAL 6570

dtype: int64

Q5. Create a DataFrame called loc\_stats and calculate the min, max and mean windspeeds and standard deviations of the windspeeds at each location over all the days.

|  | **RPT** | **VAL** | **ROS** | **KIL** | **SHA** | **BIR** | **DUB** | **CLA** | **MUL** | **CLO** | **BEL** | **MAL** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **count** | 6568.000000 | 6571.000000 | 6572.000000 | 6569.000000 | 6572.000000 | 6574.000000 | 6571.000000 | 6572.000000 | 6571.000000 | 6573.000000 | 6574.000000 | 6570.000000 |
| **mean** | 12.362987 | 10.644314 | 11.660526 | 6.306468 | 10.455834 | 7.092254 | 9.797343 | 8.495053 | 8.493590 | 8.707332 | 13.121007 | 15.599079 |
| **std** | 5.618413 | 5.267356 | 5.008450 | 3.605811 | 4.936125 | 3.968683 | 4.977555 | 4.499449 | 4.166872 | 4.503954 | 5.835037 | 6.699794 |
| **min** | 0.670000 | 0.210000 | 1.500000 | 0.000000 | 0.130000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.040000 | 0.130000 | 0.670000 |
| **50%** | 11.710000 | 10.170000 | 10.920000 | 5.750000 | 9.960000 | 6.830000 | 9.210000 | 8.080000 | 8.170000 | 8.290000 | 12.500000 | 15.000000 |
| **max** | 35.800000 | 33.370000 | 33.840000 | 28.460000 | 37.540000 | 26.160000 | 30.370000 | 31.080000 | 25.880000 | 28.210000 | 42.380000 | 42.540000 |

Q6. Create a DataFrame called day\_stats and calculate the min, max and mean windspeed and standard deviations of the windspeeds across all the locations at each day.

|  | **min** | **max** | **mean** | **Std** |
| --- | --- | --- | --- | --- |
| **Yr\_Mo\_Dy** |  |  |  |  |
| **1961-01-01** | 9.29 | 18.50 | 13.018182 | 2.808875 |
| **1961-01-02** | 6.50 | 17.54 | 11.336364 | 3.188994 |
| **1961-01-03** | 6.17 | 18.50 | 11.641818 | 3.681912 |
| **1961-01-04** | 1.79 | 11.75 | 6.619167 | 3.198126 |
| **1961-01-05** | 6.17 | 13.33 | 10.630000 | 2.445356 |

Q7. Find the average windspeed in January for each location.

#### Treat January 1961 and January 1962 both as January.

RPT 14.847325

VAL 12.914560

ROS 13.299624

KIL 7.199498

SHA 11.667734

BIR 8.054839

DUB 11.819355

CLA 9.512047

MUL 9.543208

CLO 10.053566

BEL 14.550520

MAL 18.028763

dtype: float64