**Dozee Data Analysis Task.**

**Introduction: -** There are 10 csv files, each having data measured for each day’s sleep cycle of a person.

Vitals such as: 1) Breathing Rate and 2) Heart beat Rate is measured per 30 seconds (1 epoch)

**Tools Used: -**

1. Python Language
2. Jupyter Notebook
3. Pandas Library
4. Matplotlib

**Data Cleaning: -**

The data extracted required to be cleaned a bit, as there were only 3 columns each of integer type viz 1) Timestamp, 2) Heartrate, 3) Breathing Rate

The process was pipelined.

1. Timestamp was in Unix epoch time: Meaning it had to be converted in a human readable format i.e. DD-MM-YYYY HH:MM: SS
2. Once this was done, the time was split in 2 halves as date was not required for the analysis to be performed in hand. (We could have also dropped the Date column; I didn’t do it as to not alter the original data.
3. An hourly based data segregation was to be done, so to plot the data on hourly basis and visualize it.

**Task 2: -**

**Sleep cycle of a person for 10 Days.**

**Dividing classes based on no of sleep hours.**

**The Breathing Rate and Heartrate depicts same graph, hence revealing a direct relation between both the variables** **Normal breathing rate of a healthy person per hour is between 1200-1500 in a relaxed (Sleeping State)** **Normal Heart rate of a healthy person per hour is between 3000-4000 in a relaxed (sleeping State)**

*while sleeping, your oxygen levels are lower and your carbon dioxide levels are higher because your level of breathing goes slightly down.* [*[1]*](https://www.mja.com.au/system/files/issues/188_11_020608/cre11027_fm.pdf) *,*[*[2]*](https://en.wikipedia.org/wiki/Heart_rate#:~:text=During%20sleep%20a%20slow%20heartbeat,heart%20rate%20sometimes%20indicate%20disease.)

* 6 Hours - At day 8: The Heartrate and Breathing Rate were above normal.
* 7 Hours - At day 2,3 and 5: The heartbeat and Breath rate were above normal.
* 9 Hours - At day 1 & 7: The heartbeat and Breath rate were above normal.
* 10 Hours- At day 6 & 9: The heartbeat rate was above normal, but breathing was normal.
* 11 Hours- At day 4 & 10: The heartbeat and Breath rate were above normal.

**Conclusion**: - Is that the person might have some irregularities in his sleep, and might be at a risk of serious illness.