**Clinical AI lab**

Programming Task

**Task-0: Github repo. Creation**

1. Create a public repo called python-refresher under your account
2. Create two directories inside this repo called:
   1. Task1
   2. Task2
3. Create any directories and subdirectories as per your requirements.
4. Push all code, tables, and charts you will develop in tasks 2 and 3 into their respective folders as well as the dataset you used.

**Task-1: Dataset summarization**

Use the attached sleep-quality-dataset.csv file to do the following in a separate jupyter notebook:

1. Extract the dataset from the zipped file using python
2. Read the dataset.
3. Get rid of any column that does not hold any meaningful sleeping data (hint: there is only one).
4. Create a summary table for the whole dataset including the following items for each column:
   1. Counts
   2. Mean
   3. Standard deviation
   4. min.
   5. 25% Q
   6. 50% Q
   7. 75% Q
   8. Max.
5. Check if there is any column with missing data and identify it.
6. Retrieve the data type for each column and print it.
7. Plot a pie chart for one qualitative column of your choice including the following:
   1. Chart Legend
   2. Chart title
8. Plot a histogram for one quantitative column of your choice including the following:
   1. Chart title
   2. Axes titles
9. Plot a bar chart of the BMI Category column with the same requirements as point 8.
10. Save all generated tables and figures.

**Task-2: Function development**

Write a Python function in a separate jupyter notebook called get\_array\_stats() that takes a random integer numpy array of shape (nxn) and returns:

1. Mean (column-wise)
2. Standard deviation (column-wise)
3. Minimum value
4. Maximum value
5. Computation time

Each value should be stored in a single variable. Do not hardcode the 5 requirements, use ready-made Python functions from any library. Show the results for arrays of size:

1. (10x10)
2. (100x100)
3. (1000x1000)

Try to well document your function.

Have a nice Python refresher 😉