- ## Description of the application domain

The application domain SLEEP PATTERN the amount of sleep of an individual based on weekly screen time duration and hours of daily physical exercise.

- ## An ideas about the application domain

The application SLEEP PATTERN has been crafted based on few preliminary parameters such as Age(between 6 to 70), Gender, Screen time on weekdays and Screen time on weekends. The formula **[(5/7)*(weekdays) + (2/7)*(weekend)]** calculates the total Screen time of an individual on daily basis. Furthermore, the Screen time duration explains the Screen time Exposure i.e. whether it is **'LOW' or 'HIGH'**. Another important attribute Exercise helps to find out the Sleep time of an individual. The formula for calculating Sleep time is defined as **[9 – Screen Time+ Exercise**]. It tells the relationship of between Screen time, Exercise and Sleep time. Last but not the least the final targeted attribute which has been derived from Sleep time portraits the pattern of sleep of an individual that is whether it is **'HIGH', 'NORMAL" or "LOW".**

- ## The approach to creating the synthetic data

- ✓ In order to randomly generate the attributes **'AGE', 'PC+TV ON WEEKDAYS' ,'PC+TV ON WEEKENDS' and 'EXERCISE'**, **random.randint(range)** function has been used between a range of relevant values.
- ✓ To generate the random gender between 'Male' and 'Female', **random.choice(list)** function has been used with a list in the argument.
- ✓ The attribute '**SCREENTIME'** has been calculated based on the formula **[(5/7)*('PC+TV ON WEEKDAYS') + (2/7)*('PC+TV ON WEEKENDS')].**
- ✓ The attribute **'SCREENTIME_EXPOSURE'** has been calculated based on the **IF-ELSE** conditional statement.
- ✓ The column '**SCREENTIME'** has been changed into the numpy array to assign anomalies in the values. For this purpose **np.random.exponential()** and **np.random.choice()** function has been used.
- ✓ Boxplot technique is implemented to show the attribute with outliers.
- ✓ The attribute **'SLEEPTIME'** is formulated based on the equation **[9 – SCREEN TIME+ EXERCISE].**
- ✓ Last but not the least the final column 'SLEEP_PATTERN' is calculated based on 'SLEEPTIME" value and using conditional statement.