Assignment

Please read this first:

`https://ouraring.com/blog/sleep-stages`

In this assignment, we will analyze the sleep efficiency dataset from Kaggle:

`https://www.kaggle.com/datasets/equilibriumm/sleep-efficiency`

The dataset describes the sleeping patterns of 452 people. From Kaggle:

The dataset contains information about a group of test subjects and their sleep patterns. Each test subject is identified by a unique "Subject ID" and their age and gender are also recorded. The "Bedtime"

and "Wakeup time" features indicate when each subject goes to bed and wakes up each day, and the "Sleep duration" feature records the total amount of time each subject slept in hours. The "Sleep efficiency" feature is a measure of the proportion of time spent in bed that is actually spent asleep. The "REM sleep percentage", "Deep sleep percentage", and "Light sleep percentage" features indicate the amount of time each subject spent in each stage of sleep. The "Awakenings" feature records the number of times each subject wakes up during the night. Additionally, the dataset includes information about each subject's caffeine and alcohol consumption in the 24 hours prior to bedtime, their smoking status, and their exercise frequency.

Questions:

1. load the "Sleep_Efficiency.csv" file into Pandas
2. how many different entries are there for each columns.
3. how many entries are missing for each column
4. for each missing entry, impute the missing values using the following procedure:
   (a) find 5 peoples with the same gender with the closest age ("neighbors")
   (b) compute the average of these "neighbors" as the value
5. divide all people into the following groups:

- Group 1: children (1-12)
- Group 2: teenagers (13-17)
- Group 3: young adults (18-30)
- Group 4: adults (31-60)
- Group 5: older adults (65+)

For each group, compute the mean and standard deviation and summarize them in three tables (like one below): one table for females, one tables for males and one combined

METRIC	Group 1	Group 2	Group 3	Group 4	Group 5
age duration efficiency REM % deep sleep % light sleep% # awake smoking exercise					

6. Which group (age range and gender) sleeps the most? the least? wakes up the most? the least?

7. which group has the max and min sleep efficiency? Deep/-light sleep percentage
8. do people sleep more or less if they exercise?
9. do smokers sleep more or less
10. examine your tables carefully and tell us what you see (2-3 paragraphs)