# AY23/24 Computer Based Assessment Question Paper

## Sleep Analytics

**Introduction**

Sleep is important. Insufficient sleep has been linked to poor concentration, reduced immunity, and even hallucination. The dataset contains data on sleep (including various phases of sleep) and lifestyle factors. Refer to Appendix A for more information on the variables.

**Part A: Data Exploration and Research Question (30%)**

1. Explore the data and present three interesting findings.

2. Propose one research question involving a target variable that can be answered from the dataset and models learnt in this course. Explain your choice of the target variable.

**Part B: Analytics and Models[1] (40%)**

3. Compare the predictive performance of at least 2 types of models learnt in this course for the target variable and display the results in a table. Which model performed the best? Note: one of the models must be CART.

4. Answer the research question in (2).

**Part C: Conclusion and Key Insights (30%)**

5. Summarize the important findings (excluding your answer in (4)) from analytics in less than 300 words.

6. Suggest a way in which your model could be useful in real world applications. Explain.

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[1] Your code (e.g., Rscript, Python script) must be submitted as separate files but all answers should be complete in the Submission word document file without having to read/execute any other files.

## About the Dataset

ID:                          Person ID.

Age:                         Age of the person.

Gender:                      Gender of the person.

Bedtime:                     Time goes to bed.

Wakeup Time:                 Time wakes up.

Sleep Duration:              Amount of Time Slept (Hours).

Sleep efficiency:            Proportion of time spent in bed that is actually spent asleep.

REM sleep percentage:        Percentage of time in Rapid Eye Movement (REM) sleep.

Deep sleep percentage:       Percentage of time in Deep sleep.

Light sleep percentage:      Percentage of time in Light sleep.

Awakenings:                  Number of times that the person wakes up during the night.

Caffeine consumption:        Amount of Caffeine consumed in the 4 hrs prior to bedtime.

Alcohol consumption:         Amount of Alcohol consumed in the 4 hrs prior to bedtime.

Smoking Status:              No or Yes to smoking in the 4 hrs prior to bedtime.

Exercise frequency:          Number of exercises (at least 30 mins) per week.

Daily Steps:                 Number of Steps in that day prior to bedtime.