**Assignment 04 – Hyperparameter Tuning**

This assignment will deal with tuning the hyperparameters for the [online shopping](https://archive.ics.uci.edu/ml/datasets/Online+Shoppers+Purchasing+Intention+Dataset) dataset. Please start with a random.seed(last four digits of your GUIDg).

Since this is a classification dataset, for the first part, you will follow the steps in assignment 2 (and some more) as shown below. The code is already with you, and you can use that.

**I have intentionally misspelled some explanations in assignments. When you copy the text, make sure to spell check it. I will drop points for incorrect spelling and grammar (-5 points). Please also provide explanations/ reasoning for utilizing a command and describe the output. Failure to describe/ explain will result in lower points. Also, make sure to add a g#groupnumber (for example, g01) suffix to each variable, so we will know you are not just copy-pasting the given example code.**

# Load the dataset and show the dataframe. (1)

# Describe pandas Dataframe by using describe. (1)

# Split the dataset into the Training set and Test set. Choose your preferred split and justify the rationale. (1)

# Perform classification routine by using RandomForestClassifier(), BaggingClassifier(), GradientBoostingClassifier(), XGboostclassifier. Output the accuracy box plot as we have seen in the class, independently. (20)

# Perform same classification as 4 using the GridsearchCV(). (20)

# Perform same classification as 4 using the RandomSearchCV(). (20)

# Compare the results of 5, 6, and 7 and describe the best hyperparameters for all three experiments. (12)