United International University

Department of Computer Science and Engineering

DS 1115 (BD): Object Oriented Programming for Data Science

Trimester: Spring 2025

Class Test 1, Total Marks: **10**, Total Time: **30 minutes**

Any examinee found adopting unfair means will be expelled from the trimester/program as per UIU disciplinary rules.

The UIU Data Science Club is organizing an AI Model Evaluation Challenge, where teams compete to build the most efficient machine learning models. To keep track of performance, they have decided to develop an Evaluation Scoreboard Application. Read the scenario carefully and design the application using Python.

You must use Object-Oriented Programming (OOP) concepts such as classes, objects, and methods to implement the solution.

A competition consists of multiple teams, and each team submits a machine learning model for evaluation. Each model has a name (stored as a string), an accuracy score (a floating-point number representing its accuracy percentage), and an execution time (a floating-point number representing the time taken for inference in seconds).

The Model class should have the following functionalities:

- update_accuracy(score): Takes a floating-point score value as input and updates the model's accuracy.
- update_execution_time(time): Takes a floating-point time value as input and updates the model's execution time.

Each team consists of one model. A team must have a name and a model assigned to it. The Team class should have the following functionalities:

- assign_model(model): Takes a Model object and assigns it to the team.
- get_model_performance(): Returns a tuple containing the model's accuracy and execution time.

Finally, implement a function compare_models(team1, team2), which does not belong to any class. This function takes two Team objects, determines the winner based on the highest accuracy score, and prints a message such as:

"Team DataWizards wins with a model accuracy of 92.5%!"

If both models have the same accuracy, the model with the lower execution time wins.

Write a Python program that implements the above functionalities using Object-Oriented Programming (OOP) principles.