[ML’ 24] Simple Linear Regression Assignment

- In this assignment, you will predict the expected student performance based on an exploration of a number of factors.
- **Dataset Description**:

Variable Name	Description of Variable
Hours Studied	The total number of hours spent studying by each student
Previous Scores	The scores obtained by students in previous tests.
Sleep Hours	The average number of hours of sleep the student had per day
Sample Question Papers Practiced	The number of sample question papers the student practiced
Performance Index	The performance index represents the student's academic performance. The index ranges from 10 to 100, with higher values indicating better performance.

- **Assignment deadline** is **Friday 8/3/2024 11: 59 PM**.
- Apply simple linear regression to predict the performance index of a student.
- Find the best variable (X) that can be used to predict the performance index (Y).
- This variable (X) can be provided by the dataset as is (for example: use Sleep Hours as “X” to predict price “Y”) **or** it can be a calculated variable (for example: use a new variable Hours Studied+Questions Practices as “X” to predict performance index “Y”).

- **Your code must show at least all four basic trials (for the four columns).**
- Use simple linear regression **from scratch** as discussed in Lab 2 and try adjusting the learning rate and number of epochs as needed.
- Cheating Detection will be applied and it will not be tolerated.
- **You are expected to deliver the assignment using this google form according to the following instructions**:

  1- Upload a single “YourStudentID.py” code file containing the code for the four models and prints the MSE for each model.

  2- Upload a PDF file (report) containing:
  - Your name, id, department and UMS Level
  - A table that summarizes the mean square error of each model
  - Your conclusion the best variable to use for this task.

Take Note that the code file name must be YourStudentID.py (example:20191700123.py) or you will be penalized.

Take Note that the report file name must be YourStudentID.pdf (example: 20191700123.pdf) or you will be penalized.