MAT 345 - PROJECT #3
due Monday, November 9, 2020 at 10:00PM.

OBJECTIVE: In this project, you will implement the linear regression and the logistic regression algorithms.

GRADING: The assignment is worth 8% of your course grade.

INSTRUCTIONS: Students will work individually on this project, but they may ask questions and clarification from classmates and the instructor. Students must submit their projects on Moodle.

SUBMIT THE FOLLOWING: A copy of your code and an Answer sheet.

PROJECT: You will consider the grade data from a MAT course, in the attached Excel file Project3.xlsx. You are given the training set **Training** (first tab) and the set **Predict** (second tab). The input vector consists of scores for midterm, homework, and quizzes, each out of 100 points. Note that the score on the final exam is missing from this data, even though it is extremely relevant to the course grade. The output (in Training set only) is a final course grade.

Step 1. (a) You will run the Linear Regression Algorithm to compute the weight vector that estimates the final course grade, using the **Training** set.

(b) Use your answer from (a) to estimate course scores for each data point in the set **Predict.**

Step 2. (a) First, you will have to modify the output in the **Training** set to denote Fail by a score under 70% and Pass by a score of at least 70%.

(b) You will run the Logistic Regression Algorithm with Gradient Descent or Stochastic Gradient Descent to approximate the weight vector that estimates the probability of passing the course.

(c) Use your answer from (b) to estimate the probability of passing the course, for each data point in the set **Predict.**

Step 3. On your Answer Sheet, include:

(a) Your name

(b) The programming language you used for the project

(c) Weights computed in Step 1 (a)

(d) Answers from Step 1 (b)

(e) State if you used the Gradient Descent or the Stochastic Gradient Descent algorithm in Step 2

(f) The step(s) used in gradient descent and the stopping condition

(g) Weights computed in part Step 2 (b)

(h) Answers from Step 2 (c)