Instruction:

(A) Questions in this  ered by students whose **surnames** fall within the range **N-Z**.

(B) Use the Excel file o answer the questions asked.

(**C**) A heavy penalty r answers are not based on dataset assigned to you.

Instructions for Dataset3_part3a: Multiple Regression Analysis

The production manager of a company that manufactures car seats has been concerned about the number and cost of machine breakdowns. The problem is that the machines are old and becomi[illegible] However, the cost of replacing them is quite high, and the manager is[illegible]e cost can be recouped given the slow economy. To help make a de[illegible]cement, he randomly selected 50 machines and gathered data abo[illegible]ts for repairs, ages of the plant's machines and machine type. Data[illegible] **Dataset3_part3a**.

The variables save[illegible]**3a** are:

- crep (Y, cost of repairs in $)
- age (X1, age of machines in months)
- mach (X2, machine type, coded 1 if welding machine and 0 if not welding machine)

The dependent variable for your analysis is **crep**.

Answer the following questions using Dataset3_part3a.

(a) Estimate a regression model using X1 and X2 to predict Y (state the multiple regression equation).
(b) Interpret the meaning of the slope of Y with X2.
(c) What are the estimated values of the intercept when X2 = 0 and X2 = 1?

(d) At the 5% level of significance, test whether the intercepts differ by machine type. Follow all the necessary steps and use t-test.
(e) Estimate a regression model using X1, X2 and an interaction between X1 and X2 to predict Y (state the multiple regression equation).

(f) Interpret the meaning of the slope of Y with the interaction term.
(g) At the 5% level of significance, test whether the slope of Y with X1 differs by machine type. Follow all the necessary steps and use t-test.