Instruction:

(A) Questions in this paper should be answered by students whose **surnames** fall within the range **N-Z**.

(B) Use the Excel file '**Dataset3_part3a** to answer the questions asked.

(**C**) A heavy penalty will be applied if your answers are not based on dataset assigned to you.

Assignment Project Exam Help

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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 becoming quite unreliable. However, the cost of replacing them is quite high, and the manager is not certain that the cost can be recouped given the slow economy. To help make a decision about replacement, he randomly selected 50 machines and gathered data about last month's costs for repairs, ages of the plant's machines and machine type. Data for this is saved in **Dataset3_part3a**.

The variables saved in **Dataset3_part3a** 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**.

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Answer the following questions using Dataset3_part3a:

(a) Estimate a regression model using X1 and X2 to predict Y (state the multiple regression equation).

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(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.

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(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 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.