**Warming Up Assignment for SLDM course**

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Q.1 Consider the data given in file dat1.csv . Here y is a function of x1 and x2. Write out the form of the linear model. What are the coefficients , rvs and constants?

(b) What is the correlation between x1 and x2? Create a scatterplot

displaying the relationship between the variables. Comment

(c) Using this data, fit a least squares regression to predict y using x1 and x2. Describe the results obtained.

Interpret $\hat{\beta}0$, $\hat{\beta}1$, and $\hat{\beta}2$ ( these are the estimated coefficients). Test the null hypothesis $H0 : \beta 1 = 0$ and the hypothesis $H0 : \beta 2 = 0$

(d) Now fit a least squares regression to predict y using only x1.

Comment on your results. Can you reject the null hypothesis

H0 : β1 = 0?

(e) Now fit a least squares regression to predict y using only x2.

Comment on your results. Can you reject the null hypothesis H0 : β2 = 0?

(f) Do the results obtained in (c)–(e) contradict each other? Explain your answer

(g) Measure the accuracy of your model fitted above using X1 and X2

(i) Obtain the residuals and study its properties . Comment

**Q.2** Consider the Anscombe's data attached herewith . This data file contains four different bivariate samples namely (x1,y1 ) , (x2,y2),(x3,Y3) and (x4,y4)

1. Explore the data and obtain summary statistics for each set and correlations between (xi, yi) i=1,2,3,4. Comment on the results

2. Perform linear regression of Yi on Xi for each i=1,2,3,4 and comment on the results