Topic Covered: Multiple linear regression
Instructions to the students:

- The homework exercises are meant to only to improve your understanding.
- Make your own study group and try to do it.
- Prepare a one page writeup explanation (in .docx format) for the questions.

Questions:

1) For the sales vs advertisement channels dataset given in *advertisement.csv*, build a multiple linear regression model.

Calculate the correlation matrix and you may find that there is a strong correlation between radio and newspaper. Hence, newspaper feature is insignificant and can be dropped from the model.

Without considering the newspaper feature, now develop the multiple linear regression model for the same dataset.
Expected solution: 2.92 + 0.045*TV marketing +0.187*Radio marketing
sales are in crores and the budget is in lakhs.

Answer the questions below to test your understanding

- Given this model, what will be the increase in Sales if TV marketing is increased by 2 lakh, given everything else is constant? (**Ans:** 9 lakhs)
- What will be the sales given TV Marketing and Radio Marketing budgets are 50 lakhs, 25 lakhs respectively? (**Ans:** 9.845 lakhs)
- If the budget only allows investment in one advertisement channel, which marketing channel would you pick for the best return on investment?
  (**Ans:** Radio marketing because of large coefficient, one unit increase in radio will give more sales compared to one unit increase in TV)

For any clarifications: Reach me at **harimurugan@nitj.ac.in**

All the best