STT3851 Homework 8

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Load the `Carseats` data set from the `ISLR` library. Be sure to explore this data set before answering the questions below. When exploring, the R commands such as `?Carseats`, `str()`, `head()` might be helpful.

1. Fit a linear regression to predict the 'Sales' using 'Age' and 'Income'.

2. Conduct a hypothesis test to check if there is a relationship between 'Sales' and the predictor variables 'Age' and 'Income'.

   (a) Null and alternative hypothesis:

   (b) Test statistic

   (c) p-value

   (d) Make the decision:

3. Fit a linear regression to predict the 'Sales' using 'Age', 'Income' and the interaction between 'Age' and the 'Income'.

4. Conduct a hypothesis test to check if the interaction term is useful in the model above

   (a) Null and alternative hypothesis:

   (b) Test statistic

   (c) p-value

   (d) Make the decision: