Linear Regression Assignment

### **Problem Statement:**

Sam built some beautiful graphs to have a better understanding of the data. Now, he’ll go ahead and build linear regression models.

Sam will start off by building simple regression models, where there is just one independent variable

## Questions on simple linear regression:

1. Build a simple linear model:
   1. Divide the data-set into train & test sets in 70:30 ratio. Splitting criteria would be determined by the ‘tenure’ column.
   2. Build a simple linear model on the ‘train’ set, where the dependent variable is ‘tenure’ & the independent variable is ‘Contract’ & store the result in ‘model1’
   3. Predict the values on top of the ‘test’ set & store the result in ‘predicted\_values’
   4. Bind the actual values & predicted values & store the result in ‘final\_data’
   5. Find out the error in prediction & store the result in ‘error’
   6. Bind ‘error’ to ‘final\_data’ object
   7. Find the root mean square error

After simple linear regression, Sam will build multiple linear regression models

## Questions on multiple linear regression:

1. Build a multiple linear regression model:
   1. Divide the data-set into train & test sets in 75:25 ratio. Splitting criteria would be determined by the ‘MonthlyCharges’ column.
   2. Build a linear model on the ‘train’ set, where the dependent variable is ‘MonthlyCharges’ & the independent variables are ‘Dependents’, ‘MultipleLines’, ‘OnlineSecurity’,’OnlineBackup’ & ‘DeviceProtection’ and store the result in ‘mod\_multi\_linear’
   3. Predict the values on top of the ‘test’ set & store the result in ‘predicted\_multi\_linear’
   4. Bind the actual values & predicted values & store the result in ‘final\_data’
   5. Find out the error in prediction & store the result in ‘error’
   6. Bind ‘error’ to ‘final\_data’ object
   7. Find the root mean square error