# Topic: Simple Linear Regression

**Instructions:**

Please share your answers filled in-line in the word document. Submit code separately wherever applicable.

Please ensure you update all the details:

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**Topic: Simple Linear Regression**

**Guidelines:**

**1. An assignment submission is considered complete only when the correct and executable code(s) and documentation explaining the method and results are submitted. Failing to submit either of those will be considered an invalid submission and not a correct submission.**

**2. Ensure that you submit your assignments correctly and in full. Resubmission is not allowed.**

**3. Post the submission you can evaluate your work by referring to the keys provided. (will be available only post the submission).**

**Hints:**

1. **Business Problem**
   1. **What is the business objective?**
   2. **Are there any constraints?**
2. **Work on each feature of the dataset to create a data dictionary as displayed in the image below:**



**Make a table as shown above and provide information about the features such as its data type and its relevance to the model building. And if not relevant, provide reasons and a description of the feature.**

1. **Data Pre-processing.**
   1. **Data Cleaning, Feature Engineering, etc.**

**3.2. Outlier Treatment.**

1. **Exploratory Data Analysis (EDA):**

**4.1 Summary.**

**4.2 Univariate analysis.**

**4.3 Bivariate analysis.**

1. **Model Building:**
   1. **Perform Simple Linear Regression on the given datasets.**
   2. **Apply different transformations such as exponential, log, polynomial, etc. transformations and calculate RMSE values, R-Squared values, and the correlation coefficient for each model.**
   3. **Build the models and choose the best-fit model.**
   4. **Briefly explain the model output in the documentation.**
2. **Write about the benefits/impact of the solution - in what way does the business (client) benefit from the solution provided**

**Problem Statement: -**

1. A logistics company recorded the time taken for delivery and the time taken for the sorting of the items for delivery. Build a Simple Linear Regression model to find the relationship between delivery time and sorting time with the delivery time as the target variable. Apply necessary transformations and record the RMSE and correlation coefficient values for different models.

