**Interpretations**

**Simple Linear Regression Analysis**

**Overview of the Model:** Simple Linear Regression model is developed to predict the profit earned by startups. The Model was developed in such a way that the model will predict the profit earned by a StartUp when their R&D spending data is given.

**Model Parameters:**

(i)\*\* R-Squared = 0.93\*\*, The R-squared value suggests that there exists a very high positive correlation between R&D Spend and the profit of the StartUp. it essentially means that 93% of the changes in profit is explained by the changes in R&D spending of the StartUp.

(ii)**Intercept (𝛽0) = 49336.67**, the Intercept represents the level of profit that a StartUp will get when its R&D spending is 0. Here, the intercept suggests that the profit earned will be 49336.67 when R&D spending is 0.

**Multiple Linear Regression Analysis**

**Overview of the Model**: A Multiple Linear Regression is developed to predict the Profit of the StartUp based on R&D Spend, Administration, Marketing Spend, and State. The dataset was pre-processed by converting categorical variables (State) into numerical format to ensure compatibility with the regression model.

**Model Parameters**

(i) **R-Squared value = 0.9001**; The R-Squared Value suggests that the independent variables collectively explain 90.01% of the variability in Profit. This indicates a strong relationship between the predictors and the target variable.

(ii)**Intercept (𝛽0) = 54080.72**, the intercept indicates that if all independent variables (R&D Spend, Administration, Marketing Spend, and the encoded State variables) are zero, the model predicts a baseline profit of approximately 54080.72 units.

(iii) **Mean Squared Error = 80929465.4910**, The MSE value represents the average squared difference between the actual and predicted profits. Generally, a lower MSE value is preferred for the model.