Experiment 4

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Aim: Implementation of Linear Regression for Single variate and Multivariate

Theory: Linear regression is a fundamental statistical method used for modeling the relationship between one or more independent variables and a dependent variable. It assumes a linear relationship between the variables aiming to find the best-fitting line that maximizes the sum of squared differences between observed and predicted values.

It used in finace to predict stock prices. It is used to extract insights from data and make informed predictions in various domains.

Single variate Linear regression

We model the relationship between a single independent and a dependent variable. The goal is to find the best-fit be represented by $y = mx + b$ when m is the slope & b is the y-intercept.

Multivariate Linear regression

We model a relationship between multiple variables. The Model equation becomes: $y = b_0 + b_1 x_1 b_2 x_2 + b_{xp}$

Where bo is the y'intercept and b_1, b_2, b_p are the co-efficients. The goal is to minimize the sum of squared differences. This approach accomodates the complexity of real world scenarios with multiple predictors

allowing for more nuanced understanding of the relationship between variables.

Conclusion: Hence, we implemented single variate & multivariate linear regression.