# Experiment/Practical 4 ****Ridge and Lasso Regression****

**Title:** Implementation of Ridge and Lasso Regression

**Aim**: To apply Ridge and Lasso regression algorithms for prediction and model regularization

**Objective:** Students will learn

* Implementation of Ridge and Lasso regression algorithms on the given dataset(s).
* To compare and contrast both algorithms' performance and understand their impact on model regularization.
* To visualize and interpret the results effectively.

# Problem statement

Use the given datasets to demonstrate Ridge and Lasso regression, predicting a dependent variable based on independent variables while applying regularization to prevent overfitting.

# Explanation/Stepwise Procedure/ Algorithm:

* Give a brief description of Ridge and Lasso regression.
* Give mathematical formulation of Ridge and Lasso regression
* Write the importance of Ridge and Lasso regression in data analysis.
* Mention applications of Ridge and Lasso regression in real-world scenarios.
* Brief explanation of performance metrics (e.g., R², Mean Squared Error, Root Mean Squared Error).
* ***Add necessary figure(s)/Diagram(s)***

# Input & Output:

# About dataset and custom user input

Analyze the results: How well the model fits the data.

Challenges encountered during the implementation.

**Conclusion:**

Summarize the significance of independent variables and their interactions.

Discuss the nature of the relationships based on regression coefficients.

Highlight the importance of performance metrics and compare it for both Ridge and Lasso regression