Predicting Energy Efficiency Using Ridge and Lasso Regression

**Objective:**  
The goal of this assignment is to analyze energy efficiency in buildings using Ridge and Lasso Regression models. You will use a dataset containing **768 building shapes**, each characterized by **8 features** that impact energy consumption. The objective is to predict **Heating Load (y1)** and **Cooling Load (y2)** based on the given features.

**Dataset Description:**

The dataset consists of **768 samples** with the following **8 features (X1 - X8)**:

1. **Relative Compactness (X1)**
2. **Surface Area (X2)**
3. **Wall Area (X3)**
4. **Roof Area (X4)**
5. **Overall Height (X5)**
6. **Orientation (X6)**
7. **Glazing Area (X7)**
8. **Glazing Area Distribution (X8)**

**Target Variables (Responses):**

* **y1:** Heating Load
* **y2:** Cooling Load

**Tasks:**

1. Load the dataset and perform exploratory data analysis (EDA).
2. Split the data into training and testing sets.
3. Implement **Ridge Regression** and **Lasso Regression** to predict **Heating Load (y1)** and **Cooling Load (y2)**.
4. Tune the hyperparameter **alpha** using cross-validation.
5. Compare and analyze the performance of both models using **Mean Squared Error (MSE)**.
6. Interpret the effect of **Lasso Regularization** on feature selection.

**Deliverables:**

* Python code implementing Ridge and Lasso Regression.
* Performance comparison between the two models.

**Note:** Use proper visualization techniques (such as scatter plots and coefficient analysis) to support your findings.