1. Implement Linear Regression, Ridge Regression and Lasso regression on teams dataset .

2. Use cross validation score and RMSE, R2 score.
3. Compare the results of various regression techniques
4. Finally write your analysis.

In [ ]:

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split, cross_val_score
from sklearn.linear_model import LinearRegression, Ridge, Lasso
from sklearn.metrics import mean_squared_error, r2_score
from math import sqrt

# Load the dataset (replace 'teams.csv' with your dataset file)
data = pd.read_csv('/path/to/your/directory/teams.csv')
# Handle missing values (if any)
data = data.fillna(0)

# Encode categorical features (if any)
# Example: data = pd.get_dummies(data, columns=['categorical_column'])

# Split the data into features (X) and target (y)
X = data.drop(columns=['target_column'])
y = data['target_column']
# Initialize the models
linear_reg = LinearRegression()
ridge_reg = Ridge(alpha=1.0)  # You can adjust the alpha parameter
lasso_reg = Lasso(alpha=1.0)  # You can adjust the alpha parameter

# Cross-validation scores
linear_reg_scores = cross_val_score(linear_reg, X, y, cv=5, scoring='r2')
ridge_reg_scores = cross_val_score(ridge_reg, X, y, cv=5, scoring='r2')
lasso_reg_scores = cross_val_score(lasso_reg, X, y, cv=5, scoring='r2')

# RMSE and R2 score
def evaluate_model(model, X, y):
    y_pred = model.predict(X)
    rmse = sqrt(mean_squared_error(y, y_pred))
    r2 = r2_score(y, y_pred)
    return rmse, r2

linear_reg_rmse, linear_reg_r2 = evaluate_model(linear_reg, X, y)
ridge_reg_rmse, ridge_reg_r2 = evaluate_model(ridge_reg, X, y)
lasso_reg_rmse, lasso_reg_r2 = evaluate_model(lasso_reg, X, y)
# Print the results
print("Linear Regression:")
print("Cross-Validation Scores:", linear_reg_scores)
print("RMSE:", linear_reg_rmse)
print("R2 Score:", linear_reg_r2)
print()

print("Ridge Regression:")
print("Cross-Validation Scores:", ridge_reg_scores)
print("RMSE:", ridge_reg_rmse)
print("R2 Score:", ridge_reg_r2)
print()

print("Lasso Regression:")
print("Cross-Validation Scores:", lasso_reg_scores)
print("RMSE:", lasso_reg_rmse)
print("R2 Score:", lasso_reg_r2)
print()
```