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.

```
import pandas as pd
from sklearn.model_selection import cross_val_score, train_test_split
from sklearn.linear_model import LinearRegression, Ridge, Lasso
from sklearn.metrics import mean_squared_error, r2_score
data = pd.read_csv('teams(1).csv')

# Assume you have features 'X' and target 'y'
X = data.drop('teams(1).csv', axis=1)
y = data['teams(1).csv']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
# Create Linear Regression model
linear_reg = LinearRegression()
linear_cv_scores = cross_val_score(linear_reg, X_train, y_train, cv=5,
scoring='neg_mean_squared_error')
linear_rmse = (-linear_cv_scores.mean()) ** 0.5
linear_r2 = cross_val_score(linear_reg, X_train, y_train, cv=5, scoring='r2').mean()

linear_reg.fit(X_train, y_train)
linear_predictions = linear_reg.predict(X_test)
linear_test_rmse = mean_squared_error(y_test, linear_predictions) ** 0.5
linear_test_r2 = r2_score(y_test, linear_predictions)

# Create Ridge Regression model
ridge_reg = Ridge(alpha=1.0)
```

```
ridge_cv_scores = cross_val_score(ridge_reg, X_train, y_train, cv=5,
scoring='neg_mean_squared_error')

ridge_rmse = (-ridge_cv_scores.mean()) ** 0.5

ridge_r2 = cross_val_score(ridge_reg, X_train, y_train, cv=5, scoring='r2').mean()


ridge_reg.fit(X_train, y_train)

ridge_predictions = ridge_reg.predict(X_test)

ridge_test_rmse = mean_squared_error(y_test, ridge_predictions) ** 0.5

ridge_test_r2 = r2_score(y_test, ridge_predictions)

# Create Lasso Regression model

lasso_reg = Lasso(alpha=0.1)

lasso_cv_scores = cross_val_score(lasso_reg, X_train, y_train, cv=5,
scoring='neg_mean_squared_error')

lasso_rmse = (-lasso_cv_scores.mean()) ** 0.5

lasso_r2 = cross_val_score(lasso_reg, X_train, y_train, cv=5, scoring='r2').mean()


lasso_reg.fit(X_train, y_train)

lasso_predictions = lasso_reg.predict(X_test)

lasso_test_rmse = mean_squared_error(y_test, lasso_predictions) ** 0.5

lasso_test_r2 = r2_score(y_test, lasso_predictions)

# Print comparison results

print("Linear Regression:")

print(f"CV RMSE: {linear_rmse:.4f}, CV R2: {linear_r2:.4f}")

print(f"Test RMSE: {linear_test_rmse:.4f}, Test R2: {linear_test_r2:.4f}")

print("=" * 40)


print("Ridge Regression:")

print(f"CV RMSE: {ridge_rmse:.4f}, CV R2: {ridge_r2:.4f}")

print(f"Test RMSE: {ridge_test_rmse:.4f}, Test R2: {ridge_test_r2:.4f}")

print("=" * 40)


print("Lasso Regression:")
```

```
print(f"CV RMSE: {lasso_rmse:.4f}, CV R2: {lasso_r2:.4f}")
print(f"Test RMSE: {lasso_test_rmse:.4f}, Test R2: {lasso_test_r2:.4f}")
print("=" * 40)
```