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
import warnings
warnings.filterwarnings('ignore')

from sklearn.linear_model import LinearRegression, Ridge, Lasso
from sklearn.model_selection import cross_val_score, train_test_split
from sklearn.metrics import mean_squared_error, r2_score
```

In [ ]:
```
teams_data = pd.read_csv('desktop/python/teams.csv')
```

In [ ]:
```
X = teams_data.iloc[:,2:30]
Y = teams_data['events']
```

In [ ]:
```
X
```

In [ ]:
```
Y
```

In [ ]:
```
X_train, X_test, Y_train, Y_test =  train_test_split(X, Y, test_size =6, random_state=40
```

In [ ]:
```
lr = LinearRegression()
lr.fit(X_train, Y_train)
lr_predictions = lr.predict(X_test)

lr_cv_score = cross_val_score(lr, X, Y, cv=5)  # Cross-validation score
lr_rmse = mean_squared_error(Y_test, lr_predictions)  # RMSE
lr_r2 = r2_score(Y_test, lr_predictions)  # R2 score
```

In [ ]:
```
ridge = Ridge(alpha=0.5)
ridge.fit(X_train, Y_train)
ridge_predictions = ridge.predict(X_test)

ridge_cv_score = cross_val_score(ridge, X, Y, cv=5)  # Cross-validation score
ridge_rmse = mean_squared_error(Y_test, ridge_predictions)  # RMSE
ridge_r2 = r2_score(Y_test, ridge_predictions)  # R2 score
```

In [ ]:
```
lasso = Lasso(alpha=0.1)
lasso.fit(X_train, Y_train)
lasso_predictions = lasso.predict(X_test)

lasso_cv_score = cross_val_score(lasso, X, Y, cv=5)  # Cross-validation score
lasso_rmse = mean_squared_error(Y_test, lasso_predictions)  # RMSE
lasso_r2 = r2_score(Y_test, lasso_predictions)  # R2 score
```

In [ ]:
```
print("Linear Regression:")
print("Cross-validation score:", lr_cv_score)
print("RMSE:", lr_rmse)
print("R2 score:", lr_r2)

print("\nRidge Regression:")
print("Cross-validation score:", ridge_cv_score)
', ridge_rmse)
```

```
print("R2 score:", ridge_r2)

print("\nLasso Regression:")
print("Cross-validation score:", lasso_cv_score)
print("RMSE:", lasso_rmse)
print("R2 score:", lasso_r2)
```

In [ ]:

1. According to Cross validation score Linear and Ridge regression perform better than Lasso regression.
2. According to RMSE Lasso regression gives better accuracy than Linear and Ridge regression.
3. According to R2 score Linear regression performs better than Ridge and Lasso regression.