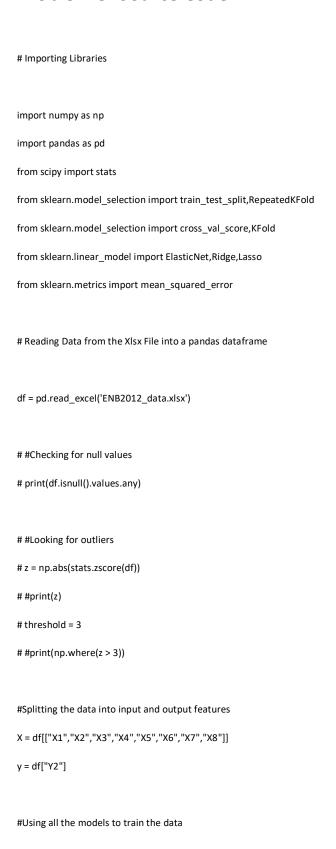
## **Problem 5: Source Code**



```
model_Lasso = Lasso(alpha=1.0)
model_Ridge = Ridge(alpha=1.0)
model_ElasticNet = ElasticNet(alpha=1.0, l1_ratio=0.5)
#Using Kfolds = 5 to cross validate the results
kf = KFold(n_splits=5)
kf.get_n_splits(X)
scores_Lasso = []
scores_Ridge = []
scores_ElasticNet= []
mse_Lasso = []
mse_Ridge = []
mse_ElasticNet= []
#Train and test the all three models, calculate their scores and MSE
for train_index, test_index in kf.split(X):
          X_train, X_test = X.iloc[train_index], X.iloc[test_index]
          y_train, y_test = y.iloc[train_index], y.iloc[test_index]
           model_Lasso.fit(X_train, y_train)
           model_Ridge.fit(X_train, y_train)
           model_ElasticNet.fit(X_train, y_train)
           scores\_Lasso.append(model\_Lasso.score(X\_test,y\_test))
           scores\_Ridge.append(model\_Ridge.score(X\_test,y\_test))
           scores\_ElasticNet.append(model\_ElasticNet.score(X\_test,y\_test))
```

```
mse_Lasso.append(mean_squared_error(temp,y_test))

temp = model_Ridge.predict(X_test)

mse_Ridge.append(mean_squared_error(temp,y_test))

temp = model_ElasticNet.predict(X_test)

mse_ElasticNet.append(mean_squared_error(temp,y_test))

#scores and MSE of

print("Mean of scores of Lasso:",sum(scores_Lasso)/len(scores_Lasso))

print("Mean of scores of Ridge:",sum(scores_Ridge)/len(scores_Ridge))

print("Mean of scores of ElasticNet:",sum(scores_ElasticNet)/len(scores_ElasticNet))
```

 $print(sum(mse\_Lasso)/len(mse\_Lasso),sum(mse\_Ridge)/len(mse\_Ridge),sum(mse\_ElasticNet)/len(mse\_ElasticNet)) \\$ 

## Output(Evaluation Result):

print("MSE of \nLasso , Ridge , ElasticNet")

temp = model\_Lasso.predict(X\_test)

Mean of scores of Lasso: 0.7380103307895334

Mean of scores of Ridge: 0.8668525182699964

Mean of scores of ElasticNet: 0.7418988862088958

MSE of:

Lasso, Ridge, ElasticNet

22.5004863291658 11.54632478836805 22.125773471265415