# Problem Statement – Part II

Q1. What is the optimal value of alpha for ridge and lasso regression? What will be the changes in the model if you choose double the value of alpha for both ridge and lasso? What will be the most important predictor variables after the change is implemented?

Ans. The optimal value of alpha for ridge and lasso regression

Ridge Alpha 1

lasso Alpha 10

If we choose to double the value of alpha for both Ridge and Lasso following will happen:

Ridge: R2score on training data has decreased but it has increased on testing data

Lasso: R2score on training data has decreased but it has increased on testing data

Most important predictor variables are:

LotArea----------Lot size in square feet

OverallQual---------Rates the overall material and finish of the house

OverallCond--------Rates the overall condition of the house

YearBuilt----------Original construction date

BsmtFinSF1--------Type 1 finished square feet

TotalBsmtSF------- Total square feet of basement area

GrLivArea----------Above grade (ground) living area square feet

TotRmsAbvGrd----Total rooms above grade (does not include bathrooms)

Street_Pave--------Pave road access to property

RoofMatl_Metal----Roof material_Metal

Q2. You have determined the optimal value of lambda for ridge and lasso regression during the assignment. Now, which one will you choose to apply and why?

Ans. The r2_score of lasso is slightly higher than lasso for the test dataset so we will choose lasso regression to solve this problem

Q3. After building the model, you realised that the five most important predictor variables in the lasso model are not available in the incoming data. You will now have to create another model excluding the five most important predictor variables. Which are the five most important predictor variables now?

Ans. Five most important predictor variables after excluding the top 5 variables are:

11stFlrSF----------First Floor square feet

GrLivArea----------Above grade (ground) living area square feet

Street_Pave---------Pave road access to property

RoofMatl_Metal------Roof material_Metal

RoofStyle_Shed------Type of roof(Shed)

Q4. How can you make sure that a model is robust and generalisable? What are the implications of the same for the accuracy of the model and why?

Ans. The model should be generalized so that the test accuracy is not lesser than the training score. The model should be accurate for datasets other than the ones which were used during training. Too much importance should not given to the outliers so that the accuracy predicted by the model is high. To ensure that this is not the case, the outliers analysis needs to be done and only those which are relevant to the dataset need to be retained. Those outliers which it does not make sense to keep must be removed from the dataset. If the model is not robust, It cannot be trusted for predictive analysis.