Question-1:
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?

Answer:

1. The Optimal values obtained for "RL" model for Ridge regression is 4 and for Lasso regression is 0, based on "neg_mean_absolute_error" scoring in RidgeCV cross validation function.
2. When we double the value of alpha, we are making model to be less aggressive with high bias and low variance.
3. The top 5 important predictor variables after alpha value changed from 4 to 8 are as follows
    a. NoRidge-Northridge location, 1SO-1Storey Old, HalfBath-no of half baths above grade, LotArea-sq.ft of lot area, BsmtUnfSF-Unfinished sq.ft of basement area

Question-2:
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?

Answer:
I would choose Ridge regression alpha value of 4 instead of Lasso regression value of 0, because of more aggressiveness. Alpha value=0 would be having low bias and high variance and chances of overfitting is high.

Question-3:
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?

Answer:
The next set of 5 most important predictor variables in the lasso models are 1. StoneBr-Location is Stone Brook, 2. Twnhs-Townhouse Inside type of dwelling,3. BsmtFinSF1-Type 1 finished square feet, 4. E2_Stone-Exterior 2nd covering on the home with stone, 5. BsmtUnfSF-Unfinished square feet of basement area

Question-4:
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?

Answer:

The Model can be mode robust and generalizable by having alpha value slight higher than the optimum value to make it less aggressive for unknown data. The accuracy will be slightly lower compared to optimum value when we are making the model generalizable.