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?

Optimal Value for Ridge = 10
Optimal Value for Lasso = 0.0001

When double the alpha value for both ridge and lasso then
Doubled Value for Ridge = 20
Doubled Value for Lasso = 0.0002

There are no significant changes in the model there is a slight change in r2 score

Important Predictor Variables after change

Ridge
(0.108, 'GrLivArea'),
(0.101, 'OverallQual_8'),
(-0.078, 'Neighborhood_Crawfor'),
(-0.076, 'OverallCond_2'),
(-0.071, 'Remodel')

Lasso
(-0.943, 'Condition2_PosA'),
(-0.305, 'HouseStyle_SLvl'),
(0.235, 'MSZoning_RH'),
(0.228, 'MSSubClass_190'),
(0.228, 'MSZoning_FV'),

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?

Due to the higher number of features I would consider using lasso regression due to automatic feature selection which would make model more robust.

After building the model, you realized 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?

Important predictor variables now are-

(-0.980, 'Condition1_RRNe'),
(-0.492, 'HouseStyle_2.5Fin'),
(0.317, 'MSSubClass_160'),
(0.314, 'MSSubClass_180'),
(0.314, 'MSSubClass_190'),

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?

The model should be as simple as feasible, as this will reduce accuracy while increasing robustness and generalizability. The bias-variance trade off can also be used to understand it. The simpler the model, the greater the bias, less variation, and greater generalizability.