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:

As of now, based on my model, Optimal value of alpha for ridge regression is **50**.

For Lasso, Optimal value of alpha would be 5e-05.

Doubling the value of alpha makes no significant difference either to ridge or lasso in my model.

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:

We will choose Lasso because Lasso gives us the option of feature selection whereas Ridge does not. Lasso can remove unwanted features without affecting model accuracy and hence the model would be built in accordance to the principle of parsimony.

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:

Next top 5 features would be

114	HouseStyle_1Story	44668.728144
87	Neighborhood_Timber	38554.535014
168	GarageFinish_NA	38537.633156
115	HouseStyle_2.5Fin	37899.005456
150	Exterior2nd_Stucco	34807.132369

Excluding the top 5 features would significantly drop the R-SQUARE value and would reduce the model's predictive power.

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:

We need to ensure then following

1. The model should work well on the training data as well as more importantly on the test data. We should avoid overfitting. In my case, both the training as well as test R sq for Linear model is more than 70% and for Lasso/ Ridge model its more than 80%. So it fits well.
2. While fitting a model, we should always follow the principle of Parsimony. We should not over complicate the model and should keep it as simple as possible.
3. All my p values are less than 0.05 and VIFs <5. This means there are no insignificant variables in my model and also multi collinearity has been taken care of.