**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?

**Conclusion** : The optimal lambda value in case of Ridge and Lasso is as below:  
  
Ridge : 10 /Lasso : 0.0005  
The Mean Squared error in case of Ridge and Lasso are:  
Ridge : 0.010818669121321043 / Lasso : 0.010953019379927487

**Most important predictor variables are :**

1. Zoning classification  
2. Overall quality  
3. Total basement area in square feet  
4. Foundation type of the house  
5. condition of the house  
6. Number of cars that can be accomodated in the garage

**Conclusion After doublisng alpha values -->**

Ridge : 20 / Lasso : 0.001  
The Mean Squared error in case of Ridge and Lasso are:  
Ridge : 0.010624344217494613 / Lasso : 0.010953019379927487

**Most important predictor variables are :**

1. Zoning classification  
2. Living Room Area  
2. Overall quality  
3. Total basement area in square feet  
4. Foundation type of the house  
5. condition of the house  
6. Number of cars that can be accomodated in the garage

**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?

The Mean Squared Error of Ridge is "extremely" slightly lower than that of Lasso.  
But as Lasso helps in feature reduction (as the coefficient value of one of the feature became 0), Lasso has a better edge over Ridge.

**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?

5 most important predictor variables that will be excluded are :-

1. GrLivArea

2. OverallQual

3. OverallCond

4. TotalBsmtSF

5. GarageArea

**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?

Model needs to be simple. More complex the model, lesser it will be accurate on test data.

Simpler model are generally more robust and generalisable.

They may have a Bias , but will have lesser variance on test data.