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?

    The Optimal value of alpha (lambda) for Ridge and Lasso is **0.001**

    When the value is doubled to 0.002, the R-squared value for Ridge remains almost same but the R-squared value for Lasso reduced by 0.05 indicating that if the value is reduced, some features also are eliminated.

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?

    Based on the values tried, the optimal value was 0.001. Any other value of a higher polynomial would reduce the r-squared for Lasso to zero. Hence for lasso, 0.001 only will be used. For Ridge, the values were reducing at a low rate with the increase in the polynomial value. Yet, 0.001 is the optimum value and I would choose to use it.

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?

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?

    For the model to be robust and Generalizable, the overfitting should be reduced and a higher R-Squared value would be recommended and desirable. With the overfitting reduction, the model will be able to predict the test data better and with lesser error and closer to the error values of the training data.