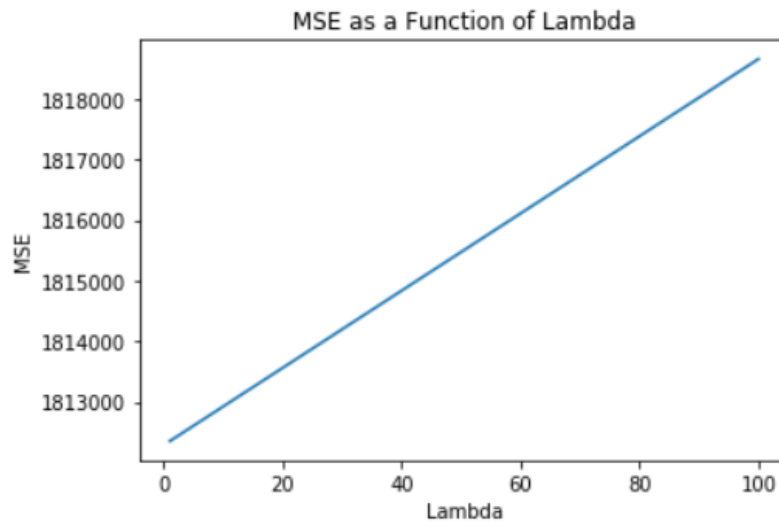


Finding Best Lambda (test lambda = [1,100]):



Best lambda tested is 1, which yields an MSE of 1812352.2198910983

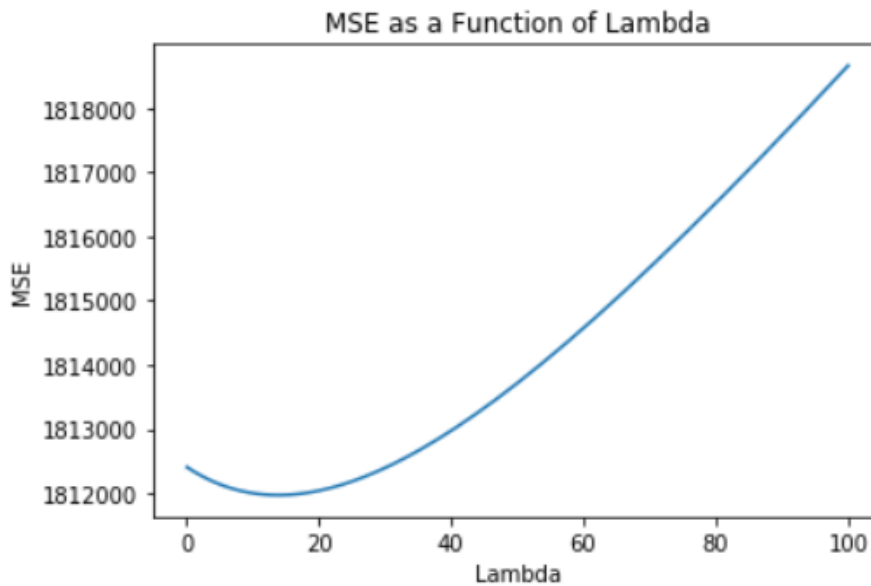
Based on the range of Lambda values tested, the best lambda value is 1 which yielded an MSE of 1812352 as shown in plot above.

Equation of best fitted model:

$$y(x) = 5157.1181911 x_1 - 208.0110813 x_2 - 207.20822783 x_3 - 1431.94185492 x_4 \\ + 237.83046737 x_5 - 31.50643342 x_6 + 500.51745038 x_7 + 73.91684047 x_8 - 460.23360732 x_9 \\ + 3928.07687554$$

The predicted price y for a 0.25 carat, 3 cut, 3 color, 5 clarity, 60 depth, 55 table, 4 x, 3 y, 2 z diamond is \$6724.24, which was calculated using the above best fitted model.

Finding Best Lambda (Submission lambda = np.logspace(-1, 2, num=101));



Based on the range of Lambda values tested, the best lambda value is 13.4896, which yields an MSE of 1811976.57 as shown in plot above

Equation of best fitted model:

$$y(x) = 5115.6513 x_1 - 201.49769x_2 - 207.15474x_3 - 1338.29096x_4 + 219.18597 x_5 - 66.36405 x_6 + 500.90982 x_7 + 74.30622 x_8 - 459.07248x_9 + 3928.07685$$

predicted price y for a 0.25 carat, 3 cut, 3 color, 5 clarity, 60 depth, 55 table, 4 x, 3 y, 2 z diamond is \$4171.0496 which was calculated using above best fitted model