EAS506

TAKE HOME QUIZ

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1. (iv) The **s** is a constraint upon the coefficients of the predictors. When s=0, all the coefficients have to be zero and the model will just fit it to the mean of the training data. But as s increases the coefficients get more freedom to choose their value when fitting the model and important variables starts getting included in the model. Thus, the fit on the training data gets better, so the training RSS is set to **steadily decrease.**
2. (ii) Initially, as s increases from 0 and as coefficients get more freedom, the coefficients will start taking values that would fit the model and the test RSS would **initially decrease** and eventually as s increases even further, the model would start overfitting the training data and the test RSS will **start increasing** and would eventually take a U shape.
3. (iii) Now, we know that as s increases from 0, it starts fitting the training data and would eventually overfit the data as s approaches infinity. Hence, the variance will keep **steadily increasing** as s increases.
4. (iv) When s=0, bias will be maximum because all the coefficients would be 0 and the model would not fit the data. But as s increases, it will start fitting the model and the bias would start decreasing and would **steadily decrease** as s increases.
5. (v) Irreducible error, as the name goes is inherent for the model and would **not change** with the parameters of the model.