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ECON 257
EXERCISES 2

Classical linear model

1. Describe the classical linear model.
2. In the context of the classic linear model, define what is meant by:
   (a) the least squares estimator of the regression coefficients;
   (b) a linear unbiased estimator of the regression coefficients;
   (c) the best linear unbiased estimator of the regression coefficients.
3. State and prove the Gauss-Markov theorem.
4. Respond by TRUE, FALSE or UNCERTAIN to each one of the following statements and explain your answer (Maximum: 1 page per statement).
   (a) In the classical linear model, the number of observations must be smaller than the number of regression coefficients.
   (b) In the classical linear model, the sum of the squared least squares residuals is never larger than the sum of the squared true errors.
   (c) In the classical linear model, the sum of the squared least squares residuals is a biased estimator of the true error variance.
   (d) In the classical linear model, the fitted values and the residuals are uncorrelated.