STAT 353 Assignment 2

Note: Write up your solution carefully and with sufficient details for each problem. For data analysis problems, you also need to submit your R codes and related R outputs. For hypothesis tests, you must specify the null and alternative hypotheses, find the p-values and state your conclusions (use $\alpha = 0.05$ unless specified otherwise).

It is always a good idea to start working on the homework as soon as you can. Note however that the concepts of multicollinearity, R^2_{adj} and general linear hypothesis will be covered in the second week of October. So leave parts of problems 1 and 2 concerning multicollinearity and R^2_{adj} as well as problem 4 until after they are covered.

Due in class on Tuesday, October 16

1. Question 3.7 Change part **a** as follows:

a. Plot selling price versus each regressor [use par(mfrow=c(3,3))] and fit a multiple regression model relating selling price to all nine regressors.

2. Question 3.11 Change part **a** as follows:

a. Plot yield versus each regressor [use par(mfrow=c(3,2))] and fit a multiple regression model relating yield to all five regressors.

In the following, "Question 3.18 [4th] or 3.22 [5th]", for example, means do either question 3.18 in the 4th edition of the textbook and or question 3.22 in the 5th edition. These are the same question but with different numbers in different editions of the book.

3. Question 3.18 [4th] or 3.22 [5th] The H_0 should read $H_0 : \beta_1 = \beta_2 = \cdots = \beta_k = 0$.

4. Question 3.21 [4th] or 3.25 [5th] Change part **a** as follows:

a. $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4$

Note: Use the test statistic for the general hypotheses $H_0 : T\beta = \mathbf{c}$ versus $H_1 : T\beta \neq \mathbf{c}$ for this question. Specify T for **a, b** and **c** respectively.

5. Question 3.23 [4th] or 3.27 [5th]

6. Question 3.27 [4th] or 3.31 [5th]