STAT 512

Homework 4 (9.5 pts.) due Feb. 7

A reminder – Please do not hand in any unlabeled or unedited SAS output. Include in your write-up only those results that are necessary to present a complete solution (what you want the grader to grade). In particular, questions must be answered in order (including graphs), and all graphs must be fully labeled (main title should include the question number, and all axes should be labeled). Don't forget to put all necessary information (see course policies) on the first page. Include the SAS input for all questions at the very end of your homework; this could be important even though it won't be graded. You will often be asked to continue problems on successive homework assignments so save all your SAS code.

- 1. (5 pts.) If you have not already done so, on a separate piece of paper turn in matrices project. Please do not attach this to the rest of the problem set.
- (3.5 pts.) Based on the following small data set, construct the design matrix, X, its transpose X', and the matrices X'X, (X'X)⁻¹, X'Y, and b = (X'X)⁻¹X'Y. Compare your calculations with the results from SAS.

Х	Y	
2	1	
3	2	
6	4	
7	5	
9	7	

 (1 pts.) Consider the data set from Problem 6.18 about "Commercial Properties" (CH06PR18.DAT) which describes a data set (n = 81) used to evaluate the relation because rental rates (Y) and the age of the unit (X₁), operating expenses and taxes (X₂), vacancy rates (X₃), total square footage (X₄). Run the multiple linear regression with age, operating expenses, vacancy rates and total square footage as the explanatory variables and rental rate as the response variable. Summarize the regression results by giving the fitted regression equation.