Home Work Assignment – Chapter 4

4-21 The following data gives the starting salary for students who recently graduated from a local university and accepted jobs soon after graduation. The starting salary, grade-point average (GPA), and major (business or other) are provided.

SALARY	$29,500	$46,000	$39,800	$36,500
GPA	3.1	3.5	3.8	2.9
Major	Other	Business	Business	Other

SALARY	$42,000	$31,500	$36,200
GPA	3.4	2.1	2.5
Major	Business	Other	Business

(a) Using a computer, develop a regression model that could be used to predict starting salary based on GPA and major. Show the math equation.

(b) Use this model to predict the starting salary for a business major with a GPA of 3.0.

(c) What does the model say about the starting salary for a business major compared to a nonbusiness major? (How much higher or lower?)

(d) Do you believe this model is useful in predicting the starting salary? Justify your answer using information provided in the computer output.

Hint: use binary variables to represent the major – how many binary variable(s) is (are) needed?

4-22 The following data give the selling price, square footage, number of bedrooms, and age of houses that have sold in a neighborhood in the last 6 months. Develop three regression models to predict the selling price based upon each of the three factors individually. Which of these is best? (You must write out the three regression equations. Each equation is in the form of **SellingPrice = $b_0 + b_1 X$**, where **X** is either the SquareFootage, or the Bedrooms, or the Age. Also explain why one of the equations is the best.)

SELLING PRICE($)	SQUARE FOOTAGE	BEDROOMS	AGE
64,000	1,670	2	30
59,000	1,339	2	25
61,500	1,712	3	30
79,000	1,840	3	40
87,500	2,300	3	18
92,500	2,234	3	30
95,000	2,311	3	19
113,000	2,377	3	7
115,000	2,736	4	10
138,000	2,500	3	1
142,500	2,500	4	3
144,000	2,479	3	3
145,000	2,400	3	1
147,500	3,124	4	0
144,000	2,500	3	2
155,500	4,062	4	10
165,000	2,854	3	3

4-23 Use the data in Problem 4-22 and develop a regression model to predict selling price based on the square footage and number of bedrooms. Use this to predict the selling price of a 2,000 square foot house with 3 bedrooms. Compare this model with the models in 4-22. Should the number of bedrooms be included in the model? Why or why not?

(You must write out your regression equation.)