**Examples for Stat286 (Chapter 2)**

1. Data: GRADRATE2.csv
   1. Find the least square regression line between all students graduated in 94 and all students graduated in 95;
   2. Get a scatter plot for all students graduated in 94 and all students graduated in 95;
   3. Find the S, se( and se(.
   4. Find the 90% confidence interval for the slope β1.
   5. Do you think the data provide strong evidence that graduation rate for all students in 94 is linearly related to graduation rate for all students in 95? State the null and alternative hypotheses, find the p-value and make conclusion in both statistical language and plain English. (Let α = 5%).
   6. Do the data provide strong evidence that when the gradation rate for 94 increases by 1%, then the average graduation rate in 95 also increases by 1%?
   7. Do the data provide strong evidence that the regression line passes through point (0,0)?
   8. Find the 90% confidence interval for .
   9. What would be the **average** gradation rate in 1995 when the school’s graduation rate in 94 is 50%?
   10. Find the 95% confidence interval for the prediction in (i).
   11. One college had 50% gradation rate in year 94, what would be the gradation rate for the year 95?
   12. Find the 95% confidence interval (prediction interval) for the estimate in (k).
   13. What proportion of variation in graduation rate for year 95 has been explained by its relationship to year 94?
2. Fine name: COMNODE3.csv
   1. What’s the least square regression line for number of ports and the cost?
   2. Find the 95% confidence interval for the slope β1.
   3. Do you have strong evidence that the number of ports is linearly related to the cost? State the null and alternative hypotheses, find the p-value and make conclusion in both statistical language and plain English. (Let α = 5%).
   4. Do you have strong evidence that the number of ports is **positively** linearly related the cost? State the null and alternative hypotheses, find the p-value and make conclusion in both statistical language and plain English. (Let α = 1%).
   5. Do you have strong evidence that each new access port adds at least $1000 to the installation of the node? State the null and alternative hypotheses, find the p-value and make conclusion in both statistical language and plain English. (Let α = 5%).
   6. Use the F-test to see whether you have strong evidence that the number of ports is linearly related to the cost.