This assignment covers material discussed in Chapter 2.

**PLEASE SHOW ALL YOUR WORK (GRAPHS, TABLES, AND CALCULATIONS) AND WRITE YOUR ANSWERS IN FULL SENTENCES.**

You can work on the assignment with other students in the class, but I expect you to write up your answers on your own. Whenever you can use the computer for calculations and graphs. The graphs should always be nicely labeled.

**Part 1. Exercises from Chapter 2.**

2.12, 2.16, 2.24, 2.26, 2.34, 2.64, 2.77

**Part 2. Properties of Correlation**

Suppose that every student in a class of 20 students scores ten points higher on the second exam than on the first exam.

(a) Produce a scatterplot. (Note: you will have to enter some imaginary data in SPSS.)
(b) Calculate the correlation coefficient between the two exam scores.
(c) Repeat (a) and (b) supposing that every student scores 20 points lower on the second exam as on the first one.
(d) Repeat (a) and (b) supposing that every student scored twice as many points on the second exam as on the first.
(e) Repeat (a) and (b) supposing that every student scored one-half as many points on the second exam as on the first.
(f) Based on your investigation of these questions, does the degree of slope evident in a scatterplot relate to the correlation between the two variables? Explain.

**Part 3. Regression**

This question serves as a warm-up for your paper project. Instead of me asking you specific questions about calculating this and that, you will have to answer the question by writing a roughly two page (double spaced, 12pt, excluding graphics and tables) report which will summarize your analysis. Imagine you are writing the report for someone who hardly knows anything about statistics.
Your task is to predict an animal's gestation period from its longevity. The dataset (gestlong.sav) includes the average longevity (in years) and gestation period (in days) for a sample of animals, as reported in *The 1993 World Almanac and Book of Facts*.

Be sure to complete the following steps:

1. Use high quality graphical displays of the evidence, thus the relationship between gestation and longevity.

2. Summarize the relationship between gestation and longevity, by measuring the relationship with numbers and by using a regression model to describe it. Be sure to explain why you can choose a regression model. Be sure to interpret the results of the model, describing what the numbers measure and their significance.

3. Assess how well the model describes the relationship between gestation and longevity. Analyze your residuals carefully for outliers or influential observations. If you find any, show and measure how influential they are. What could you do to decide whether your outliers should or should not be included in the model?