Assignment #1 — Due Friday, February 2, 2007, by 4:00 P.M.

Turn in homework in lecture, discussion, or your TA's mailbox. Please indicate the discussion section you expect to attend to pick up this assignment.

311: Tues. 1:00–2:15   **312:** Wed. 2:30–3:45   **313:** Wed. 1:00–2:15

1. Work solutions to the final exam from 571 last fall. For those students who took 571 last fall, you may use your graded finals from last semester as a guide. I will collect them from Cécile and Nick to distribute on Thursday in class if you have not yet picked them up.

   Students who did not take the exam last fall should work out the final exam (and review part of what you once knew). The exam is posted on the course web page.

2. In a study of the tufted titmouse (*Parus bicolor*), an ecologist captured seven male birds, measured their wing lengths, and then marked and released them. During the ensuing winter, he repeatedly observed the birds as they foraged for insects and seeds on tree branches, and noted the diameters of the branches. The average branch diameter for each bird is tabulated below.

Bird	1	2	3	4	5	6	7
Wing length (mm)	79.0	80.0	81.5	84.0	79.5	82.5	83.5
Branch diameter (cm)	1.02	1.04	1.20	1.51	1.21	1.56	1.29

   (a) Plot the data. Does there appear to be a linear relationship between wing length and branch diameter?
   (b) Use R to fit a regression line and add it to the plotted data. Report the equation for the regression line.
   (c) Compute the correlation coefficient of the variables as well a the means and the standard deviations. Verify that the regression coefficients you found in part (b) satisfy the expected relationships with these sample statistics.

Work to do, but not turn in.

- Acquire the textbook.

- If you have not already done so, follow the instructions on the web page to install R on your computer and to install the R libraries DAAG and MASS. Brief instructions for Windows users are on page 1 of the textbook.

- Work through the R examples in section 1.1.1, pages 1–5.

  Note: The authors are apparently part of the 'old school' and use the key combination <- for assignment. You should know that an alternative (which I strongly approve) is to use = for assignment as in

  ```
  > Year = c(1800,1850,1900,1950,2000)
  ```

  My recommendation is to save precious key strokes over your lifetime (you are given a finite number!) and use = for assignment, the convention in almost every other programming language as well.

- Read Chapter 5 of the textbook.