Due: Wednesday, April 2nd (11:59 p.m. PT.)

Reminders

The final exam will take place Thursday, April 17th in RCB 8100.

Reading

For Wednesday, March 26th, Chapter 8.

For Monday, March 31st, Chapter 9.

Assignment exercises to hand in

Questions must be solved in a spreadsheet, and must be accompanied by well-written solutions. You should provide full details of how you solved the problems. The `.pdf` files for each question will be submitted in Crowdmark (1 file per question), and any spreadsheets to Canvas.

1. (a) Take 9 points (x_i, y_i) where the x_i's are the nine digits of your student id in order, and the y_i's are the first nine digits of π. So, $y_1 = 3$, $y_2 = 1$, etc. Use `Excel` compute the Covariance between the two sequences.

(b) Using the method of Example 8.3, construct the line of best fit $y = ax + b$ (in the least-squares sense).

(c) Repeat this but using the sum of the absolute deviations in the y-coordinate as the measure of fit, as in Exercise 8.4.

(d) Based on these calculations, would you say there is a relation between the x_i's and the y_i's? Should there be?

2. Exercise 8.15 (supplementary exercise).

5. By now you should have read the first chapter of *Weapons of Math Destruction* by Cathy O'Neil. This discusses some ethical implications of mathematical modelling. Consider now the project that your group has chosen. Write a brief (at most two pages and 1000 words) analysis of potential ethical concerns related to your model. It may be helpful to consider them in terms of the three questions raised on page 28 and 29.

Some other exercises you should try

Additional exercises from Chapters 8 and 9 of the textbook and from the course notes. Note that while we do not have time to cover the Chapter 9 material before this final assignment, it is nevertheless part of the material considered for the final exam.