

**Today:** Permutations in deployed code; impact of bugs. Rob Weir’s blog entry on the topic<sup>1</sup> and related material.

**Next class:** Little languages.<sup>2</sup> Bring hardcopies to class for reference.

1. List the members of your group below. Underline your name.
2. Briefly define the following as used in computer science: random, pseudo-random, arbitrary, permutation, random permutation, uniform random distribution.

3. Comment on the following claim from the reading:

If you determine the order on a central server and then serve out that order on each innovation, then you can use nonrandom solutions, like the rotating circular buffer. But if the ordering is determined independently on each client, for each invocation, then you need some source of randomness on each client to achieve a uniform distribution overall.

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<sup>1</sup>Rob Weir, Doing the Microsoft Shuffle: Algorithm Fail in Browser Ballot, <http://www.robweir.com/>, 2010.

<sup>2</sup>Jon Bentley, “Little Languages,” *Communications of the ACM* 29/8 (1986).

4. Provide code or detailed pseudocode for the Fisher-Yates algorithm.
5. Describe a task in your Capstone project that is likely to require randomness, and how you will achieve the randomness.
6. Describe a statistical claim that is likely to appear in your Capstone report. Explain how it will be validated.