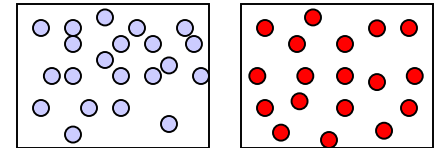


# Homework #1: Failures and Probabilities

**Answer the questions truthfully and to the best of your ability / knowledge. Due Ssept. 30, 2019.**

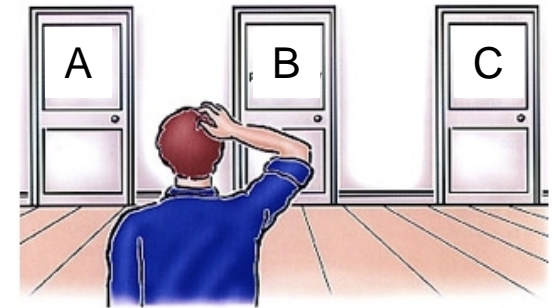
**Question 1:** Name a disaster that was caused by computer hardware or software failure. How do you define “disaster” and “failure”?

**Question 2:** Which of these patterns is more random?



**Question 3:** Which do you think is more likely: the event that everyone in this class was born in the first half of the year or the event that at least two people were born on the same day of the year?

**Question 4:** In a game show, there is a prize behind one of 3 doors with equal probabilities. You pick Door A. The host opens Door B to reveal that there is no prize behind it. The host then gives you a chance to switch to Door C. Is it better to switch or to stick to your choice?



# Pretest (Continued): Causes of Mishaps



**Question 5:** Does this photo depict a mishap due to design flaw, implementation bug, procedural inadequacies, or human error?

# Pretest (Continued): Reliability and Risk

**Question 6:** Name an emergency backup system (something not normally used unless another system fails) that is quite commonplace

**Question 7:** Which is more reliable: plane X or plane Y that carries four times as many passengers as plane X and is twice as likely to crash?

**Question 8:** Which is more reliable: a 4-wheel vehicle with one spare tire or an 18-wheeler with 2 spare tires?

**Question 9:** Which surgeon would you prefer for an operation that you must undergo: Surgeon A, who has performed some 500 operations of the same type, with 5 of his patients perishing during or immediately after surgery, or surgeon B who has a perfect record in 25 operations?

**Question 10:** Which is more probable at your home or office: a power failure or an Internet outage? Which is likely to last longer?

**If you had trouble with some questions, you really need this course!**