Stats100A **Summer 2024**

Week 1: An (Ungraded) Quiz

Author: Andrew Lizarraga

1.1 About This Quiz

- This will not be graded. **But it's important to take it!**
- Answer the questions honestly.
- **We will use the class responses to gauge everyone's prior understanding.**
- **We will structure the discussion based on how everyone performs on this quiz.**
- If you are unsure how to solve a problem, try to suggest ideas for how you would approach the problem.
- If you genuinely don't know where you'd start on a problem, simply answer "I don't know" or IDK.

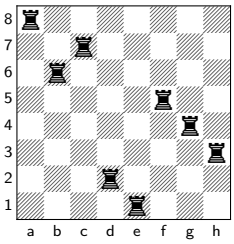
1.2 Let's Start

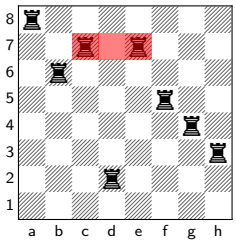
You don't need to spend all day on this. Go through the problems, see which ones you can answer, which you have an idea about, and mark any that fly over your head.

Problem 1 (Coin Flippers): I flip a fair coin 10 times and they all came up heads. Is it more likely that the 11^{th} coin flip will come up tails?

Problem 2 (Coin Toss): I flip two fair coins simultaneously, when they hit the ground, what's the probability of getting one coin showing a heads and the other a tails?

Problem 3 (Peaceful Rooks): You are given an 8×8 chess board and you need to place 8 rooks on the boards so that no two rooks can attack each other, i.e. a **peaceful** arrangement. How many peaceful arrangements are there? (Remember rooks can only go left, right, up and down. See below for an example of a peaceful and un-peaceful arrangement, respectively)





Problem 4 (The UCXB Students): Two students at UCXB, decided to party before the final. Unfortunately, due to their poor judgement they missed the final. They told the Professor that they were driving back from a families home but one of the tires went flat which is why they missed the final (this is a lie). The Professor agreed to let them take a different final. The two students were seated in separate rooms. There was only one question on the final worth 100 percent of the grade: "Which tire was it?"

What is the probability that the students give the same answer?

Problem 5 (Aurora Borealis 1): Friday is going to have a clear night. There is a 60% chance that you can see the aurora borealis in any given hour. If you go outside and watch the sky for two hours, what's the probability that you'll see the aurora borealis?

Problem 6 (Aurora Borealis 2): Saturday night is going to be clear as well! Conditions are even better this time, there is an 80% chance of seeing the aurora borealis at any given hour. Let's assume that the probability is uniform for the entire hour. What is the probability you'll see the aurora borealis in the first 15 minutes?

Problem 7 (A Message?): Initially, lions often visit elephants, snakes take antelopes, tigers invade stables, toucans irk cheetahs steadily.

Problem 8 (Anything Else?): Is there anything that you'd like to see in this course? Anything I should be made aware of? Any concerns you may have? Also, what's your major and year by the way?