COSC 220: HW#3
Due Tues, April 18th on Moodle
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Note: these questions are the exercises and Not the review questions.

1. ~~Chapter 5: 6, 10,~~ ~~11, 12,~~ 13, 19, 22, 25.

2. **The Monty Hall Problem:** Here we will investigate this famous probability phenomenon. Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you,"Do you want to pick door No. 2?" Is it to your advantage to switch your choice?"
   Write a simulation in C++ of the Monty Hall problem based on two strategies. One where you always switch and one where you always stay at your first choice door. Do this for 10,000,000 (10 million) trials. What is the experimental probability in each case? Does the outcome agree with your calculation of the theoretical probability? You will need to use the 'random' class from the Stanford libraries. Documentation can be found in the 'random.h' file.

3. **Marble Drawing:** If there are 200 marbles in a jar and 40 different types. What is the probability that you can choose 2 of the same type of marble in sequence without replacement? Can you create a simulation of this experiment in C++? You will need to use the 'random' class from the Stanford libraries. Documentation can be found in the 'random.h' file.

4. ~~Chapter 6: 1, 2,~~ 10.

5. ~~Chapter 7: 2, 5,~~ 6, 7, 10.