

COSC 120: Class Exercise 5

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1. If we create a list $A = [1, 2, 3, 4, 5]$ and then do the following assignment $\gg B = A$. We then proceed to change the first element of the list B like so, $\gg B[0] = 0$. Print out both A and B and tell me what is going on? If there is an issue, how can you fix it?
2. Type in the following code and describe what happens?
3. In your past HW, you used a numpy array when doing a bubble sort. Write code that does the bubble sort on data stored in lists. Check your sorting algorithm against the `L.sort()` command.
4. **The Birthday Problem:**
Let n be the number of randomly chosen people. What is the probability that some pair of people in this group will have the same birthday? For the birthday problem, calculate the probability if $n = 5, 10, 23, 70$. What number of people is needed to reach 99.99% probability? How's about 100%? Keep this question in mind when attending any social events and pose it as a conversation stimulator. Can you write a simulation for the Birthday Problem using python?
You may want to start by using the following code:
5. 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 python? Can you do the same simulation for 2 card types chosen from a 52 card deck?