

Outcomes:

- Apply principles from class to probability problems.
- 1. (10 points each) Suppose a slot machine has three independent wheels, each producing one of the four symbols BAR, BELL, LEMON, or CHERRY with equal probability. The slot machine has the following payout scheme for a bet of 1 coin:

BAR/BAR/BAR pays 20 coins
BELL/BELL/BELL pays 15 coins
LEMON/LEMON/LEMON pays 5 coins
CHERRY/CHERRY/CHERRY pays 3 coins
CHERRY/CHERRY/not CHERRY pays 2 coins
CHERRY/not CHERRY/not CHERRY pays 1 coin

- a. For each coin played, what is the expected payoff amount?
- b. Compute the probability that playing the slot machine once will result in a win.
- c. Implement a simulation to estimate the mean and median number of plays you can expect to make until you go broke if you start with 10 coins. Write a short summary of your results. For bonus, mathematically calculate the actual expected number of plays and compare it to the results of your simulation.
- d. Implement a visual simulation that allows the user to play the game. This part will be shown in a live demo.