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Final Project: Report

This calculator is designed to simulate many spins on perfect American Roulette tables. The user can choose the number of sessions (samples) and the number of spins in each session. They must also select a threshold value for the percentage of times any single number on the roulette table occurs. When there is a session containing a number that occurred a higher percentage of the time than the chosen threshold, the calculator will count it, and include it in its final percentage of sessions in the entire set that had a number over this threshold value.

The purpose of this is to determine the likelihood that an observed abnormality in a set of a certain size of roulette spins is due to random chance as opposed to an actual wheel bias. It is meant to demonstrate how large a sample size must be in order to find a truly biased roulette wheel with a certain level of confidence.

To accomplish this, I built a simulator for a perfect roulette table, where a variable number of samples can be taken at this table, with a variable number of spins per sample. The results from each sample are stored in a dictionary, and each dictionary is stored as part of an array. This array is then modified to convert the results in each dictionary to percentages. Another function then goes through each modified dictionary in the array and counts those that have a pocket that occurred over the threshold value.

As an additional step, I used Tkinter to build a GUI, where the user can choose the number of samples to take, and how many spins are in each sample. This was my first time building a GUI, so seeing that there are a number of packages that can be used to build them was interesting, and it was a good experience to learn how to utilize documentation to learn how to utilize and implement an imported package.

After finals period, in my free time during and after the winter break, I would like to build upon and improve this program. I would like to add more advanced analytical functions that can go beyond a simple probability calculation. I think it would also be beneficial for me to add graphs / visuals to the output of the calculator. I feel that a piece like this would be very useful in data analytics type jobs, especially ones that are looking for people with scripting experience and using large datasets.