Lab 4: Rock Paper Scissors

Due: 7/16/21 at 10:30AM EST

Description

During this lab, you'll explore two libraries commonly used in game design and machine learning: random and numpy. As the names suggest, random is a library that generates pseudo-random numbers, while numpy provides a multidimensional array object. This array object is similar to a list in python, but we'll see some differences in the following sections.

Support code

starter.py contains some base code, likely less than before though as we've moved into week 2. It also contains the instructions in sequential order.

Your tasks

1. Main game
    a. Have the robot choose rock, paper, or scissors in a randomized way. HINT: how can we do this using our random library?
    b. Record user input to allow them to pick rock, paper, or scissors
    c. Generate if statements to handle the separate possible game outcomes.
    d. Write out the code inside of the if statement that handles whether the user or robot has won
2. Use numpy to add support for each game result to be stored in an array. See "helpful resources" below for examples of numpy arrays.

Extra credit tasks

1. Use a numpy operation to modify all the results within the array after the results have already been stored.
2. Use a different data structure to store the game results.
3. Use matplotlib to create a plot of your results over time

Helpful resources

- Random
    - Full library documentation and features: https://docs.python.org/3/library/random.html
    - Generating random integers with random: https://www.w3schools.com/python/ref_random_randint.asp

- Numpy
    - Quickstart guide to numpy: https://numpy.org/doc/stable/user/quickstart.html
    - How to append an element to a list: https://numpy.org/doc/stable/reference/generated/numpy.append.html

Turning it in

Submit the assignment on replit!