Project Members (Group #324): Jenny Goldsher
6/29/2023
ISYE 6644 Simulation

Project Milestone 2: Progress Report

Over the last few weeks, I have begun writing code to model Topic #14 and evaluating appropriate methodology. Since Topic #14 is asking to model the expected value and distribution of cycles of the described card game, elements of randomness, data tracking, and graphical representations of outputs were all relevant constraints for me when picking a programming/simulation language. When considering what platform to use, I considered the tradeoffs of having to maintain a future event list, reliability of random number generators, data storage, reproducibility, and practical applicability.

Ultimately, I decided to conduct my simulation in R which has the capability to run and store many iterations as well as houses many useful packages for data visualizations. Though I will have to maintain my own future event list, I felt that the data visualization and reliability features of R were valuable enough to make it a suitable programming language for this topic. From my previous work and academic experience in R, I know that base R packages provide suitable random number generators and reproducibility with set-seed functionality. These features will allow me to appropriately model the randomness in the card dice game as well as verify the reproducibility and accuracy of my simulation output. I plan to run a number of iterations of my simulation with different initial set-seed parameters and compile those results to ensure an unbiased sample.

Going forward, I will need to formally compile my findings and plots into a comprehensive report. Alongside the generated simulation output and plots, I will need to do further research on related applications and how my findings may relate to other game-theory type problems. I would expect that my findings may have relevance to card and dice games that have varying degrees of randomness. Additionally, I would like to investigate the underlying mathematical properties of the simulation output which seem to be most relevant to Markov chain and related problems. Compiling this information should give me an in-depth analysis of my findings as well as a greater understanding of key simulation concepts and theories.