Pokémon Stats

To examine the likelihood of drawing Pokémon cards in the first hand while monitoring reshuffle rates and the distribution of rare candy cards in the prize deck, the Pokémon TCG deck simulation assignment was created to determine this. The simulation uses Monte Carlo techniques to evaluate different deck arrangements. Determining the probability of drawing at least one Pokémon in an opening hand and comprehending the distribution of Rare Candies in the deck were the main goals.

Multiple classes had to be used to implement the simulation, and each one has a specific function. RunCardGame.java was the primary execution script that iterated through the various deck options, executing 10,000 trials each scenario, while the CardGame.java class handled deck formation, hand drawing, and simulation execution. To ensure modularity, Pokémon and rare candy cards had to be defined in different classes. With the first four cards being Pokémon (Charmander), the deck was designed to always have 60 cards. The remaining cards were filled with random energy or trainer cards. Each simulation begins with seven cards being drawn if there were no Pokémon in the hand, the deck was reshuffled and redrawn until a legitimate hand formed.

After the simulations were run, the outcomes were put into an excel spreadsheet where graphs were formed to give a better visual representation. Important information included the distribution of rare candies in the prize deck and the average number of reshuffles that were going to be needed, and the likelihood of drawing at least one Pokémon in an opening hand. The results from the screenshot showed that decks with fewer Pokémon needed to be reshuffled more often, which reduced their playability. Furthermore, a 60-Pokémon deck ensured that all rare candies stayed in the main deck, while the 59 Pokémon deck had basically a 95% chance of having no rare candies in the prize deck. These findings allow us to know the best deck building process for future references.