Blackjack Simulator – Progress Report

Team of 1: **Elias Yishak**

To start building out this simulator for blackjack, I have decided to build it all entirely in Python since it will be much easier for me to control the entire simulation as opposed to having some abstractions put in place through simulation software packages, like Arena. Being able to organize all the entities in a blackjack game into Python classes also makes it easier to program each role. The following entities (classes) will be created:

* **Deck**
  + Handles different shuffling styles
  + Responsible for implementing a reshuffle, activated by **Dealer**
  + Returns the next card, activated by **Dealer**
* **Player**
  + Will have a parameter that sets how risk-averse each player will
    - Between risky or safe
  + Will have an attribute that holds the current hand
* **Dealer**
  + A special subclass of **Player** since they will also have a hand
  + Really only responsible for giving out the cards or ends the game if they have blackjack
* **CurrentGame**
  + How we will keep track of each game for multiple runs in the Monte Carlo simulation
  + Holds information about how many cards have been dealt, which player won, etc.

Currently, I have completed the development of the **Deck** class. It takes in 3 parameters; the deck type, number of decks shuffled together, and how many times to shuffle the deck before starting the game. The deck type is between two options, an “infinite” and “finite” option. In the infinite case, the card pulled comes from a deck with *unlimited* cards. This means the probability you can get an ace of spades stays the same with each draw. The finite is what the real world is like, i.e. if you pull an ace of spade from one deck, you will not pull it again. The number of decks parameter is self-explanatory, it takes an integer. And the number of shuffles is also self-explanatory, it indicates how many times the dealer will activate a shuffle on the deck before beginning a game.

What is left is implementing the rest of the classes shown above, **Player**, **Dealer**, and **CurrentGame**. And as I continue building the rest of simulation, there could very well be additional classes that need to get added.