

Final Project Proposal UNO

We will implement a version of traditional UNO. It will have a user go up against 1-3 bots. All players will have a shared pile of cards in which they can draw from. We will create this shared pile through a stack, and pop off the top card whenever a player draws it.

There will be 4 types of colors and 6 types of values. The colors are red, blue, green, and yellow. The types of values are numbers, skips, reverses, draws, wilds, and draw 4s, a combination of draw and wild values.

Besides numbers, the card values listed provide some sort of function when placed:

- Skip: skip the next player after you
- Reverse: reverse the order in which all players place cards
- Draw: Make the next person draw cards
- Wild: Pick the next color in play
- Draw 4: a devastating card that makes the next person draw 4 cards and allows you to pick the next color

The game starts off with all participants receiving 7 random cards from the deck. One card will be drawn and designated as “Top Card”. To play, you must play cards on the Top card and get rid of your cards. To place a card, at least one of the following requirements must be satisfied:

- The card must have the same value as the Top Card
- The card must have the same color as the Top Card
- The card has the value Wild or Draw 4
- The card has the color Wild

The objective of the game is to be the first player to get rid of all cards. However, when you are about to get to your last card (reduce deck size to 1), you must indicate that with “UNO!”. We plan on having that function by either clicking on a button that says UNO or by using some certain keybind. If you don’t indicate that you have one card remaining within a small period of time, you will receive an extra two cards.

For this project, we plan to incorporate Processing code so that we can make a GUI and visualize our game. That will be the main focus of our game, because the code for the functionality of the game is something we’re already familiar with.

There are three classes: Deck, Player, and Card. Deck and Player will have other versions because there is a used and unused deck and human/robot players.

We will initialize 108 cards, which is the standard number of UNO cards in a deck. In the extreme case we run out of cards, we will reverse the roles of the used and unused deck so we don't have to make any more cards (the cards we use will be the same anyway; we're not randomly generating them).

In Card, we will have mutators for setting the value and color, and accessors for returning the value and color. In Player, we will code in options to use keybinds for certain actions within the game, such as drawing cards, playing cards, and calling UNO. In Deck, we will utilize a stack that will contain Card objects and push/pull cards whenever needed. There will be a shuffle method as well, which will run at the beginning of the game and whenever we switch the decks (because we run out of unused cards, as mentioned before). This is not finalized, there might be more methods that we haven't thought of thus far, but these are what we have so far. .