

Final Project Proposal

Unselfish Neighborly Outreach

UNO class

- Has a main method that runs the whole game
- Chooses the number of players (2-5)
- Shuffle cards -> distribute them, every player starts with 7 cards and the top card of the deck is flipped over and set aside to begin the discard pile.
 - (create an ArrayList for each player that contains the current cards on their hands)
- Draw Pile & Discard Pile (create one ArrayList for each pile that contains Cards as objects so you can remove cards from draw pile and add cards into the discard pile)
- First player decided by rolling a dice (an array of the order of the players; so the game goes from left to right)
- On a player's turn, he/she must do one of the following: Draw or Play
 - play a card matching the discard in color, number, or symbol
 - play a Wild card, or a playable Wild Draw Four card
 - draw the top card of the deck
- At any time, if the Draw Pile becomes depleted and no one has yet won the round, take the Discard Pile, shuffle it, and turn it over to regenerate a new Draw Pile.
 - (uses keyboard inputs)
- HOW TO WIN?
 - Scorekeeper - First player reaches 500 points wins
 - (score: instance variable of class Player that keep track of each player's score)
 - (goal: instance variable of class Woo that once a player reaches this number points, that player wins the game)
 - The first player to get rid of his/her last card wins the round and scores points for the cards held by the other players.
 - A player who plays his/her next-to-last card must call "Uno" as a warning to the others.
 - If a player lays down his/her next-to-last card without calling "Uno" and is caught before the next player in sequence takes a turn, they must draw 2 cards. If the player is not caught in time, he/she suffers no penalty.
 - (uses keyboard inputs)
- Creates a whole deck of cards (first creates a whole deck then after distributing the cards to the players, it becomes the Draw Pile)
- Can shuffle cards

Player class extends UNO class- what players can do

- ArrayList<Deck> hand: arraylist of all cards in a players hand

- Play a card: uses the index of the arraylist as identifiers of cards. Plays the card by
- Draw a card: removes one card from the Deck array and adds that card into the hand arrayList
- Call "UNO": ends the game and calculates points
- Have points/score: int of current score for each player
- Can sort cards by color, number or wild
- distributeCards: players all draw seven cards to start the game

AiPlayer class extends Player:

- playAi(): determines whether to use determineBestOption() or chooseRandomly() depending on difficulty
- determineBestOption(): chooses best card to play
- chooseRandomly(): chooses random card in hand with the same color

Deck class

- Properties: color, point value
- types of cards: red, yellow, green, blue
 - Each color has one: 0, skip, reverse and draw two
 - Each color has two: 1-9
 - 4 wild & 4 wild draw 4
- Total 108 cards

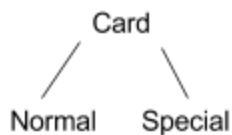
Normal card class extends card class (red,yellow,green,blue number cards)

- Property: int cardNum (a cards "face number")

Special card class extends card class (skip,reverse, draw2, wild, wild draw 4)

- Property: int action (0: cancel, 1: reverse, 2: plus 2, 3: change color, 4: plus 4 and change color)
- In a two-player game, the Reverse card acts like a Skip card; when played, the other player misses a turn.

Card Hierarchy



STRETCH/EXTEND:

A person has to call out Uno when they have one card left

Add different versions + rules of Uno

Different difficulties of computers (also different card ratios)