

## CS 341 Project #2

- For this project, you will be creating some classes that you will be using to play an initial simplified version of the card game *Clubs*. You should implement all of your collections (i.e., set of players, decks/hands of cards) except the cards played during the round (which should be implemented as an array of cards) without using any arrays and without using any classes from Java's collection package.
- For this version of *Clubs*, the trump will always be clubs and you should support playing just one round for 3-4 players.
- A round consists of dealing out 5 cards to each player, and playing 5 tricks (until all of the players' cards are played). Play starts with the dealer who plays any card from his/her hand. The player to the left of the dealer must play a card that is the same suit as the dealer's played card. If this player does not have a card that is the same suit as the card played by the dealer then he/she can play any card in his/her hand. Then the next player plays, etc. until each player has played one card. The winner of trick is the player who played the Joker. If the Joker was not played then the winner is the player who played the highest trump card. If no trump cards were played then the winner is the player who played the highest card of the suit that was lead. Note that the Joker is actually considered the highest card in the trump suit. Thus, if the dealer leads the Joker then the other players must play a trump card if they have one. The winner of the trick leads out the card for the next trick.
- The highest card is the Joker. The second highest card in the trump suit is the jack. The third highest card in the trump suit is the jack of the other same colored suit (which is the jack of spades when clubs is the trump suit). The fourth highest card in the trump suit is the ace then king, queen, 10, and 9.
- For non-trump suits, it is the standard order with the highest non-trump suit card being the ace then king, queen, jack, 10, and 9.
- All players are automated. The strategy that each player should follow is to always play the highest card in their hand if it is good enough to win the trick (unless it is the last card of the trick in which case the lowest winning card should be played). If a player cannot win the trick, he/she should play the lowest non-trump card (or lowest trump card if their hand contains only trump cards).

- Create a class **Card** that represents a standard playing card which has 2 data areas, suit and value.
- Create a class **ClubDeck** that extends **Deck<Card>** and has a single no-argument constructor that creates a deck of 25 cards: 9, 10, jack, queen, king, and ace for each of the suits (clubs, diamonds, hearts, spades) and a joker.
- Create a class **ClubHand** that extends **Pile<Card>** and adds the following **bestPlay** method:

**Card bestPlay(Card[] c);**

- The **bestPlay** method should return the **Card** that is the “best” play that can be made given the cards that have already been played. It should also remove the **Card** from the **Hand**. The play must be the same suit as the card that was lead (i.e., the suit of **c[0]**) if possible. If there is not a card of the same suit as the card that was lead then any card may be played. Follow the strategy given above.
- Create a class **ClubGame** that contains a constructor that sets up the *Clubs* game described above (querying the user to see whether there are 3 or 4 players and creating a deck of cards) and supports the following **play** method that plays the game:

**void play();**

- The **play** method should play a complete round of 5 tricks.
- To play a round, the deck of cards should be shuffled and then 5 cards should be dealt out to each of the players. A random number should be generated to determine who plays first.
- Display the following information:
  - Initial deck of cards after it is shuffled.
  - Each of the players’ hands after the cards are dealt (with \* in front of the player who was selected to play first).
  - After each trick is completed, display the card that each player played (with \* in front of the player who won the trick).
  - After the round is completed, display the number of tricks that each player won.