

Card Game (10 Points) w/Extra Credit

In this assignment you will create a computer card game where, in each round, you draw a card and the computer draws a card. The winner of the round is the one who draw the higher card (face and suit if needed). The winner of the game is the first to get two rounds ahead! Or you get border.

Create a Standard Deck of 52 cards. Each suit (Clubs, Diamonds, Hearts and Spades) and each card face (Deuce ... Nine, Jack, Queen, King and Ace).

You Must Use Dynamic Memory for each Card.

You need to provide there operator overloads for <, > and == for the Card class. You may not end up using them all, but for full credit, you need to do all 3!

You also need need to add an integer reference counter in the Card class (refCount). The Card constructor should initialize this to 1. It is not used in this assignment, but needs to be there anyway.

The best approach to this assignment is to start by duplicate the last Deck of Cards assignment. Then create the implementation code for the following classes (slightly different than last assignment because we are using dynamic memory for each card.):

```
class DeckOfCards {  
public:  
    DeckOfCards(); // constructor initializes deck  
    void shuffleTheDeck(); // shuffles cards in deck  
    Card * dealOneCard(); // deals a card from the deck  
    Card * getCard(size_t); // get the cards at the specified  
    index from the deck  
    bool cardsLeft() const; // are there any more cards left  
private:  
    std::vector< Card * > theDeckOfCards; // represents deck of  
    cards  
    size_t indexOfNextCard; // index of next card to be dealt  
};
```

```

class Card {
public:
    Card( size_t cardSuit, size_t cardFace );

    std::string cardToString() const;

    bool operator > (const Card&); // Plus the others as
needed!

private:
    int refCount;

    size_t face;

    size_t suit;


    static const std::string faceNames[ 13 ];

    static const std::string suitNames[ 4 ];

};

```

Extend the card class to overload the ==, > and < operators.

In main() you will play a game. You will draw a card. The computer will draw a random card. And you will tell who the winner is.

- Create a deck of cards.
- For each round
 - Shuffle the cards.
 - Ask the user for a number from 0 to 51 (range checked)
 - Show the user their card
 - Have the computer randomly draw a card
 - Show the Computer's card to the user
 - Compare the cards
 - Declare a winner
 - Repeat until one side is 2 wins ahead

Expected output:

The current win count is:

You: 0 Computer: 0

Enter a card number from 0 to 51: 25

Your selected card is: The Queen of Hearts.

The Computer's card is: The Six of Hearts.

You win this round!

The current win count is:

You: 1 Computer: 0

Enter a card number from 0 to 51: 25

Your selected card is: The Queen of Hearts.

The Computer's card is: The Six of Clubs.

You win this round!

And you win the Game 2 to 0!

Extra Credit:

Replace toString() with a conversion operator.

```
operator std::string() const;
```

//- OR -

```
operator char*( ) const;
```

Then replace the 3 overloads in the original with the C++20 spaceship (<=>) operator overload.

```
auto operator <=> . . .
```