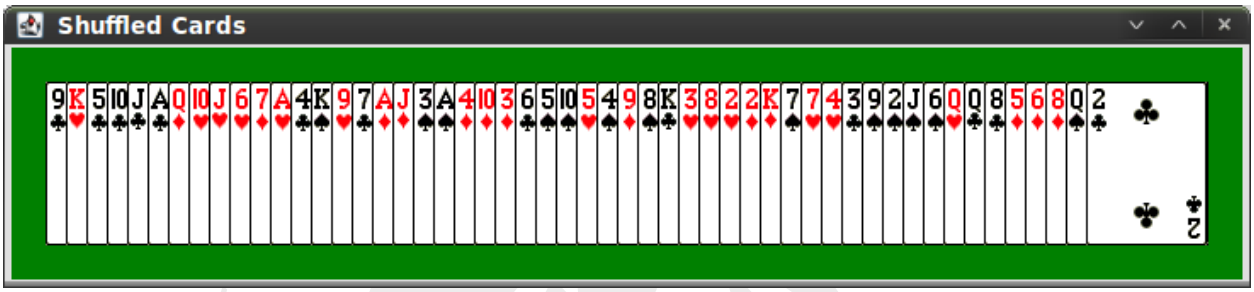
Homework 12: Card Shuffling

Display a shuffled deck of cards, like this:



A full deck consists of 52 cards. To display the full deck, you should draw each card slightly offset from the previous one, as if someone had fanned the deck out on a table. (Also, use a decent color as the background—something that looks like a gaming table.) The card images are contained in the file `cards.png`.

You must use the `Card` and `CardSet` objects we've worked with before. Add another field to the `Card` object, a `BufferedImage` that holds the image for the card. You can then modify the constructor so that each new `Card` object has the proper image saved in the new field.

(For efficiency's sake, you should also have a static 2D array of `BufferedImage` objects to hold the addresses of all the images. This is so that duplicate cards don't all need to have their own images, which would be wasteful.)

You should add a `draw()` method to the `Card` object, that takes as its arguments the x and y where to draw, and a `Graphics2D` object (that is, a "pen") indicating the drawing context. Then, you can add a `draw()` method to the `CardSet` that takes similar arguments. The `CardSet`'s `draw()` method will immediately call the Card's `draw()` method once for every card it contains.

You should also add a `shuffle()` method to the `CardSet`. This will pseudorandomly reorder all the cards, according to the Fisher-Yates shuffling algorithm that we have studied.

Be sure to test these one at a time! Start by just working on the `Card`'s `draw()` method, and see if you can create and draw a card of your choice. When that's ready, you can move on to the `CardSet`'s `draw()` method, drawing the unshuffled deck. And finally, when that's working, you can work on the `shuffle()` method.

Remember to use constants as much as you can, to make your program quickly modifiable to hold other images.

If you've done all of this correctly, making your `main()` function should be very simple. All it needs to do is to set up the `GraphicsWindow`, make a new standard deck, shuffle it, draw it, and then call the `GraphicsWindow`'s `flush()` method.

The name of this class should be `Shuffler`.