INTRODUCTION TO COMPUTER SCIENCE I

PROJECT 7
Poker Hands
Revision [ ]

1 Some new object types

For this assignment, you are given one new object type (the Card class), and a program (PokerTest) that expects another new object type (the Deck class) that you must write. Specifically, it is written to create a new Deck object—which itself is supposed to create one of each of the 52 possible Card objects)—and then call on that Deck object to shuffle its Cards. Then, it draws Cards from the Deck, one at a time, to make poker hands. It tests each poker hands, counting up instances of different types (4 of a kind, full house, etc.).

The final result is that PokerTest will print, after generating 100,000 poker hands in this manner, the number of each type of hand that it observed (e.g., how many flushes). It will print this information alongside expected numbers of each type of hand. If your shuffling method is a good one that randomly permutes the cards well, then the results found will be near the expectations.

2 Your assignment

2.1 Copying files from my directory

You must copy some files from my directory to get started on this project. To do so, follow these steps:

1. Login to remus/romulus and open a shell.

2. Create a project-7 directory and change into it.

3. Issue the following command from within your project-7 directory:

    cp -r ~sfkaplan/public/cs11/project-7/* .

If you look at your directory (use the ls -l command), you will see that there are two Java source code files:

- Card.java: A class that defines the contents of a Card object. Used to represent a single, standard playing card, each of which has a suit (spade, club, diamond, or heart) and a rank (2 through 9, ace, jack, queen, or king).

- PokerTest.java: The program, described above in Section [ ] that repeatedly generates Decks of Cards to make poker hands and test their contents.

[ ] See Appendix A for a revision history.
2.2 The overall goal

You need to write the Deck class to make this program work. Specifically, a Deck object must contain an array of pointers to Card objects. Moreover, you must write the following methods:

1. Constructor: Create one of each of the 52 possible playing cards—each possible combination of suit and rank—and keep pointers to each such card in the array of Card pointers. To perform this task, open the Card.java file, and notice the two arrays named Card.suitNames and Card.rankNames. Each is an array of pointers to String objects, each of which respectively contains a valid suit or rank name. Moreover, there is a Card constructor that accepts a suit name and a rank name as arguments. Loop over those arrays, calling the constructor with each possible combination of suit and rank, to make the 52 cards.

2. shuffle: Randomly permute the array of Card pointers.

3. drawTopCard: Assuming some order on the array of Card pointers, return the first such pointer, being sure to assign the array entry from which the pointer was taken to be null, thus “removing” that Card from the Deck.

3 How to submit your work

Use the cs11-submit command:

    cs11-submit project-7 Deck.java

This assignment is due on Friday, May 7, at 11:59 pm

A Revision history

- Revision 0 [2010-May-05]: The initial, complete version.

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2 Determine the details of the method signature—the static/non-static designation, the return type, and the parameter list that accompany the method name—from the portions of the PokerTest code that calls Deck methods.