Lab 9

Out: April 20, 2008

To get started, copy the stencil code to your `lab09` directory with the following command:

```
cp /course/cs004/pub/lab09/* ./
```

Make sure you are in your `lab09` *directory before running this command.*

Problem 9.1

In this program you will write a simplified version of twenty-one in which two players each draw three cards. These cards are printed out with numbers representing number cards (2 = 2, 3 = 3, etc.) and letters representing face cards ('A' = Ace, 'K' = King, 'Q' = Queen, 'J' = Jack).

The score for each player is then calculated and displayed along with the end result of the game. The score is the total value of all the cards the player has, with number cards being worth their number value and face cards being worth 10 points. For simplicity, in this program assume the Ace is always worth 11 points.

The winner is the player closest to 21 without going over. It is a tie if both players have the same score and are both under 21. If a player's cards sum to more than 21, that player receives a score of 0. If both players have a score of zero, both have lost.

Your program **must** be structured using the following 3 functions (in addition to your main function and the provided `getRandom` function):

```
int drawCard()
/* Input: none
 * Returns: integer repesenting a random card
 */
```

```
void printCards(int array[], int numcards)
/* Input: array of cards, integer number of cards in array
 * Returns: none
 */

int calcScore(int array[], int numcards)
/* Input: array of cards, integer number of cards in array
 * Returns: integer total score (0 if the score is above 21)
 */
```

Here are a few sample runs (note that there is no user input):

```
> ./twentyone
Player 1: 5 4 6  Score: 15
Player 2: Q 4 5  Score: 19

Player 2 Wins!

> ./twentyone
Player 1: 5 K 8  Score: 0
Player 2: 5 8 9  Score: 0

Both players lose!

> ./twentyone
Player 1: 5 7 8  Score: 20
Player 2: 10 6 4  Score: 20

Tie!

> ./twentyone
Player 1: 5 K 8  Score: 0
Player 2: Q 4 5  Score: 19

Player 2 Wins!
```

The stencil code includes some code that will help you generate random numbers. The function `getRandom(int max)` returns a random integer between 0 and `max` (not including `max`).

Think carefully about how to represent the cards as integers and how you will calculate the score given that representation. Write your program in the `twentyone.c` file. By now you should know how to compile and run your program. (no special libraries needed)