

SI@UCF Assignment: High Card Game

For this assignment you will write a simple playing card class and then use objects of that class to play the High Card Game.

Details of the Card class

Create a card class with the two following instance variables:

```
private char suit;  
private int kind;
```

Suit will get set to one of the following four characters: 'C' (for clubs), 'D' (for diamonds), 'H' (for hearts), and 'S' (for spades).

Kind will get set to an integer in between 1 and 13, inclusive. (For this assignment 1 is an Ace, 11 is a Jack, 12 is a Queen and 13 is a King.)

Your class must have a constructor that takes in a Random object and uses this object to create a randomly generated card:

```
public Card(Random r);
```

Your class must have a toString method that returns a String representation of the Card object. The most basic String your method should return is simply the suit concatenated to the kind. Feel free to make this method better so that the String is closer to what a person would expect for the representation of a playing card:

```
public String toString();
```

We compare cards as follows: First we look at the kind of the card. The higher the kind, the higher it is. Thus, any 12 beats any 11. If the kind of two cards is tied, then we determine the higher card by looking at the two suits in question. The suits, in order from highest to lowest are: 'S', 'H', 'D', and 'C'. (This is reverse alphabetical order. So, the suits, in alphabetical order, are from lowest to highest.) If two cards are identical, then they tie. Write two methods to help with comparisons. One method will take in a Card object, other, and will return true if this Card is equal to other, and false otherwise:

```
public boolean equals(Card other);
```

The other method will take in a Card object, other, and will return true if this Card is strictly higher than (beats) other:

```
public boolean beats(Card other);
```

Game A: Straight High Card

The game is between two players and goes as follows:

Player 1 receives 2 random cards. (Each of the 52 playing cards is equally likely for both cards. Thus, we are assuming that we're pulling from an "infinite" deck of equally distributed cards.)

Player 2 received 2 random cards.

If the highest card Player 1 holds is higher than the highest card Player 2 holds, then Player 1 wins. If this is true of Player 2 instead, Player 2 wins. If the highest card both players hold is the same card, then the round is a tie.

After creating your Card class, in your main, create four Card objects (2 for Player 1 and 2 for Player 2), print out which cards each player received and report the outcome of the game.

Note that this game takes no user input so when you run the program, all the output should just display.

Game A: Sample Runs

```
Player 1, your cards are 12H and 7C.  
Player 2, your cards are 3S and 9D.  
Player 1, you win!
```

```
Player 1, your cards are 9S and 11S.  
Player 2, your cards are 13C and 2D.  
Player 2, you win!
```

```
Player 1, your cards are 4C and 7D.  
Player 2, your cards are 7D and 6H.  
Player 1 and Player 2 tie!
```

Game B (optional): Repeated High Card

In this version of the game, the two players in the game play several rounds. (You can ask the users how many rounds they want to play before beginning.)

The first round works as described in Game A. For all subsequent rounds, if the previous round had a winner, then that winner gets 2 random cards in the subsequent round and the loser from the previous round gets only 1 random card. When a tie occurs in a round, then both players in the following round get 2 cards. Whichever of the two players has the highest card wins and ties occur when both players' highest card is the same card. A player gets a point for each game they win and the final winner is the player with the most points. (Of course, a tie can occur and your program should report this case as well.)

Game B: Sample Run

How many rounds will you play?

5

In round 1, Player 1 gets 2 card(s) Player 2 gets 2 card(s).

Player 1, your card(s): 12H 7C

Player 2, your card(s): 3S 9D

Player 1, you win round 1!

In round 2, Player 1 gets 2 card(s) Player 2 gets 1 card(s).

Player 1, your card(s): 3C 8D

Player 2, your card(s): 9H

Player 2, you win round 2!

In round 3, Player 1 gets 1 card(s) Player 2 gets 2 card(s).

Player 1, your card(s): 11H

Player 2, your card(s): 2S 11H

Player 1 and Player 2 tie round 3!

In round 4, Player 1 gets 2 card(s) Player 2 gets 2 card(s).

Player 1, your card(s): 8S 3H

Player 2, your card(s): 10C 11D

Player 2, you win round 4!

In round 5, Player 1 gets 1 card(s) Player 2 gets 2 card(s).

Player 1, your card(s): 6C

Player 2, your card(s): 13D 12S

Player 2, you win round 5!

Player 2 wins by a score of 3-1.