CS56—Midterm Exam 1—Question 1

E01, Q01, W15, Phill Conrad, UC Santa Barbara 02/04/2015

HAND THIS IN WITH YOUR EXAM.
YOU MAY USE THIS FOR SCRATCH WORK, BUT ALL ANSWERS SHOULD BE ON YOUR EXAM PAPER.

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INSTRUCTIONS FOR QUESTION 1

Write the code for the `Card` class, per the instructions below.

An Card object represents a playing card from a standard 52 card deck that has 13 cards in each of four suits. The four suits are:

- Hearts: ♥
- Diamonds: ♦
- Clubs: ♣
- Spades: ♠

The 13 cards in each suit have the names: Ace,2,3,4,5,6,7,8,9,10,Jack,Queen,and King. We will use a private instance variable `rank` to represent the card value as an integer, 1 through 13, with 1 for Ace, 2-10 for the number cards, and 11,12 and 13 for Jack, Queen and King, respectively.

Each card should also have a private instance variable for the suit of type char, with the value H, D, C or S.

You will write a Java class to represent a playing Card object. For full credit, your class should have all of the following. Go over this as a "checklist" when you are finished to make sure you have everything needed.

Note that for **this** exam, you do NOT need to include Javadoc comments. (I may ask you about those on midterm 2).

a. (10 pts) Correct syntax and structure of a Java class.

b. (8 pts) Private instance variables for the data members (attributes).

c. (8 pts) A two-argument constructor that takes arguments for rank and suit.
Example invocation: `Card jackOfHearts = new Card(11,'H');`

d. (8 pts) getter methods called `getSuit` and `getRank`.

e. (8 pts) setter methods called `setSuit` and `setRank`.

f. (8 pts) a correct `toString()` method. See the detailed instructions below for the format of the string returned by toString().

NOTE: You do NOT need to implement an equals() method for this exam. We'll cover that topic on midterm 2.

Instructions for toString method

The toString method should return a string that represents the Card. The string returned should be two characters long with the rank as the first character, and the suit as the second. Ranks 1,10,11,12 and 13 are represented by A,T,J,Q, and K, as shown in the following table. Write code that implements this in a way that avoids duplication (i.e. keep the code "DRY"—don't repeat yourself.) If it is useful, you may write one or more helper methods.

rank	**suit**												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
H	AH	2H	3H	4H	5H	6H	7H	8H	9H	TD	JH	QH	KH
D	AD	2D	3D	4D	5D	6D	7D	8D	9D	TD	JD	QD	KD
C	AC	2C	3C	4C	5C	6C	7C	8C	9C	TD	JC	QC	KC
S	AS	2S	3S	4S	5S	6S	7S	8S	9S	TD	JS	QS	KS

End of Q01 Handout—total points=50