ELEC 2543 Object-Oriented Programming and Data Structures

Programming Exercise 5

Topics: Enumerated Type

Released: Feb 9, 2021 (Tuesday)

Due Date: 9:30am, Feb 23, 2021 (Tuesday)

Overview: In this exercise, you will develop enumerated types/classes for representing playing cards. A card can be described by its suit and rank. We use enumerated types to represent possible suits and possible ranks. Then, define class Card for the playing cards.

Suits and Ranks

As the possible values for suit and rank are known, we can define enumerated types to represent them. Rank.java has been provided. Develop Suit.java, which contains a simple enumerated type to represent suit. The order should be SPADE, HEART, CLUB, and DIAMOND. [You can assume there are only 52 cards in a deck and there is no Joker.]

class Card

Define class Card that represents playing cards as follows:

1. define two instance variables, one for the rank and one for the suit of the card. You cannot define other instance variables
2. define constructor public Card(Rank rank, Suit suit);
3. define the toString() method such that the suit of the card is printed out first and its rank. For example, the ace of spades is “SA”, and the six of diamonds is “D6”.
4. define method public int compareTo(Card c) that returns
   1. -1 if the object calling this method is smaller than c
   2. 0 if the object calling this method is the same as c
   3. 1 if the object calling this method is larger than c

Card *c1* is smaller than *c2* if the rank of *c1* is smaller than *c2*, or if the ranks of *c1* and *c2* are the same, the suit of *c1* is smaller than *c2*.

Order of Suits: Spade > Heart > Club > Diamond

Order of Ranks: A > K > Q > J > 10 > 9 > 8 > 7 > 6 > 5 > 4 > 3 > 2

Testing

Driver program CardDriver.java (and also MyRandom.java) is provided for you to test your program. It first puts a copy of each card in an array of Card. Then, two cards are selected at random [Note: the same card may be selected twice] and are compared.

Sample Output

Below is a sample output of the program.

Two cards are drawn:

c1 = S8 and c2 = CJ

S8 is smaller than CJ

Handin

Submit your Suit.java and Card.java to Moodle before the deadline.