ELEC 2543 Object-Oriented Programming and Data Structures

Exercise 6b

Topics: ArrayList

Due Date: Mar 16, 2017

Overview: In this exercise, you will develop a simple playing card game. A set of cards of playing cards is maintained as an arraylist of Card objects. You should use the Suit.java and Rank.java provided in Lab 6a. You should also develop Card.java as specified in Lab 6a.

The Game

There are two players (P1 and P2). In the beginning, each player is given *k* cards. The cards are drawn from a deck of cards. Therefore, each player would get *k* different cards. In each round, each player removes a card from his hand at random. The player whose card is larger wins this round. The ranking of cards follows Lab 6a. SA is the largest card and D2 is the smallest. D6 is larger than S5.

Class Player

This class represents players. Each player maintains a dynamic array for the cards s/he has. Each player can get some cards and deal some cards. Define the following:

1. Declare an ArrayList of Card to keep the cards the player has.
2. Define the constructor.
3. Define a method public void addCard(Card c) adding Card c to the player’s list of cards. The cards should be maintained in ascending order in the arraylist.
4. Define a method public Card drawCard() that randomly draws a card from the arraylist of cards. The card drawn should be removed from the arraylist and is returned by the method.
5. Define a method public void printHand() that prints the cards the player has in ascending order.

You can define other methods as needed.

Class CardGame

This class defines the game logic. Define the following:

1. Declare appropriate instance variables
2. Define the constructor that accepts *k* as parameter
3. Define a method public void play() that simulates the game.

You can define other methods as needed.

Driver CardGameDriver.java

The driver program has been provided. You do not have to modify it. The parameter *k* is passed to the program by command-line argument.

Sample Output

Below is a sample output of the program when *k* = 4.

Player 1 has cards [C2, S5, H8, H10]

Player 2 has cards [H6, H7, DQ, HA]

Player 1 deals C2

Player 2 deals H6

Player 2 wins in this round!

Player 1 has cards [S5, H8, H10]

Player 2 has cards [H7, DQ, HA]

Player 1 deals H10

Player 2 deals HA

Player 2 wins in this round!

Player 1 has cards [S5, H8]

Player 2 has cards [H7, DQ]

Player 1 deals S5

Player 2 deals DQ

Player 2 wins in this round!

Player 1 has cards [H8]

Player 2 has cards [H7]

Player 1 deals H8

Player 2 deals H7

Player 1 wins in this round!

Handin

Submit your Card.java, CardGame.java, and Player.java to Moodle before the deadline.