Doubly Linked List
(Video Poker)
Advanced Computer Science

Topics: Objects, Classes, Java Components, Doubly Linked List

You are to create a card game application where items of the Item class are stored in a **Doubly Linked List** data structure. You are to use only your own Doubly Linked List Data Structure (DLList) to store the cards. You **cannot use** any other data structure such as ArrayList, LinkedList, etc...

Node<E> Class
This will be a generic node class that is compatible with the use of a Doubly Linked List. Add instance variables and methods appropriate to your Node functions.

DLList<E> Class
This will be a generic class what will manage all the necessary methods and features of a Doubly Linked List of Node<E>. Add instance variables and methods appropriate to the Doubly Linked List functionalities.

- There will be a **deck** object of the DLList<Card> Class to store cards for 52 cards.
- There will be a **player** object of the DLList<Card> Class to store cards received from the deck.

Card Class

- This class will contain information for the name and suit of the cards. The names will be 2,3,4,5,6,7,8,9,10,J,Q,K, and A.
- The suit will be clubs, diamonds, hearts, and spades, and they will be displayed using the corresponding images or drawings.
- The combination of the names and suits will result in 52 unique cards.
- The Card Class will have a drawMe that will draw itself. It will display the name and suit.
- The cards will have the following consecutive order A,2,3,4,5,6,7,8,9,10,J,Q,K, A. Optionally, you can give each card a value to track the order.
- You can add more instance variables and methods as needed.

GUI
Your program will use Java Components for the user to interact with your application.

Runner Class
This class runs your program.

Add more classes as needed.

GamePlay Features

- The player starts with **50 points.** The balance will be displayed at all times.
- 1 point is deducted from the player to start the game.
- The game starts with the deck shuffled.
- The player will receive **5 cards from the top of the deck**.
- The player will now see their 5 randomly selected cards.
- Instruct the player to select up to 5 cards to hold. You can do this by having 5 JButtons, Images as buttons or the user can click on the cards themselves.
- **The cards that are held, will not be replaced.** There will be a button called "Draw" to replace the cards that are not held. The card(s) that are not held by the player will be removed and inserted into the end of the deck. Then, they will be replaced with new cards from the top of the deck.
- The game will then calculate the winnings based on the resulting 5 cards. The player can only win with **one of the following combination** given in the order from highest points first. (It can be helpful to sort the cards in order from least to greatest e.g. 2 to A, and then do the calculation.)
    - Royal Flush (Combination of 10,J,Q,K,A all with the same suit) - **250 points.**
    - Straight Flush (Consecutive 5 cards in order all with the same suit) - **50 points.**
    - Four of Kind (4 cards with the same name) - **25 points.**
    - Full House (3 of the kind and a 2 of a kind) - **9 points.**
    - Flush (All 5 cards with the same suit) - **6 points.**
    - Straight (Consecutive 5 cards in consecutive order) - **4 Points.**
        - A straight will start from A, 2, 3, 4, 5 and goes to 10, J, Q, K, A
        - (Hint: To help determine straights, you may want to sort the cards by value)
    - 3 of a Kind - **3 points.**
    - 2 Pairs - **2 points.**
    - Pair of Jacks or Higher - **1 Point.** This is the break-even as the game cost 1 point and player wins 1 point.
- How many points the player wins will be shown. The balance will be updated with the winnings added.
- There will be sound for when you win. That means anytime you win a point. There will be a **different** sound for when you lose as well.
- Have a button to play again. When pressed, the deck gets its cards back which will be inserted at the end, and a new game starts with a newly shuffled deck. **The game can only repeat when the balance is greater than 0.**

Grading Rubric:
Your lab will be graded using the following criteria.

Completion of Lab as Described	90
Milestone 1 - **Due Friday.** 5 cards are displayed.	10

You will have class time to work on this lab. Any late submission or revision will be given a maximum score of 90.

Due: see Google Classroom. Link