PROGRAMMING ASSIGNMENT 1

UNO (the game)

Introduction

The objective is to complete the methods needed to manage the Linked List used to represent decks of cards for a *simplified version* of the **UNO** game. In this case the user (human) will play against the computer.

Game Instructions

The objective of **UNO** is to be the first player to get rid of all your cards.

A deck with 80 cards, each card containing a number and a color is used. Colors are RED, YELLOW, GREEN, and BLUE, numbers are integers from 0 to 9.

The deck is initially shuffled, 7 cards are given to each player, and one card is placed on a "game" pile (initially it only has only one card).

Players take turns, starting with the human player. On your turn you must match a card from your hand (human deck) to the card on top (front) of the "game" pile either by number or color. If you have such a card, you must click on it to throw it on top of the "game" pile. This card now becomes the card that your opponent will try to match.

EXAMPLE: If the card on the "game" pile is red 7 (7R), you must throw a red card OR a card of any color with a number 7.

If the player does not have a matching card, the player must take a card from the "deck" by clicking on the "deck" button. You must keep taking cards until you get a card that matches. If at some point you have more than 7 cards on your "hand" then you can use the left/right arrows ("<", ">") to see your other cards (you can only see 7 cards at a time).

If the "deck" is almost depleted, the "game" pile will be reshuffled and added to the "deck" so that the game can continue (this is done automatically when the "deck" has 5 cards or less).

The game ends once a player has no cards. The player with no cards wins.

Downloading Instructions

There are two files that you need to download:

- *uno.jar*
  Contains an executable version of the program. If you have Java installed in your

computer, just download the *uno.jar* file to any folder of your computer and double click on it to execute it and play.

- *uno_assignment.jar*
  Contains a "project" that you must import into Eclipse so that you can start working on your programming assignment.
  First download the *uno_assignment.jar* file to your computer.
  In Eclipse select *File -> Import -> JavaEE -> App Client JAR file*.
  Then click on Next and use (*Application Client file*) Browse to find the file that you downloaded.
  In *Application Client Project* write down the name of the new project that you will create in Eclipse. Press Finish

What to do

There are four java files in the project:

- Card.java
- CardList.java
- Play.java
- Gui.java

The only files that you are required to work on are *Card.java* and *CardList.java*.
The *Play.java* class does the actual playing following the instructions of the game, and the *Gui.java* class is just the operation of the user interface of the game. You are welcome to explore and understand those files, and if you know what you are doing you can also modify them to make the game better. If you decide to improve the game by modifying these files, let us know on the comments section when you turn in the assignment on Sakai, you might get some extra credit.

In the *Card.java* and *CardList.java* files, find the places where `DO THIS` or `do this one` appear as a comment: `/*`

Your job is to write the code for those methods, **the description of what each method must do appears as a comment before each one of the methods**. Here is a list of all the methods that you must write

In Card.java:

```
public boolean matches(boolean exact,Card card)
```

In CardList.java:

```
public void traverse()
```

```
private void add(int number,Card.Colors color)
```

```
private void add(Card card)

private int countCards()

public void concatenateWith(CardList list)

public void moveTo(CardList destination)

public void moveTo(int num,CardList destination)

public boolean moveTo(Card x,CardList destination)

public void shuffle(int split)

public Card search(Card x)

public Card getCard(Card card)
```

What to turn in

In Eclipse select *File -> Export -> Java -> JAR file*. Then select the Project that you want to export (the project that you have been working on), on the options below, select *Export Java source files and resources*, and also select *Compress the contents of the JAR file*. After selecting the destination of the JAR file, click on *Finish*.

The file that you just created (above) must be submitted on Sakai. Make sure that your project compiles and works correctly before turning it in. A project that does not compile will receive a grade of 0.