CS: 114 **OPPDA** **Spring, 2023**

Project3 (100 points) **Due 4/2/2023**

Submit your solutions to canvas. For programming assignments do not send the entire project. All that is needed are the files ending in .java. Each class will have to be defined in its own separate .java file. All driver code should be put in one .java file. Please make sure your name is included at the top of each .java file. Make one zip file that includes all the .java files and submit that one zip file to canvas. Do not include the card images.

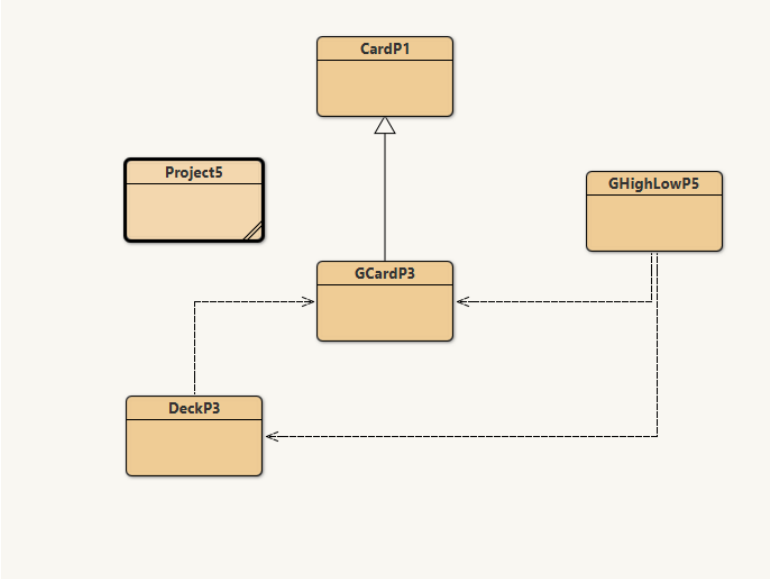
Project Goals

1. Creation of a `jFrame` object (Window Object)
2. Creation of a `jPanel` object in order to place containers in the window
3. Creation of a `jLabel` objects to hold the Card images
4. Extending the `Card` class such that each `Card` has-a Graphics Image
5. Creation of `ImageIcon` objects to hold each card `png` image.
6. Getting reacquainted with inheritance.
    a. `extends`
    b. `super`

For this assignment, please include class diagrams for each class, and the class relationships in one UML document. You don't have to submit a javadoc zip but it should be easy to generate a javadoc for any of your classes.

Problem 1

Use the classes we discussed in lecture8 to create a graphical version of the `HighLow` card game that you created in Project1. The BlueJ class hierarchy might look like this:



You should be able to use the Card class from Project1 without any modifications. You should however extend the Card class from Project1 to create a sub-class called `GCardP3`. The `GCardP3` sub-class will have one data member of type `ImageIcon.` The constructor for `GCardP3` will look like this:

```
public GCardP3(int theValue, Suit theSuit, String imgFileName)
```

The constructor will of course construct the superclass and then it will use the file path to create the `ImageIcon.`

You will have to modify your Deck class from Project1 to generate 52 `GCardP3` objects.

Below is a suggested way to generate the imgFileName `s2` which you can use in the `DeckP3` constructor

where s1 is:
```
String[] s1 = {"SPADES", "HEARTS", "DIAMONDS", "CLUBS"};
```

and where
```
s2 = "cards//" + String.valueOf(value) + s1[s] + ".png";
```

`value` - is the value of the Card, a number from 1 to 13 and,
`s` – is the ordinal value of the Suit of the Card, a number from 0 to 3

Be sure to place the cards.zip file in the project3 folder, and then uzip it such that the folder card is holding all the images. Right click on the cards.zip file and select from the 7-zip menu the choice Extract to "card\"

At this point you should use a previous test (`TestDeckDriver_Lab1`), to test your `DeckP3` class to make sure you can generate and shuffle your deck. Build a little, test a little!!

Once you are confident that your `Deck` class is working the way you want then you can take the next step. Take the `HighLow` code from Project1 and place it in a method called `Play()` in the `GHighLowP3` class. You can create the `GHighLowP3` by utilizing the material presented in lecture8. You can take `GHighLowLe8` and change the name to `GHighLowP3`

Along with the Project3 driver on canvas you should now be able to run you `GHighLowP3` game. Your window will just show the back of the cards for now. Build a little, test a little.

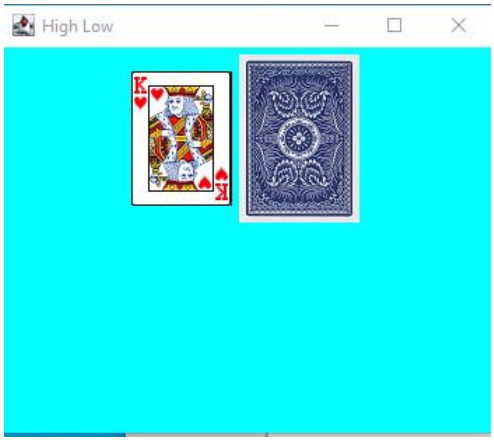
The last modification you will need to make is to strategically insert the following commands in your code where you are displaying the `currentCard`, and the `nextCard.` They are:

```
// Display current card on left
this.iconLabelOne.setIcon(card.getImageIcon() );
```

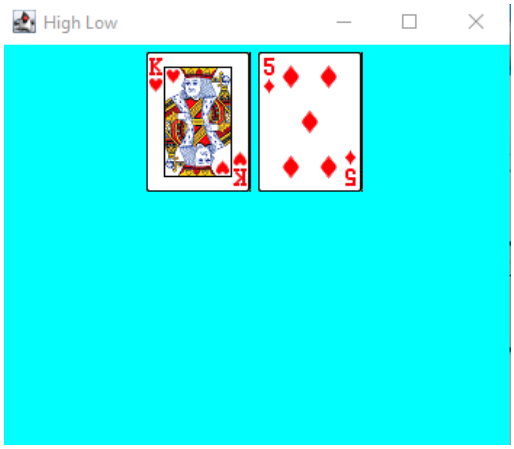
and

```
// Display next card on the right
this.iconLabelTwo.setIcon(card.getImageIcon() );
```

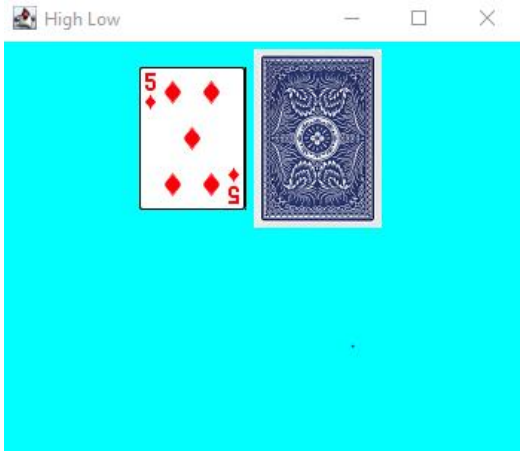
Output from your complete program should look something like this:



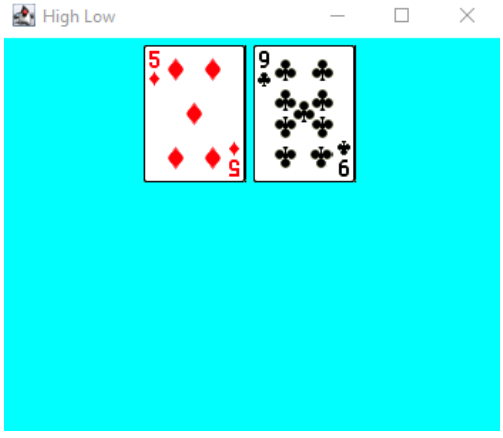

```
The current card is King of Hearts
Will the next card be higher (H) or lower (L)?
L



The next card is 5 of Diamonds
Your prediction was correct.
Hit any key to continue
```



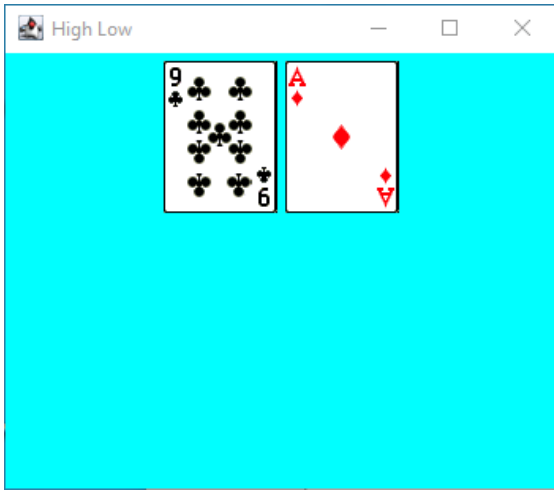

```
c
The current card is 5 of Diamonds
Will the next card be higher (H) or lower (L)?
```



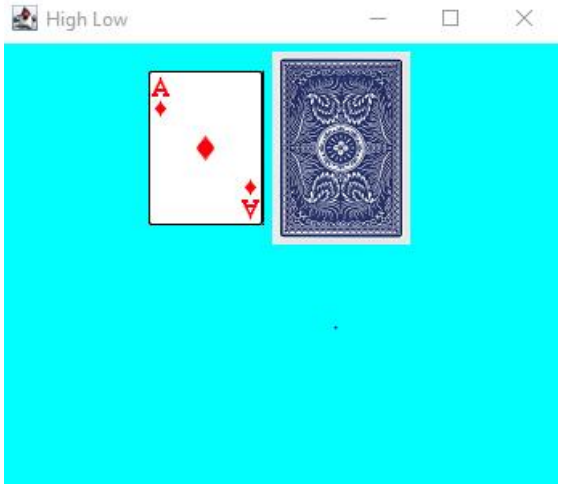

```
H
The next card is 9 of Clubs
Your prediction was correct.
Hit any key to continue
```



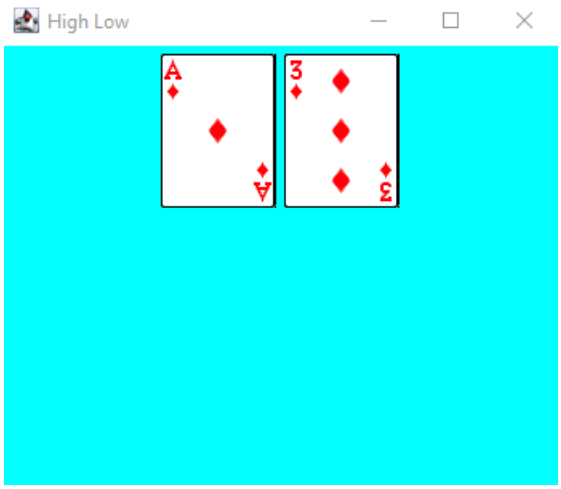
```
c
The current card is 9 of Clubs
Will the next card be higher (H) or lower (L)?
L
The next card is Ace of Diamonds
Your prediction was correct.
Hit any key to continue
```



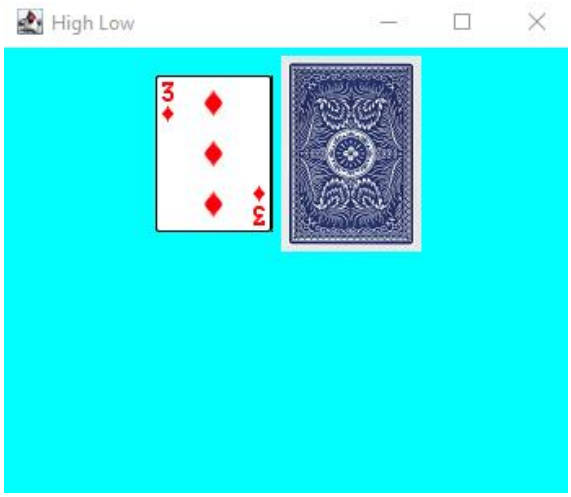

```
c
The current card is Ace of Diamonds
Will the next card be higher (H) or lower (L)?
```



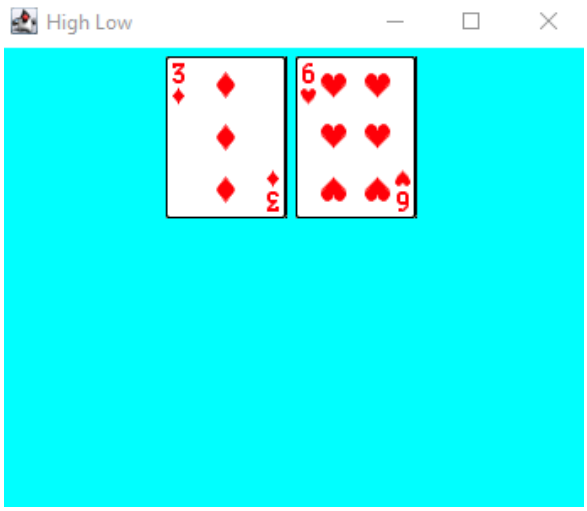

```
H
The next card is 3 of Diamonds
Your prediction was correct.
Hit any key to continue
```



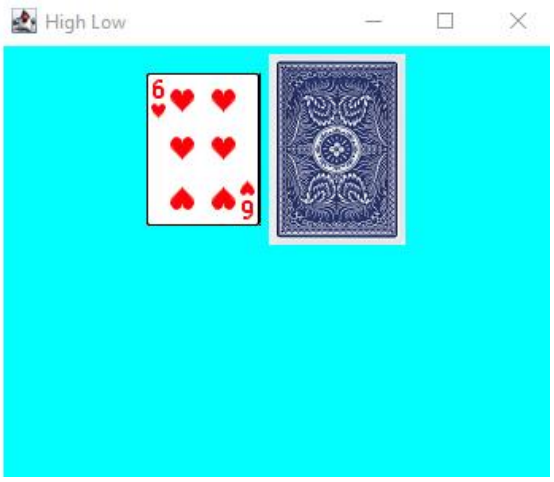

```
c
The current card is 3 of Diamonds
Will the next card be higher (H) or lower (L)?
```



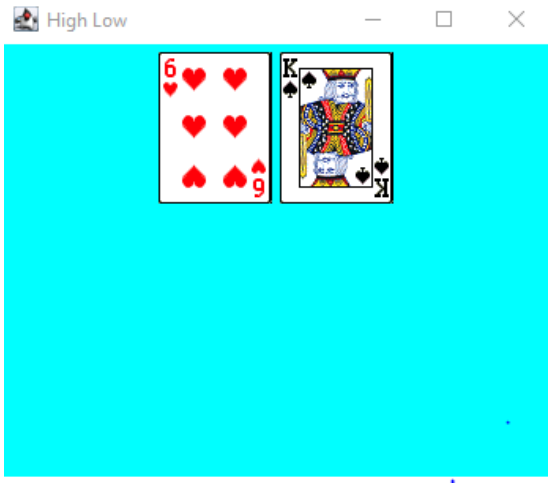

```
c
Please respond with H or L:
H
The next card is 6 of Hearts
Your prediction was correct.
Hit any key to continue
```



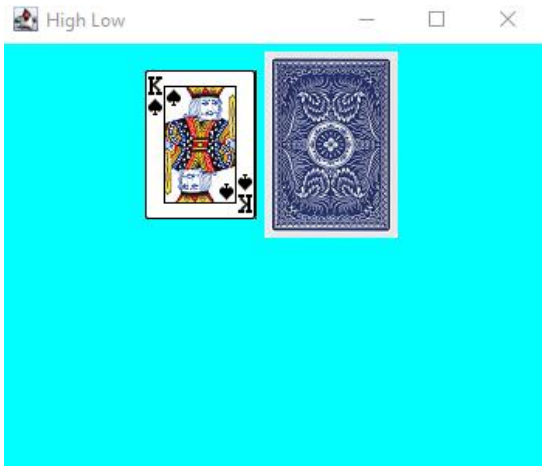

```
c
The current card is 6 of Hearts
Will the next card be higher (H) or lower (L)?
```



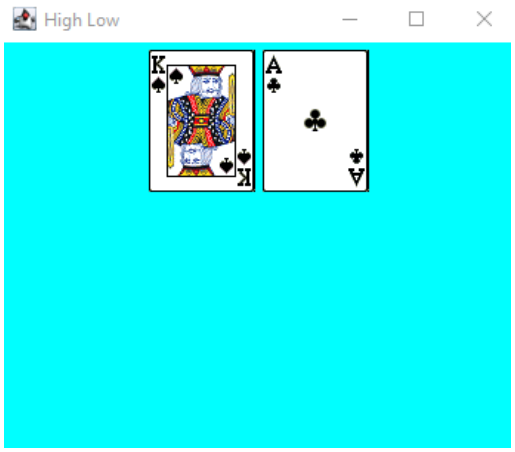

```
H
The next card is King of Spades
Your prediction was correct.
Hit any key to continue
```



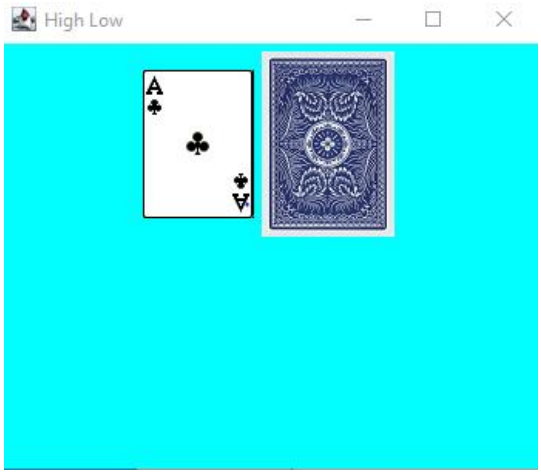

```
c
The current card is King of Spades
Will the next card be higher (H) or lower (L)?
```



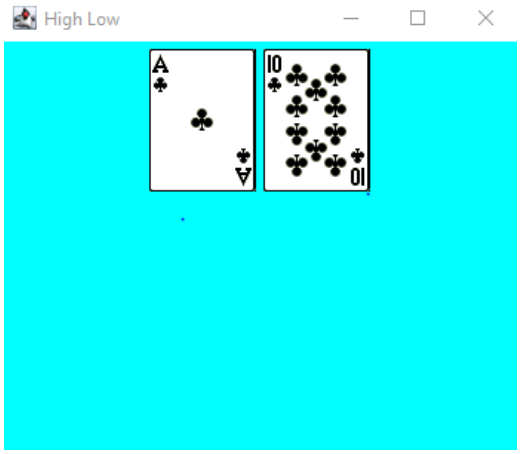

```
L
The next card is Ace of Clubs
Your prediction was correct.
Hit any key to continue
```




```
c
The current card is Ace of Clubs
Will the next card be higher (H) or lower (L)?
```




```
L
The next card is 10 of Clubs
Your prediction was incorrect.
Hit any key to continue
```




```
L
The next card is 10 of Clubs
Your prediction was incorrect.
Hit any key to continue
c

The game is over.
You made 7 correct predictions.

Play again?
N
Average score of 7.0 for 1 rounds played.
```