Project 1 (100 points)   **Due   2/2/2023**

Submit all of your solutions via one zip file to canvas. **There will be no re-submission of work. There will be no exceptions. So, before you submit your work please ensure you have everything the way you want it.**

Problem 1

Get the code from `Ex5` from `ListOfInts.java` that was posted on canvas. In order to get the code in `Ex5` to work properly you will need to create a class called `Person2.java`. We discussed in lecture2 what methods need to be added to `Person1.java` in order to make it function like the `Integer` and `String` classes when they are part of a Java `List`. For Problem1 please submit `Person2.java,` a UML class diagram for `Person2.java`, and a javadoc folder for `Person2.java.`

Problem 2

Modify your `Deck` class from lab1 to use an `ArrayList` or `LinkedList` to store the list of the 52 cards. Also, modify your `Deck Shuffle` method to use the `shuffle` method that is part of the Java `List` interface that we discussed in lecture2. Test your updated `Deck` class with the lab1 driver called `TestDeckDriver_Lab1.java`. Submit you `Deck.java` class to canvas via the one zip file.

Problem 3

Use the `Deck` class you created in Problem2 to create a card game called `HighLow`. Design and implement your `HighLow.java` class. It should use the `Deck` class you created in problem2. Your `HighLow` class should have one public method called `Play` which takes no arguments and has a `void` return type. All the other methods should be private. If for some reason you feel additional classes need to be created in addition to `Card.java`, `Deck.java`, and `HighLow.java` present your reasoning to me. If you get the ok then implement the one or more additional classes that you feel are required.

Submit a class diagram for the following classes: `HighLow.java`, `Deck.java`, and `Card.java`. Show the class relationships in the UML diagram. StarUML can export the diagrams as jpg file. That is the preferred file format for submitting UML diagrams.

A useful expression to get one `char` from the `Scanner` is:

```
Scanner in = new Scanner(System.in);
char ch = in.next().charAt(0); // get a char from Scanner
```

Below is some sample output from the game:

```
The current card is Queen of Spades
Will the next card be higher (H) or lower (L)?
L
The next card is 5 of Spades
Your prediction was correct.
The current card is 5 of Spades
Will the next card be higher (H) or lower (L)?
H
The next card is 8 of Diamonds
Your prediction was correct.
The current card is 8 of Diamonds
Will the next card be higher (H) or lower (L)?
H
The next card is Ace of Clubs
Your prediction was incorrect.

The game is over.
You made 2 correct predictions.

Play again?
y
The current card is 7 of Clubs
Will the next card be higher (H) or lower (L)?
H
The next card is King of Diamonds
Your prediction was correct.
The current card is King of Diamonds
Will the next card be higher (H) or lower (L)?
L
The next card is 9 of Clubs
Your prediction was correct.
The current card is 9 of Clubs
Will the next card be higher (H) or lower (L)?
L
The next card is 3 of Hearts
Your prediction was correct.
The current card is 3 of Hearts
Will the next card be higher (H) or lower (L)?
H
The next card is 6 of Hearts
Your prediction was correct.
The current card is 6 of Hearts
Will the next card be higher (H) or lower (L)?
H
```

```
The next card is 9 of Spades
Your prediction was correct.
The current card is 9 of Spades
Will the next card be higher (H) or lower (L)?
L
The next card is 5 of Hearts
Your prediction was correct.
The current card is 5 of Hearts
Will the next card be higher (H) or lower (L)?
H
The next card is 10 of Diamonds
Your prediction was correct.
The current card is 10 of Diamonds
Will the next card be higher (H) or lower (L)?
L
The next card is 3 of Spades
Your prediction was correct.
The current card is 3 of Spades
Will the next card be higher (H) or lower (L)?
H
The next card is Queen of Diamonds
Your prediction was correct.
The current card is Queen of Diamonds
Will the next card be higher (H) or lower (L)?
L
The next card is 9 of Hearts
Your prediction was correct.
The current card is 9 of Hearts
Will the next card be higher (H) or lower (L)?
L
The next card is 2 of Spades
Your prediction was correct.
The current card is 2 of Spades
Will the next card be higher (H) or lower (L)?
H
The next card is 3 of Clubs
Your prediction was correct.
The current card is 3 of Clubs
Will the next card be higher (H) or lower (L)?
H
The next card is 8 of Spades
Your prediction was correct.
The current card is 8 of Spades
Will the next card be higher (H) or lower (L)?
L
The next card is 2 of Clubs
Your prediction was correct.
```

```
The current card is 2 of Clubs
Will the next card be higher (H) or lower (L)?
H
The next card is King of Clubs
Your prediction was correct.
The current card is King of Clubs
Will the next card be higher (H) or lower (L)?
L
The next card is Queen of Hearts
Your prediction was correct.
The current card is Queen of Hearts
Will the next card be higher (H) or lower (L)?
L
The next card is Queen of Spades
You lose on ties.  Sorry!

The game is over.
You made 16 correct predictions.

Play again?
n
Average score of 9.0 for 2 rounds played.
```