Name:   
Date:

**18.05 Elevens Lab Worksheet**

**Directions**: Make note of your responses to the following questions as you work through the activities and exercise in the lesson.

**Activity 3 Exercise Results**

1. After running the Shuffler.java class, paste the output results of the perfect shuffle and efficient selection shuffle. Ensure the integers are shuffled a minimum of five times per demonstration.

Results of 5 consecutive perfect shuffles:

1: 0 2 1 3

2: 0 1 2 3

3: 0 2 1 3

4: 0 1 2 3

5: 0 2 1 3

Results of 5 consecutive efficient selection shuffles:

1: 3 0 1 2

2: 0 2 1 3

3: 1 3 2 0

4: 1 0 3 2

5: 3 0 2 1

## **Activity 3 Questions:**

1. Suppose that the initial contents of the values array in Shuffler.java are {1, 2, 3, 4}. What sequence of random integers would the efficient selection shuffle change values to contain {4, 3, 2, 1}? Show values of k, the random integer, and the array contents.

|  |  |  |
| --- | --- | --- |
| **k** | **random integer** | **values array** |
| - | - | {1, 2, 3, 4} |
| 3 | 0 | {4, 2, 3, 1} |
| 2 | 1 | {4, 3, 2, 1} |
| 1 | 1 | {4, 3, 2, 1} |

**Activity 4 Exercise Results**

1. For the shuffle method, write the steps for its algorithm for the shuffle method.

public void shuffle()

{

for(int k=cards.size()-1; k>=0; k--){

int rand = (int)(Math.random() \* (k));

Card temp = cards.get(k);

cards.set(k, cards.get(rand));

cards.set(rand, temp);

}

}

1. Run the DeckTester.java file, and paste the results of at least one shuffle of the deck of 52 cards below.

The Shuffled Deck

\*\*\*\* Shuffled Deck Methods \*\*\*\*

toString:

size = 52

Undealt cards:

Jack of Clubs (point value = 11), King of Spades (point value = 13),

8 of Spades (point value = 8), 8 of Diamonds (point value = 8),

5 of Clubs (point value = 5), 5 of Diamonds (point value = 5),

7 of Diamonds (point value = 7), 4 of Spades (point value = 4),

4 of Hearts (point value = 4), Jack of Diamonds (point value = 11),

2 of Diamonds (point value = 2), 6 of Hearts (point value = 6),

3 of Clubs (point value = 3), Queen of Clubs (point value = 12),

9 of Clubs (point value = 9), Ace of Clubs (point value = 1),

Ace of Hearts (point value = 1), 6 of Spades (point value = 6),

10 of Clubs (point value = 10), 9 of Hearts (point value = 9),

6 of Clubs (point value = 6), 2 of Clubs (point value = 2),

9 of Diamonds (point value = 9), 9 of Spades (point value = 9),

2 of Spades (point value = 2), 4 of Diamonds (point value = 4),

4 of Clubs (point value = 4), 6 of Diamonds (point value = 6),

5 of Spades (point value = 5), 5 of Hearts (point value = 5),

Queen of Spades (point value = 12), 2 of Hearts (point value = 2),

3 of Hearts (point value = 3), 10 of Hearts (point value = 10),

Ace of Diamonds (point value = 1), 10 of Spades (point value = 10),

King of Diamonds (point value = 13), 7 of Spades (point value = 7),

Jack of Hearts (point value = 11), 8 of Clubs (point value = 8),

7 of Hearts (point value = 7), 3 of Diamonds (point value = 3),

King of Hearts (point value = 13), Queen of Hearts (point value = 12),

10 of Diamonds (point value = 10), Jack of Spades (point value = 11),

8 of Hearts (point value = 8), Ace of Spades (point value = 1),

3 of Spades (point value = 3), 7 of Clubs (point value = 7),

Queen of Diamonds (point value = 12), King of Clubs (point value = 13)

Dealt cards:

isEmpty: false

size: 52