Programming Fundamentals
Lab #4

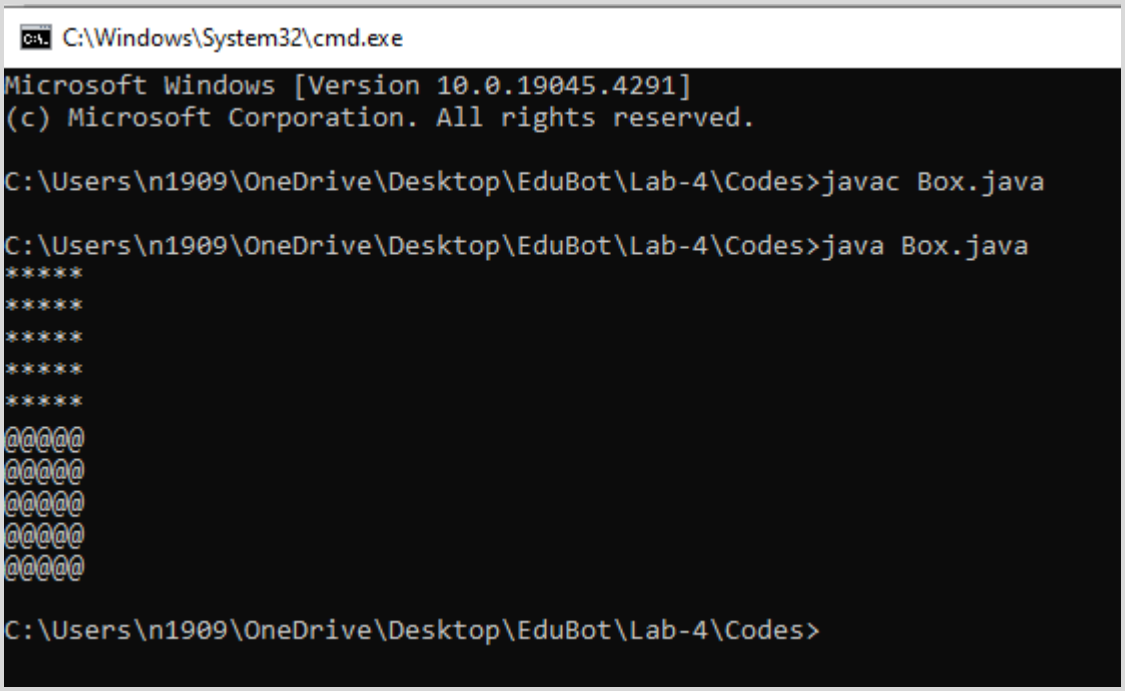
Exercise 1 (Box):

```
public class Box {
    int size = 0;

    public void printBox() {
        printBox('*');
    }

    public void printBox(char c) {
        for (int i = 0; i < size; i++) {
            for (int j = 0; j < size; j++) {
                System.out.print(c);
            }
            System.out.println();
        }
    }

    public static void main(String[] args) {
        Box box = new Box();
        box.size = 5;
        box.printBox();
        box.printBox('@'); // Using the overloaded method with a different
character
    }
}
```



Exercise 2 (Account):

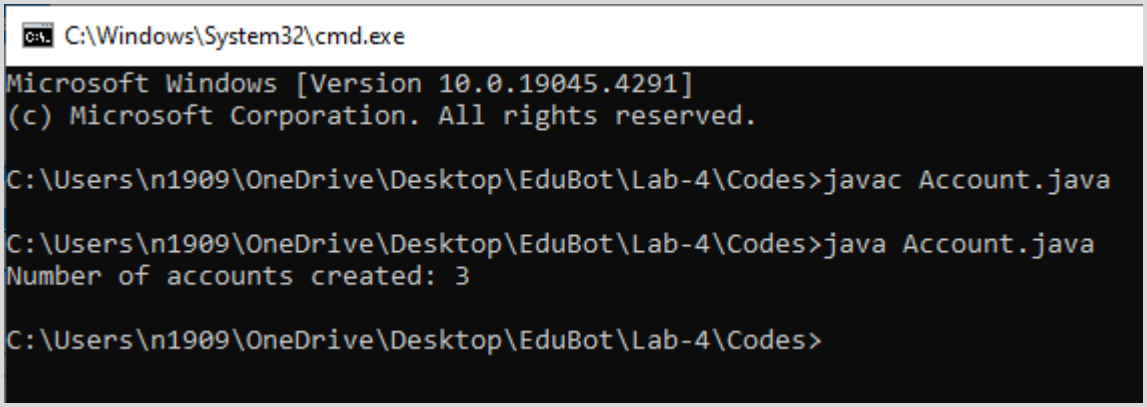
```
public class Account {
    static int numAccounts = 0;

    public Account() {
        numAccounts++;
    }

    public static int getNumAccounts() {
        return numAccounts;
    }

    public static void main(String[] args) {
        Account account1 = new Account();
        Account account2 = new Account();
        Account account3 = new Account();

        System.out.println("Number of accounts created: " +
Account.getNumAccounts());
    }
}
```



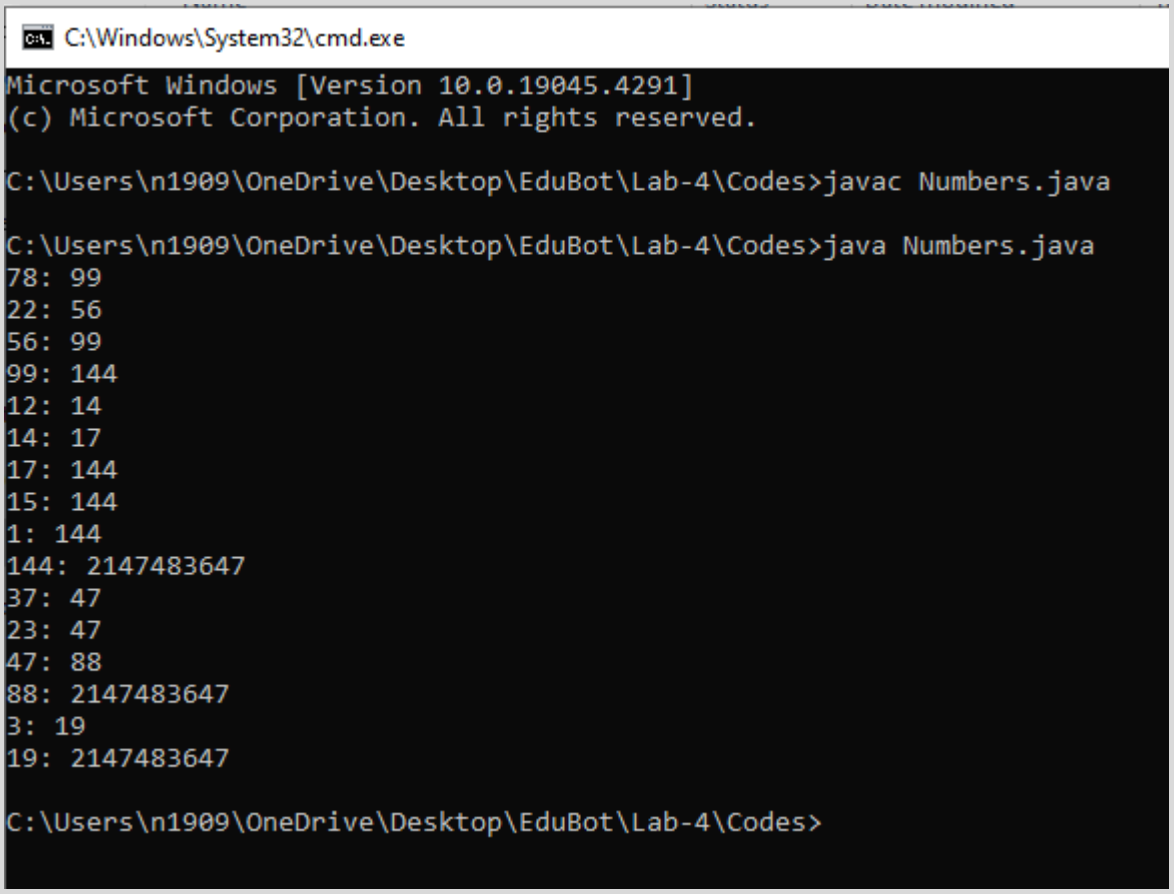
Exercise 3 (Numbers):

```
public class Numbers {

    public static void nextLargest(int[] numbers) {
        for (int i = 0; i < numbers.length; i++) {
            int currentNum = numbers[i];
            int nextLargestNum = Integer.MAX_VALUE;

            for (int j = i + 1; j < numbers.length; j++) {
                if (numbers[j] > currentNum) {
                    nextLargestNum = numbers[j];
                    break;
                }
            }
            System.out.println(currentNum + ": " + (nextLargestNum ==
Integer.MAX_VALUE ? "2147483647" : nextLargestNum));
        }
    }

    public static void main(String[] args) {
        int[] inputArray = {78, 22, 56, 99, 12, 14, 17, 15, 1, 144, 37, 23, 47,
88, 3, 19};
        nextLargest(inputArray);
    }
}
```



Exercise 4 (Card):

```
import java.util.Random;

public class Card {
    private int suit;
    private int faceValue;

    public Card(int suit, int faceValue) {
        this.suit = suit;
        this.faceValue = faceValue;
    }

    public String toString() {
        String[] suits = {"Hearts", "Diamonds", "Clubs", "Spades"};
        String[] faceValues = {"Ace", "2", "3", "4", "5", "6", "7", "8", "9",
"10", "Jack", "Queen", "King"};

        return faceValues[faceValue] + " of " + suits[suit];
    }

    public static void main(String[] args) {
        Random random = new Random();

        for (int i = 0; i < 5; i++) {
            int randomSuit = random.nextInt(4);
            int randomFaceValue = random.nextInt(13);
            Card card = new Card(randomSuit, randomFaceValue);
            System.out.println("Card " + (i + 1) + ": " + card);
        }
    }
}
```