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import java.util.ArrayList;
import java.util.Collections;
import java.util.Random;
import java.util.Scanner;

public class ArrayListExercises {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("triangular number: ");
        int num = scan.nextInt();
        scan.close();
        bulgarianSolitaire(num);
    }

    /**
     * Models/simulates the game of Bulgarian Solitaire.
     *
     * @param numCards the number of cards to start with; n must be a triangular
     *                 number (a triangular
     *                 number is a number that can be written as the sum of the
     *                 first n positive integers).
     */
    public static void bulgarianSolitaire(int numCards) {
        // Check if given number of cards is triangular
        int n = (int) Math.sqrt(2 * numCards);
        if (n * (n + 1) / 2 != numCards) {
            System.out.println(numCards + " is not triangular");
            return;
        }

        Random rand = new Random();
        ArrayList<Integer> cards = new ArrayList<Integer>();
        while (true) {
            int sum = 0;
            for (int i = 0; i < cards.size(); i++) {
                sum += cards.get(i);
                if (cards.get(i) == 0) {
                    cards.remove(i);
                    i--;
                }
            }
            if (sum < numCards) {
                cards.add(rand.nextInt(numCards - sum + 1));
            } else {
                break;
            }
        }
        System.out.println("startconfig: " + cards);

        while (true) {
            int m = 0;
            for (int i = 0; i < cards.size(); i++) {
                cards.set(i, cards.get(i) - 1);
                if (cards.get(i) == 0) {
                    cards.remove(i);
                    i--;
                }
            }
            m++;
            cards.add(m);
            System.out.println(cards);

            Collections.sort(cards);
            int j = 0;
            for (int i = 1; i < cards.size(); i++) {
                if (cards.get(i - 1) + 1 == cards.get(i)) {
                    j++;
                }
            }
            if (j == cards.size() - 1) {
                break;
            }
        }
        System.out.println("finalconfig: " + cards);
    }
}

```