

```
1 import java.util.ArrayList;
2 import java.util.Collections;
3 import java.util.Random;
4
5
6 public class BulgarianSolitaire {
7
8     public static void main(String[] args) {
9         bulgarianSolitaire(45);
10    }
11
12    public static void bulgarianSolitaire(int numCards) {
13        // Check if given number of cards is triangular
14        int n = (int) Math.sqrt(2 * numCards);
15        if (n * (n + 1) / 2 != numCards) {
16            System.out.println(numCards + " is not triangular");
17            return;
18        }
19
20        // Create an ArrayList to represent piles
21        ArrayList < Integer > piles = new ArrayList < > ();
22        Random random = new Random();
23
24        // Randomly divide the cards into piles
25        for (int i = 0; i < n; i++) {
26            int cardsInPile = random.nextInt(numCards) + 1;
27            piles.add(cardsInPile);
28            numCards -= cardsInPile;
29        }
30
31        // Print the initial configuration
32        System.out.println("Initial Configuration: " + piles);
33
34        // Play Bulgarian Solitaire until the final configuration is reached
35        while (!isFinalConfiguration(piles)) {
36            piles = performSolitaireStep(piles);
37            System.out.println("After Solitaire Step: " + piles);
38        }
39
40        System.out.println("\nFinal Configuration Reached!");
41    }
42
43    private static ArrayList < Integer > performSolitaireStep(ArrayList < Integer > piles) {
44        ArrayList < Integer > newPiles = new ArrayList < > ();
45
46        for (int pile: piles) {
47            if (pile > 1) {
48                newPiles.add(pile - 1);
49            }
50        }
51
52        newPiles.add(piles.size());
53
54        return newPiles;
55    }
56}
```

```
56  
57     private static boolean isFinalConfiguration(ArrayList < Integer > piles) {  
58         int expectedSize = 1;  
59  
60         for (int pile: piles) {  
61             if (pile != expectedSize) {  
62                 return false;  
63             }  
64             expectedSize++;  
65         }  
66  
67         return true;  
68     }  
69 }
```

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