

Project 6

Objectives

The objective of this project is to learn how to create a class that simulates a game of Bulgarian Solitaire. Please refer to your book Chapter 7 (Page 367) - Programming project P7.4.

Background

The project contains two classes – `BulgarianSolitaire.java` and `Project6.java`. The `Project6.java` is given to you and it represents a driver module for `BulgarianSolitaire.java` class. You will be writing code for `BulgarianSolitaire.java`. `Project6.java` is given to you and you do not need to modify it.

Objectives

This project provides you with the opportunity to use arrays, loops, random number generators and writing to a text file. Most of what you are asked to do is very similar to what you did in the labs and in-class work, so look back at those labs and class examples for ideas.

Procedure

- Go over `Project6.java` and the sample runs. Read the project description in your book and understand what needs to be done. It will be helpful to play the game with a pencil and paper and trace the sample runs (given to you)
- The class has the following *public interface* consisting of two `public` methods:
 1. The constructor - it sets up the game. It creates a random number of piles with a random number of cards in each pile. Make sure that the number of total cards is exactly 45. This method is tricky and you have to try it multiple times (by adding `println()` statements in your code) to make sure it is correct. You need to keep the number of cards in the piles in an `int` array. Make use of `copyOf` method in the `java.util.Arrays` class to truncate/extend the array. You will be using lot of loops in this project. Your initial number of piles should be in the range 4 to 8 (both inclusive) and the number of cards in the piles should be more or less uniformly distributed (except possibly the last pile)

2. *play* method that simulates the game and prints appropriate messages to the output file `Project6_Output.txt`. This method does the following:

- while the array does not have the configuration (it has to have length 9 and all the integers 1-9 should appear in the array in some order) keep doing the following:
 - From the original array, subtract one from each entry and add a new pile at the end.
 - Remove all the zeroes from the array (truncating the array if needed by using `Arrays.copyOf` method)
 - Print the contents of the array to the output file

Specifications

You probably will have one or more private methods in your code. Remember the rule of thumb in programming is no method should be more than a screen length. A method body should fit within your computer screen. Private methods are sometimes called *utility* methods.

You need to submit your Project6 folder with the subfolder Project6Code with `BulgarianSolitaire.java` and `Project6.java` files.

A log file which must address **what you learned in this project and the difficulties you faced**, time you spent on the project, web sources you referenced etc. **The log file must be a plain text file, be named `DiscussionLog.txt`, and must be at the top level of your repository.**

This is an Individual Assignment - No Partners

As this is a Project (and not a Lab) you will be working on your own, not with a partner. You should not be sharing your code with anyone else, other than the instructor.

You will need to fork your own private Project6 repository on GitLab for this project. The only person who should have any access to your repository is your instructor.

You can ask questions on Piazza about setting up your repository on GitLab, about using Git to send code to the instructor, and general questions about how to write your code. However you should not be posting sections of code and asking others to find your errors.

You can cut down your coding time by a significant percentage by:

- understanding the project specifications mentioned in your book
- tracing the output file to understand how your code should work. Remember that your output will most probably won't match mine. The output files are given to help you understand the game
- figuring out what needs to be done before you start typing the code
- having a clear understanding of how the game of Bulgarian Solitaire is played

Deliverables

Be sure that you have your name and an explanation of what your program does in the Javadoc comments. Be sure that you have indented consistently.

You have to submit a discussion log along with the project. Please refer to DiscussionLogGuidelines repository or Lab2 for more information.

The instructor will pull your Project6 from your GitLab repository to grade it. Make sure:

1. You have pushed all changes to your shared repository. (I can't access local changes on your computer.)
2. You have added your instructor as Master to your shared GitLab repository.

Due Date/Time

Your project deadline will be determined by your instructor

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