

CONTESTANT ID# _____

Time _____

Rank _____

JAVA PROGRAMMING

(45)

REGIONAL 2012

TOTAL POINTS _____ (of 240)

Failure to adhere to any of the following rules will result in disqualification:

- 1. Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.***
- 2. No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.***
- 3. Electronic devices will be monitored according to ACT standards.***

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Workplace Skills Assessment Program competition.

HOT POTATO (THE JOSEPHUS PROBLEM)

The Josephus problem is the following game:

There are n players, numbered 1 to n , sitting in a circle. Starting at player 1, a hot potato is passed from player to adjacent player in sequence. After m passes, the person holding the hot potato is eliminated, the circle closes ranks, and the game continues with the player who was next in sequence after the eliminated player picking up the hot potato. The last remaining player wins. A common assumption is that m is constant, although it may be randomized after each player elimination.

Write a program that simulates a game of "Hot Potato" using the rules above. The program must take argument from the command line for the number of players, the number of passes prior to elimination, and whether the pass cycle is to be randomized.

Example Session (5 players, 3 passes, not randomized)

```
$ java Josephus 5 3
Starting Hot Potato game with 5 players.
Players are eliminated every 3 passes.
WINNER: Player 1.
```

Example Session 2 (7 players, 4 passes, randomized)

```
$ java Josephus 7 4 randomize
Starting Hot Potato game with 7 players.
Random elimination is ENABLED.
WINNER: Player 2
```

Display the following usage guide if inappropriate arguments are provided on the command line:

```
Usage: java Josephus players passes [randomize]
```

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PAGE 3 of 3

All source code must contain your contestant number within a comment block at the top of each file.

Copy all source (.java) and compiled bytecode (.class) files to the provided USB drive. Place the drive within a folder marked with your contestant number.

Your application will be graded on the following criteria:

Criteria	Point Value	Score
Application reads arguments correctly from the command line	30	
Application displays output with a message	30	
Application displays correct output	50	
Application correctly solves the Josephus problem for non-randomized elimination cycles	50	
Application presents a usage guide if inappropriate arguments are provided	50	
Code is well-commented	10	
Code uses descriptive variable and method names	10	
Code copied to and runs from the USB drive	10	
	TOTAL	240