Chapter 23

Concurrency

Card Game WAR

Description

The purpose of this application is to create a multi-threaded application with one thread being a producer of playing cards and another thread being a consumer of playing cards.

The buffer (Chapter 23, Fig. 23.9, pg. 978) will be **based on** the SynchronizedBuffer (Chapter 23, Fig. 23.16, pg. 989) but will store a Card instead of an int.

The producer (Chapter 23, Fig. 23.10, pg. 979) will produce a playing card having a random value of either 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King, or Ace. The producer will put that randomly created card in the buffer. Afterward, the producer will sleep randomly between 1-4 seconds before producing another card.

The consumer (Chapter 23, Fig. 23.11, pg. 980) will get 2 cards from the buffer. Once the consumer has 2 cards, it will use them to simulate the card game WAR. The consumer will compare the cards and print the winner. Afterward, the consumer will sleep randomly between 1-4 seconds before consuming cards and simulating the game again.

Both producer and consumer will run forever. This means the output of the game will never end – the game will play forever.

Watch a demonstration of the application:  
  
<https://youtu.be/MDpKPx0FBcc>

General Requirements

Your application must follow these general requirements

* All classes must be in a package following these rules:
  + The package name is your last name plus the first letter of your first name. For example, if you name is Rita Red, her package is “red.r”
  + Package names are all lowercase letters
* All *class* names must start with an UPPERCASE letter then camel-cased after that.
* All *property* names must start with a lowercase letter then came-cased after that.
* All *method* names must start with a lowercase letter then came-cased after that.
* Output must match the examples. Watch out for spaces and punctuation.

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***NOTE***: If the code does not compile, it’s an automatic 0!

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| --- | --- |
| The package name is your last name plus the first letter of your first name. For example, if you name is Rita Red, her package is “red.r” | 5 |
| Print welcome message | 5 |
| Create a buffer | 5 |
| Buffer can only hold 1 card at a time | 5 |
| Start producer running | 5 |
| Start consumer running | 5 |
| Producer randomly creates a card and puts it in the buffer. | 5 |
| Producer randomly sleeps 1-4 seconds | 5 |
| Consumer reads 2 cards from buffer | 5 |
| Consumer plays the WAR game and shows the results. | 5 |
| Consumer randomly sleeps 1-4 seconds | 5 |
| Producer and consumer loop forever | 5 |
| **Total:** | **60** |