Introduction Document for Week7 DQ1

This project contains 3 public classes (Deitel and Deitel, 2013)

1. SimpleArray
   1. This class manages a character “array to be shared by multiple threads with synchronization.” (Deitel and Deitel, 2013)
   2. Contains public methods:
      1. add(char value)
         1. Used to “add a value to the shared array” (Deitel and Deitel, 2013)
         2. Is synchronized, meaning that other threads invoking it must wait for the first thread to be done with it (Oracle, 2013)
         3. Argument passed in is a character, which is added to the array.
      2. toString()
         1. Returns contents of the array.
   3. Contains instance variables:
      1. Array, which stores values of type char.
      2. writeIndex, which is of type int, and is the index of the next element of the array to be written to.
      3. generator, which is of type Random, and is used to generate the number of milliseconds to sleep.
2. ArrayWriter
   1. Implements Runnable
   2. Used to create an instance of the SimpleArray class.
   3. Adds characters “to an array shared with other Runnables” (Deitel and Deitel, 2013)
   4. Contains public method run()
      1. Uses a for loop:
         1. Counter is of datatype character
         2. Invokes add() method of SimpleArray, and adds the counter, which is of type character to the array.
3. SharedArrayTest
   1. This is the driver class for the project.
   2. Used to create an instance of the SimpleArray class.
   3. “Executes two Runnables to add elements to a shared SimpleArray.” (Deitel and Deitel, 2013)

Changes made from the original Deitel examples:

1. SimpleArray class
   1. Changed line 9 from “private final int[] array” to “private final char[] array”, which changes the array to store values of data type character instead of integer.
   2. Changed line 16 from “int” to “char”, which changes the array from int to char.
2. ArrayWriter class
   1. Changed line 8 from “private final int startValue” to “private final char startValue”, which changes the startValue to data type char.
   2. Changed line 10 from int to char, which changes the arguments in the constructor’s method signature to accept char instead of int.
   3. Changed line 18. The counter in the for loop was changed to datatype of char.
3. SharedArrayText
   1. Lines 15 and 16, which create instances of ArrayWriter, had the first value changed.
      1. Integers 1 and 11 were changed to characters ‘a’ and ‘k’, to conform with the constructor for ArrayWriter.

References:

Deitel, P. & Deitel H. (2013) *Code Examples for Individual Download* [Online]. Available from: <http://media.pearsoncmg.com/ph/esm/deitel/java_htp9e/code_examples/code_examples.html> (Accessed: 17 August 2013)

Oracle (2013) *Synchronized Methods* [Online]. Available from: <http://docs.oracle.com/javase/tutorial/essential/concurrency/syncmeth.html> (Accessed: 17 August 2013)