Implementing and Using a Stack and a Queue

A palindrome is a string that reads the same both forwards and backwards, excluding spaces, punctuation and capitalization.

"Able was I ere I saw Elba"
"A man, a plan, a canal, Panama"

You will use a stack and queue to determine if a string is a palindrome. You are not to use the methods in the String class and StringBuilder class that do this for you (reverse( )). You can use the equals( ) method from the String class and the methods of the Character( ) class. The reason you cannot use the built-in classes that reverse a String is because this is a course in data structures in computer science and not a course on how to use built-in methods.

You will need the code for the LinkedStack and the CirculareQueue provided on Moodle. You will also need the interface files for the StackADT and the QueueADT and the code for the EmptyCollectionException. You must implement the Stact using the LinearNode and the Queue using an array. Be sure you implement the circular queue. Most of this code is written in the text and I provided a link to the textbook code.

Then write a driver class that will accept input from the keyboard and state whether the string is a palindrome. The user may continue to enter a string for testing until the user enters a q (or Q) to quit. The input string may have punctuation and capitalization, so your driver should handle this possibility.

Use only a stack and a queue in conjunction. Do not use String class methods such are reverse( ) or an array outside of the queue class or stack class.

Your submission will be graded based on whether it produces correct output, uses the stack and the queue correctly, has readable code that is fully documented.

0 points earned if the code does not compile with all the needed files specified above.
0 points earned if stack and queue not used
0 points earned if reverse( ) method used
-10 if program does not allow user to enter a string more than one time
-15 if program does not take care of punctuation and capitalization by ignoring it
-10 if no javadoc documentation
-15 if no documentation whatsoever

Zip your files and submit to Moodle before Sunday, June 5, 11:55 pm.