CS 265 Closed Lab 10 Stack Class Implemented with an ArrayList

Directions

Implement the Stack Class with an ArrayList instead of an array, including the following functions:

- empty
- push
- peek
- pop
- overrided toString( ) function which returns all of the stack's contents

Things to note:

- You no longer need a size.
- You no longer need to define a constant DEFAULT_CAPACITY. Since ArrayLists grow dynamically.
- Whenever possible, use ArrayList functions instead of the [ ] (index operator) to implement your stack functions.

Then write a driver program to do palindrome check. A string is said to be a *palindrome* if it does not change when the order of characters in the string is reversed. For example, MADAM, 45811854, and ABLE WAS I ERE I SAW ELBA are palindromes. In your driver program, you are required to use the Stack class that you create in this lab to do the string processing. Your program need to be able to read our provided text file, find which line is palindrome and which line is not, and output all of palindromes line by line to a new file. Submit your work for credit.

Hint: You may consider to use a string(initialized as empty) and your Stack class in your program that reads a line of sentence from the file, one character at a time, pushing only each letter character/number character(not special sign, etc.) onto a stack as it is read and simultaneously append it to the string. Then empty out the stack and put all of the letters/numbers to a second string, which is used to hold the reversed string. Next compare the first string and the second string to see if both are the same.