Homework Assignments 2
Due date: February 13, 11:55PM EST.

You do not have to write the actual programs for any of the problems, but you may want to experiment with some code to verify your own answers.

Problem 1

There is nothing to submit for this, just complete the online exercises after you sign in with the account you created for this class. Make sure you read through this section of the OpenDSA e-book. The ADT specified there and used in the exercises is different than the one we specified in class.
If you get to the point where the score is displayed as: "Current score: 3 out of 3", you completed enough of the exercises. You can keep going for extra practice.

Problem 2

Given the queue and stack ADTs defined in class, write a method

    boolean isPalindrome(String text)

that determines if the string passed to it is a palindrome. Your method should make use of both, the stack and the queue. Assume that you have the ADT for CharStack and CharQueue both of which store elements of type Character.
WARNING: It will not be the most efficient implementation of the test for palindromes - that is fine.

Problem 3

Given the CharStack ADT that we discussed in class:

Informal Specification
The CharStack contains a (possibly empty) collection of objects of type Character. The stack supports the following operations:

insert / push This operation adds a Character object, given as a parameter, to the top of the stack of characters.
remove / pop  This operation removes and returns a Character object from the top of the stack of characters.

peak  This operation returns a Character object from the top of the stack of characters.

toString  This operation produces a meaningful String representation of the stack.

```java
public interface CharStack {
    public void push ( Character item );
    public Character pop ( ) ;
    public Character peak ( ) ;
    public String toString ( ) ;
}
```

Show the content of the, initially empty, stack of Character objects after each of the following operations. If any of the operations below is invalid or would cause program to crash, state it and explain what is wrong with it. Assume that stack is a reference of type CharStack.

```
stack.push('c');
stack.push( new Character('s') );
stack.pop();
char p = 's';
stack.push( p );
stack.push( new Character('1') );
stack.peak();
stack.pop();
stack.push('02');
stack.peak();
```

**How and what to submit**

You can use the template provided at https://docs.google.com/document/d/1Kx9TkAp8n_rxOTyy4BHLL6CMadA0BdbBfOTag7xwbX4/edit?usp=sharing to complete your solution.

The completed solutions should be submitted as PDF documents to NYU Classes.