**CSC 331 Assignment 2**

1. A *palindrome* is a string of characters (a word, phrase, or sentence) that is the same regardless of whether you read it forward or backward—assuming that you ignore spaces, punctuation, and case. For example, *Race car* is a palindrome. So is *A man, a plan, a canal: Panama*. Write a program that **use a stack** to test whether a string is a palindrome.
2. Suppose that you read a binary string—that is, a string of 0s and 1s—one character at a time. Write a program that **use a stack** but no arithmetic to see whether the number of 0s is equal to the number of 1s. When these counts are not equal, show which character—0 or 1—occurs most frequently and by how much its count exceeds the other’s.
3. The ADT randomized queue is like a queue, but the removal and retrieval operations involve an entry chosen at random instead of the entry at the beginning of the queue. These operations should return null if they encounter an empty randomized queue.
4. Write a C++ header file that specifies the methods for a randomized queue. Name the retrieval operation get instead of peekFront.
5. Define a class of randomized queues, named RandomizedQueue, that implements the header file you created in Part a.