Homework 2: Lists

1. List class can be implemented either as ArrayList or LinkedList. State the advantages and disadvantages of each implementation with respect to time performance (in Big Oh) of operations `find(x)`, `get(idx)`, `remove(idx)` and `add(idx)`. (8 points)

2. Consider merging two sorted lists into a single sorted list. The order of the elements in these lists is from smaller to larger, and there is no duplicate in each list. (10 points)

   1.1. What implementation (ArrayList or LinkedList) you would choose for the lists? Justify your choice.

   1.2. Write in pseudo code the function merge(L1, L2) in your chosen implementation.

   1.3. What is the time performance of your code? Your answer should be given in Big-Oh of |L1| and |L2|.

3. Write a pseudo code to determine whether a sequence of 0's and 1's contains the same number of 0's and 1's. The only data structure to use is the stack and the only stack operations are `stackEmpty`, `top`, `push`, `pop`. In particular, you are NOT allowed to count the 0's and 1's when reading them from the input. (7 points)