CSC 228 Data Structures and Algorithms, Spring 2019
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Quiz 5: Intersection of Two Linked Lists using a Hashtable

Due: March 22nd, 11.59 PM

You are given the code for finding the union of two linked lists using a hashtable. Modify this code to determine the intersection (a new list) of two linked lists whose values are randomly generated. If an element appears k times ($k \geq 1$) in both the linked lists, then the element should appear k times in the intersection list too.

For example, if the two linked lists that get randomly generated in your program are as follows:

2 --> 1 --> 9 --> 4 --> 6 --> 1 --> 5 --> 2 --> 2 --> 4

9 --> 6 --> 4 --> 9 --> 2 --> 9 --> 2 --> 2 --> 4 --> 2

then, the intersection list is:

9 --> 6 --> 4 --> 2 --> 2 -->4 --> 2

Note that element '2' occurs 'three' times in the first list and 'four' times in the second list; so, it is included 'three' times in the intersection list. Element '9' occurs 'one' time in the first list and 'three' times in the second list; so, it is included 'one' time in the intersection list. Element '1' occurs 'two' times in the first list but does not appear in the second list even once; so, element '1' is not included in the intersection list.

Testing:
Test your code by generating two linked lists of '10' elements each, in the range of 1...10; print the two linked lists as well as print the intersection list.

Submission (through Canvas):
(1) Submit your entire C++ code.
(2) Submit a word document that contains a screenshot for the testing condition mentioned above as well as analyzes the theoretical time complexity and space complexity of your algorithm to determine the intersection of two linked lists.