Assignment 04

Submit a text file, Java, Python, C or C++ source file or .ipynb notebook file.

For all questions, you can define your own Node, LinkedList, DoublyLinkedList and Tree classes or use the code presented in class. I would advise using the aformentioned classes as the built-in equivalents found in your language of choice may make your code unnecessarily complicated.

However, you may use built-in classes of the structures we have previously discussed (arrays, stacks, queues, deques, hash tables, etc...)

(25 points each)

1. Write a function to reverse the elements in a doubly linked list. Do not simply print it out. It must have the references correctly set in reversed order.

Also, write a print method – this should help with debugging.

2. Write a function that takes two linked list and outputs a union of these two linked lists. Make it as efficient as possible. You can assume that each list consists of unique numbers and are not necessarily sorted. Also, the order of the output is not significant.

For example:

[2, 10, 5, 3, 4] and [4, 7, 8, 3, 11] has a union of [2, 10, 3, 4, 5, 7, 8, 11]

3. Write the following binary search tree functions to:

- Return the minimum value
- Return the maximum value
- Return the sum of all values

4. Write a function that accepts a binary tree and verifies whether it fulfills binary search tree conditions.