COP3530

Programming Assignment #1

Problem 1: Delete a Sequence

In this assignment, you will be given a set of N numbers that you will use to create **your own implementation** of a linked list. You will then be given M sets of beginning and end values, a and b, and a step size S. Using these values:

1) Start from the beginning of your list
2) Move through your list until you reach the first node with the value of a
3) Skip S-1 nodes
4) delete the node that you have landed on and continue to the following node in the list
5) Repeat steps 3 and 4 until the next node with value b is either skipped or deleted
6) After b is encountered the remaining nodes will make up your list

ex. List → (0, 5, 8, 7, 1, 2)

DeleteInput → (5, 1, 2)

Result → (0, 5, 7, 2)

Notice both the start and end values are inclusive and are a part of the sequence (ie. The sequence in the example above is interpreted as [5,1]). So the above example finds 5 in the list, skips one node because S = 2, and deletes 8, then moves to 7, skips one node again and deletes 1. Since 1 is b, the end of the sequence, the deletion is complete.

In the case of repeated values, the sequence will start from the first occurrence of a from the beginning of the list and end at the first occurrence of b after the location of a.

ex.

List -> (1, 5, **4**, **4**, **6**, **5**, 5)

DeleteInput -> (4, 5, 1)

Result -> (1, 5, 5)

If either a or b is not present in the list, the deletion should be ignored and the list should remain unchanged. This includes if a = b and only one occurrence of the value is present.

ex.

List -> (2, 4, 7, 3, 9)

DeleteInput -> (4, 4, 1)

Result -> (2, 4, 7, 3, 9)

Each deletion should run in **O(N)** time, so the entire process should run in **O(M*N)** time.

INPUT:

On the first line, you will read the quantity of numbers in the list, N. The following N lines will contain the numbers for the list construction in the order that the list should be created.

The following line will contain M, the number of sequences to be deleted. The following 3*M lines will contain a start value followed by an end value of the sequence in the list to be deleted, followed by the step size to be used for deletion.

OUTPUT:

Your code should print the remaining numbers after the sequence deletion, in the order of the original list, with each number followed by a space.

Sample:

Input:

8
1
8
7
3
4
23
5

7
2
7
5
2
5
8
1

Output:

7 4

NOTES:

- Sequences may run through end of list (ex. 1,6,8,4,5 5,1,1 -> 6,8,4)
- Make sure your code follows the input and output format, as described above. Don't print any prompts, e.g. “Please enter a number:”.
- **If you have any questions, use the discussion section.**