COMP2611: Tutorial #2

Sample code is provided on the course Github page to act as starter code for this lab.
The purpose of this tutorial session is to help familiarize you with Python.

1) Using sample code provided, implement a doubly linked list in Python
2) Implement a method on the above implemented doubly linked list that facilitates insertion at the end of the list
3) Implement the __str__ magic method that returns a string representation of the contents of the doubly link list. If the list is empty, the method should return a string 'NIL'. If the list is not empty, it should print each element out with a bidirectional arrow separating them. The last element should have a single arrow pointing out to 'NIL'. The below figure exemplifies the required specification:

```
3 <--> 34 <--> 0 <--> 76 -->  NIL
```

   You should assume that the data contained within the doubly linked list is of a type which has __str__ defined.

4) Write a function to_list that converts the doubly linked list into a Python list (array)
5) Write a function from_doubly_linked_list that converts a Python list (array) to a doubly linked list
6) A record for a book comprises of its ISBN, Title, and Author List. Write a Python class that can contain this data. Name this class Book. Implement the __str__ magic method for your Book class should output the title, authors, and ISBN separated by a backslash.
7) Books are often lexicographically (alphabetically) ordered by ISBN. Implement the __eq__, __neq__, __lt__, __lte__, __gt__, and __gte__ magic methods on your Book class.
8) Consider the text file books.txt. This file follows the CSV (Comma-Separated Value) file specification where each value in the file is separated by a comma. Write code that reads in this file, creates a Book object for each line, and stores each object in a Python list.
9) Read the documentation for Python's sorted function(https://docs.python.org/3.6/howto/sorting.html). Using the key parameter along with a lambda expression, use sorted to sort your list of Book objects.
10) Using a list comprehension (https://www.pythonforbeginners.com/basics/list-comprehensions-in-python) and the join method (https://www.geeksforgeeks.org/join-function-python/#targetText=join()%20function%20in%20Python,of%20iterable%20will%20be%20stored.), create a string with all of your Books sorted by ISBN and print it.