



DATA STRUCTURES AND ALGORITHMS
ENGR-UH 3510

LAB 2

Basic Data Structures

Using a Stack/Queue

1 Assignment

The owner of a small bookstore needs a software engineer in order to implement an inventory for the day to day operations. After a short meeting with the bookstore owner, we noted down the initial requirements. The owner needs to be able to perform the following:

- Retrieve how many books are available for sale, given a specific ISBN.
- When a book is sold, print out the ISBN and serial number of the book in order for the owner to write it on the receipt and at the same time remove the book from the inventory.
- When the bookstore is replenished with additional copies, be able to add these copies to the inventory.

Keep in mind that each book has an ISBN and a serial number. This means that a specific book has the same ISBN but different serial number per each copy.

1.1 Milestone 1 - LIFO

Implement the above functionality by providing a simple menu for the owner in order to print/add/remove books from the list. The version in milestone 1 can be implemented using the original stack (LIFO). The resulting program will run as a pilot for the final version so there is no need to support multiple ISBNs.

1.2 Milestone 2 - FIFO

After a while of using the first version of your program the owner decides that it would be better if he could sell the oldest book available in the bookstore instead of the one that just came from the producer.

Conceptually the program should work as shown in the next figure. Keep in mind that modifications need to be done to the prelab implementation in order to support the dequeuing which now is not happening at the top of the list (i.e., queue), but at the tail.

