Practice Exercise #31: Simple Exercise on Stack

http://www.comp.nus.edu.sg/~cs1020/4_misc/practice.html

Objectives:

1. Implementing a stack using Linked List
2. Using stack operations

Task statement:

Write a program **StackExercise.java** to read inputs that indicate the "Add" or "Query" operation. The program is to create a stack that holds integer values.

The "Add" operation:

- The word "Add" is followed by a list of integers.
- For example, Add 8 12 to add the values 8 and 12 into the stack, in that order (i.e. 8 is pushed onto the stack first, followed by 12.)
- Your program displays the items in the stack after each "Add" operation.

The "Query" operation:

- The word "Query" is followed by a list of integers.
- For example, Query 3 6. Your program is to check if it is possible to retrieve the values 3 and 6 (in that order) by popping values from the stack. Suppose the stack contains the following values (first value, 6, at top of stack):

  6, 3, 10, 2, 6, 8, 3

  This will require the program to perform 5 pops to meet the query. (The first pop does not satisfy the first query value of 3, the second pop satisfies the first query value and the fifth pop satisfies the second query value.)
- Your program is to indicate whether the query is met, and display the stack.

Your stack uses the **StackLL** class given in lecture, which in turn uses the **BasicLinkedList** class. The programs for these two classes, and the skeleton program for **StackExercise.java**, are given. Study the programs. (Note that the **print()** method in **BasicLinkedList.java** shown in lecture has been replaced with **toString()** method.)

You are to submit **StackExercise.java**.

Sample input:

```
Add 10 5
Add 7 2 12
Query 2 5
Add 11 20 18 4 7
Query 4 18
Add 3 8 9
Query 20 3
Add 17 6 15
Query 15
```

Sample output:

```
Items added: [5, 10]
Items added: [12, 2, 7, 5, 10]
Query met: [10]
Items added: [7, 4, 18, 20, 11, 10]
Query met: [20, 11, 10]
Items added: [9, 8, 3, 20, 11, 10]
Query not met: []
Items added: [15, 6, 17]
Query met: [6, 17]
```