CS2300 Assignment 3 (50 points)

Due Date: 10/14 (11:59pm)

Description: In this assignment, you are going to write a Java program to implement a doubly linked list.

Requirement: For the basic linked list operation, you need to implement

- InsertFront
- InsertEnd
- InsertInterior
- DeleteNode
- Traverse and Print out the content

In addition, you need to implement two additional functions

- Duplicate – must duplicate it in a new memory space
- Reverse – reverse the order of the duplicated list

Expected Results may look like the following

```
Original List
A  (43556938)  D  (3d04a311)  C  (7a46a697)  E  (5f205aa)  F  (6d86b085)

Duplicated List
A  (75828a0f)  D  (3abfe836)  C  (2ff5659e)  E  (77afea7d)  F  (161cd475)

Reserved List
F  (161cd475)  E  (77afea7d)  C  (2ff5659e)  D  (3abfe836)  A  (75828a0f)

Original List
A  (43556938)  D  (3d04a311)  C  (7a46a697)  E  (5f205aa)  F  (6d86b085)
```

Grading:
Submit your source files along with a readme indicating how to compile your files via blackboard.

Successfully compile and link (10 points)
Correctly create the list and traverse after insertion and deletion (10 points)
Correctly duplicate the list (10 points)
Correctly reverse the list (20 points)

**** You may not use `java.util.LinkedList` ****

Bonus (10 points)

Copy Constructor
Another way to duplicate a list is through a copy constructor. For example, if we want to copy a list from a second node, we may

```
DLLNode<String> newHead = new DLLNode(head.getNext());
System.out.println("Copy Constructor");
Traverse(newHead);
```

```
Original List
A  (43556938)  D  (2cfb4a64)  C  (5474c6c)  E  (4b6995df)  F  (2fc14f68)
Copy Constructor
D  (233c0b17)  C  (63d4e2ba)  E  (7bb11784)  F  (33a10788)
```

You will receive additional 10 bonus points if you implement the copy constructor using deep copy. **** You may not use any Cloneable interface ****