Homework 9

All the following assignments are selected from Gaddis edition 7. The purpose is that you practice with **linked lists**. First do the reading assignment; Section 17.1-18-7 (pages 1023-1060). Run your code, submit the output and code too. Submit code in a separate, compliable file, do NOT include it in your pdf or text file.

1. Programming challenges 17.1, Simple Linked List Class, page 1068 [1 point1].
2. Programming challenges 17.2, List Copy Constructor, page 1068 [1 point1].
3. Programming challenges 17.3, List Print, page 1068 [1 point1].
4. Programming challenges 17.4, Recursive Member Check, page 1069 [1 point1].

1. Simple Linked List Class

Using an appropriate definition of `ListNode`, design a simple linked list class with only two member functions and a default constructor:

```
void add(double x);
boolean isMember(double x);
LinkedList( );
```

The add function adds a new node containing `x` to the front (head) of the list, while the `isMember` function tests to see if the list contains a node with the value `x`. Test your linked list class by adding various numbers to the list and then testing for membership.

2. List Copy Constructor

Modify your list class of Programming Challenge 1 to add a copy constructor. Test your class by making a copy of a list and then testing membership on the copy.

3. List Print

Modify the list class you created in the previous programming challenges to add a `print` member function. Test the class by starting with an empty list, adding some elements, and then printing the resulting list out.

4. Recursive Member Check

Modify the list class you created in the previous programming challenges to use a recursive method to check for list membership. Test your class.