Data Structures (Spring 2020)
Lab #5: Linked lists

Task-1 Singly Linked List

Create a Singly Linked List class called "MyLinkedList" which can be used to store elements of type "strings".

MyLinkedList class should contains at least following attributes, constructors and methods:

```
Node* head;                          // pointer to the head of list

MyLinkedList ();                     // empty list constructor
~MyLinkedList ();                    // destructor to clean up all nodes
bool empty() const;                  // is list empty?
const string& front() const;               // get front element
void addFront(const string& e);            // add to front of list
void removeFront();                  // remove front item list
void displayAll();                   // Display values of all elements
```

Node class should contain at least following attributes:

```
string elem; //data element (type string in this case)
Node* next;  //Link (pointer) to the next Node
```

Write a main function to validate the functionalities of MyLinkedList class.

Task-2 Doubly Linked List

Convert your Singly Linked List into a Doubly Linked List By adding following features in it:

```
A Pointer that points the tail of the LinkedList
addBack() method to add an element at the back of the LinkedList
removeBack() method to remove the last element from the LinkedList
reverseList() method to reverse the Linked List
addBefore()    method to add an element to the linked list before some specific
               element
```

You also need to add an additional pointer in Node class that points to the previous element of the list

Task-3 List of pointers to objects

In the last task of lab3 you were asked to store pointers to objects of type CTime in a dynamic array. Think about adapting the above simply linked list so that it can be used as a container to store pointers to objects of type CTime (the elem attribute in each node of the list is a pointer to a CTime object). Write the source code, fill the list, then traverse it to display the CTime objects.
