Lab 09 - Nodes & Maps Problems

Direction: Submit typed work in the Labs directory of your github repositor or dropbox, or upload to the google classroom assignment. Each part will have a template file provided named `"lab9A.cpp"` and `"lab9B.h"` respectively.

Part A: In class

Your objective is to write the definition of the function `HasCycle()` whose header is

```
template<typename T>
bool HasCycle(Node<T>* root)
```

Given that *root* is referencing a singly linked list, the function returns true if the linked list referenced by *root* has a cycle; otherwise, it returns false. A linked list has a cycle if the link of a node is equal to a previous node in the linked list.

Part B: Take home

Your objective is to define all the methods of the class **MyCalendar**. The class **MyCalendar** allows users to book events for a range of days; however, it prohibits more than 2 events to overlap. Its methods are

- ☐ A default constructor. It initializes the calendar to 365 days with no events booked.
- ☐ A overloaded constructor that takes a ulong parameter. Given that the parameter represents a year, it initializes the calendar to the amount of days in the year the parameter represents with no events booked.
- ☐ A copy constructor.
- ☐ A assignment operator.
- ☐ A destructor.
- ☐ A bool method `Book()` that takes two ulong parameters named *start* and *end* respectively. If *start* and *end* are both less than the number of days in the year, *start* is less than *end*, and booking the event does not cause an overlap of more than 2, the function adds the event to the calendar and returns true. Otherwise, the function returns false.