Data Structures & Algorithms
Spring 2024
Lab. Three

June. 24, 2024

Objectives:

1. To build Doubly Linked List (DLL) class
2. To solve problems related to Linked List

Problem1:

Write Doubly Linked List class, as discussed in Theory Lecture, and on the same pattern as was done for Singly Linked List so that the following main() program works correctly.

```
int main()
{
        DLList  intDLL;
        for (int i{1}; i < 10; ++i)
        {
                intDLL.insertAtHead(i*5);
                intDLL.insertAtTail(i*10);
        }
        intDLL.print();

        DLList int2DLL {intDLL};
        int2DLL.deleteHead();
        int2DLL.print();

        int2DLL = intDLL;

        for (int i{1}; i < 5; ++i)
        {
                int2DLL.deleteHead();
                int2DLL.deleteTail();
        }
        int2DLL.print();

        return 0;
}
```

Problem2:

Write a member function ***deletNode*** in the DLList class of problem 1 that accepts a ***key*** and deletes it, the node containing the key, from the list if the ***key*** is present in the list. Then test it (deleteNode function) in the main() program.

Problem3:
Write a member function ***length*** in the DLList class of problem 1 to count the number of nodes in the linked list. Then test it (***length*** function) in the main() program.

Problem4:
Write a member function ***empty*** in the DLList class of problem 1 that returns ***true*** if the linked list is empty otherwise ***false***. Then test it (***empty*** function) in the main() program.