Assignment - 2
Linked List

Linked Lists - Deque

Implement a nested class DoubleNode for building doubly-linked lists, where each node contains a reference to the item preceding it and the item following it in the list (null if there is no such item). Then implement methods for the following tasks:

- Print the contents of the list
- Insert at the beginning
- Insert at the end
- Remove from the beginning
- Remove from the end
- Insert before a give node (Insert before the first occurrence of the node, if the node exists; else insert at the end)
- Insert after a given node (Insert after the first occurrence of the node, if the node exists; else insert at the end)
- Remove a given node (Remove the first occurrence of the node, remove nothing if node not found)
- Move to front (move the first occurrence of the node to the front)
- Move to end (moved and first occurrence of the node to the end)

Write a tester program and test your implementation. You must test each of these cases and print the list after each test and verify the correctness of the code.

Examples:

Suppose the link list contains the following elements:

C-> O -> M -> P -> U -> T -> E

1. Print the contents of the list:
   C-> O -> M -> P -> U -> T -> E
2. Insert M at the beginning of the list:
   M -> C-> O -> M -> P -> U -> T -> E
3. Insert R at the end:
   M -> C-> O -> M -> P -> U -> T -> E -> R
4. Remove from the beginning:
   C-> O -> M -> P -> U -> T -> E -> R

5. Remove from the end:
   C-> O -> M -> P -> U -> T -> E
6. Insert M before P:
   C-> O -> M -> M -> P -> U -> T -> E
7. Insert H before M:
   C-> O -> H -> M -> M -> P -> U -> T -> E -> B
8. Insert B before A:
   C-> O -> M -> M -> P -> U -> T -> E -> B
9. Insert C after P:
   C-> O -> M -> M -> P-> C -> U -> T -> E -> B
10. Insert L after M:
    C-> O -> M -> L -> M -> P -> C-> -> U -> T -> E -> B
11. Remove M
    C-> O -> L -> M -> P -> C-> -> U -> T -> E -> B
12. Remove G
    C-> O -> L -> M -> P -> C-> -> U -> T -> E -> B
13. Move P to the front of the list:
    P -> C-> O -> L -> M -> C-> -> U -> T -> E -> B
14. Move L to the end of the list:
    P -> C-> O -> M -> C-> -> U -> T -> E -> B -> L