SVKM’s NMIMS

Mukesh Patel School of Technology Management & Engineering

Computer Engineering Department

Program: MCA, Semester - I

PART B

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| Class :MCA | Batch : B3 |
| Date of Experiment : | Date of Submission : |
| Grade : | Time of Submission : |
| Date of Grading: |  |

B.1 Software Code written by student: (Task 1)

class Node {

    int data;

    Node next;

    Node prev;

    public Node(int data) {

        this.data = data;

        this.next = null;

        this.prev = null;

    }

}

public class DoublyLinkedList {

    private Node head;

    private Node tail;

    public LinkedList() {

        this.head = null;

        this.tail = null;

    }

    public void traverse() {

        Node current = head;

        while (current != null) {

            System.out.print(current.data + " <-> ");

            current = current.next;

        }

        System.out.println("null");

    }

    public void insert(int data) {

        Node newNode = new Node(data);

        if (head == null) {

            head = newNode;

            tail = newNode;

        } else {

            tail.next = newNode;

            newNode.prev = tail;

            tail = newNode;

        }

    }

    public void delete(int data) {

        if (head == null) {

            return;

        }

        if (head.data == data) {

            if (head.next != null) {

                head.next.prev = null;

            }

            head = head.next;

            if (head == null) {

                tail = null;

            }

            return;

        }

        Node current = head;

        while (current != null && current.data != data) {

            current = current.next;

        }

        if (current != null) {

            if (current.prev != null) {

                current.prev.next = current.next;

            }

            if (current.next != null) {

                current.next.prev = current.prev;

            }

            if (current == tail) {

                tail = current.prev;

            }

        }

    }

    public static void main(String[] args) {

        DoublyLinkedList list = new DoublyLinkedList();

        list.insert(1);

        list.insert(2);

        list.insert(3);

        list.insert(4);

        list.insert(5);

        System.out.println("Doubly Linked List:");

        list.traverse();

        System.out.println("Deleting node with value 3:");

        list.delete(3);

        list.traverse();

        System.out.println("Deleting node with value 1:");

        list.delete(1);

        list.traverse();

        System.out.println("Deleting node with value 5:");

        list.delete(5);

        list.traverse();

    }

}

B.2 Input and Output: (Task 1)

(Paste your program input and output in following format, If there is error then paste the specific error in the output part. In case of error with due permission of the faculty extension can be given to submit the error free code with output in due course of time. Students will be graded accordingly.)

B.3 Observations and learning [w.r.t. all tasks]:

(Students are expected to comment on the output obtained with clear observations and learning for each task/ sub part assigned)

B.4 Conclusion:

(Students must write the conclusion as per the attainment of individual outcome listed above and learning/observation noted in section B.3)

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