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| **Part A**  **Name:- Aryan Srivastava**  **Roll No:- A073**  **Subject:- Data Structures and Algorithms**  **Program: MCA Sem I** |
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| **Part B** |
| **Code:** import java.util.Scanner;  class Node {      int data;      Node next;      public Node(int data) {          this.data = data;          this.next = null;      }  }  public class LinkedList {      private Node head;      public LinkedList() {          this.head = 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;          } else {              Node current = head;              while (current.next != null) {                  current = current.next;              }              current.next = newNode;          }      }      public void delete(int data) {          if (head == null) {              return;          }          if (head.data == data) {              head = head.next;              return;          }          Node current = head;          while (current.next != null && current.next.data != data) {              current = current.next;          }          if (current.next != null) {              current.next = current.next.next;          }      }      public static void main(String[] args) {          LinkedList list = new LinkedList();          Scanner scanner = new Scanner(System.in);          int choice;            do {              System.out.println("\nMenu:");              System.out.println("1. Insert Node");              System.out.println("2. Delete Node");              System.out.println("3. Traverse List");              System.out.println("4. Exit");              System.out.print("Enter your choice: ");                choice = scanner.nextInt();                switch (choice) {                  case 1:                      System.out.print("Enter value to insert: ");                      int insertValue = scanner.nextInt();                      list.insert(insertValue);                      System.out.println("Node inserted.");                      break;                    case 2:                      System.out.print("Enter value to delete: ");                      int deleteValue = scanner.nextInt();                      list.delete(deleteValue);                      System.out.println("Node deleted if it existed.");                      break;                    case 3:                      System.out.println("Current Linked List:");                      list.traverse();                      break;                    case 4:                      System.out.println("Exiting...");                      break;                    default:                      System.out.println("Invalid choice. Please enter a number between 1 and 4.");              }          } while (choice != 4);            scanner.close();      }  } |
| **Output:** |
| **Observation & Learning:**  Implemented fucntions of linked list |
| Curiosity questions:   1. **What will be the output of the following code snippet for the list 1->2->3->4->5->6?**   **void solve(struct node\* start)**  **{**  **if(start == NULL)**  **return;**  **printf("%d ", start->data);**  **if(start->next != NULL )**  **solve(start->next->next);**  **printf("%d ", start->data);**  **}**   1. 1 2 3 4 5 6 2. 1 3 5 5 3 1 3. 1 3 5 1 3 5 4. 2 4 6 1 3 5      1. **Insertion of an element at the middle of a linked list requires the modification of how many pointers?** 2. 2 3. 1 4. 3 5. 4 |
| **Conclusion:**  We successfully implemented linked list and its operations using Java. . |