import java.util.Scanner;

public class Main {

static Node head = null;

static Node tail = null;

static class Node {

int data;

Node next;

Node(int val) {

data = val;

next = null;

}

}

public static void insert(int val) {

Node newNode = new Node(val);

if (head == null) {

head = newNode;

tail = newNode;

} else {

tail.next = newNode;

tail = newNode;

}

}

public static void insertAtPosition(int x, int pos) {

Node newNode = new Node(x);

if (pos == 0) {

newNode.next = head;

head = newNode;

} else {

Node current = head;

int index = 0;

while (index < pos - 1 && current != null) {

current = current.next;

index++;

}

if (current == null) {

tail.next = newNode;

tail = newNode;

} else {

newNode.next = current.next;

current.next = newNode;

}

}

}

public static void deleteAtPosition(int pos) {

if (head == null) {

System.out.println("Linked list is empty. Nothing to delete.");

return;

}

if (pos == 0) {

head = head.next;

if (head == null) {

tail = null; // If head becomes null, update tail to null

}

return;

}

Node current = head;

int index = 0;

while (current != null && index < pos - 1) {

current = current.next;

index++;

}

if (current == null || current.next == null) {

System.out.println("Invalid position. Nothing to delete.");

return;

}

current.next = current.next.next;

if (current.next == null) {

tail = current; // Update tail if last node is deleted

}

}

public static void display() {

Node temp = head;

while (temp != null) {

System.out.print(temp.data + " ");

temp = temp.next;

}

System.out.println();

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

char choice;

do {

System.out.print("Enter value to insert: ");

int value = scanner.nextInt();

System.out.print("Enter position to insert (0-indexed): ");

int position = scanner.nextInt();

insertAtPosition(value, position);

display();

System.out.print("Do you want to insert more? (y/n): ");

choice = scanner.next().charAt(0);

} while (choice == 'y' || choice == 'Y');

System.out.println("Final linked list:");

display();

deleteAtPosition(0);

System.out.println("after deletion");

display();

}

}

ANOTHER MODEL

class Main{

static Node head=null;

static Node tail=null;

static class Node{

int data;

Node next;

Node(int val){

data=val;

next=null;

}

}

public static void insert(int val){

Node newNode=new Node(val);

if(head==null){

head=newNode;

tail=newNode;

}

else{

tail.next=newNode;

tail=newNode;

}

}

public static void insertAtPosition(int x,int pos){

Node newNode = new Node(x);

if(pos==0){

newNode.next=head;

head=newNode;

}

if(tail==null){

tail=newNode;

}

else{

Node current=head;

int index=0;

while(index<pos-1){

current=current.next;

index++;

}

if(current==null){

tail.next=newNode;

tail=newNode;

}

else{

newNode.next=current.next;

current.next=newNode;

}

}

}

public static void display(){

Node temp=head;

while(temp!=null){

System.out.println(temp.data+" ");

temp=temp.next;

}

System.out.println(" ");

}

public static void main(String[]args){

insert(10);

insert(20);

insert(30);

display();

insertAtPosition(15,1);

display();

}

}