# **Programming Assignment #4**

**Program # 4:**

import java.util.Scanner;

// LinkedNode.java

class LinkedNode {

int value;

LinkedNode next;

LinkedNode(int value) {

this.value = value;

this.next = null;

}

}

// Set.java

class Set {

private LinkedNode head;

Set() {

head = null;

}

// Method to add an element to the set

public void add(int x) {

if (!exists(x)) {

LinkedNode newNode = new LinkedNode(x);

newNode.next = head;

head = newNode;

}

}

// Method to delete an element from the set

public void delete(int x) {

if (head == null) return;

if (head.value == x) {

head = head.next;

return;

}

LinkedNode current = head;

while (current.next != null) {

if (current.next.value == x) {

current.next = current.next.next;

return;

}

current = current.next;

}

}

// Method to check if an element exists in the set

public boolean exists(int x) {

LinkedNode current = head;

while (current != null) {

if (current.value == x) {

return true;

}

current = current.next;

}

return false;

}

// Method to represent the set as a space-separated string

public String toString() {

StringBuilder sb = new StringBuilder();

LinkedNode current = head;

while (current != null) {

sb.append(current.value).append(" ");

current = current.next;

}

return sb.toString().trim();

}

}

// Assignment4\_Test.java

class Assignment4\_Test {

public static void main(String[] args) {

System.out.println("Programming Fundamentals");

System.out.println("NAME: RAVIKUMAR NAIK");

System.out.println("PROGRAMMING ASSIGNMENT 4 - SET\n");

Scanner scanner = new Scanner(System.in);

Set set = new Set();

while (true) {

System.out.print("Enter command: ");

String input = scanner.nextLine();

String[] command = input.split(" ");

if (command.length != 2) {

System.out.println("Invalid command. Please enter in the format: add/del/exists <number>");

continue;

}

int num;

try {

num = Integer.parseInt(command[1]);

} catch (NumberFormatException e) {

System.out.println("Invalid number. Please enter a valid integer.");

continue;

}

switch (command[0]) {

case "add":

set.add(num);

break;

case "del":

set.delete(num);

break;

case "exists":

System.out.println(set.exists(num));

break;

default:

System.out.println("Invalid command. Please enter either add, del, or exists.");

}

System.out.println(set.toString());

}

}

}

