**Exercise 5: Task Management System**

**Code:**

class Task {

    int taskId;

    String taskName;

    String status;

    Task next; // pointer to next task

    public Task(int taskId, String taskName, String status) {

        this.taskId = taskId;

        this.taskName = taskName;

        this.status = status;

        this.next = null;

    }

    @Override

    public String toString() {

        return "Task ID: " + taskId + ", Name: " + taskName + ", Status: " + status;

    }

}

class TaskManager {

    private Task head;

    public TaskManager() {

        head = null;

    }

    // Add task at end

    public void addTask(int taskId, String taskName, String status) {

        Task newTask = new Task(taskId, taskName, status);

        if (head == null) {

            head = newTask;

        } else {

            Task current = head;

            while (current.next != null) {

                current = current.next;

            }

            current.next = newTask;

        }

        System.out.println("Task added: " + newTask);

    }

    // Search for a task

    public Task searchTask(int taskId) {

        Task current = head;

        while (current != null) {

            if (current.taskId == taskId) {

                return current;

            }

            current = current.next;

        }

        return null;

    }

    // Delete task by ID

    public boolean deleteTask(int taskId) {

        if (head == null) return false;

        if (head.taskId == taskId) {

            head = head.next;

            return true;

        }

        Task current = head;

        while (current.next != null) {

            if (current.next.taskId == taskId) {

                current.next = current.next.next;

                return true;

            }

            current = current.next;

        }

        return false;

    }

    // Traverse and print tasks

    public void traverseTasks() {

        if (head == null) {

            System.out.println("No tasks in the list.");

            return;

        }

        Task current = head;

        while (current != null) {

            System.out.println(current);

            current = current.next;

        }

    }

}

public class TaskManagementSystem {

    public static void main(String[] args) {

        TaskManager tm = new TaskManager();

        // Add tasks

        tm.addTask(1, "Design module", "In Progress");

        tm.addTask(2, "Write documentation", "Not Started");

        tm.addTask(3, "Code review", "Completed");

        // Traverse tasks

        System.out.println("\nAll Tasks:");

        tm.traverseTasks();

        // Search task

        System.out.println("\nSearching for Task ID 2:");

        Task foundTask = tm.searchTask(2);

        if (foundTask != null) {

            System.out.println("Found: " + foundTask);

        } else {

            System.out.println("Task not found.");

        }

        // Delete task

        System.out.println("\nDeleting Task ID 2:");

        if (tm.deleteTask(2)) {

            System.out.println("Task deleted.");

        } else {

            System.out.println("Task not found.");

        }

        // Traverse again

        System.out.println("\nAll Tasks after deletion:");

        tm.traverseTasks();

    }

}

**Output:**

