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package Practicals;

import java.util.Arrays;

class Job {
    char id;      // Job ID (like A, B, C)
    int deadline; // Deadline of job
    int profit;   // Profit if job is done before or on deadline

    Job(char id, int deadline, int profit) {
        this.id = id;
        this.deadline = deadline;
        this.profit = profit;
    }
}

public class JobSequencingSimple {
    public static void main(String[] args) {
        // Step 1: Create job list
        Job[] jobs = {
            new Job('A', 2, 100),
            new Job('B', 1, 19),
            new Job('C', 2, 27),
            new Job('D', 1, 25),
            new Job('E', 3, 15)
        };

        // Step 2: Sort jobs by descending profit
        Arrays.sort(jobs, (a, b) -> b.profit - a.profit);

        // Step 3: Find maximum deadline
        int maxDeadline = 0;
        for (Job j : jobs)
            if (j.deadline > maxDeadline)
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        maxDeadline = j.deadline;

    // Step 4: Create arrays to store scheduled jobs
    char[] schedule = new char[maxDeadline];
    boolean[] slot = new boolean[maxDeadline];

    int totalProfit = 0;

    // Step 5: Schedule jobs greedily
    for (Job job : jobs) {
        // find a free slot for this job before its deadline
        for (int j = job.deadline - 1; j >= 0; j--) {
            if (!slot[j]) {
                slot[j] = true;
                schedule[j] = job.id;
                totalProfit += job.profit;
                break;
            }
        }
    }

    // Step 6: Display results
    System.out.print("Job sequence for maximum profit: ");
    for (int i = 0; i < maxDeadline; i++) {
        if (slot[i])
            System.out.print(schedule[i] + " ");
    }
    System.out.println("\nTotal Profit: " + totalProfit);

    // Step 7: Time and Space Complexity
    System.out.println("\n--- Time and Space Complexity ---");
    System.out.println("Time Complexity: O(n^2) (due to sorting and slot checking)");
    System.out.println("Space Complexity: O(n) (for slot and schedule arrays)");

```

}

}