LAB ASSIGNMENT – 2

Program

```
import java.util.*;

class Job {
   String id;
   int deadline;
   int profit;

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

public class JobSequencing {

   public static void jobSequencing(Job[] jobs) {
      int n = jobs.length;

      // Sort jobs by decreasing profit
      Arrays.sort(jobs, (a, b) -> b.profit - a.profit);

      // Find max deadline
      int maxDeadline = 0;
      for (Job job : jobs) {
         maxDeadline = Math.max(maxDeadline, job.deadline);
      }

      String[] jobSchedule = new String[maxDeadline + 1]; // 1-indexed
      boolean[] slotOccupied = new boolean[maxDeadline + 1];

      int totalProfit = 0, jobCount = 0;

      for (Job job : jobs) {
         for (int j = job.deadline; j > 0; j--) {
            if (!slotOccupied[j]) {
               slotOccupied[j] = true;
               jobSchedule[j] = job.id;
               totalProfit += job.profit;
               jobCount++;
               break;
            }
         }
      }
```

```
        System.out.println("\nScheduled Jobs:");
        for (int i = 1; i <= maxDeadline; i++) {
            if (jobSchedule[i] != null) {
                System.out.print(jobSchedule[i] + " ");
            }
        }

        System.out.println("\nTotal Jobs Done: " + jobCount);
        System.out.println("Total Profit: ₹" + totalProfit);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of jobs: ");
        int n = sc.nextInt();
        sc.nextLine();

        Job[] jobs = new Job[n];

        for (int i = 0; i < n; i++) {
            System.out.println("\nEnter details for Job " + (i + 1));
            System.out.print("Job ID: ");
            String id = sc.nextLine();

            System.out.print("Deadline (in units): ");
            int deadline = sc.nextInt();

            System.out.print("Profit (₹): ");
            int profit = sc.nextInt();
            sc.nextLine();

            jobs[i] = new Job(id, deadline, profit);
        }

        System.out.println("\nJob Sequencing using Greedy Algorithm");
        jobSequencing(jobs);
    }
}
```

Output

```
"C:\Program Files\Java\jdk-24\bin\java.exe"
Enter number of jobs: 5

Enter details for Job 1
Job ID: J1
Deadline (in units): 2
Profit (₹): 100

Enter details for Job 2
Job ID: J2
Deadline (in units): 1
Profit (₹): 19

Enter details for Job 3
Job ID: J3
Deadline (in units): 2
Profit (₹): 27

Enter details for Job 4
Job ID: J4
Deadline (in units): 1
Profit (₹): 25

Enter details for Job 5
Job ID: J5
Deadline (in units): 1
Profit (₹): 15
Job Sequencing using Greedy Algorithm

Scheduled Jobs:
J3 J1
Total Jobs Done: 2
Total Profit: ₹127

Process finished with exit code 0
```

Fig – Sequencing 5 Jobs with deadline