Lab 02
CSE 156
Introduction to Programming Lab
Fall 2025

1. Take a student's marks as input.

- If marks are above 50, check whether they are above 80.
    - If yes, print "Distinction."
    - Else, print "Pass."
- Else, print "Fail."

2. Take a year as input.

- If divisible by 4, check if divisible by 100.
    - If yes, check if divisible by 400.
        - If yes, it is a leap year.
        - Else, not a leap year.
    - Else, it is a leap year.
- Else, not a leap year.

3. **Electricity Bill Calculator**

Input total units consumed.

- If units ≤ 100 → bill = units * 5.
- If units > 100 → check if ≤ 300.
    - If yes → bill = 100*5 + (units-100)*7.
    - Else → bill = 100*5* + *200*7 + (units-300)*10.

4. **Nested Discount Policy**

Input purchase amount.

- If amount ≥ 5000, apply 20% discount.
    - If after discount still ≥ 8000, give free gift.
- Else if amount ≥ 2000, apply 10% discount.
- Else, no discount.

5. **Bus Fare System**

Input: age and distance.

- If age < 5 → Free ride.
- If 5–17:
    - If distance > 20 km → Half fare + 10 extra.
    - Else half fare.
- If adult:
    - If distance > 50 km → Full fare + 20 extra.
    - Else full fare.
- If senior (≥ 60):
    - If distance > 20 km → Half fare.
    - Else 30% fare.

6. **Sports Tournament Qualifier**

Input: number of matches won, lost, and drawn.

- If wins ≥ 5 → Qualified.
- Else if wins = 4:
    - If draws ≥ 2 → Qualified.
    - Else Not qualified.
- Else if wins = 3:
    - If draws ≥ 3 → Playoffs.

        - Else Not qualified.

- Else Not qualified.

7. **Parking Lot Charge**

Input: vehicle type (car/bike), hours parked, and membership status.

- If car:
    - If hours ≤ 2 → 100.
    - Else if hours ≤ 5 → 200.
    - Else → 300.
    - If member → 20% discount.
- If bike:
    - If hours ≤ 2 → 50.
    - Else if hours ≤ 5 → 100.
    - Else → 150.
    - If member → 10% discount.

8. **University Admission Gate With Bridge Options**

Inputs: GPA, IELTS overall, IELTS band minimum, hasPortfolio, track: "HCI" or "DS".
Logic:

- If GPA ≥ 3.7 and IELTS overall ≥ 7 with band ≥ 6.5, admit.
- Else if GPA ≥ 3.5:
    - If HCI and portfolio is strong, admit conditional.
    - If DS and IELTS ≥ 7.5, admit conditional.
- Else if GPA ≥ 3.2:
    - Offer 1-term bridge if IELTS ≥ 6.5 and band ≥ 6.
- Else reject.

9. **Health Plan Claim Adjudication**

Inputs: claimType: "inpatient" or "outpatient", hospitalGrade A/B/C, bill amount, hasPreapproval, daysSinceAdmission.
Logic:

- If inpatient:
    - If preapproval or emergency admitted within 24h, proceed.
    - Reimburse 90% for Grade A, 80% for B, 70% for C; cap at policy max tiers.
- If outpatient:
    - If bill < minimal threshold, reject.
    - If hospital grade A and amount > mid cap, require doctor note, else 60% reimbursement.
- If hospital not in network, reduce by additional 20%.

10. **Exam Seating With Accessibility Priority**

Inputs: student hasDisability, hallCapacity, currentAssigned, seatType: "front", "middle", "back", timeSlot clash flag.
Logic:

- If clash, deny slot unless an alternate is available.
- If hasDisability:
    - If front seats available, assign front.
    - Else middle; if none, open overflow hall if capacity not exceeded.
- If not disabled:
    - If back has room, assign back; else middle; else front.
      Reject if all capacities hit.

11. **Scholarship Continuation Checker**

Inputs: currentCGPA, previousCGPA, warningsCount, misconductFlag, creditsThisTerm.
Logic:

- If misconduct, revoke.
- Else if CGPA ≥ 3.75:
    - If warnings = 0 keep full; if warnings = 1 reduce 25%.
- Else if CGPA 3.5–3.74:
    - If improved vs previous and credits ≥ 12 keep 75%; else 50%.
- Else if CGPA 3.2–3.49:
    - Probation if credits ≥ 9; else revoke.
- Else revoke.