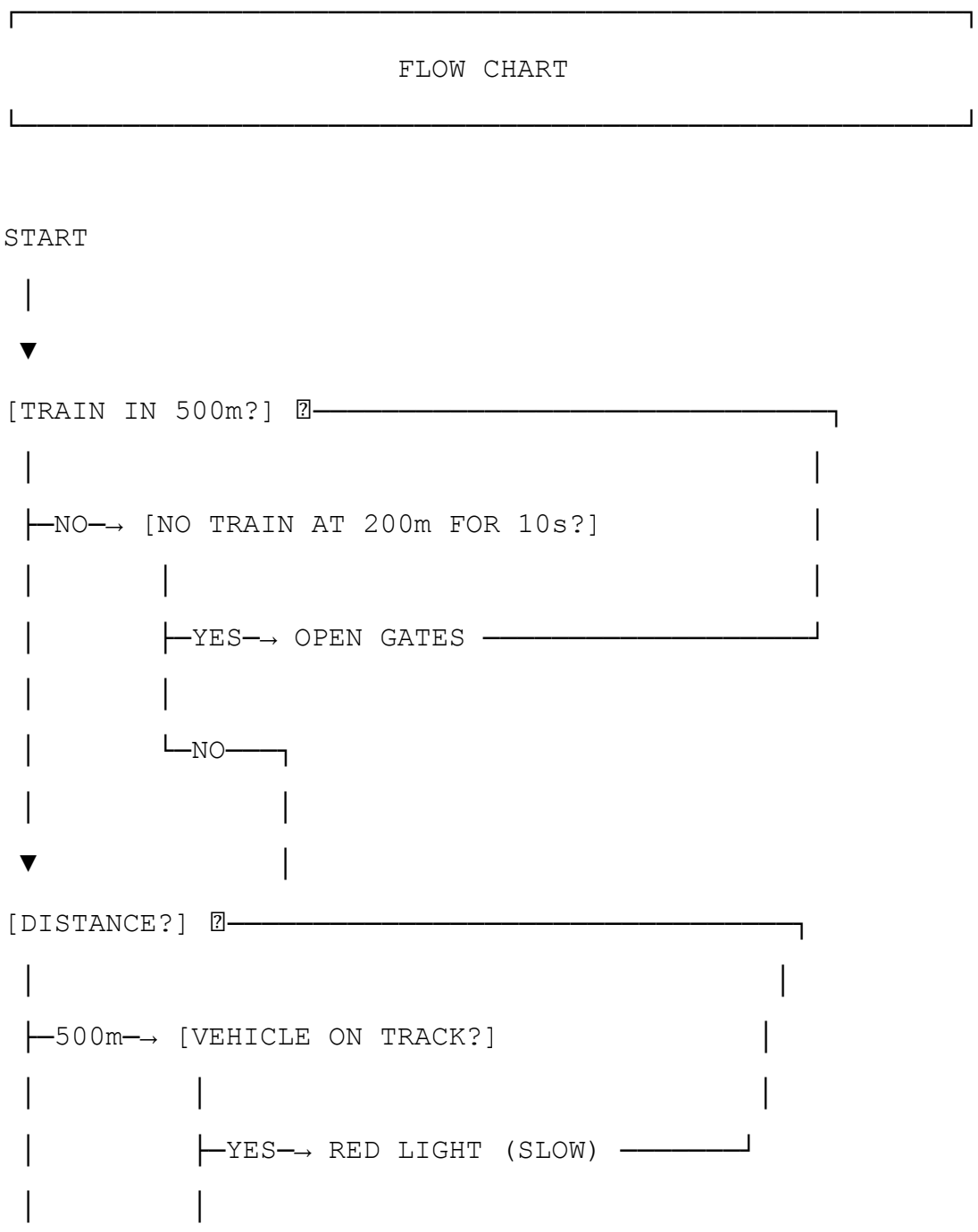
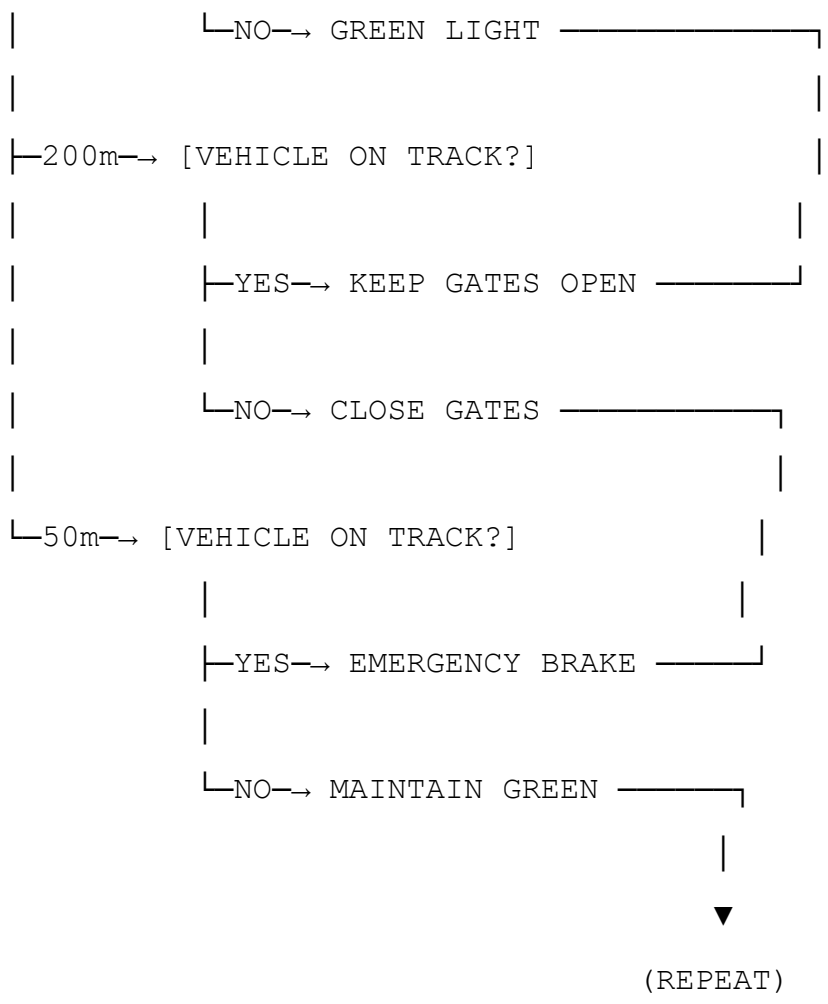
Planning and Implementing

❖ Working sequence for the Railway logic-based system

- **Check for Trains**
  - Continuously monitor if any train is detected within 500m of the crossing.
- **If No Train Detected (500m range):**
  - Verify if no train has been at 200m for at least 10 seconds
  - If true: Open the crossing gates
  - If false: Keep checking (loop back to Step 1)
- **If Train Detected (500m range):**
  - Determine the train's current distance (500m/200m/50m)
  - **At 500m:**
    - Check if any vehicle is stuck on the tracks
    - If yes: Turn signal red to warn approaching train
    - If no: Keep signal green
  - **At 200m:**
    - Check for vehicles on tracks again
    - If yes: Freeze gate operation (keep open)
    - If no: Close crossing gates automatically
  - **At 50m:**
    - Perform final safety check for vehicles
    - If yes: Trigger emergency train brake
    - If no: Maintain clear green signal
- **Continuous Loop**
  - After every action, the system automatically returns to:
  - Train detection (Step 1) if gates are open
  - Distance monitoring (Step 3) if train is approaching
- **Gate Reopening Rule**
  - Gates only reopen when:

- No train is detected within 200m
- This condition lasts 10+ seconds




└─NO─→ GREEN LIGHT
├─200m─→ [VEHICLE ON TRACK?]
├─YES─→ KEEP GATES OPEN
└─NO─→ CLOSE GATES
└─50m─→ [VEHICLE ON TRACK?]
├─YES─→ EMERGENCY BRAKE
└─NO─→ MAINTAIN GREEN
(REPEAT)