Conformance Testing

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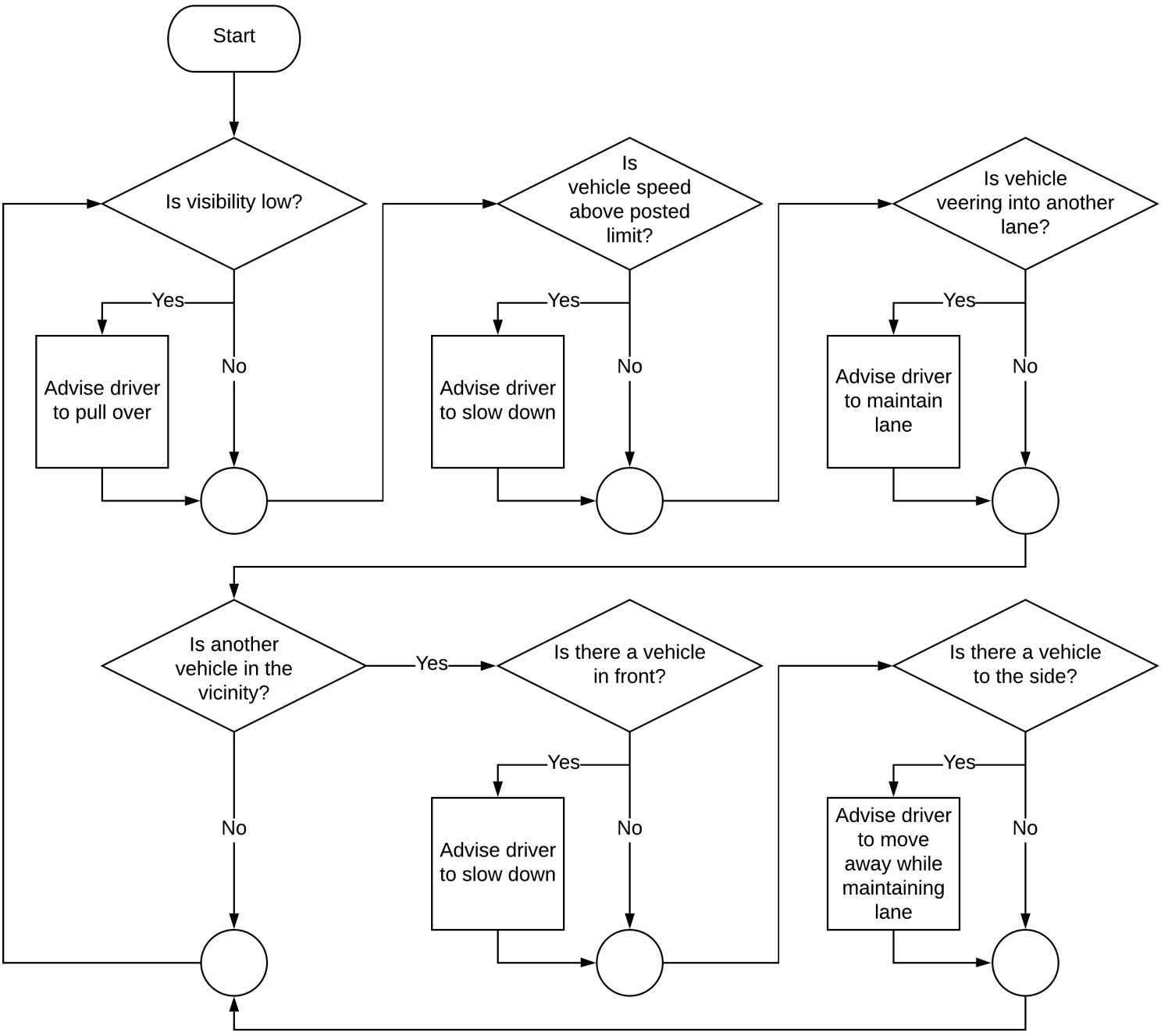
1 Workflow Diagram



2 Business Rules

- Cory should be on when the car starts
- Cory should detect if the driver is going over the speed limit and advise the driver to decelerate
- Cory should detect if there is a car in front that is too close to the driver and advise the driver to decelerate
- Cory should detect if the driver is steering into another lane and advise the driver to steer back into their lane
- Cory should detect if there are cars that are too close to the sides of the car and advise the driver to steer left or right accordingly
- Cory should detect if visibility is too low and advise the driver to pull over

3 States and Transitions

3.1 Set of States, Input and Output Sets

Abbreviation	Expanded Form	Meaning
S	Start	Cory software is on (Initial state)
DEC	Decelerate	Cory tells the driver to decelerate the car
SL	Steer Left	Cory tells the driver to steer left within the lane
SR	Steer Right	Cory tells the driver to steer right within the lane
PO	Pull Over	Cory tells the driver to pull over

Table 1: Set of States

Input	Output
AS: Above speed limit	A: Accelerate message
FC: Front car too close	D: Decelerate message
STL: Steering too far left	SLL: Steer left while staying in lane message
STR: Steering too far right	SRL: Steer right while staying in lane message
LC: Left car too close	POS: Pull over to side message
RC: Right car too close	—: No message
VL: Visibility too low	
CNS: Car not stopped	

Table 2: Input and Output Sets

3.2 State Transitions

3.2.1 Start (S)

- If car is going over speed limit, go to DEC
- If there is a car too close in front of the car, go to DEC
- If the car is steering towards the left lane, go to SR
- If the car is steering towards the right lane, go to SL
- If there is a car too close to the left side of the car, go to SR
- If there is a car too close to the right side of the car, go to SL
- If visibility is too low, go to PO

3.2.2 Decelerate (DEC)

- If the car is still over the speed limit, stay in DEC
- If the car in front is still too close, stay in DEC
- Else, go back to S

3.2.3 Steer Left (SL)

- If the car is still steering towards the right, stay in SL
- If the car on the right is still too close, stay in SL
- Else, go back to S

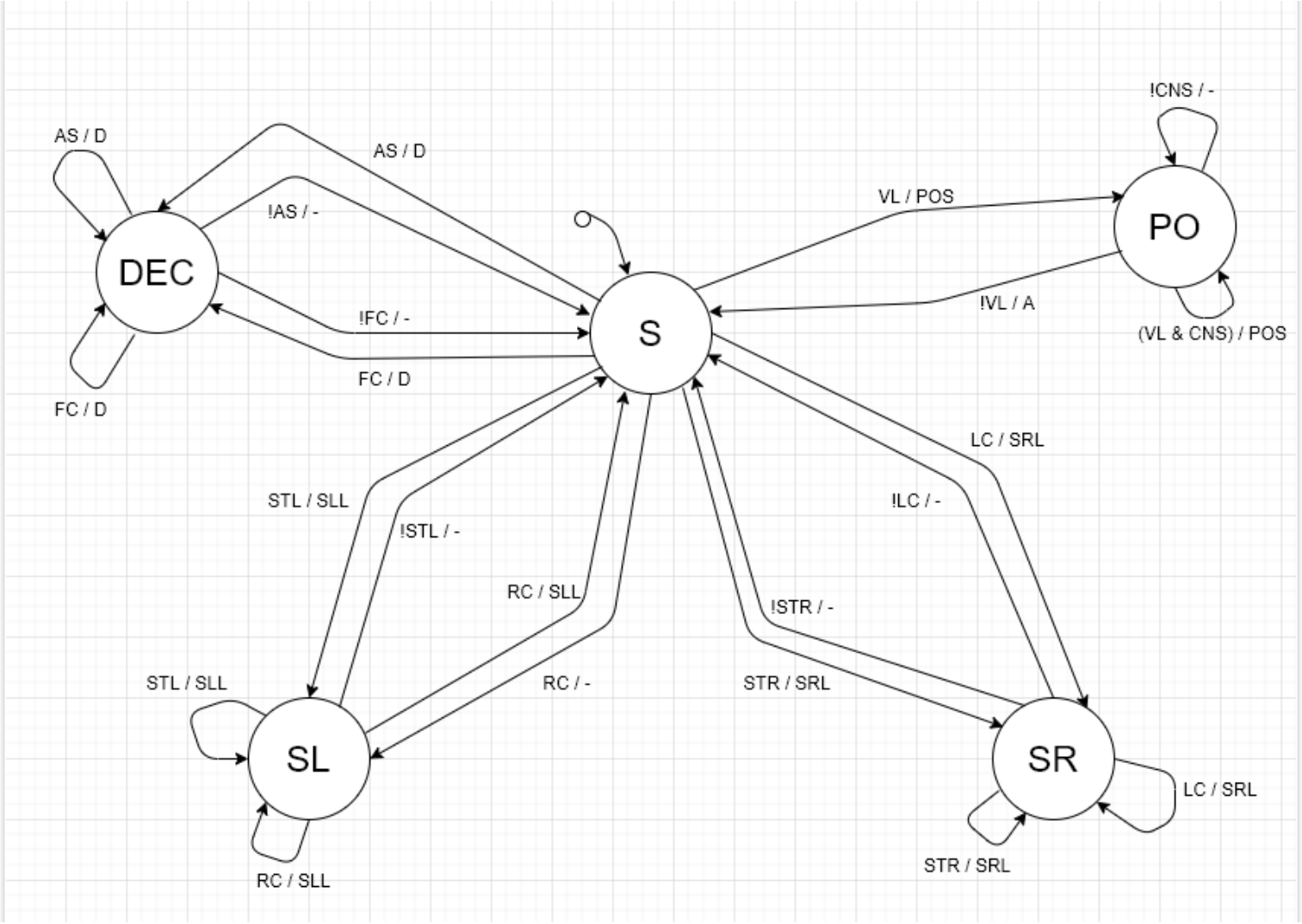
3.2.4 Steer Right (SR)

- If the car is still steering towards the left, stay in SR
- If the car on the left is still too close, stay in SR
- Else, go back to S

3.2.5 Pull Over (PO)

- If the car has not pulled over and visibility is still too low, stay in PO
- Else, go back to S

4 Finite State Machine



5 Test Generation

5.1 Transition Tour - Start, Pull Over, Start

Scenario: Visibility is low.
Sequences:

- <S, VL : POS, PO>
- <PO, !VL : A, S>

5.2 Transition Tour - Start, Decelerate, Start

Scenario: Driver is speeding.
Sequences:

- <S, AS : D, DEC>
- <DEC, !AS :—, S>