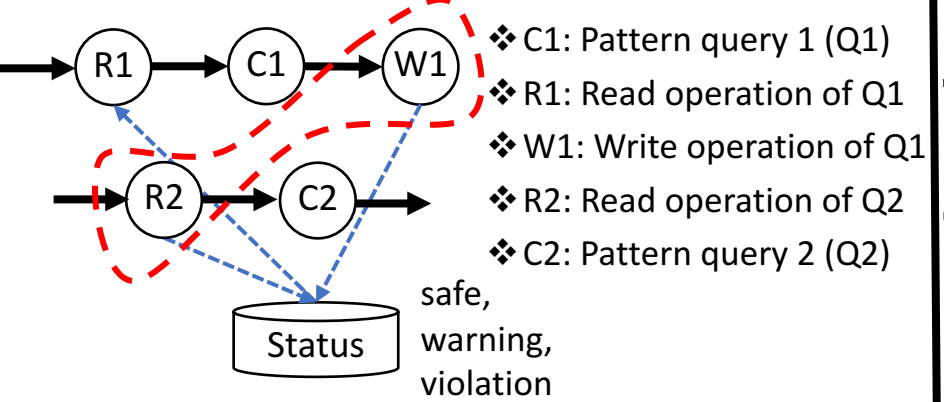
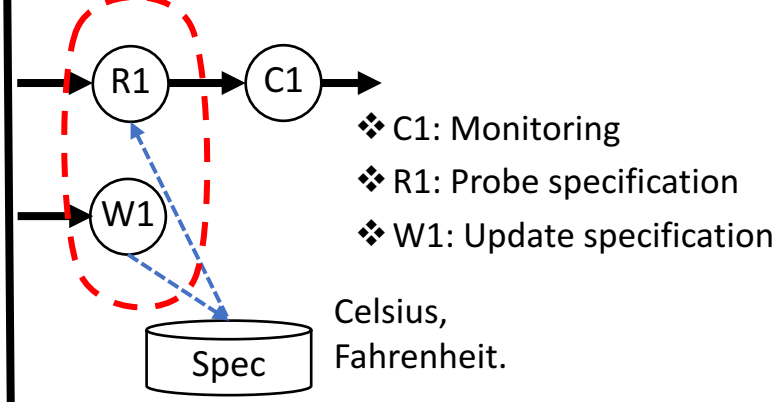


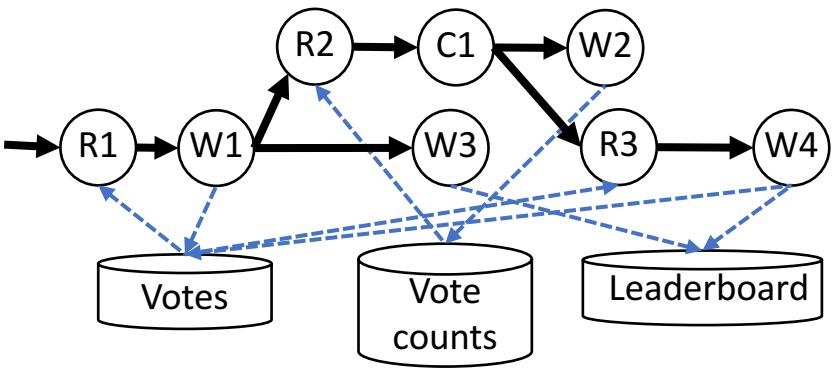
- C1: Pattern query 1 (Q1)
- R1: Read operation of Q1
- W1: Write operation of Q1
- R2: Read operation of Q2
- C2: Pattern query 2 (Q2)

(a) ACEP in TStream.



- C1: Monitoring
- R1: Probe specification
- W1: Update specification

(b) Temp monitor in TStream.



- R1: Check if the vote is valid
- W1: Post the (valid) vote to Votes table
- R2, C1, W2: increment vote counts
- W3: update leaderboard state
- R3: Determine the lowest contestant
- W4: Delete lowest contestant and votes

(c) Leaderboard Maintenance in TStream (contestant table is omit for simplicity).

Every R/W operator is grouped into a stage by itself.