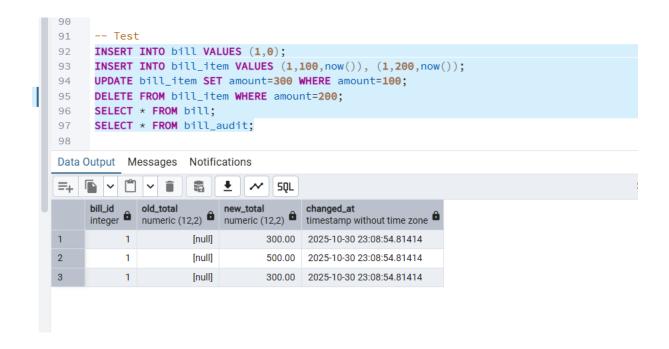
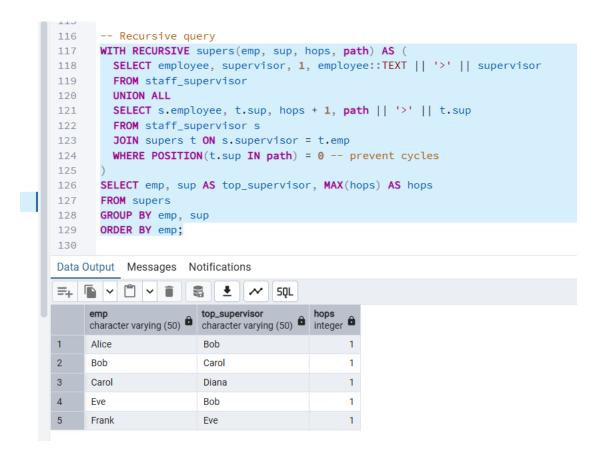
- 1. Rules (Declarative Constraints): Safe Prescriptions
- 2. Active Databases (E–C–A Trigger): Bill Totals That Stay Correct



3. Deductive Databases (Recursive WITH): Referral/Supervision Chain



## 4. Knowledge Bases (Triples & Ontology): Infectious-Disease Roll-Up

```
-- Compute transitive closure of isA
153
      WITH RECURSIVE isa(child, ancestor) AS (
       SELECT s, o FROM triple WHERE p = 'isA'
154
155
156
        SELECT t.s, i.ancestor
        FROM triple t
157
        JOIN isa i ON t.o = i.child
158
159
        WHERE t.p = 'isA'
160
161
      infectious_patients AS (
        SELECT DISTINCT t.s
162
163
        FROM triple t
        JOIN isa i ON t.o = i.child
164
        WHERE t.p = 'hasDiagnosis'
165
          AND i.ancestor = 'InfectiousDisease'
166
167
168
      SELECT s AS patient_id FROM infectious_patients;
Data Output Messages Notifications
     character varying (100)
     Patient1
     Patient2
```

## 5. Spatial Databases (PostGIS): Radius & Nearest-3

Spatial Database task for Oracle using SDO\_GEOMETRY.

- -- The issues in the starter are:
- --Wrong SRID should be 4326 (WGS84) instead of 3857.Lat/Lon order swapped Oracle expects (X=longitude, Y=latitude).
- --distance units missing need 'unit=KM'.

- -- placeholder :AMB\_POINT must define the ambulance location as a
- -- SDO\_GEOMETRY point.
- --Corrected Query
- -- Define ambulance location (example coordinates)

VAR AMB\_POINT SDO\_GEOMETRY;

EXEC :AMB\_POINT := SDO\_GEOMETRY(2001, 4326, SDO\_POINT\_TYPE(-73.935242, 40.730610, NULL), NULL); -- Example: New York City

-- Find nearest hospital within 10 km

SELECT HOSPITAL\_ID, NAME, ADDRESS,

SDO\_NN\_DISTANCE(1) AS DISTANCE\_KM

FROM HOSPITAL

WHERE SDO\_NN(LOCATION, :AMB\_POINT, 'sdo\_num\_res=1') = 'TRUE'

AND SDO\_WITHIN\_DISTANCE(LOCATION, :AMB\_POINT, 'distance=10 unit=KM') = 'TRUE';

ORDER BY DISTANCE\_KM;

-- Limit to 1 nearest hospital

FETCH FIRST 1 ROW ONLY;