Adapting to Schema Evolution

Q: SELECT EMP.Emp#, Sum(WORKS.Hours) as T_Hours
FROM EMP, WORKS
WHERE EMP.Emp# = WORKS.Emp#
GROUP BY EMP.Emp#

Relations
Conditions (covering database constraints and query conditions)
Queries
Views

Graph Semantics
Nodes represent database constructs, i.e., relation nodes, attribute nodes, query nodes, etc.
Edges represent relationships between constructs, i.e., schema edges, map-select edges, operand edges, etc.

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Our Approach
1. Graph-based modeling
   Database Constructs mapped to directed graphs
   - Relations
   - Conditions (covering database constraints and query conditions)
   - Queries
   - Views

   Graph Semantics
   - Nodes represent database constructs, i.e., relation nodes, attribute nodes, query nodes, etc.
   - Edges represent relationships between constructs, i.e., schema edges, map-select edges, operand edges, etc.

2. Extending SQL with Evolution Semantics
   CREATE VIEW emps-prjs AS
   SELECT E.Emp#, E.Name, P.Projname
   FROM Emp E, Works W, Proj P
   WHERE E.EMP#=W.EMP# AND W.Proj#=P.Proj#
   ON Modify Condition TO emps-prjs THEN block
   Event: Add attribute Phone to relation EMP

3. Adapting to Schema Evolution
   Event: Add attribute Phone to relation EMP

HECATAEUS: a what-if analysis tool

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