Mary Nations
DMBS Final
Winter 2022

Q6.1: List pairs of supplier ids (sids) such that the supplier with the first sid charges more for some part than the supplier with the second sid.

    SELECT s1.sid, s2.sid
    FROM SUPPLIER s1, SUPPLIER s2, CATALOG c1, CATALOG c2
    WHERE s1.sid = c1.sid AND s2.sid = c2.sid AND c1.price > c2.price;

Q6.2: Using correlated subqueries, list the ID's (sids) of suppliers who supply red colored parts "or" who's store are located in "Ruston City".
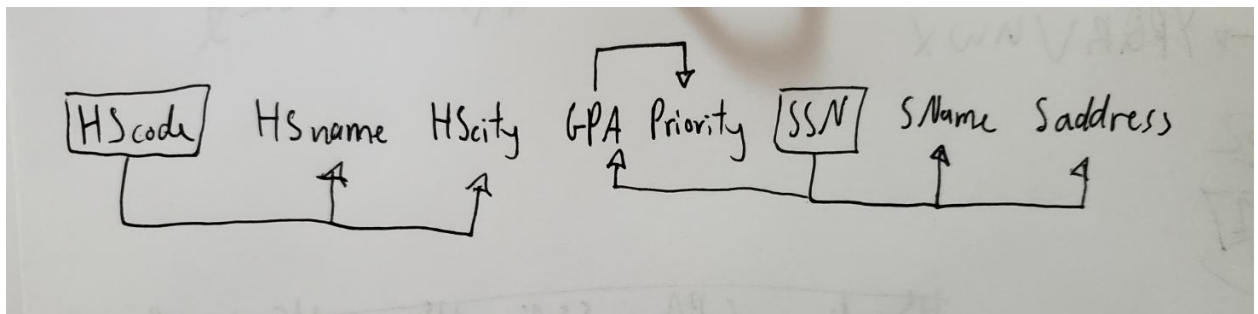
    SELECT s.sid
    FROM SUPPLIER s
    WHERE s.address = "Ruston City" OR s.sid IN
            (SELECT s.sid
            FROM PART p
            WHERE p.color = "red");

Q8.1:
    $HScode^+$ -> HScode, HSname, HScity
    GPA^+ -> GPA, Priority
    SSN^+ ->SSN, SName, Saddress, GPA, Priority

HScode, SSN become the primary key:
HScode, SSN^+ -> HScode, SSN, HSname, HScity, SSN, SName, Saddress, GPA, Priority

- Using HScode ->HSname, HScity
- R_1 (HScode, HSname, HScity)
- R_2 (HScode, SSN, SName, Saddress, GPA, Priority)
- Using GPA -> Priority
  - R_{21} (GPA, Priority)
  - R_{22} (GPA, HScode, SSN, SName, Saddress)
  - Using SSN -> SName, Saddress, GPA

- ■ R_{221} (SSN, SName, Saddress, GPA)
- ■ R_{222}(SSN, HScode)
- HScode$^+$: HScode, HSname, HScity
- GPA$^+$: GPA, Priority
- SSN$^+$: SSN, SName, Saddress, GPA

Q8.2:

- Syntact Checks: is the syntax correct?
- Type checks: does each attribute have the correct type?
- Rewriting parse trees: trees should be expanded to its maximum extend before rewriting
  - pushing selects and exceptions
  - Cascading Selects

Q9.1:

(b) 1 is lossless but 2 is lossy.

This is because Subject gets lost with the decompositions

Work:

2)

CWID	Name	Loc	Score
10156731	John	Bus.	96
10145221	John	Bus.	100

Loc	Score
Bus	96
Bus	100

Join on Score

CWID	Name	Loc	Score
10156731	John	Bus	96
10145221	John	Bus	100

Where is Subject?

Q9.2:

RID -> Title, Subject
AID -> Author

Work:

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BID | Title Subject | AID | Author
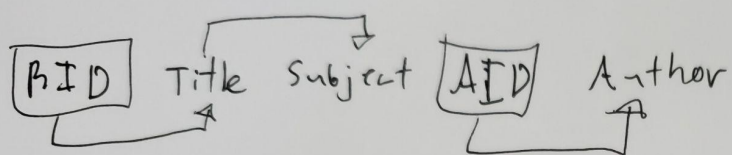
BID → Title, Subject

AID → Author

no transitivity ✓

no multivalued attributes ✓

no partial dependencies ✓