CS 344 DBMS

LECTURE NOTES : AUGUST 16TH

TOPIC: RELATIONAL ALGEBRA PRACTISE PROBLEMS

CONVENTION USED : \$ AS NATURAL JOIN

Prepared By

V.Krishna Chaitanya – 09010159

SSV Prasad – 09010151

Q) Consider the following schema:

Suppliers (sid : integer, sname : string, address : string)

Parts (pid : integer, pname : string, color : string)

Catalog (sid : integer, pid : integer, cost : real)

The key fields are underlined and domain of each field is listed after the field name

1) Find the name of suppliers who supply some red parts

We first find the pids of parts that are red in color and then we compute the natural join of this with catalog from this we project sid which gives ids of the supplier who supply some red part, then we take the natural join of this with supplier and project names which gives us the names of suppliers who supply some red part

Step 1: $R1 = \pi_{pid}(\sigma_{color = 'red'}parts)$

Step 2 : $R2 = \pi_{sid}(R1 \ \ Catalog \)$

Step 3 : R3=π_{name}(R2 \$ Sppliers)

Required answer is R3

2) Find the sids of suppliers who supply some red or green parts

Step1: $R1 = \pi_{pid}(\sigma_{color = 'red' V 'green'} parts)$

Step 2: $R2 = \pi_{sid}(R1 \ \ Catalog)$

Same as above one but here we have to choose red or green parts and we have to have sids of suppliers so we can stop after step 2 after choosing parts either in red color or green color

3) Find the sids of suppliers who supply some red part or are at 221 packer Ave

Sids of suppliers who supply some red part

Step 1 : R1 = $\pi_{pid}(\sigma_{color = 'red'}parts)$

Step 2 : $R2 = \pi_{sid}(R1 \ \ Catalog)$

Sids of suppiers who are at 221 packer Ave

Step 1: R3 = $\pi_{sid}\sigma_{address = '221 packer Ave}$ (Suppliers)

Therefore sids of suppliers who supply some red part or are at 221 packer Ave

Is R2 U R3

4) Find the sids of suppliers who supply some red part and some green part

A) R1 = $\pi_{sid}(\pi_{pid}(\sigma_{color = 'red'} \text{ parts}) \$ Catalog)

 $R2 = \pi_{sid}(\pi_{pid}(\sigma_{color = 'green'}parts) \ \ \ \ Catalog)$

From question one we get the sids of suppliers who supply some red part (R1)

Similarly R2 is the sids of suppliers who supply some green part

Required list of sids who supply some red and some green part is R1

Intersection R2

5) Find the sids of suppliers who supply every part

A) R1= $\pi_{sid,pid}$ Catalog

 $R2=\pi_{pid}Parts$

R1/R2 give us the required list of sids of suppliers who supply every part

6)Find the sids of suppliers who supply every red part

A)This is same as previous one but in R2 we consider only red parts

R1= $\pi_{sid,pid}$ Catalog

 $R2=\pi_{pid}\sigma_{colr='red'}parts$

So required answer is R1/R2

7)Find the sids of suppliers who supply every red or green part

A) R1= $\pi_{sid,pid}$ Catalog

R2= $\pi_{pid}\sigma_{colr='red' v'green'}$ parts

R1/R2 gives the sids of suppliers who supply every part which is either red in

Color or green in color