Katie Stevens

CPSC 321 01

HW 2

9/23/2021

Part 1: Relational Algebra

1.

a. $\pi_{maker}(\sigma_{hd<256}(product \bowtie_{model} laptop)$

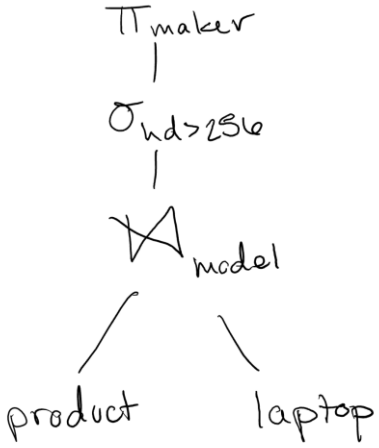
b. $\pi_{model,price}(\sigma_{maker=B}((product \bowtie_{model} pc) \bowtie (product \bowtie_{model} laptop)))$

c. $\pi_{maker}(\pi_{maker}(product \bowtie_{model} laptop) - \pi_{maker}(product \bowtie_{model} pc))$

d. $\pi_{hd}(\sigma_{pc1.hd=pc2.hd \wedge pc1.model != pc2.model}(\rho_{pc1}(pc) \times \rho_{pc2}(pc)))$

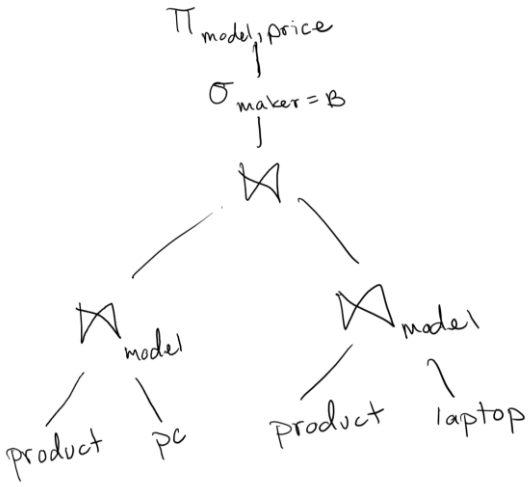
e. $\pi_{maker}(product \bowtie_{model} (\sigma_{pc1.speed<pc2.speed}(\rho_{pc1}(pc) \times \rho_{pc2}(pc))))$

2.

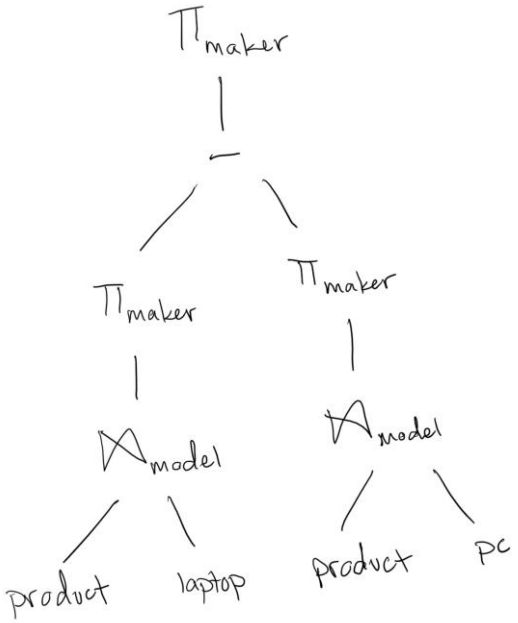


a.

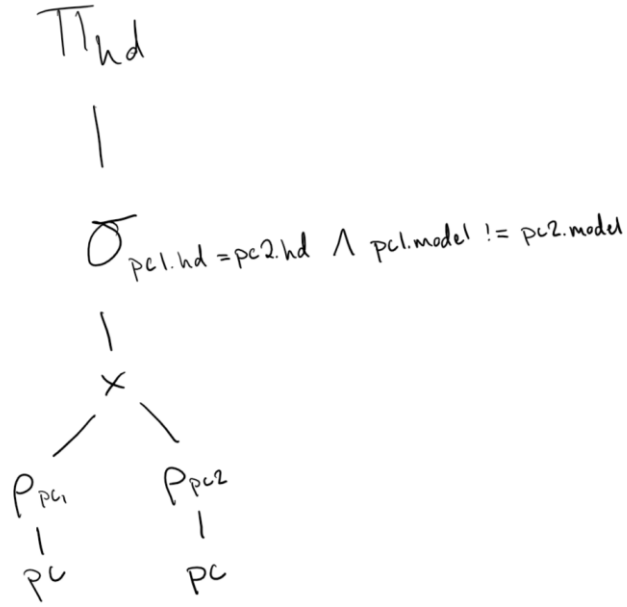
b.


Π model, price
σ maker = B
⋈
⋈ model
⋈ model
product
pc
product
laptop

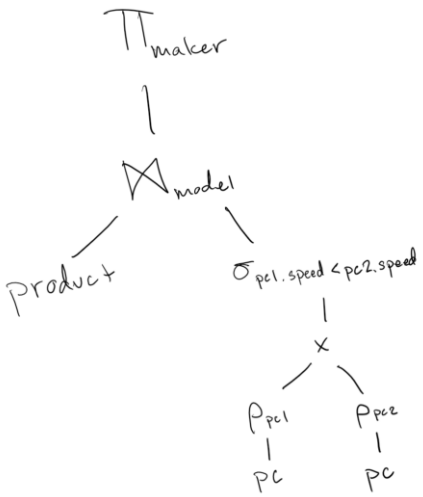
c.


Π maker
=
Π maker
Π maker
⋈ model
⋈ model
product
laptop
product
pc

d.



e.



3.

a. max = m + n min = min(m, n)

b. max = max(m, n) min = 0

c. max = m * n min = 0

d. max = m * n min = 0

e. max = n min = 0

4. LegoBrick(brick id, design id, name, color, price)

LegoSet(set item number, year range, category, name, age range, price, minifigure count, vip points, height, width, depth, theme, category, total pieces)

Foreign keys: theme, category

Theme(name, year range, description, license)

PartList(set item number, brick id, num_pieces)

Foreign keys: set, brick id

a. $\pi_{set\_item\_num,name}\ (\sigma_{num\_pieces>10\ \wedge price<\$25.00}(Legoset\ \bowtie_{set\_item\_num}\ PartList))$

b. $\pi_{set\ item\ num,name}\ (Legoset\ \bowtie_{set\_item\_num}$

$(\sigma_{(color=Bright\ Blue\ \wedge name=1x2\ Brick)\vee(color=Bright\ Red\ \wedge name=2x4\ Plate)}(Legobrick\ \bowtie_{brick\ id}\ Partlist)))$

c. $\pi_{set\ item\ num,name}(\sigma_{theme=disney\ \wedge\ category=building}(LegoSet))$

d. $\pi_{set\ item\ num,name}(\sigma_{category=Building\ \wedge category=sports}(LegoSet\ \bowtie_{category}\ LegoSet))$

e.
$\pi_{brick_{id},names,price}(\sigma_{color=Bright\ Blue\ \wedge price<\$0.20\ \wedge design\ id=design\ id}(LegoBrick\ \bowtie_{brickid}\ LegoBrick))$

Part 2: Project Idea Revision

1. I want to make a database of my Rockband statistics. I want to make it a web app.

2. My original idea was to make my project using spotify music data. I decided to change my topic to logging my house's Rockband statistics.

3. Let user enter for one song entry, what song was played, how many times, what instruments were used, who was playing, and player's score on the song. Optionally, they could enter their statistics on how many notes they hit/missed during the song.

Store a collection of songs, their artist, and their length (time). Categorized by dlc (purchased) and free songs. Ability to add new songs to collection.

Have a profile for each player to calculate and keep track of how many times they play a specific instrument, what songs they played.

Calculate overall most played song, most played artist, most popular instrument, highest score achieved and by who, how much was spent on dlc songs, and total songs owned.

Calculate for specific player most played song, most played artist, most played instrument, highest score and for what song, how many songs they have played, estimated time played (calculate by song times).