

# Quiz 2

Shivneel Chand

Friday, October 8, 2021

12:39 AM

Consider the following relational schema, provided as a SQLite database populated with sample data:

- Product(maker, model, type)
- PC(model, speed, ram, hd, price)
- Laptop(model, speed, ram, hd, screen, price)
- Printer(model, color, type, price)

Draw optimized relational algebra query execution trees for the following queries (5 points each). Show the schema for every intermediate operator as well as the root of the tree.

1. What makers produce Laptops cheaper than \$2000 with a screen larger than 16?
2. What makers produce PCs but do not produce Laptops?
3. For every maker that sells both PCs and Printers, find the combination of PC and Printer that has maximum price. Print the maker, the PC model, Printer model, and the combination price (PC price + Printer price).
4. What Laptop hd sizes are offered in at least 2 different models?
5. What PCs are less expensive than all the Laptops? Print the model and the price.
6. What makers produce at least a Laptop model and at least 2 Printer models?

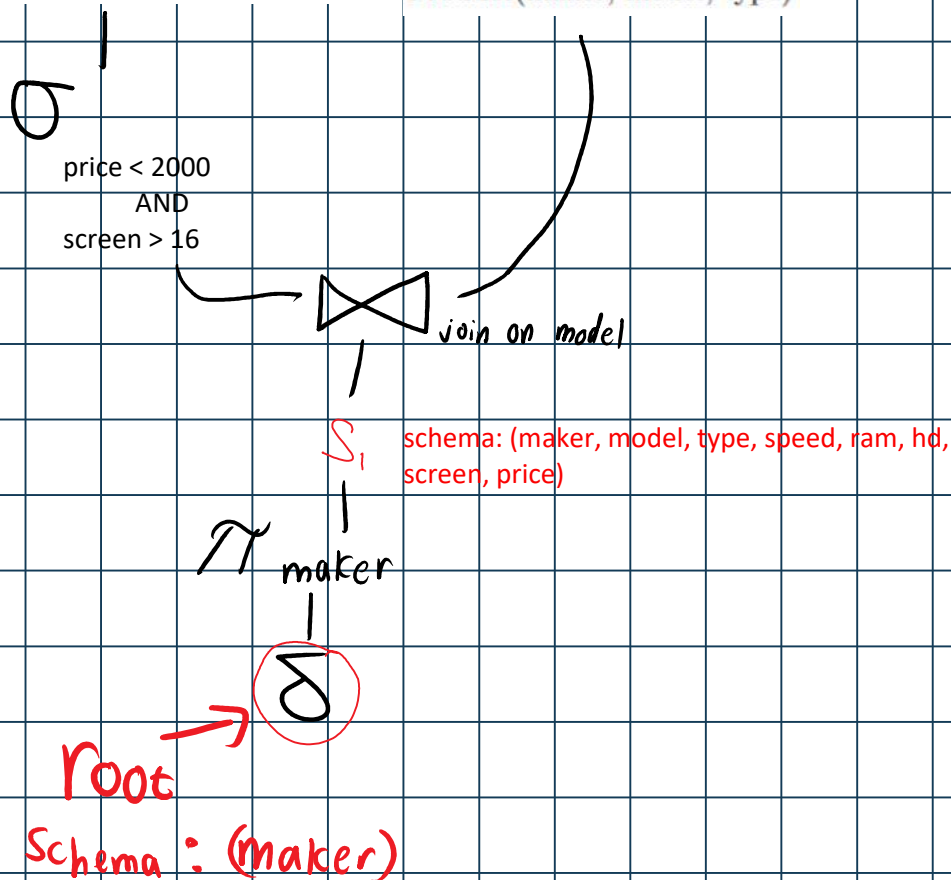
Draw/write your answers in a doc file or presentation slides. Convert to pdf and upload the pdf file to CatCourses.

Not really sure what this means, so I included schema for the current table every so often in red

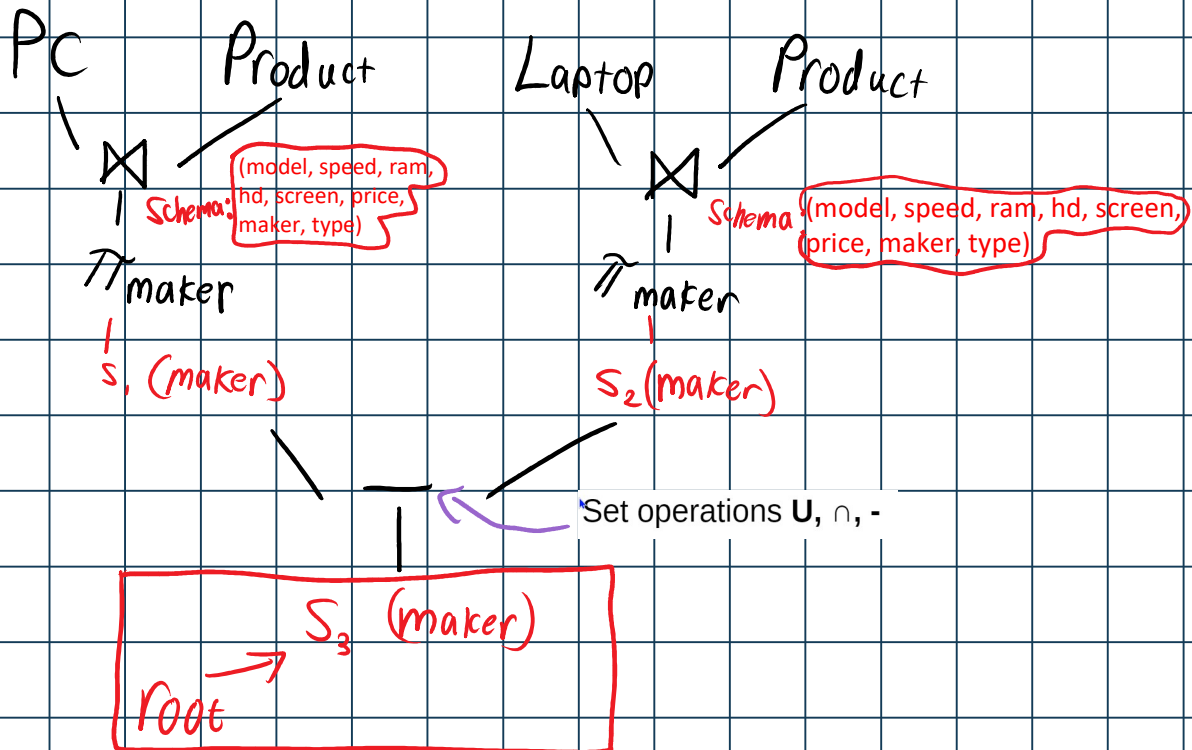
1) 1. What makers produce Laptops cheaper than \$2000 with a screen larger than 16?

Laptop(model, speed, ram, hd, screen, price)

Product(maker, model, type)

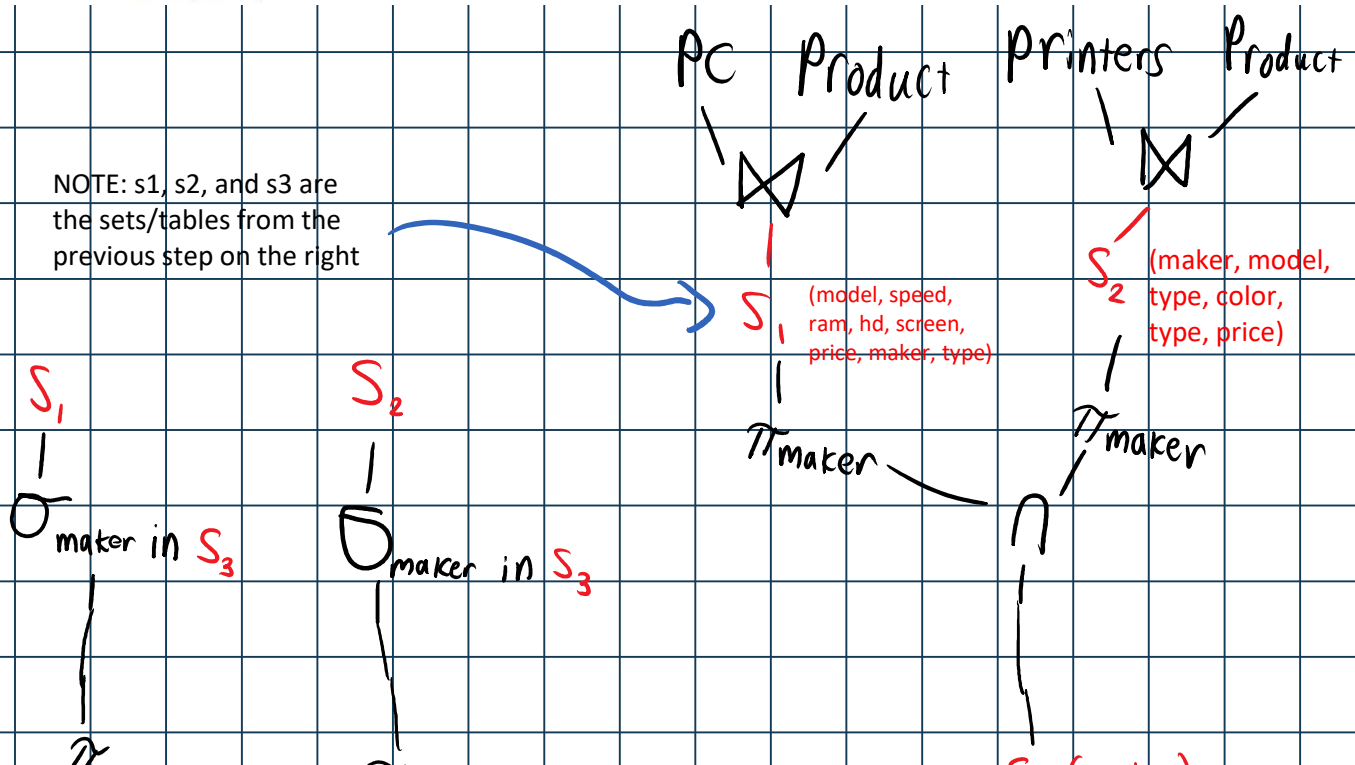


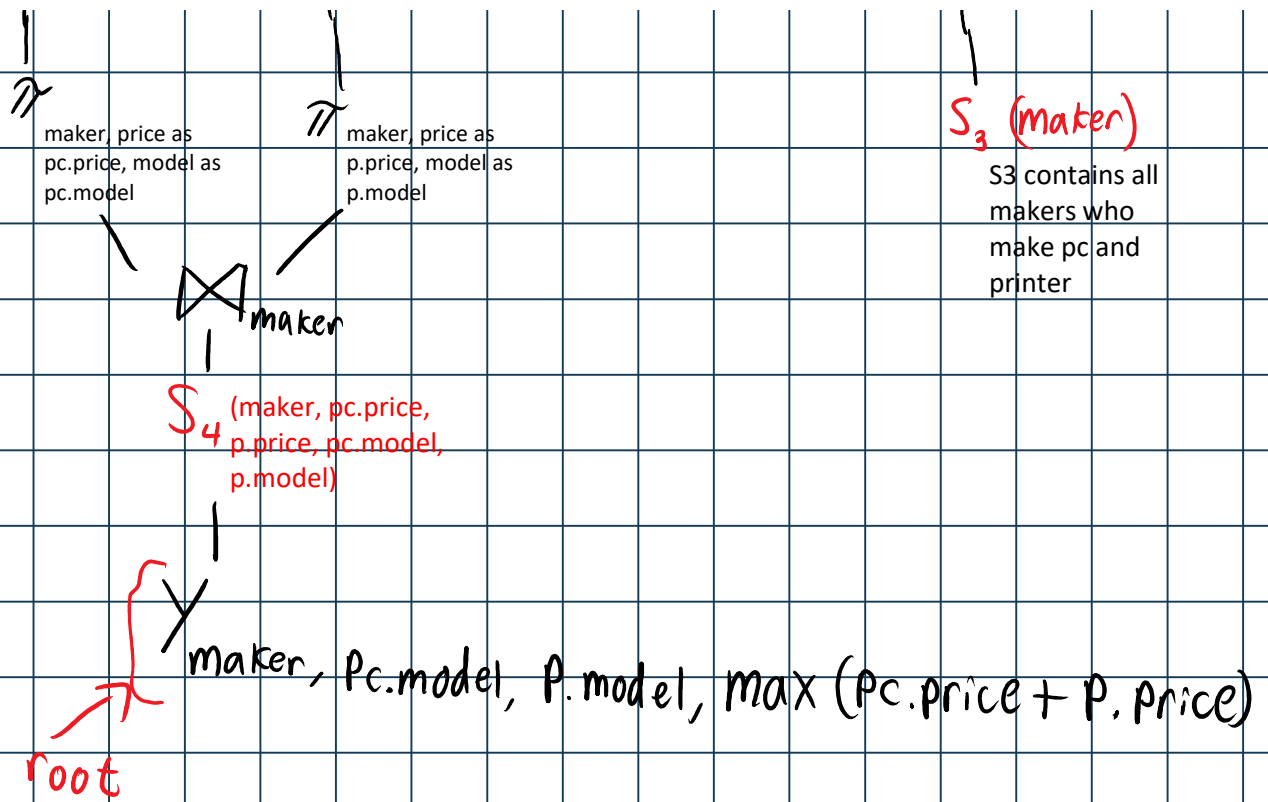
② 2. What makers produce PCs but do not produce Laptops?



3) 3. For every maker that sells both PCs and Printers, find the combination of PC and Printer that has maximum price. Print the maker, the PC model, Printer model, and the combination price (PC price + Printer price).

NOTE:  $s_1$ ,  $s_2$ , and  $s_3$  are the sets/tables from the previous step on the right



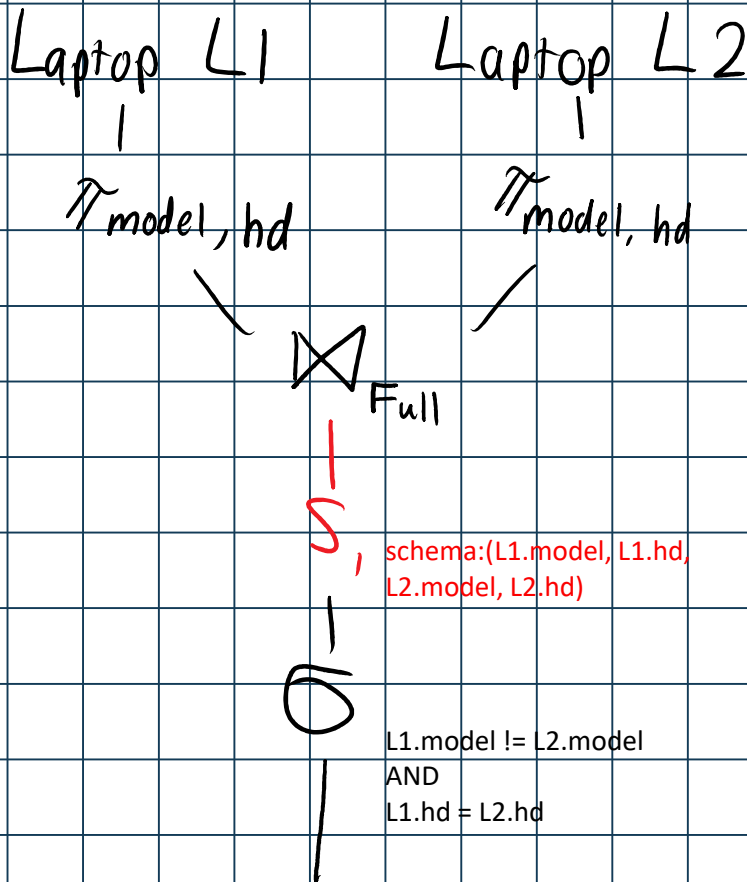


$S_3$  (maker)

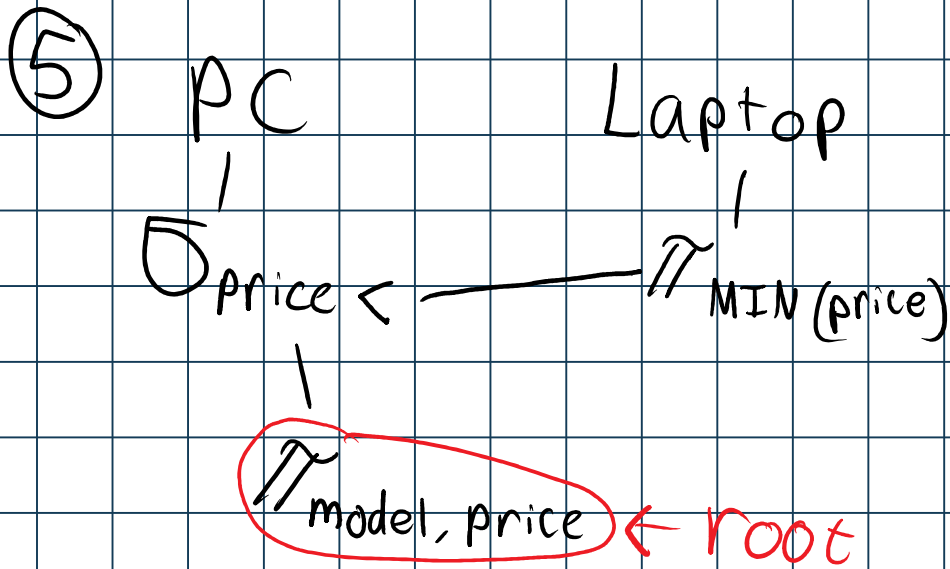
$S_3$  contains all  
makers who  
make pc and  
printer

④

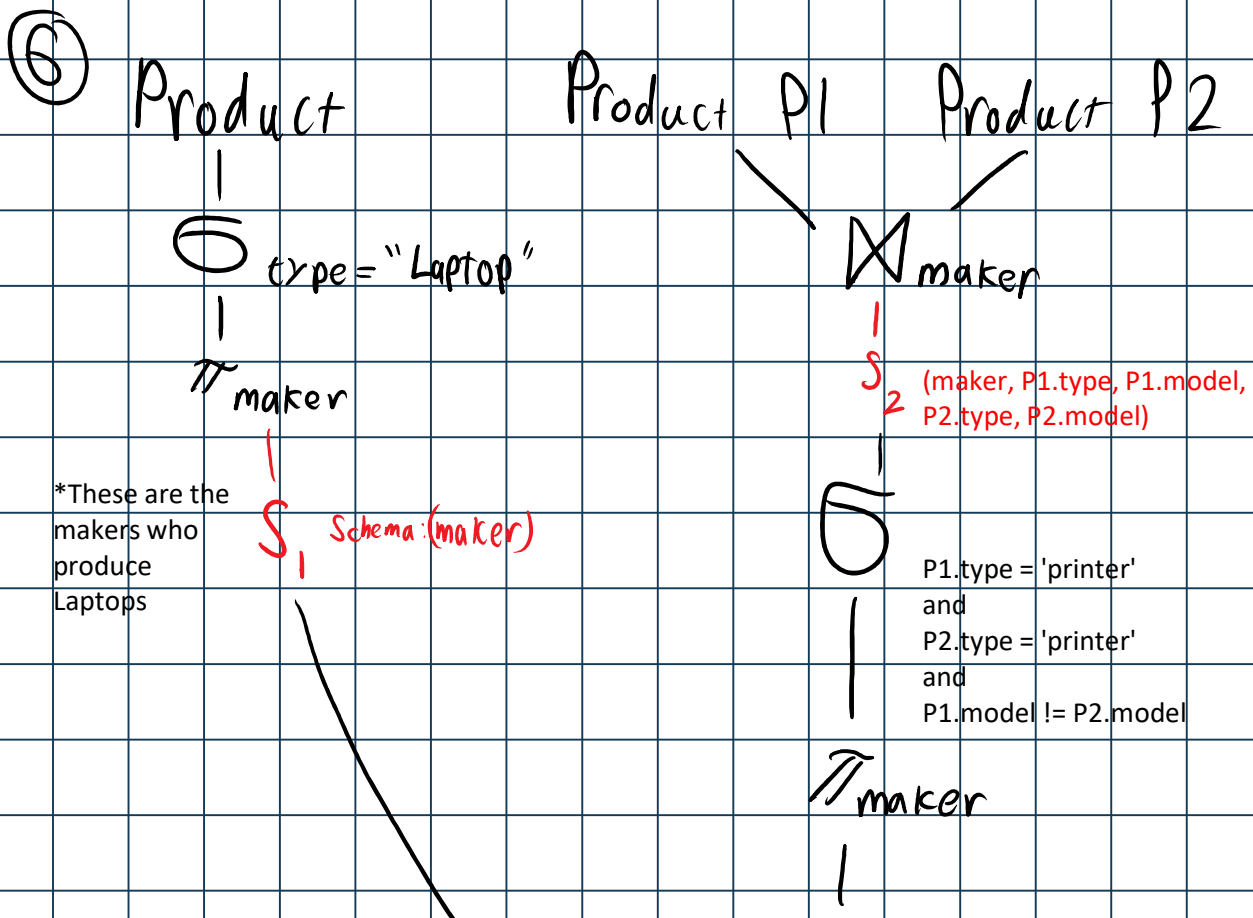
4. What Laptop hd sizes are offered in at least 2 different models?



$\pi_{L1.hd}$   
 $\delta \leftarrow \text{root}$



Schema is same as original PC table except for at projects which have schema equal to the parameters of the projection



\*These are the makers who produce Laptops

