Quiz 2

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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)

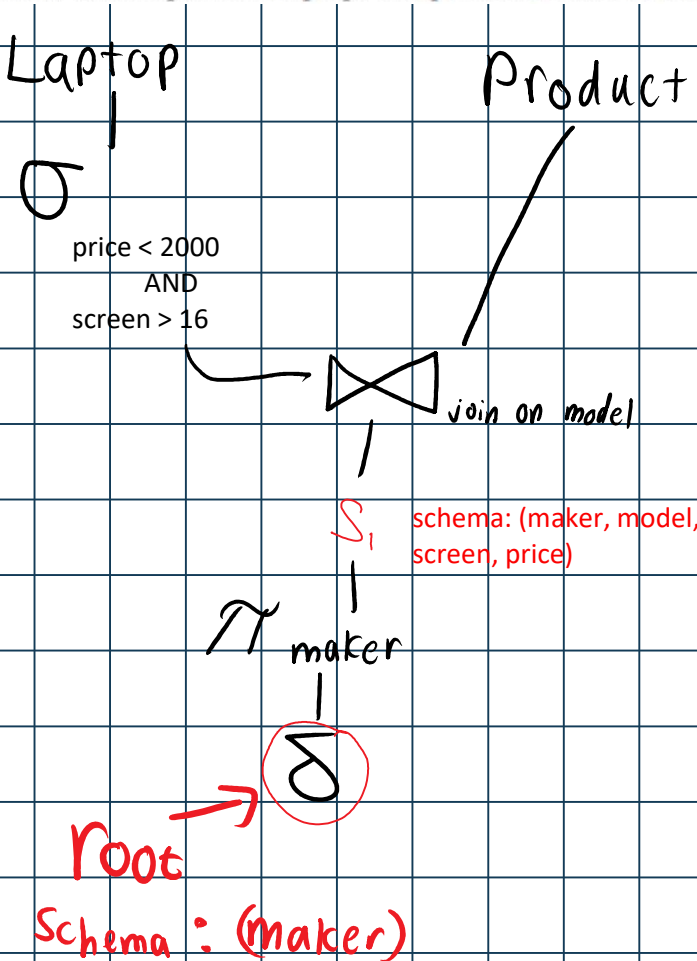
Draw optimized relational algebra query execution trees for the following queries (**5 points each**). Show the schema for every intermediate operator as well as the root of the tree.

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?

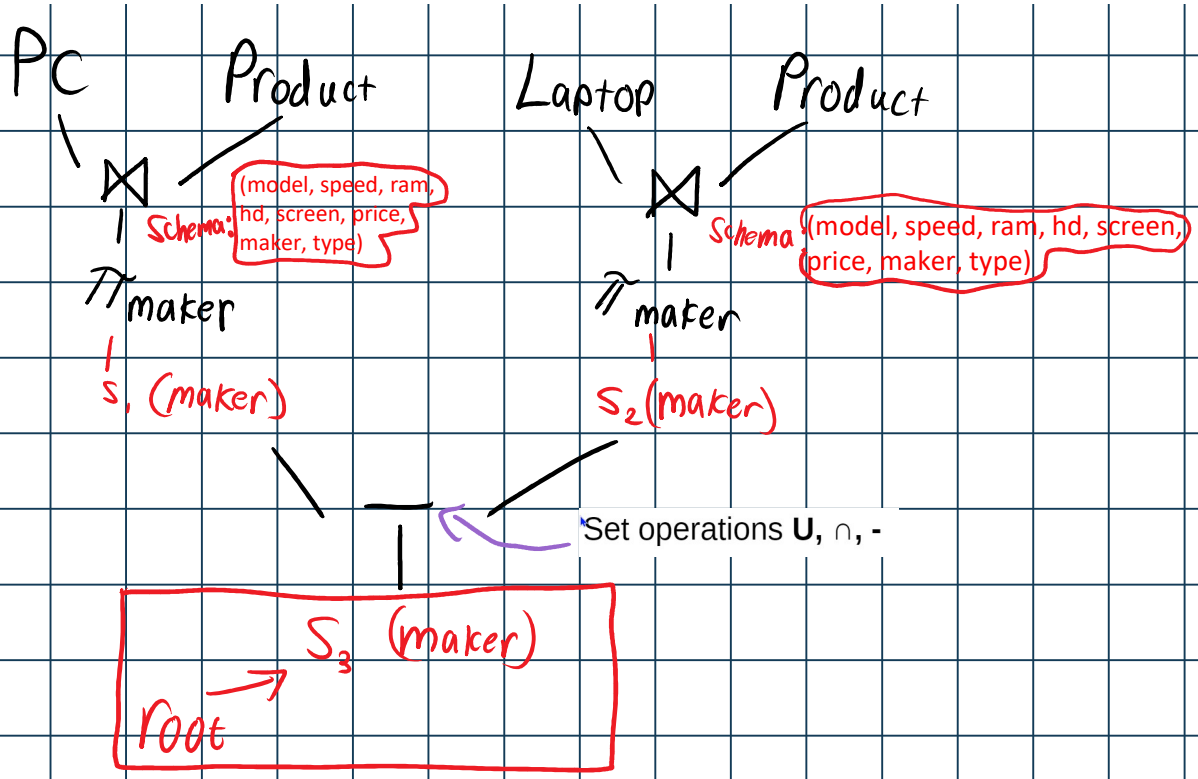
Draw/write your answers in a doc file or presentation slides. Convert to pdf and upload the pdf file to CatCourses.

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?

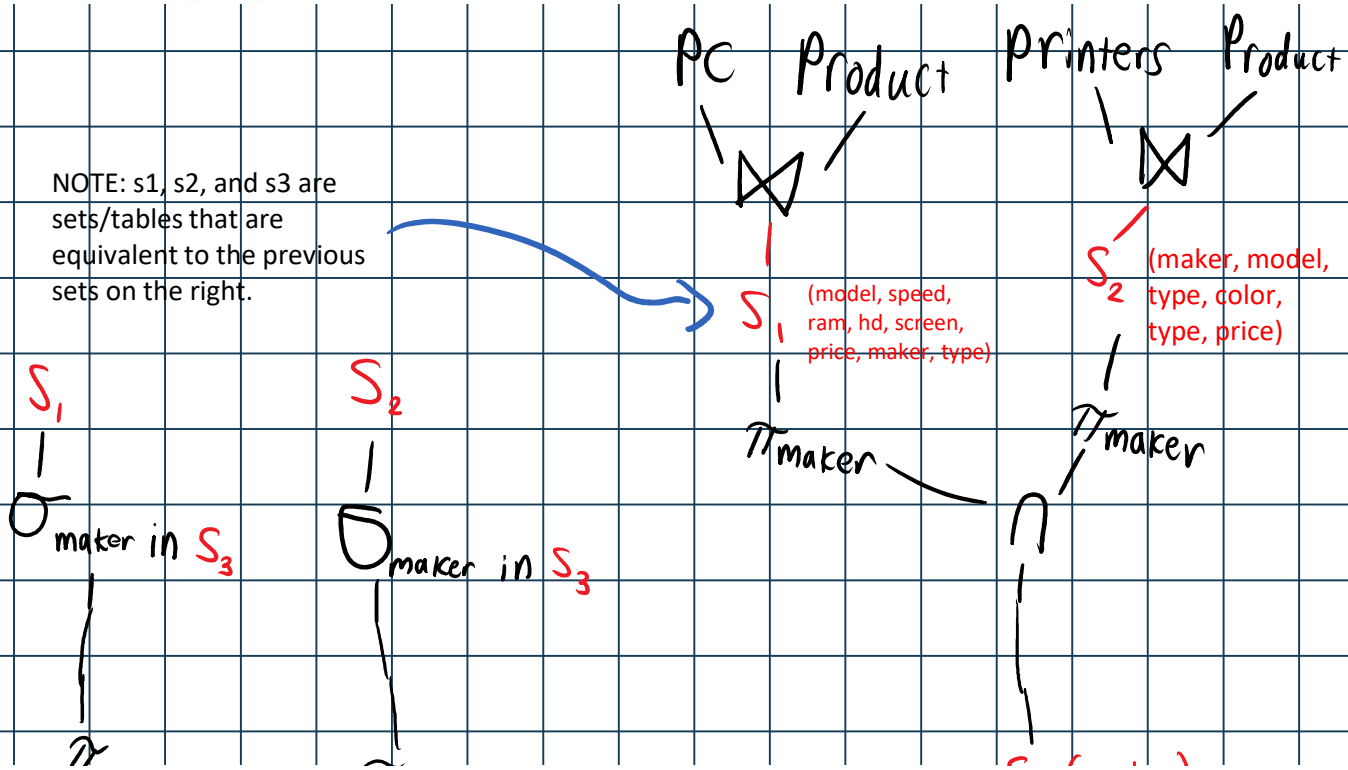


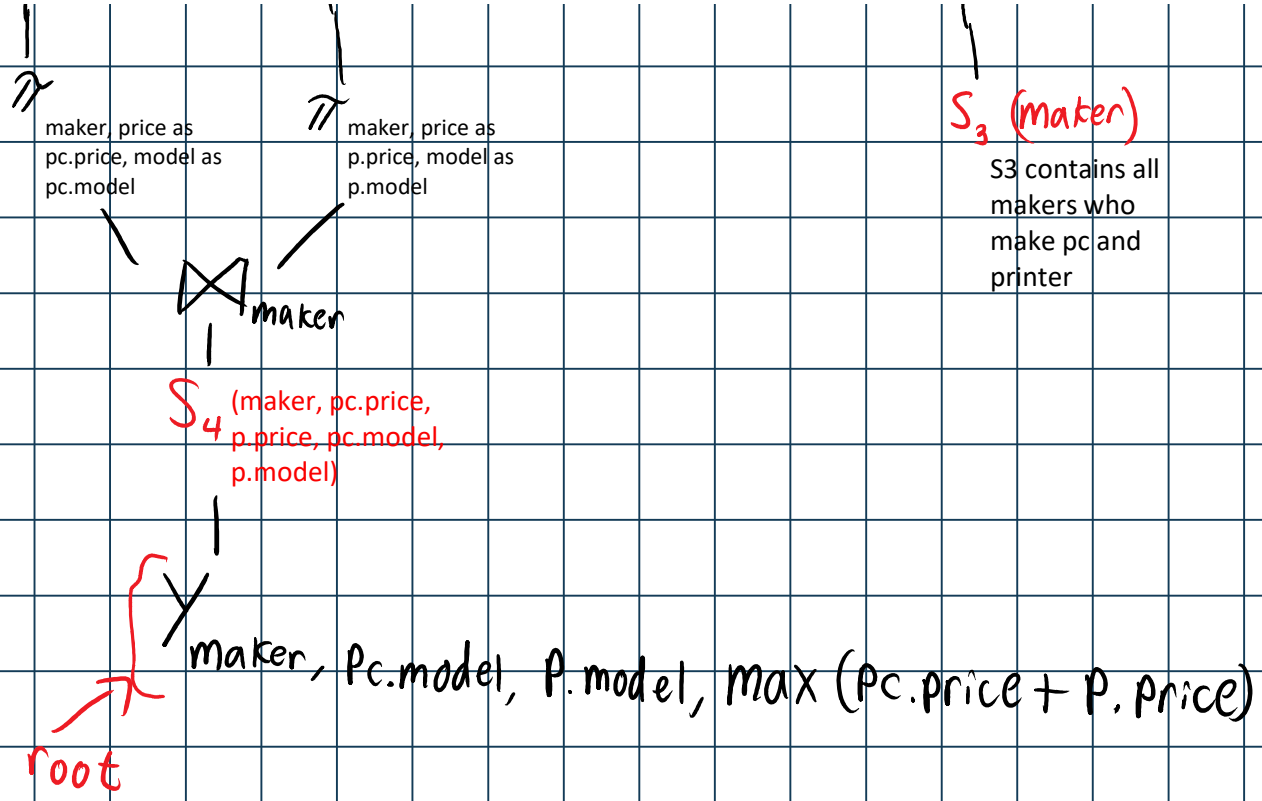
2. What makers produce PCs but do not produce Laptops?



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).

NOTE: s1, s2, and s3 are sets/tables that are equivalent to the previous sets on the right.





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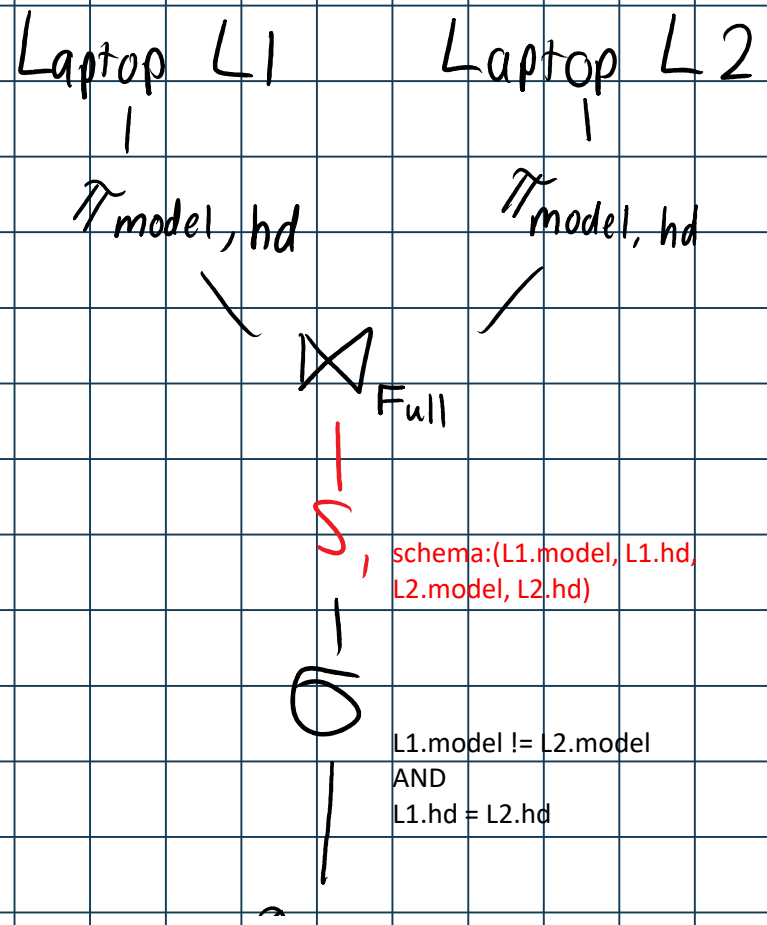
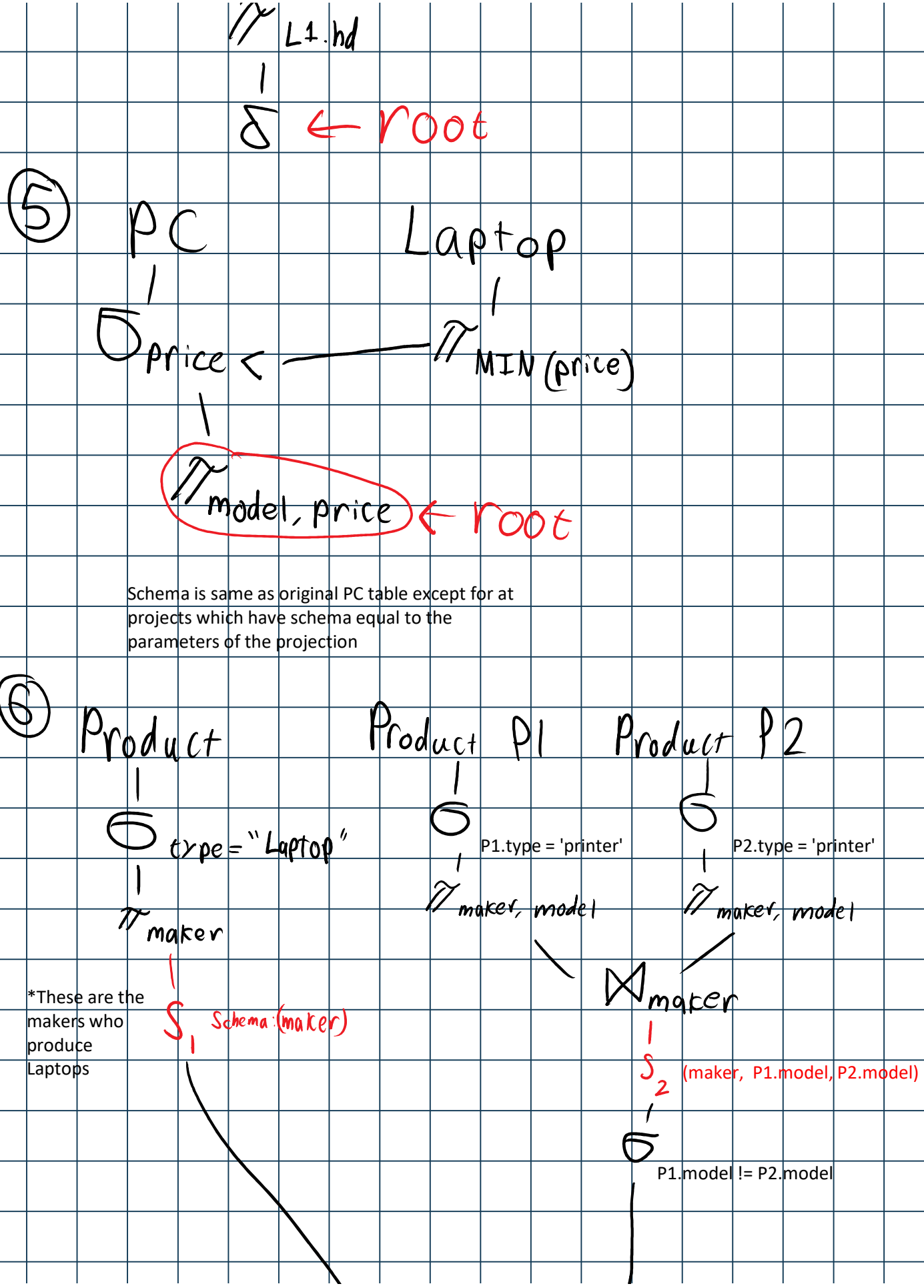
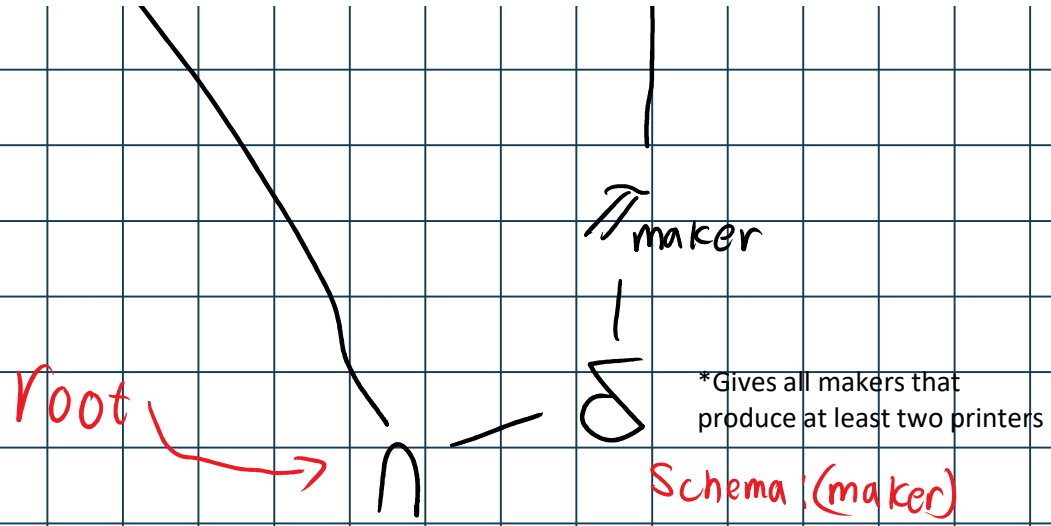
4. What Laptop hd sizes are offered in at least 2 different models?




L1.hd
root
5
PC
Laptop
price <
MIN (price)
model, price
root
Schema is same as original PC table except for at projects which have schema equal to the parameters of the projection
6
Product
Product P1
Product P2
type = "Laptop"
P1.type = 'printer'
P2.type = 'printer'
maker
maker, model
maker, model
*These are the makers who produce Laptops
S1
Schema: (maker)
S2
(maker, P1.model, P2.model)
P1.model != P2.model


maker
root
*Gives all makers that
produce at least two printers
Schema: (maker)