

CS2102 Lecture 12

Review: Questions

AY2015/16, Sem 1, Exercise 3

Consider relation R with attributes $\{A, B, C, D, E\}$ and FDs $F = \{ \{A, B\} \rightarrow \{D, E\}, \{A, B\} \rightarrow \{B\}, \{D, E\} \rightarrow \{B\}, \{A, B, C\} \rightarrow \{C, D\}, \{C, D, E\} \rightarrow \{B\} \}$

- (a) Use Armstrong's Axioms to prove that $\{A, C, D, E\}$ is a superkey of R .
- (b) Find all candidate keys of R .
- (c) Is R in BCNF?
- (d) Find a minimal cover of F .
- (e) Synthesize a 3NF decomposition of R .

AY2016/17, Sem 2, Question 3

staff (sid, sname)

project (pid, pdesc, pfrom, pto)

asset (aid, acat, adesc)

workfor (sid, pid, wfrom, wto)

assignment (aid, sid, pid, afrom, ato)

Find the names of the staffs who worked or are working for more than one project.

AY2016/17, Sem 2, Question 4

staff (sid, sname)

project (pid, pdesc, pfrom, pto)

asset (aid, acat, adesc)

workfor (sid, pid, wfrom, wto)

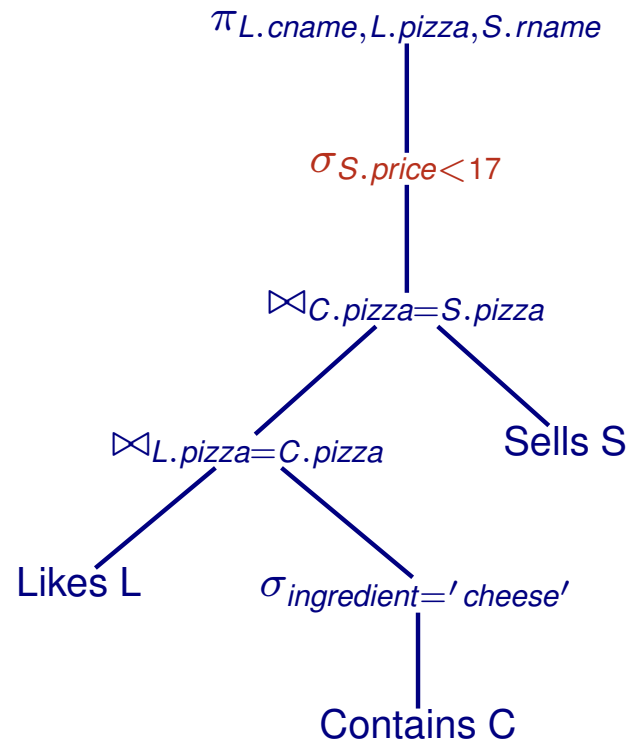
assignment (aid, sid, pid, afrom, ato)

Find the identifiers and categories of the assets related to Python that have been assigned to all projects also related to Python.

Question 1

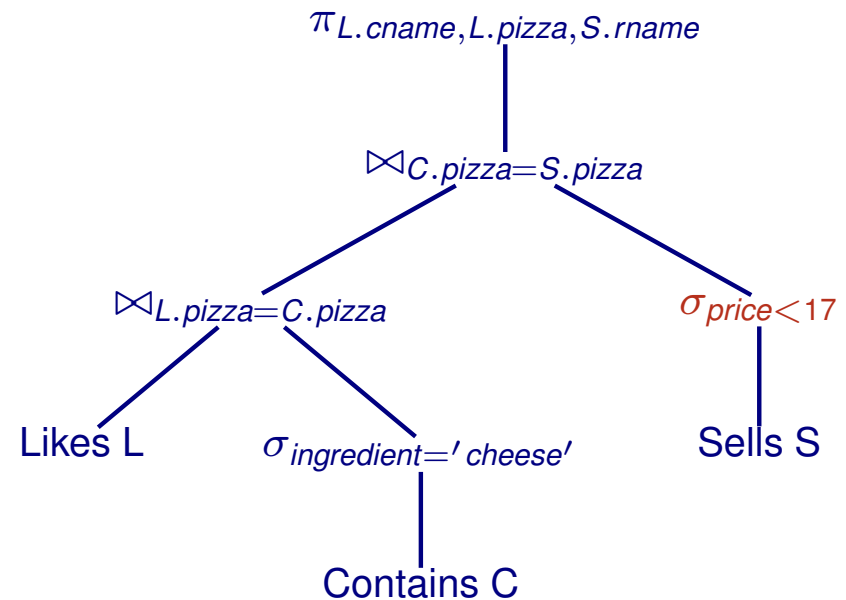
Query 1

select L.cname, L.pizza, S.rname
from Likes L **join** Contains C
 on L.pizza = C.pizza
 and C.ingredient = 'cheese'
join Sells S **on** C.pizza = S.pizza
where S.price < 17



Query 2

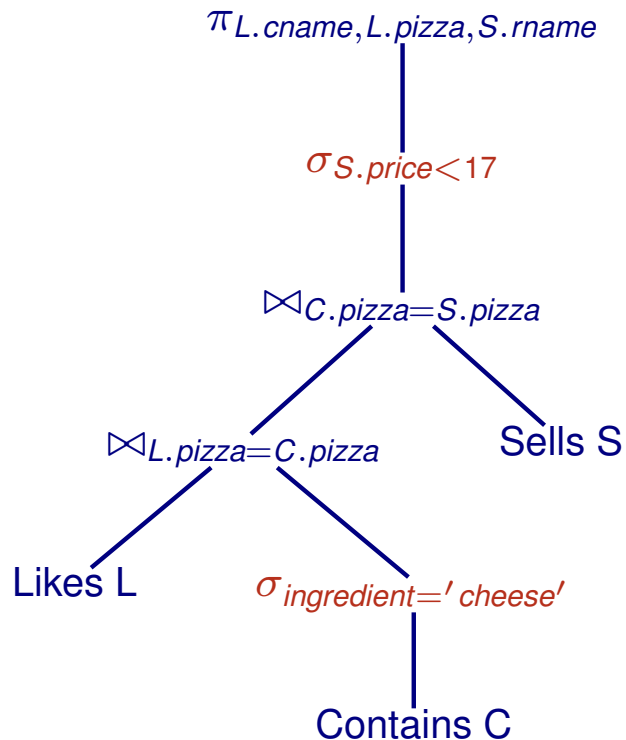
select L.cname, L.pizza, S.rname
from Likes L **join** Contains C
 on L.pizza = C.pizza
 and C.ingredient = 'cheese'
join Sells S **on** C.pizza = S.pizza
and S.price < 17



Question 1 (cont.)

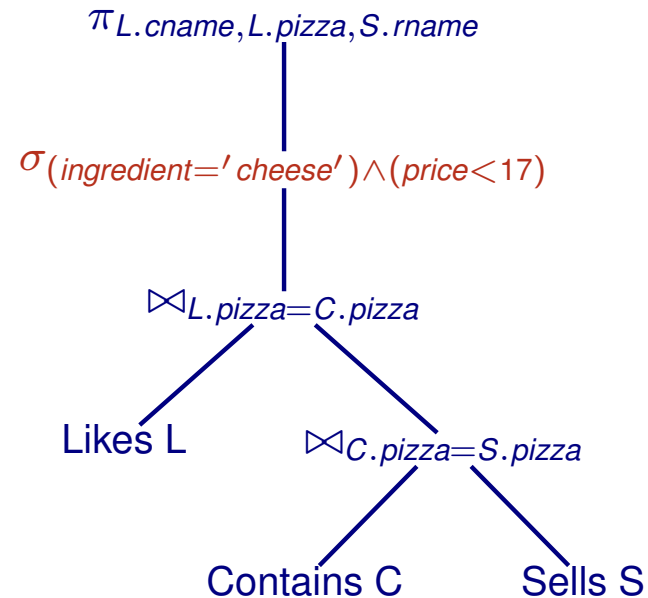
Query 1

select L.cname, L.pizza, S.rname
from Likes L **join** Contains C
 on L.pizza = C.pizza
 and C.ingredient = 'cheese'
join Sells S **on** C.pizza = S.pizza
where S.price < 17



Query 3

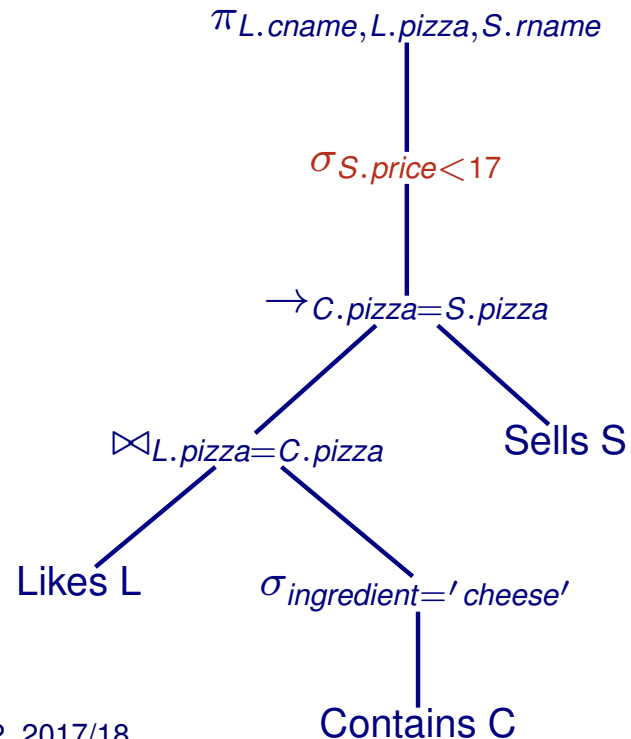
select L.cname, L.pizza, S.rname
from Likes L **join** (Contains C **join** Sells S)
 on C.pizza = S.pizza
on L.pizza = C.pizza
where C.ingredient = 'cheese'
and S.price < 17



Question 2

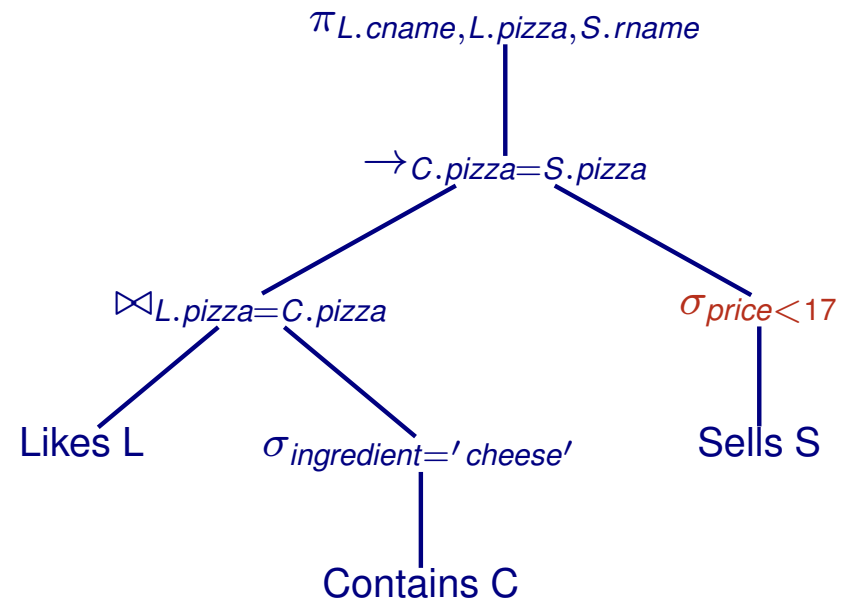
Query 1

select L.cname, L.pizza, S.rname
from Likes L **join** Contains C
 on L.pizza = C.pizza
 and C.ingredient = 'cheese'
left join Sells S **on** C.pizza = S.pizza
where S.price < 17



Query 2

select L.cname, L.pizza, S.rname
from Likes L **join** Contains C
 on L.pizza = C.pizza
 and C.ingredient = 'cheese'
left join Sells S
 on C.pizza = S.pizza
 and S.price < 17



Question 3

Query 1

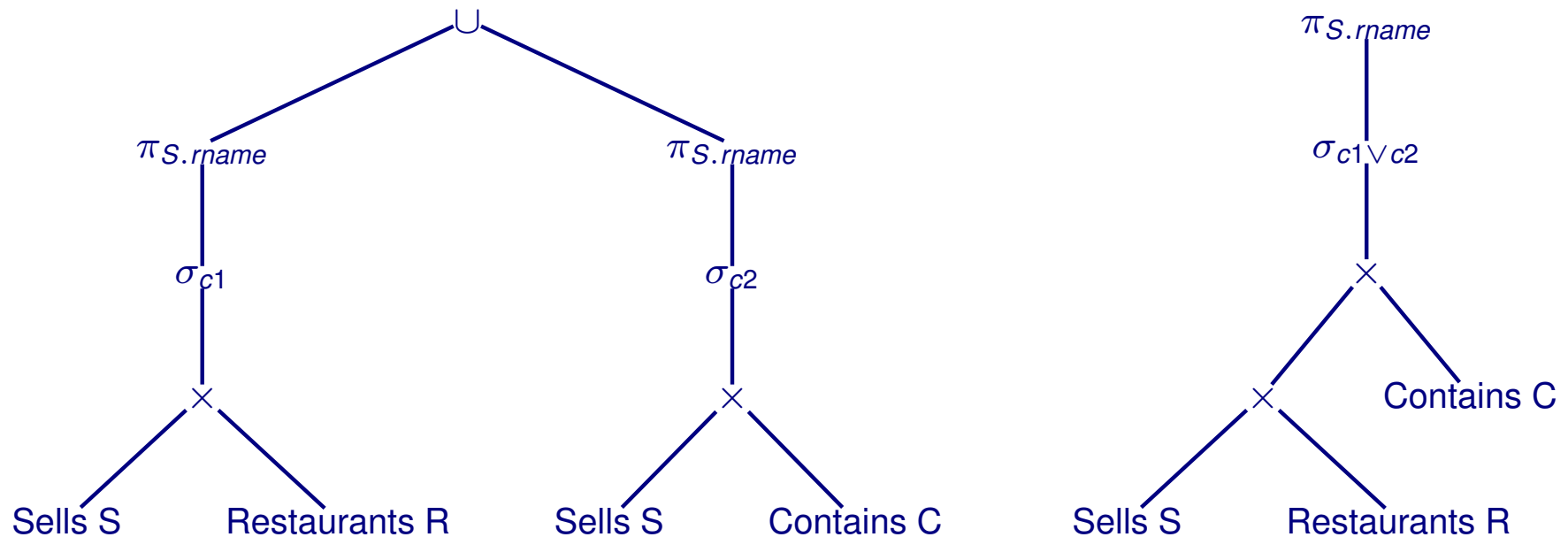
select S.rname
from Sells S, Restaurants R
where S.rname = R.rname
and R.area = 'East'
union
select S.rname
from Sells S, Contains C
where S.pizza = C.pizza
and C.ingredient = 'seafood'

Query 2

select **distinct** S.rname
from Sells S, Restaurants R, Contains C
where ((S.rname = R.rname) **and** (R.area = 'East'))
or ((S.pizza = C.pizza) **and** (C.ingredient = 'seafood'))

$$c1 = (S.rname = R.rname) \wedge (R.area = 'East')$$

$$c2 = (S.pizza = C.pizza) \wedge (C.ingredient = 'seafood')$$



Question 3 (cont.)

Query 3

```
select    distinct  S.rname
from      Sells S
where     exists(
            select    1
            from      Restaurants R
            where     R.rname = S.rname
            and       R.area = 'East')
or        exists(
            select    1
            from      Contains C
            where     C.pizza = S.pizza
            and       C.ingredient = 'seafood')
```

AY2016/17, Sem 2, Question 7

staff (sid, sname)

project (pid, pdesc, pfrom, pto)

asset (aid, acat, adesc)

workfor (sid, pid, wfrom, wto)

assignment (aid, sid, pid, afrom, ato)

Find the names of the different staffs who worked or are working for more than 20 projects that started in March 2017 (each of the 20 projects started in March 2017). Print the names of these different staffs and the corresponding numbers of projects (numbers of projects refers to the quantity of projects).