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Question 1.1

$$\pi\,(title)(\\ \sigma(dept\ =\ 'EE'\Lambda\ credits > 3)\\ (Course))$$

Question 1.2

$$\pi\,(s.\,student, c.\,title)(\\ \sigma\,(s.\,dept = c.\,dept)(\\ \rho s(Student) \bowtie (s.\,sid = e.\,sid)\\ \rho e(Enroll) \bowtie (c.\,cid = e.\,cid)\\ \rho c(Course))))$$

Question 1.3 Part 1

$$\pi(c.\,title, c.\,dept)\rho C(Course)\\ -\\ \pi(c.\,title, c.\,dept)(\\ \rho C(Course) \bowtie (p.\,cid = c.\,cid)\\ \rho p(Prereq))$$

Question 1.3 Part 2

$$\pi(c.\,title)(\\ \sigma(cnt > 1)(\\ \gamma(c.\,cid, c.\,title, count(p.\,pid) \rightarrow cnt)(\\ \rho c(Course) \bowtie (c.\,cid = p.\,cid)\\ \rho p(Prereq))))$$

Question 1.4

$$\pi(e.\,sid, cnt)(\\ \gamma(e.\,sid, sum(c.\,credits) \rightarrow cnt)(\\ \sigma(e.\,gradepoint)(\\ \rho c(Course) \bowtie (e.\,cid = c.\,cid)\\ \rho e(Enroll))))$$

Question 1.5

$$\pi(cid)(\sigma(sid =' 001')(Enroll) - (\pi(cid)(\sigma(sid =' 002')(Enroll))) \cup (\pi(cid)(\sigma(sid =' 002')(Enroll)) - (\pi(cid)(\sigma(sid =' 001')(Enroll))))$$

PART 2 Question 2.1

```
SELECT P1, MAX(Y) AS Z
FROM (
  SELECT pc.p1 AS p1, COUNT(*) as Y
  FROM parent_child pc
  JOIN person_living pl on pl.x = pc.p1
  JOIN(
    SELECT p1 as p3, p2 as p4
    FROM parent_child)
  AS pc2 ON pc.p2 = pc2.p3
  GROUP BY pc.p1, pc2.p3)
GROUP BY p1;
```

Question 2.2

$\pi a.p(A - B)$

$WhereA:$

$\pi(a.p)($

$\rho a(person\_living) \bowtie (a.p = b.name)$

$\rho b(male))$

$WhereB:$

$\pi(a.p)($

$\rho c(parent\_child) \bowtie (c.p1 = d.name)$

$p.d(female) \bowtie (c.p2 = a.p)\rho a(person\_living))$