

1. Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach.

```
SELECT DISTINCT S.Sname
FROM Student S, Class C, Enrolled E, Faculty F
WHERE S.snum = E.snum AND E.cname = C.name AND C.fid = F.fid AND
F.fname = 'I.Teach' AND S.level = 'JR'
```

2. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. Teach.

```
SELECT MAX(S.age)
FROM Student S
WHERE (S.major = 'History')
OR S.snum IN (SELECT E.snum
FROM Class C, Enrolled E, Faculty F
WHERE E.cname = C.name AND C.fid = F.fid
AND F.fname = 'I.Teach' )
```

3. Find the names of all classes that either meet in room R128 or have five or more students enrolled.

```
SELECT C.name
FROM Class C
WHERE C.room = 'R128'
OR C.name IN (SELECT E.cname
FROM Enrolled E
GROUP BY E.cname
HAVING COUNT (*) >= 5)
```

4. Find the names of all students who are enrolled in two classes that meet at the same time.

```
SELECT DISTINCT S.sname
FROM Student S
WHERE S.snum IN (SELECT E1.snum
FROM Enrolled E1, Enrolled E2, Class C1, Class C2
WHERE E1.snum = E2.snum AND E1.cname <> E2.cname
AND E1.cname = C1.name
AND E2.cname = C2.name AND C1.meets at = C2.meets at)
```

5. Find the names of faculty members who teach in every room in which some class is taught.

```
SELECT DISTINCT F.fname
FROM Faculty F
WHERE NOT EXISTS (( SELECT *
FROM Class C )
EXCEPT
(SELECT C1.room
FROM Class C1
WHERE C1.fid = F.fid ))
```

6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.

```
SELECT DISTINCT F.fname
FROM Faculty F
WHERE 5 > (SELECT COUNT (E.snum)
FROM Class C, Enrolled E
WHERE C.name = E.cname
AND C.fid = F.fid)
```

7. For each level, print the level and the average age of students for that level.

```
SELECT S.level, AVG(S.age)
FROM Student S
GROUP BY S.level
```

8. For all levels except JR, print the level and the average age of students for that level.

```
SELECT S.level, AVG(S.age)
FROM Student S
WHERE S.level <> 'JR'
GROUP BY S.level
```

9. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.

```
SELECT F.fname, COUNT(*) AS CourseCount
FROM Faculty F, Class C
WHERE F.fid = C.fid
GROUP BY F.fid, F.fname
HAVING EVERY ( C.room = 'R128' )
```

10. Find the names of students enrolled in the maximum number of classes.

```
SELECT DISTINCT S.sname
FROM Student S
WHERE S.snum IN (SELECT E.snum
FROM Enrolled E
GROUP BY E.snum
HAVING COUNT (*) >= ALL (SELECT COUNT (*)
FROM Enrolled E2
GROUP BY E2.snum ))
```

11. Find the names of students not enrolled in any class.

```
SELECT DISTINCT S.sname
FROM Student S
WHERE S.snum NOT IN (SELECT E.snum
FROM Enrolled E )
```

12. For each age value that appears in Students, find the level value that appears most often. For example, if there are more FR level students aged 18 than SR, JR, or SO students aged 18, you should print the pair (18, FR).

```
SELECT S.age, S.level
FROM Student S
GROUP BY S.age, S.level,
HAVING S.level IN (SELECT S1.level
FROM Student S1
WHERE S1.age = S.age
GROUP BY S1.level, S1.age
HAVING COUNT (*) >= ALL (SELECT COUNT (*)
FROM Student S2
WHERE s1.age = S2.age
GROUP BY S2.level, S2.age))
```