SQL Nested Queries Part 1

Q1.

Solution 1:

```
SELECT MAX(S.age)
FROM Students S, Enrolled E, Class C, Faculty F
WHERE S.snum = E.snum AND
      E.cname = E.cname AND
      C.fid = F.fid AND
      F.fname = 'Adam Smith';
```

Solution 2:

```
SELECT S1.age
FROM Students S1, Enrolled E1, Class C1, Faculty F1
WHERE S1.age >= ANY (SELECT S2.age
                     FROM Students S2, Enrolled E2,
                          Class C2, Faculty F2
                     WHERE F2.fname = "Adam Smith")
```

{20, 18}

```
SELECT S1.age
FROM Students S1
WHERE S1.age >= ALL (SELECT age
                     FROM Enrolled E2, Class C2,
                          Faculty F2
                     WHERE F2.fname = 'Adam Smith'
                       AND
                       S1.snum = E2.snum
                       AND
                       E2.cname = C2.cname
                       AND
                       C2.fid = F2.fid);
```

Q2.

Solution 1:

```
SELECT E.cname
FROM Enrolled AS E
GROUP BY E.cname
HAVING (COUNT(E.snum > 1))
  UNION
SELECT C.cname
FROM Class AS C
WHERE C.room = 'Babbio 310';
```

Solution 2:

```
SELECT C1.cname
FROM Class C1
WHERE C1.cname IN
        SELECT C2.cname
        FROM Class C2, Enrolled E2,
             Enrolled E2.
        WHERE E1.snum <> E2.snum AND
              E1.cname = E2.cname AND
              C2.cname = E1.cname AND
              C2.cname = E2.cname
```

SQL Nested Queries Part 2

Q4. SELECT S.sname
FROM Student S
WHERE

Q3. Solution 1

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

Solution 2

```
SELECT S.sname
FROM Student S <> ALL
WHERE S.snum (SELECT snum
        FROM
        Enrolled E
WHERE
```

Q4.

Solution 1

```
SELECT sname
FROM Student NJ Enrolled
GROUP BY snum, sname
HAVING count(cname) = (SELECT MAX(count(cname))
        FROM Enrolled
        GROUP BY snum)
```

- step1. find # of distinct classrooms each faculty taught in
step 2. find total # of classrooms that have at least 1 class
step3 (output): return faculty name whose output by step 1 = output by step 2

Solution 2

```
SELECT X.sname
FROM (SELECT Y.sname, MAX(Y.ccount)
      FROM (SELECT S.sname, COUNT(E.cname) AS ccount
            FROM Students S, Enrolled E
            WHERE S.saum = E.snum
            GROUP By S.sname) AS Y) AS X;
```

Q5. Solution 1

```
SELECT fname
FROM Faculty F NJ class C
GROUP By fid, fname
HAVING count(DISTINCT (room)) =
       (SELECT count(DISTINCT
       (room))
       FROM class);
```

Can't
MAX(count(...))