Practice Writing Queries

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

1) Find all rooms that can seat at least 100 people.

```
SELECT name
FROM Room
WHERE capacity >= 100;
```

2) Find the course or courses with the earliest start time.

```
SELECT name
FROM Course
WHERE start_time = (SELECT MIN(start_time)
                    FROM Course);
```

Practice Writing Queries (cont.)

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

3) Find the number of majors in each department.

```
SELECT dept, COUNT(*)
FROM MajorsIn
GROUP BY dept;
```

4) Find all courses taken by CS ('comp sci') majors.

```
SELECT DISTINCT E.course_name
FROM Enrolled E, MajorsIn M
WHERE E.student_id = M.student_id
  AND M.dept_name = 'comp sci';
```

Practice Writing Queries (cont.)

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

5) Create a list of all Students who are *not* enrolled in a course.

```
SELECT name
FROM Student
WHERE ID NOT IN (SELECT student_id FROM Enrolled);
```

Why won't this work?

```
SELECT name
FROM Student, Enrolled
WHERE Student.id != Enrolled.student_id;
```

Practice Writing Queries (cont.)

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

6) Find the number of CS majors enrolled in cscie268.

```
SELECT COUNT(*)
FROM Enrolled E, MajorsIn M
WHERE E.student_id = M.student_id
    AND E.course_name = 'cscie268'
    AND M.dept_name = 'comp sci';
```

6b) Find the number of CS majors enrolled in any course.

```
SELECT COUNT(DISTINCT E.student_id)
FROM Enrolled E, MajorsIn M
WHERE E.student_id = M.student_id
      AND M.dept_name = 'comp sci';
```

Practice Writing Queries (cont.)

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

7) Find the number of majors that each student has declared.

```
SELECT id, name, COUNT(dept_name)
FROM Student LEFT JOIN MajorsIn
    ON id = student_id
GROUP BY id, name;      # include id in case two
                        # students have the same name
```

The following will *not* work, because it counts the rows,
rather than the number of non-NULL values.

```
SELECT id, name, COUNT(*)
FROM Student LEFT JOIN MajorsIn
    ON id = student
GROUP BY id, name;
```

Practice Writing Queries (cont.)

Student(id, name)   Department(name, office)   Room(id, name, capacity)
Course(name, start_time, end_time, room_id)   MajorsIn(student_id, dept_name)
Enrolled(student_id, course_name, credit_status)

8) For each department with more than one majoring student,
   output the department's name and the number of majoring
   students.

```
SELECT dept_name, COUNT(*)
FROM MajorsIn
GROUP BY dept_name
HAVING COUNT(*) > 1;
```