SQL Exercises: GROUP BY and HAVING

Schema

Student(sID, surName, firstName, campus, email, cgpa) Offering[dept, cNum] ⊆ Course[dept, cNum]

Course(dept, cNum, name, breadth) Took[sID] ⊆ Student[sID]

Offering(oID, dept, cNum, term, instructor) Took[oID] ⊆ Offering[oID]

Took(sID, oID, grade)

Questions

1. Write a query to find the average grade, minimum grade, and maximum grade for each offering.

2. Which of these queries is legal?

```
SELECT surname, sid
FROM Student, Took
WHERE Student.sid = Took.sid
GROUP BY sid;
```

```
SELECT instructor, max(grade),
    count(Took.oid)
FROM Took, Offering
WHERE Took.oid = Offering.oid
GROUP BY instructor;
```

```
SELECT surname, Student.sid
FROM Student, Took
WHERE Student.sid = Took.sid
GROUP BY campus;
```

```
SELECT Course.dept, Course.cnum,
    count(oid), count(instructor)
FROM Course, Offering
WHERE Course.dept = Offering.dept and
    Course.cnum = Offering.cnum
GROUP BY Course.dept, Course.cnum
ORDER BY count(oid);
```

3. Find the sid and minimum grade of each student with an average over 80.

4. Find the sid, surname, and average grade of each student, but keep the data only for those students who have taken at least 10 courses.

5. For each student who has passed at least 10 courses, report their sid and average grade on the courses that they passed.

6. For each student who has passed at least 10 courses, report their sid and average grade on *all of their courses.*

7. Which of these queries is legal?

```
SELECT dept
FROM Took, Offering
WHERE Took.oID = Offering.oID
GROUP BY dept
HAVING avg(grade) > 75;
```

```
SELECT Took.oID, avg(grade)
FROM Took, Offering
WHERE Took.oID = Offering.oID
GROUP BY Took.oID
HAVING avg(grade) > 75;
```

```
SELECT Took.oID, dept, cNum, avg(grade)
FROM Took, Offering
WHERE Took.oID = Offering.oID
GROUP BY Took.oID
HAVING avg(grade) > 75;
```

```
SELECT oID, avg(grade)
FROM Took
GROUP BY sID
HAVING avg(grade) > 75;
```