

# Course ISE 322: Database Systems

## Recitation 11: Nested and Aggregate Queries

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Answer the following queries in SQL using nested and aggregate queries. There may be other ways to answer the query, so try them out!

The following queries are based on the following schemas:

Sailors(sid:integer, sname:string, rating:integer, age:real)  
Boats(bid:integer, bname:string, color:string)  
Reserves(sid:integer, bid:integer, day:date)

and

Student(snum:integer, sname:string, major:string, level:string, age:integer)  
Class(name:string, meets\_at:time, room:string, fid:integer)  
Enrolled(snum:integer, cname:string)  
Faculty(fid:integer, fname:string, deptid:integer)

**Note:** The queries here have appeared previously in Recitations 9a and 9b. Sample answers are available on Telem. The queries which were done together during the recitation session today are marked with a † symbol.

### 1 Nested Queries

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

fname
Richard Jackson

### 2 Aggregate Queries

1. Print out the names of sailors who have never reserved the same boat twice.†

sname
Andy
Art
Bob
Brutus
Horatio
Lubber
Rusty
Zorba

2. Print the level and the average age of students for that level, for each level.

level	avgage
FR	17
JR	19
SO	18
SR	20

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

fname
Barbara Wilson
David Anderson
Elizabeth Taylor
Ivana Teach
James Smith
Jennifer Thomas
John Williams
Mary Johnson
Michael Miller
Patricia Jones
Richard Jackson
Robert Brown
Ulysses Teach
William Moore

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

name
Archaeology of the Incas
Dairy Herd Management
Data Structures
Database Systems
Intoduction to Math
Operating System Design
Patent Law

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

maxage
20

6. Print the level and the average age of students for that level, for all levels except JR.

level	avgage
FR	17
SO	18
SR	20

7. 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.

fname	CourseCount
Robert Brown	1

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

sname
Ana Lopez
Juan Rodriguez

9. 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).

age	level
17	FR
18	FR
19	SO
20	JR
21	SR
22	SR