

## Assignment 3: Relational2

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- 1 Find the IDs of all students who were taught by an instructor named Einstein. Your answer may not contain any duplicates.

```
tombohbot=# tombohbot=# SELECT distinct S.ID
FROM student_s as S, takes_s as T, instructor_s as I, teaches_s as F
WHERE T.ID = S.ID and I.name = 'Einstein' and T.course_id = F.course_id and F.ID = I.ID;
 id
-----
 44553
(1 row)
```

Figure 1: Unique student's Taking Einstein's courses

- 2 Find the “enrollment” of every section that was taught in Fall 2009, and report the enrollment along with the course “id” and section “id” information.

```
tombohbot=# SELECT count(T.ID) as Enrollment, T.course_id, T.sec_id
FROM takes_s as T
WHERE T.year = 2009 and T.semester = 'Fall'
GROUP BY T.course_id, T.sec_id;
 enrollment | course_id | sec_id
-----
          6 | CS-101    | 1
          2 | CS-347    | 1
          1 | PHY-101   | 1
(3 rows)
```

Figure 2: Enrollment of Fall '09 Sections

- 3 Find the instructor id and department name of all instructors associated with a department whose budget is greater than \$95,000.

```
tombohbot=# SELECT I.ID, D.dept_name
tombohbot=# FROM instructor_s as I, department_s as D
tombohbot=# WHERE I.dept_name = SOME(
tombohbot=# SELECT D.dept_name
tombohbot=# WHERE D.budget > 95000);
```

id	dept_name
10101	Comp. Sci.
45565	Comp. Sci.
83821	Comp. Sci.
12121	Finance
76543	Finance

(5 rows)

Figure 3: Teachers in high budget departments

- 4 Find the highest salary of any instructor

```
tombohbot=# SELECT MAX(I.salary)
tombohbot=# FROM instructor_s as I;
max
-----
95000.00
(1 row)
```

Figure 4: Highest salary among professors

- 5 For each department, find the maximum salary of instructors in that department.

```
tombohbot=# SELECT MAX(I.salary) AS max_salary, D.dept_name
tombohbot=# FROM instructor_s as I, department_s as D
tombohbot=# WHERE I.dept_name = D.Dept_name
tombohbot=# GROUP BY D.dept_name;
```

max_salary	dept_name
90000.00	Finance
62000.00	History
40000.00	Music
72000.00	Biology
80000.00	Elec. Eng.
95000.00	Physics
92000.00	Comp. Sci.

(7 rows)

Figure 5: Max. salary of each professor per department

- 6 find the lowest, across all departments, of the per-department maximum salary computed by the preceding query.

```
tombohbot=# SELECT MIN(max_sal_instructors.max_salary)
tombohbot=# FROM department_s as D,(
tombohbot=# SELECT MAX(I.salary) AS max_salary, D.dept_name
tombohbot=# FROM instructor_s as I, department_s as D
tombohbot=# WHERE I.dept_name = D.Dept_name
tombohbot=# GROUP BY D.dept_name)
tombohbot=# AS max_sal_instructors;
 min
-----
40000.00
(1 row)
```

Figure 6: Lowest of the max. salaries per department.

- 7 Find all information about all instructors in the University including “departmental information” such as his department’s building and budget.

```
tombohbot=# SELECT I.*, D.building, D.budget
tombohbot=# FROM instructor_s as I, department_s as D
tombohbot=# WHERE I.dept_name = D.dept_name;
```

id	name	dept_name	salary	building	budget
10101	Srinivasan	Comp. Sci.	65000.00	Taylor	100000.00
12121	Wu	Finance	90000.00	Painter	120000.00
15151	Mozart	Music	40000.00	Packard	80000.00
22222	Einstein	Physics	95000.00	Watson	70000.00
32343	El Said	History	60000.00	Painter	50000.00
33456	Gold	Physics	87000.00	Watson	70000.00
45565	Katz	Comp. Sci.	75000.00	Taylor	100000.00
58583	Califieri	History	62000.00	Painter	50000.00
76543	Singh	Finance	80000.00	Painter	120000.00
76766	Crick	Biology	72000.00	Watson	90000.00
83821	Brandt	Comp. Sci.	92000.00	Taylor	100000.00
98345	Kim	Elec. Eng.	80000.00	Taylor	85000.00

(12 rows)

Figure 7: Max. info on all professors

- 8 Find instructor names, and the courses they teach, for all instructors in the Computer Science department.

```
tombobbot=# SELECT I.name, T.course_id
FROM instructor_s as I, teaches_s as T
WHERE I.ID = T.ID and I.dept_name = 'Comp. Sci.';
 name | course_id
-----+-----
Srinivasan | CS-101
Srinivasan | CS-315
Srinivasan | CS-347
Katz      | CS-101
Katz      | CS-319
Brandt    | CS-190
Brandt    | CS-190
Brandt    | CS-319
(8 rows)
```

Figure 8: Comp Sci instructor names and courses taught

- 9 Find the number of instructors in each department who taught a course in the Spring 2010 semester.

```
tombobbot=# SELECT count(distinct I.ID), I.dept_name
FROM instructor_s as I, teaches_s as T
WHERE I.ID = T.ID and T.year = 2010 and T.semester = 'Spring'
GROUP BY I.dept_name;
 count | dept_name
-----+-----
3      | Comp. Sci.
1      | Finance
1      | History
1      | Music
(4 rows)
```

Figure 9: Number of instructors who taught in Spring 2010 per dept.