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Intro To DB

Homework 3

Spring 2017

1)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) \* FROM `student` WHERE dept\_name = 'Finance' [OR](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_or) dept\_name = 'History'

2)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) ID,name FROM `student` WHERE dept\_name = 'Elec. Eng.' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) tot\_cred >= 65

3)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) title FROM `course` where dept\_name = 'Biology' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) credits = 4

4)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) ID FROM `takes` WHERE course\_id = 'CS-190' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) semester = 'Spring' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) [year](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/date-and-time-types.html) = '2009' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) grade = 'B+'

5)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) a.ID,a.name FROM `student` a INNER JOIN `takes` b on a.ID = b.ID WHERE b.course\_id = 'CS-315' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) b.grade = 'A'

6)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) a.ID,a.name FROM student a INNER JOIN takes b on a.ID = b.ID WHERE (b.course\_id = 'CS-315' [or](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_or) b.course\_id = 'CS-319') [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) b.grade = 'B'

7)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) a.ID, a.name, b.title FROM instructor a INNER JOIN teaches c on a.id = c.id INNER JOIN course b on c.course\_id = b.course\_id WHERE a.dept\_name = 'Comp. Sci.' [and](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) b.title [like](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html" \l "operator_like) '%Intro.%'

8)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) DISTINCT(a.id), a.name FROM student a INNER JOIN takes b on a.ID = b.ID INNER JOIN teaches c on c.course\_id = b.course\_id INNER JOIN instructor d on c.ID = d.ID where d.salary < 75000

9)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) DISTINCT(a.id), a.name FROM student a INNER JOIN takes b on a.ID = b.ID INNER JOIN section c on c.course\_id = b.course\_id INNER JOIN classroom d on c.room\_number = d.room\_number where d.building = 'Packard'

10)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) DISTINCT(a.id) FROM student a INNER JOIN takes b on a.ID = b.ID INNER JOIN teaches c on c.course\_id = b.course\_id INNER JOIN instructor d on c.ID = d.ID where d.name = 'Einstein'

11)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(DISTINCT a.id) from student a INNER JOIN takes b on b.ID = a.ID where b.course\_id = 'CS-315'

12)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(DISTINCT a.id), b.grade from student a INNER JOIN takes b on b.ID = a.ID where b.course\_id = 'CS-101' GROUP BY b.grade

13)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(b.course\_id), a.ID from instructor a INNER JOIN teaches b on b.ID = a.ID GROUP BY a.ID

14)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [sum](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_sum)(c.credits), a.ID from student a INNER JOIN takes b on b.ID = a.ID INNER JOIN course c on c.course\_id = b.course\_id GROUP BY a.ID

15)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(c.course\_id), a.ID, a.name from student a INNER JOIN takes b on b.ID = a.ID INNER JOIN course c on c.course\_id = b.course\_id where b.year = '2009' GROUP BY a.ID

16)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(c.course\_id), a.name from student a INNER JOIN takes b on b.ID = a.ID INNER JOIN course c on c.course\_id = b.course\_id where a.dept\_name = 'Comp. Sci.' GROUP by a.ID HAVING [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(c.course\_id) < 3

17)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) a.name, a.ID from instructor a INNER JOIN teaches b on b.ID = a.ID where a.dept\_name = 'Comp. Sci.' GROUP by a.ID HAVING [COUNT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_count)(b.course\_id) < 3

18)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [AVG](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_avg)(a.salary), a.dept\_name from instructor a GROUP BY a.dept\_name

19)

SELECT COUNT(a.sec\_id), a.semester, a.year, a.building from section a GROUP BY a.semester, a.year, a.building

20)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) [min](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html" \l "function_min)(a.salary) from instructor a where a.dept\_name = 'Physics'

Part II

2)[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) ID,name FROM `student` WHERE dept\_name = 'Elec. Eng.' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) tot\_cred >= 65

π ID, name σ dept\_name = 'Elec. Eng.' ^ tot\_cred >= 65 ( student )

4)[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) ID FROM `takes` WHERE course\_id = 'CS-190' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) semester = 'Spring' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) [year](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/date-and-time-types.html) = '2009' [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) grade = 'B+'

π ID σ course\_id = 'CS-190' ^ semester >= 'Spring' ^ grade = 'B+' ( takes )

6)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) a.ID,a.name FROM student a INNER JOIN takes b on a.ID = b.ID WHERE (b.course\_id = 'CS-315' [or](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_or) b.course\_id = 'CS-319') [AND](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/logical-operators.html" \l "operator_and) b.grade = 'B'

π a.ID, a.name ⋈ (a.ID = b.ID) takes b σ (b.course\_id = ‘CS-315’ v b.course\_id = ‘CS-319’) ^ b.grade = ‘B’ (student a, takes b)

8)

[SELECT](http://localhost/phpmyadmin/url.php?url=http://dev.mysql.com/doc/refman/5.5/en/select.html) DISTINCT(a.id), a.name FROM student a INNER JOIN takes b on a.ID = b.ID INNER JOIN teaches c on c.course\_id = b.course\_id INNER JOIN instructor d on c.ID = d.ID where d.salary < 75000

π a.ID, a.name ⋈ (a.ID = b.ID) ⋈ (c.course\_id = b.course\_id) ⋈ (c.ID = d.ID) takes b σ d.salary < 75000 (student a, takes b, teaches c, instructor d)