LAB 3

1.

a. `SELECT * FROM course WHERE course.credits > 3;`

	course_id	title	dept_name	credits
1	BIO-101	Intro. to Biology	Biology	4
2	BIO-301	Genetics	Biology	4
3	CS-101	Intro. to Computer Science	Comp. Sci.	4
4	CS-190	Game Design	Comp. Sci.	4
5	PHY-101	Physical Principles	Physics	4

b. `SELECT * FROM classroom`
   `WHERE (classroom.building='Watson' or`
   `classroom.building='Packard');`

	building	room_number	capacity
1	Packard	101	500
2	Watson	100	30
3	Watson	120	50

c. `SELECT * FROM course WHERE course.dept_name='Comp. Sci.';`

	course_id	title	dept_name	credits
1	CS-101	Intro. to Computer Science	Comp. Sci.	4
2	CS-190	Game Design	Comp. Sci.	4
3	CS-315	Robotics	Comp. Sci.	3
4	CS-319	Image Processing	Comp. Sci.	3
5	CS-347	Database System Concepts	Comp. Sci.	3

d. `SELECT course.course_id,title,dept_name,credits,semester`
   `FROM course,section WHERE course.course_id=section.course_id`
   `and section.semester='Fall';`

	course_id	title	dept_name	credits	semester
1	CS-101	Intro. to Computer Science	Comp. Sci.	4	Fall
2	CS-347	Database System Concepts	Comp. Sci.	3	Fall
3	PHY-101	Physical Principles	Physics	4	Fall

e. `SELECT* FROM student WHERE student.tot_cred>45 and`
   `student.tot_cred<90;`

	id	name	dept_name	tot_cred
1	19991	Brandt	History	80
2	44553	Peltier	Physics	56
3	45678	Levy	Physics	46
4	54321	Williams	Comp. Sci.	54
5	76543	Brown	Comp. Sci.	58
6	76653	Aoi	Elec. Eng.	60

f. `SELECT * FROM student WHERE student.name~*'[aewiuoy]$';`

id	name	dept_name	tot_cred
1	45678	Levy	Physics	46
2	70557	Snow	Physics	0
3	76653	Aoi	Elec. Eng.	60
4	98988	Tanaka	Biology	120

g.
```sql
SELECT course.course_id, title, dept_name,credits,prereq_id
FROM course,prereq WHERE prereq.course_id=course.course_id and
prereq_id='CS-101';
```

	course_id	title	dept_name	credits	prereq_id
1	CS-190	Game Design	Comp. Sci.	4	CS-101
2	CS-315	Robotics	Comp. Sci.	3	CS-101
3	CS-319	Image Processing	Comp. Sci.	3	CS-101
4	CS-347	Database System Concepts	Comp. Sci.	3	CS-101

2.

a.
```sql
SELECT dept_name,avg(instructor.salary) FROM instructor group
by dept_name order by avg(instructor.salary) asc;
```

	dept_name	avg
1	Music	40000
2	History	61000
3	Biology	72000
4	Comp. Sci.	77333.333333333333
5	Elec. Eng.	80000
6	Finance	85000
7	Physics	91000

b.
```sql
SELECT department.building,count(1) FROM department,course
WHERE department.dept_name = course.dept_name
GROUP BY department.building
HAVING count(1)=(SELECT MAX(second.number) FROM
(SELECT count(1) as number FROM department,course
WHERE department.dept_name = course.dept_name
group by department.building) as second)
```

	building	count
1	Taylor	6

c.
```sql
SELECT department.dept_name,count(1) FROM department,course
WHERE department.dept_name = course.dept_name
GROUP BY department.dept_name
HAVING count(1)=(SELECT MIN(second.number) FROM
(SELECT count(1) as number FROM department,course
WHERE department.dept_name = course.dept_name
group by department.dept_name) as second)
```

	dept_name	count
1	Finance	1
2	History	1
3	Music	1
4	Elec. Eng.	1
5	Physics	1

d. SELECT DISTINCT student.id,student.name FROM student
   WHERE student.id IN (SELECT third.id FROM
   (SELECT student.id, count(1) as number
   FROM student,takes,course
   WHERE student.id=takes.id and takes.course_id=course.course_id
   and course.dept_name='Comp. Sci.' group by student.id)as third
   WHERE third.number>3)

	id	name
1	12345	Shankar

e. SELECT * FROM instructor WHERE instructor.dept_name='Biology'
   or instructor.dept_name='Philosophy' or
   instructor.dept_name='Music';

	id	name	dept_name	salary
1	15151	Mozart	Music	40000.00
2	76766	Crick	Biology	72000.00

f. SELECT DISTINCT instructor.id, instructor.name,
   instructor.dept_name, instructor.salary
   FROM instructor,teaches
   WHERE instructor.id=teaches.id and teaches.year=2018
   and teaches.id NOT IN (SELECT DISTINCT instructor.id
   FROM instructor,teaches
   WHERE instructor.id=teaches.id and teaches.year=2017)

	id	name	dept_name	salary
1	12121	Wu	Finance	90000.00
2	15151	Mozart	Music	40000.00
3	32343	El Said	History	60000.00
4	45565	Katz	Comp. Sci.	75000.00

3.

a. SELECT DISTINCT
   student.id,student.name,student.dept_name,student.tot_cred
   FROM student,takes,course
   WHERE student.id=takes.id and takes.course_id=course.course_id
   and course.dept_name='Comp. Sci.' and (takes.grade='A' or
   takes.grade='A-') group by
   (student.id,student.name,student.dept_name,student.tot_cred)
   order by student.name;

	id	name	dept_name	tot_cred
1	76543	Brown	Comp. Sci.	58
2	12345	Shankar	Comp. Sci.	32
3	54321	Williams	Comp. Sci.	54
4	00128	Zhang	Comp. Sci.	102

b.
```sql
SELECT * FROM instructor WHERE instructor.id in(SELECT
advisor.i_id
FROM advisor,student,takes
WHERE advisor.s_id=student.id and takes.id=student.id
and (takes.grade!='A' and takes.grade!='A-' and
takes.grade!='B+'
and takes.grade!='B' or takes.grade IS NULL))
```

	id	name	dept_name	salary
1	10101	Srinivasan	Comp. Sci.	65000.00
2	22222	Einstein	Physics	95000.00
3	76543	Singh	Finance	80000.00
4	76766	Crick	Biology	72000.00
5	98345	Kim	Elec. Eng.	80000.00

c.
```sql
SELECT DISTINCT * FROM department WHERE department.dept_name
NOT IN (SELECT DISTINCT department.dept_name
FROM department,student,takes
WHERE department.dept_name=student.dept_name and
student.id=takes.id
and (takes.grade='F' or takes.grade='C'))
```

	dept_name	building	budget
1	Biology	Watson	90000.00
2	Music	Packard	80000.00
3	History	Painter	50000.00
4	Finance	Painter	120000.00

d.
```sql
SELECT DISTINCT * FROM instructor WHERE instructor.id NOT IN
(SELECT DISTINCT instructor.id FROM instructor,teaches,takes
WHERE instructor.id=teaches.id and
teaches.course_id=takes.course_id and takes.grade='A')
```

	id	name	dept_name	salary
1	12121	Wu	Finance	90000.00
2	98345	Kim	Elec. Eng.	80000.00
3	76543	Singh	Finance	80000.00
4	22222	Einstein	Physics	95000.00
5	58583	Califieri	History	62000.00
6	33456	Gold	Physics	87000.00
7	15151	Mozart	Music	40000.00
8	32343	El Said	History	60000.00

e.
```sql
SELECT DISTINCT
course.course_id,course.title,course.dept_name, course.credits
FROM course,section,time_slot
```

```sql
WHERE section.time_slot_id=time_slot.time_slot_id and
end_hr<=13 and section.course_id=course.course_id;
```

	course_id	title	dept_name	credits
1	EE-181	Intro. to Digital Systems	Elec. Eng.	3
2	CS-190	Game Design	Comp. Sci.	4
3	MU-199	Music Video Production	Music	3
4	BIO-101	Intro. to Biology	Biology	4
5	BIO-301	Genetics	Biology	4
6	CS-101	Intro. to Computer Science	Comp. Sci.	4
7	FIN-201	Investment Banking	Finance	3
8	CS-319	Image Processing	Comp. Sci.	3
9	CS-347	Database System Concepts	Comp. Sci.	3
10	PHY-101	Physical Principles	Physics	4
11	HIS-351	World History	History	3
12	CS-315	Robotics	Comp. Sci.	3