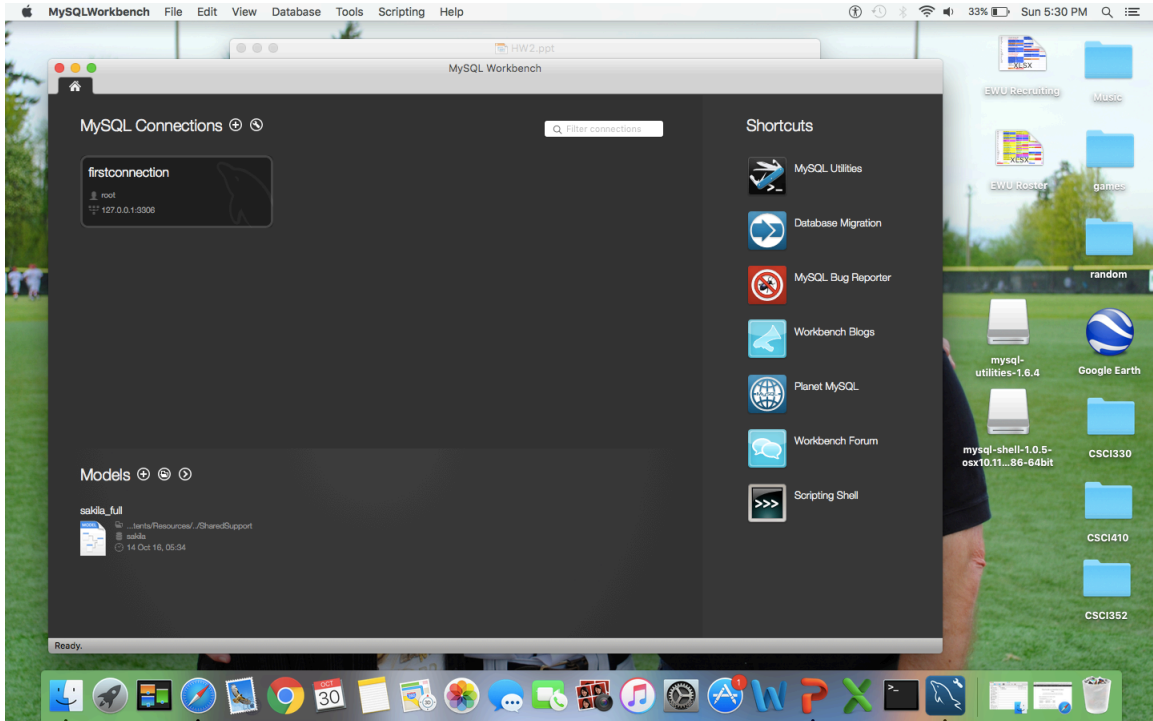


Gavin Harris
CSCI 330, 9am
Homework 2

Task 1:



Task 2:

create database university;
use university;

```
create table department(  
  dept_name varchar (20),  
  building varchar (15),  
  budget numeric (12,2),  
  primary key (dept_name));
```

```
create table course(  
  course_id varchar (7),  
  title varchar(50),  
  dept_name varchar (20),  
  credits numeric(2,0),  
  primary key (course_id),  
  foreign key (dept_name) references department(dept_name));
```

```
create table instructor
(ID varchar (5),
name varchar (20) not null,
dept_name varchar (20),
salary numeric (8,2),
primary key (ID),
foreign key (dept_name) references department(dept_name));
```

```
create table section(
course_id varchar (8),
sec_id varchar (8),
semester varchar (6),
year numeric (4,0),
building varchar (15),
room_number varchar (7),
time_slot_id varchar (4),
primary key (course_id, sec_id, semester, year),
foreign key (course_id) references course(course_id));
```

```
create table teaches(
ID varchar(5),
course_id varchar (8),
sec_id varchar (8),
semester varchar (6),
year numeric (4,0),
primary key (ID, course_id, sec_id, semester, year),
foreign key (course_id, sec_id, semester, year) references section(course_id, sec_id,
semester, year),
foreign key (ID) references instructor(ID));
```

Task 3:
use university;

select * from department;

insert into department values ('Biology','Watson',90000);
insert into department values ('Comp. Sci.','Taylor',100000);
insert into department values ('Elec. Eng.','Taylor',85000);
insert into department values ('Finance','Painter',120000);
insert into department values ('History','Painter',50000);
insert into department values ('Music','Packard',80000);
insert into department values ('Physics','Watson',70000);

select * from instructor;

insert into instructor values (10101, 'Srinivasan', 'Comp. Sci.', 65000);
insert into instructor values (12121, 'Wu', 'Finance', 90000);
insert into instructor values (15151, 'Mozart', 'Music', 40000);
insert into instructor values (22222, 'Einstein', 'Math', 95000);
insert into instructor values (32343, 'El Said', 'History', 60000);
insert into instructor values (33456, 'Gold', 'Physics', 87000);
insert into instructor values (45565, 'Katz', 'Comp. Sci.', 75000);
insert into instructor values (58583, 'Califieri', 'History', 62000);
insert into instructor values (76543, 'Singh', 'Finance', 80000);
insert into instructor values (76766, 'Crick', 'Biology', 72000);
insert into instructor values (83821, 'Brandt', 'Comp. Sci.', 92000);
insert into instructor values (98345, 'Kim', 'Elec. Eng.', 80000);

select * from course;

insert into course values ('BIO-101', 'Intro. to Biology', 'Biology', 4);
insert into course values ('BIO-301', 'Genetics', 'Biology', 4);
insert into course values ('BIO-399', 'Computational Biology', 'Biology', 3);
insert into course values ('CS-101', 'Intro. to Computer Science', 'Comp. Sci.', 4);
insert into course values ('CS-190', 'Game Design', 'Comp. Sci.', 4);
insert into course values ('CS-315', 'Robotics', 'Comp. Sci.', 3);
insert into course values ('CS-319', 'Image Processing', 'Comp. Sci.', 3);
insert into course values ('CS-347', 'Database System Concepts', 'Comp. Sci.', 3);
insert into course values ('EE-181', 'Intro. to Digital Systems', 'Elec. Eng.', 3);
insert into course values ('FIN-201', 'Investment Banking', 'Finance', 3);
insert into course values ('HIS-351', 'World History', 'History', 3);
insert into course values ('MU-199', 'Music Video Production', 'Music', 3);
insert into course values ('PHY-101', 'Physical Principles', 'Physics', 4);

select * from section;

```

insert into section values ('BIO-101', 1 , 'Summer', 2009 , 'Painter', 514, 'B');
insert into section values ('BIO-301', 1 , 'Summer', 2010 , 'Painter', 514, 'A');
insert into section values ('CS-101', 1 , 'Fall', 2009 , 'Packard', 101 , 'H');
insert into section values ('CS-101', 1 , 'Spring', 2010 , 'Packard', 101, 'F');
insert into section values ('CS-190', 1 , 'Spring', 2009 , 'Taylor', 3128, 'E');
insert into section values ('CS-190', 2 , 'Spring', 2009 , 'Taylor', 3128, 'A');
insert into section values ('CS-315', 1 , 'Spring', 2010 , 'Watson', 120, 'D');
insert into section values ('CS-319', 1 , 'Spring', 2010 , 'Watson', 100, 'B');
insert into section values ('CS-319', 2 , 'Spring', 2010 , 'Taylor', 3128, 'C');
insert into section values ('CS-347', 1 , 'Fall', 2009 , 'Taylor', 3128, 'A');
insert into section values ('EE-181', 1 , 'Spring', 2009 , 'Taylor', 3128, 'C');
insert into section values ('FIN-201', 1 , 'Spring', 2010 , 'Packard', 101, 'B');
insert into section values ('HIS-351', 1 , 'Spring', 2010 , 'Painter', 514, 'C');
insert into section values ('MU-199', 1 , 'Spring', 2010 , 'Packard', 101, 'D');
insert into section values ('PHY-101', 1 , 'Fall', 2009 , 'Watson', 100, 'A');

```

```

select * from teaches;

```

```

insert into teaches values (10101, 'CS-101', 1, 'Fall', 2009);
insert into teaches values (10101, 'CS-315', 1, 'Spring', 2010);
insert into teaches values (10101, 'CS-347', 1, 'Fall', 2009);
insert into teaches values (12121, 'FIN-201', 1, 'Spring', 2010);
insert into teaches values (15151, 'MU-199', 1, 'Spring', 2010);
insert into teaches values (22222, 'PHY-101', 1, 'Fall', 2009);
insert into teaches values (32343, 'HIS-351', 1, 'Spring', 2010);
insert into teaches values (45565, 'CS-101', 1, 'Spring', 2010);
insert into teaches values (45565, 'CS-319', 1, 'Spring', 2010);
insert into teaches values (76766, 'BIO-101', 1, 'Summer', 2009);
insert into teaches values (76766, 'BIO-301', 1, 'Summer', 2010);
insert into teaches values (83821, 'CS-190', 1, 'Spring', 2009);
insert into teaches values (83821, 'CS-190', 2, 'Spring', 2009);
insert into teaches values (83821, 'CS-319', 2, 'Spring', 2010);
insert into teaches values (98345, 'EE-181', 1, 'Spring', 2009);

```

ID	course_id	sec_id	semester	year			
▶ 76766	BIO-101	1	Summer	2009			
76766	BIO-301	1	Summer	2010			
10101	CS-101	1	Fall	2009			
45565	CS-101	1	Spring	2010			
83821	CS-190	1	Spring	2009			
83821	CS-190	2	Spring	2009			
10101	CS-315	1	Spring	2010			
45565	CS-319	1	Spring	2010			
83821	CS-319	2	Spring	2010			
10101	CS-347	1	Fall	2009			
NULL	NULL	NULL	NULL	NULL			
instructor 7		department 8		section 9	teaches 10	course 11	
	course_id	sec_id	semester	year	building	room_number	time_slot_id
▶	BIO-101	1	Summer	2009	Painter	514	B
	BIO-301	1	Summer	2010	Painter	514	A
	CS-101	1	Fall	2009	Packard	101	H
	CS-101	1	Spring	2010	Packard	101	F
	CS-190	1	Spring	2009	Taylor	3128	E
	CS-190	2	Spring	2009	Taylor	3128	A
	CS-315	1	Spring	2010	Watson	120	D
	CS-319	1	Spring	2010	Watson	100	B
	CS-319	2	Spring	2010	Taylor	3128	C
	CS-347	1	Fall	2009	Taylor	3128	A
	NULL	NULL	NULL	NULL	NULL	NULL	NULL
instructor 7		department 8		section 9	teaches 10	course 11	
▶	BIO-101	Intro. to Biology			Biology	4	
	BIO-301	Genetics			Biology	4	
	BIO-399	Computational Biology			Biology	3	
	CS-101	Intro. to Computer Science			Comp. Sci.	4	
	CS-190	Game Design			Comp. Sci.	4	
	CS-315	Robotics			Comp. Sci.	3	
	CS-319	Image Processing			Comp. Sci.	3	
	CS-347	Database System Concepts			Comp. Sci.	3	
	EE-181	Intro. to Digital Systems			Elec. Eng.	3	
	FIN-201	Investment Banking			Finance	3	
	NULL	NULL			NULL	NULL	
instructor 7		department 8		section 9	teaches 10	course 11	

[illegible]

Task 4:

1)

```
1 • use university;
2
3 ✖ select name, instructor.dept_name, building
4 ✖ from instructor, department
5 ✖ where instructor.dept_name = department.dept_name;
6
7
8
9
10
11
```

100% 16:1

Result Grid Filter Rows: Search Export:

name	dept_name	building
▶ Crick	Biology	Watson
Srinivasan	Comp. Sci.	Taylor
Katz	Comp. Sci.	Taylor
Brandt	Comp. Sci.	Taylor
Kim	Elec. Eng.	Taylor
Wu	Finance	Painter
Singh	Finance	Painter
El Said	History	Painter
Califieri	History	Painter
Mozart	Music	Packard
Einstein	Physics	Watson
Gold	Physics	Watson

2)

```
1 • use university;
2
3 ✖ select name, course_id
4 ✖ from instructor, teaches
5 ✖ where instructor.ID = Teaches.ID;
6
7
8
9
10
11
```

100% 33:5

Result Grid Filter Rows: Search Export:

name	course_id
▶ Srinivasan	CS-101
Srinivasan	CS-315
Srinivasan	CS-347
Wu	FIN-201
Mozart	MU-199
Einstein	PHY-101
El Said	HIS-351
Katz	CS-101
Katz	CS-319
Crick	BIO-101
Crick	BIO-301
Brandt	CS-190
Brandt	CS-190
Brandt	CS-319
Kim	EE-181

Result 2

3)

```
1 • use university;
2
3 ✖ select Distinct T.name
4 ✖ from instructor as T, instructor as S
5 ✖ where T.salary > S.salary and S.dept_name = 'Finance';|
6
7
8
9
10
11
```

100% 55:5

Result Grid Filter Rows: Search Export:

name
Wu
Einstein
Gold
Brandt

4)

```
1 • use university;
2
3 ✖ (select course_id
4 ✖ from section
5 ✖ where semester = 'Fall' and year = 2009)
6 ✖ union
7 ✖ (select course_id
8 ✖ from section
9 ✖ where semester = 'Spring' and year = 2010)
10
11
12
13
```

100% 1:12

Result Grid Filter Rows: Search Export:

course_id
CS-101
CS-347
PHY-101
CS-315
CS-319
FIN-201
HIS-351
MU-199

5)

```

1 • use university;
2
3 ✖ select dept_name, avg(salary)
4 ✖ from instructor
5 ✖ group by dept_name
6 ✖ having avg(salary) > 42000;
7 ✖
8
9
10
11

```

100%

1:3

Result Grid

Filter Rows:

Export:

dept_name	avg(salary)
Biology	72000.000000
Comp. Sci.	77333.333333
Elec. Eng.	80000.000000
Finance	85000.000000
History	61000.000000
Physics	91000.000000