CS 313 - Assignment 2

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Answer 1:

Table containing the information such as primary keys, integrity constraints about university schema.

Table	Primary Key	Domain of PK	Foreign Key	Not Null
classroom	building, room_number	varchar, varchar	None	(building, room_number)
department	dept_name	varchar	None	dept_name
course	course_id	varchar	dept_name (references to department)	course_id, credits
instructor	ID	varchar	dept_name (references to department)	ID, name
section	course_id, sec_id, semester, year	varchar,varchar, varchar, numeric	dept_name (references to department), building, room_number (references to classroom)	course_id, sec_id, credits, semester, year

teaches	ID, course_id, sec_id, semester, year	varchar, varchar, varchar, varchar, numeric	course_id, sec_id, semester, year (references to section on delete cascade), ID (references to instructor on delete cascade)	ID, course_id, sec_id, semester, year
student	ID	varchar	dept_name (references to department on delete set null)	ID, name
takes	ID, course_id, sec_id, semester, year	varchar, varchar, varchar, varchar, numeric	course_id, sec_id, semester, year (references to section on delete cascade), ID (references to student on delete cascade)	ID, course_id, sec_id, semester, year
advisor	s_ID	varchar	i_ID (references to instructor (ID) on delete set null), s_ID (references to student (ID) on delete cascade)	s_ID
time_slot	time_slot_id, day, start_hr, start_min	varchar, varchar, numeric, numeric	None	time_slot_id, day, start_hr, start_min

prereq	course_id, prereq_id	varchar	course_id, (references course on delete cascade), prereq_id (references course)	course_id, prereq_id

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Answer 2:

Query:

select * ***from*** *student, department, takes, advisor, instructor*
where *student.dept_name = department.dept_name*
and *department.dept_name = instructor.dept_name*
and *student.ID = takes.ID*
and *student.ID = advisor.s_ID*
and *instructor.ID = advisor.i_ID*
and *student.name = "Zhang";*

Enter SQL commands here

```
1 select *
2 from student, department, takes, advisor, instructor
3
4 where student.dept_name = department.dept_name and department.dept_name = instructor.dept_name and
5 student.ID = takes.ID and student.ID = advisor.s_ID and instructor.ID = advisor.i_ID and student.name = "Zha
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

ID	name	dept_name	tot_cred	dept_name	building	budget	ID	course_id	sec_id	semester	year	grade	s_ID	i_ID	ID	na
00128	Zhang	Comp. Sci.	102	Comp. Sci.	Taylor	100000	00128	CS-101	1	Fall	2017	A	00128	45565	45565	Ka
00128	Zhang	Comp. Sci.	102	Comp. Sci.	Taylor	100000	00128	CS-347	1	Fall	2017	A-	00128	45565	45565	Ka

Enter SQL commands here

```
select *
from student, department, takes, advisor, instructor

where student.dept_name = department.dept_name and department.dept_name = instructor.dept_name and
student.ID = takes.ID and student.ID = advisor.s_ID and instructor.ID = advisor.i_ID and student.name = "Zha
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

ıe	tot_cred	dept_name	building	budget	ID	course_id	sec_id	semester	year	grade	s_ID	i_ID	ID	name	dept_name	salary
i.	102	Comp. Sci.	Taylor	100000	00128	CS-101	1	Fall	2017	A	00128	45565	45565	Katz	Comp. Sci.	75000
i.	102	Comp. Sci.	Taylor	100000	00128	CS-347	1	Fall	2017	A-	00128	45565	45565	Katz	Comp. Sci.	75000

Answer 3:

Query on:

---

classroom table

Original state using query $- - - >$ *select * from classroom*

Enter SQL commands here

```
select * from classroom
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

building	room_number	capacity
Packard	101	500
Painter	514	10
Taylor	3128	70
Watson	100	30
Watson	120	50

state after query $- - - >$

insert into classroom
values("Anil", 786, 1000);
select from classroom;*

Enter SQL commands here

```
1 insert into classroom
2 values("Anil", 786, 1000);
3
4 select* from classroom;
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

building	room_number	capacity
Packard	101	500
Painter	514	10
Taylor	3128	70
Watson	100	30
Watson	120	50
Anil	786	1000

---

department table

Original state using query $- - - >$ *select * from department*

Enter SQL commands here

```
1 select* from department;
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

dept_name	building	budget
Biology	Watson	90000
Comp. Sci.	Taylor	100000
Elec. Eng.	Taylor	85000
Finance	Painter	120000
History	Painter	50000
Music	Packard	80000
Physics	Watson	70000

state after query $- - - >$

alter table department
add head_of_dept varchar(10);
*select * from department;*

Enter SQL commands here

```
1 alter table department add head_of_dept varchar(10);
2 select * from department;
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

dept_name	building	budget	head_of_dept
Biology	Watson	90000	
Comp. Sci.	Taylor	100000	
Elec. Eng.	Taylor	85000	
Finance	Painter	120000	
History	Painter	50000	
Music	Packard	80000	
Physics	Watson	70000	

---

course table

Original state using query $- - - >$ *select * from course*

course_id	title	dept_name	credits
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
HIS-351	World History	History	3
MU-199	Music Video Production	Music	3
PHY-101	Physical Principles	Physics	4

state after query $- - - >$

delete from course
where title = "Intro. to Biology";
*select * from course;*

course_id	title	dept_name	credits
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
HIS-351	World History	History	3
MU-199	Music Video Production	Music	3
PHY-101	Physical Principles	Physics	4

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instructor table

Original state using query $---> select * from instructor$

ID	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000
12121	Wu	Finance	90000
15151	Mozart	Music	40000
22222	Einstein	Physics	95000
32343	El Said	History	60000
33456	Gold	Physics	87000
45565	Katz	Comp. Sci.	75000
58583	Califieri	History	62000
76543	Singh	Finance	80000
76766	Crick	Biology	72000
83821	Brandt	Comp. Sci.	92000
98345	Kim	Elec. Eng.	80000

state after query $--> select * from instructor where salary > 62000;$

ID	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000
12121	Wu	Finance	90000
22222	Einstein	Physics	95000
33456	Gold	Physics	87000
45565	Katz	Comp. Sci.	75000
76543	Singh	Finance	80000
76766	Crick	Biology	72000
83821	Brandt	Comp. Sci.	92000
98345	Kim	Elec. Eng.	80000

---

section table

Original state using query $---> select * from section$

course_id	sec_id	semester	year	building	room_number	time_slot_id
BIO-101	1	Summer	2017	Painter	514	B
BIO-301	1	Summer	2018	Painter	514	A
CS-101	1	Fall	2017	Packard	101	H
CS-101	1	Spring	2018	Packard	101	F
CS-190	1	Spring	2017	Taylor	3128	E
CS-190	2	Spring	2017	Taylor	3128	A
CS-315	1	Spring	2018	Watson	120	D
CS-319	1	Spring	2018	Watson	100	B
CS-319	2	Spring	2018	Taylor	3128	C
CS-347	1	Fall	2017	Taylor	3128	A
EE-181	1	Spring	2017	Taylor	3128	C
FIN-201	1	Spring	2018	Packard	101	B
HIS-351	1	Spring	2018	Painter	514	C
MU-199	1	Spring	2018	Packard	101	D
PHY-101	1	Fall	2017	Watson	100	A

state after query $-->$

select sec_id, semester, building
from section where time_slot_id = "A";

sec_id	semester	building
1	Summer	Painter
2	Spring	Taylor
1	Fall	Taylor
1	Fall	Watson

---

teaches table

Original state using query $---> select * from teaches$

ID	course_id	sec_id	semester	year
10101	CS-101	1	Fall	2017
10101	CS-315	1	Spring	2018
10101	CS-347	1	Fall	2017
12121	FIN-201	1	Spring	2018
15151	MU-199	1	Spring	2018
22222	PHY-101	1	Fall	2017
32343	HIS-351	1	Spring	2018
45565	CS-101	1	Spring	2018
45565	CS-319	1	Spring	2018
76766	BIO-101	1	Summer	2017
76766	BIO-301	1	Summer	2018
83821	CS-190	1	Spring	2017
83821	CS-190	2	Spring	2017
83821	CS-319	2	Spring	2018
98345	EE-181	1	Spring	2017

state after query $--> $

select ID, course_id, year
from teaches where semester =“Fall”;

ID	course_id	year
10101	CS-101	2017
10101	CS-347	2017
22222	PHY-101	2017

---

student table

Original state using query $---> $ *select * from student*

ID	name	dept_name	tot_cred
00128	Zhang	Comp. Sci.	102
12345	Shankar	Comp. Sci.	32
19991	Brandt	History	80
23121	Chavez	Finance	110
44553	Peltier	Physics	56
45678	Levy	Physics	46
54321	Williams	Comp. Sci.	54
55739	Sanchez	Music	38
70557	Snow	Physics	0
76543	Brown	Comp. Sci.	58
76653	Aoi	Elec. Eng.	60
98765	Bourikas	Elec. Eng.	98
98988	Tanaka	Biology	120

state after query $--->$

*select * from student where name = "Shankar"*
or dept_name = "Comp. Sci.";

ID	name	dept_name	tot_cred
00128	Zhang	Comp. Sci.	102
12345	Shankar	Comp. Sci.	32
54321	Williams	Comp. Sci.	54
76543	Brown	Comp. Sci.	58

---

takes table

Original state using query $--->$ *select * from takes*

ID	course_id	sec_id	semester	year	grade
00128	CS-101	1	Fall	2017	A
00128	CS-347	1	Fall	2017	A-
12345	CS-101	1	Fall	2017	C
12345	CS-190	2	Spring	2017	A
12345	CS-315	1	Spring	2018	A
12345	CS-347	1	Fall	2017	A
19991	HIS-351	1	Spring	2018	B
23121	FIN-201	1	Spring	2018	C+
44553	PHY-101	1	Fall	2017	B-
45678	CS-101	1	Fall	2017	F
45678	CS-101	1	Spring	2018	B+
45678	CS-319	1	Spring	2018	B
54321	CS-101	1	Fall	2017	A-
54321	CS-190	2	Spring	2017	B+
55739	MU-199	1	Spring	2018	A-
76543	CS-101	1	Fall	2017	A
76543	CS-319	2	Spring	2018	A
76653	EE-181	1	Spring	2017	C
98765	CS-101	1	Fall	2017	C-
98765	CS-315	1	Spring	2018	B
98988	BIO-101	1	Summer	2017	A
98988	BIO-301	1	Summer	2018	

state after query $--> select * from takes where course\_id = "CS-101";$

ID	course_id	sec_id	semester	year	grade
00128	CS-101	1	Fall	2017	A
12345	CS-101	1	Fall	2017	C
45678	CS-101	1	Fall	2017	F
45678	CS-101	1	Spring	2018	B+
54321	CS-101	1	Fall	2017	A-
76543	CS-101	1	Fall	2017	A
98765	CS-101	1	Fall	2017	C-

---

advisor table

Original state using query $--->$ *select * from advisor*

s_ID	i_ID
00128	45565
12345	10101
23121	76543
44553	22222
45678	22222
76543	45565
76653	98345
98765	98345
98988	76766

state after query $--->$

insert into advisor
values(1000, 2000);
*select * from advisor;*

s_ID	i_ID
00128	45565
12345	10101
23121	76543
44553	22222
45678	22222
76543	45565
76653	98345
98765	98345
98988	76766
1000	2000

---

time_slot table

Original state using query $--->$ *select * from time_slot*

time_slot_id	day	start_hr	start_min	end_hr	end_min
A	M	8	0	8	50
A	W	8	0	8	50
A	F	8	0	8	50
B	M	9	0	9	50
B	W	9	0	9	50
B	F	9	0	9	50
C	M	11	0	11	50
C	W	11	0	11	50
C	F	11	0	11	50
D	M	13	0	13	50
D	W	13	0	13	50
D	F	13	0	13	50
E	T	10	30	11	45
E	R	10	30	11	45
F	T	14	30	15	45
F	R	14	30	15	45
G	M	16	0	16	50
G	W	16	0	16	50
G	F	16	0	16	50
H	W	10	0	12	30

state after query $-->$

*select * from time_slot where time_slot_id = "A"*
and start_hr = 8 and start_min = 0;

time_slot_id	day	start_hr	start_min	end_hr	end_min
A	F	8	0	8	50
A	M	8	0	8	50
A	W	8	0	8	50

---

prereq table

Original state using query $--->$ *select * from prereq*

course_id	prereq_id
BIO-301	BIO-101
BIO-399	BIO-101
CS-190	CS-101
CS-315	CS-101
CS-319	CS-101
CS-347	CS-101
EE-181	PHY-101

state after query −− >

delete from prereq
where course_id = "BIO-301";
*select * from prereq*

course_id	prereq_id
BIO-399	BIO-101
CS-190	CS-101
CS-315	CS-101
CS-319	CS-101
CS-347	CS-101
EE-181	PHY-101

Answer 4:

A:

Query

select distinct *student.ID, student.name*
from *student, department, classroom, course*
where *student.dept_name = department.dept_name*
and *department.dept_name = course.dept_name*
and *department.building = classroom.building*
and *student.dept_name = "Comp. Sci."*
and *department.building = "Taylor";*

Enter SQL commands here

```
1 select distinct student.ID, student.name
2 from student, department, classroom, course
3 where student.dept_name = department.dept_name
4 and department.dept_name = course.dept_name
5 and department.building = classroom.building
6 and student.dept_name = "Comp. Sci."
7 and department.building = "Taylor"
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

ID	name
00128	Zhang
12345	Shankar
54321	Williams
76543	Brown

B:

Query

select *student.ID, student.name* ***from*** *student, takes*
where *student.ID = takes.ID* ***and*** *grade = "A"*
intersect
select *student.ID, student.name* ***from*** *student, takes*
where *student.ID = takes.ID* ***and*** *grade = "C";*

Enter SQL commands here

```
1 select student.ID, student.name from student, takes where student.ID = takes.ID and grade = "A"
2 intersect
3 select student.ID, student.name from student, takes where student.ID = takes.ID and grade = "C"
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

ID	name
12345	Shankar

C:

Query

select distinct *department.building, classroom.room_number*
from *department, classroom, time_slot*
where *department.building = classroom.building* ***and*** *day = "W";*

Enter SQL commands here

```
1 select distinct department.building, classroom.room_number from department, classroom, time_slot
2 where department.building = classroom.building and day = "W"
```

Execute | Save the db | Load an SQLite database file: Choose File No file chosen

building	room_number
Watson	100
Watson	120
Taylor	3128
Painter	514
Packard	101