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	Domain	Foreign	Not Null
	Key	of PK	\mathbf{Key}	
classroom	building,	varchar,	None	(building,
	room_number	varchar		room_number)
department	dept_name	varchar	None	dept_name
course	course_id	varchar	dept_name (course_id,
			references to	credits
			department)	
instructor	ID	varchar	dept_name (ID, name
			references to	
			department)	
section	course_id,	varchar, varchar	, dept_name (course_id,
	\sec_{id} ,	varchar,	references to	sec_id,
	semester, year	numeric	department),	credits,
			building,	semester, year
			$room_number$	
			(references to	
			classroom)	

teaches	ID, course_id,	varchar,	course_id,	ID, course_id,
	sec_id,	varchar,	sec_id,	
	semester, year	varchar,	semester, year	semester, year
		varchar,	(references to	, ,
		$\overline{\mathrm{numeric}}$	section on	
			delete	
			cascade), ID (
			references to	
			instructor on	
			delete	
			cascade)	
student	ID	varchar	dept_name (ID, name
			references to	
			department	
			on delete set	
			null)	
takes	ID, course_id,	varchar,	course_id,	ID, course_id,
	sec_id,	varchar,	\sec_{id} ,	$\operatorname{sec}_{-\operatorname{id}},$
	semester, year	varchar,	semester, year	semester, year
		varchar,	(references to	
		numeric	section on	
			delete	
			cascade), ID (
			references to	
			student on	
			delete	
			cascade)	
advisor	$s_{-}ID$	varchar	i_ID (s_ID
			references to	
			instructor	
			(ID) on delete	
			set null), s_ID	
			(references to	
			student (ID)	
			on delete	
1 1	1 . 1 . 1	1	cascade)	, 1 , 1
time_slot	time_slot_id,	varchar,	None	time_slot_id,
	day, start_hr,	varchar,		day, start_hr,
	$start_min$	$\operatorname*{numeric,}_{\cdot}$		$start_min$
		numeric		

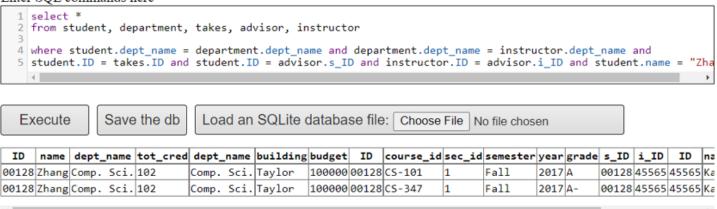
prereq	$course_id,$	varchar	course_id, (course_id,
	prereq_id		references	prereq_id
			course on	
			delete	
			cascade),	
			prereq_id (
			references	
			course)	

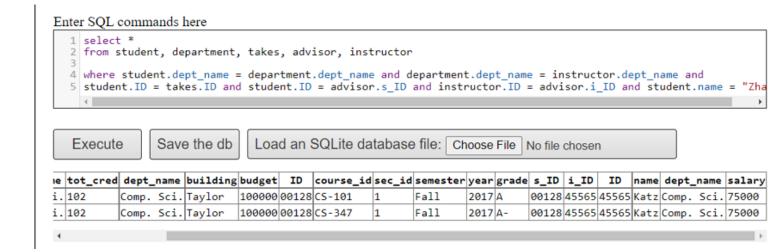
Answer 2:

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



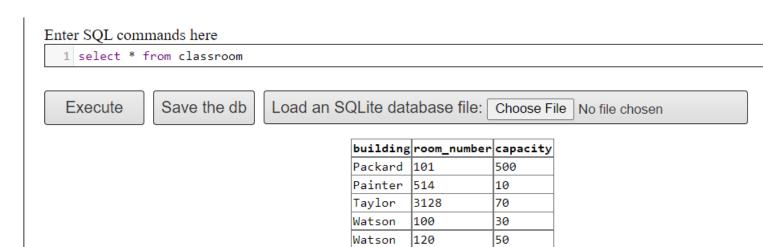


Answer 3:

Query on:

classroom table

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



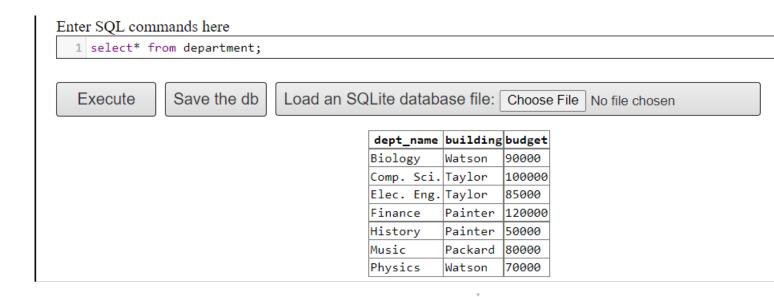
state after query --->

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

Enter SQL commands here insert into classroom values("Anil", 786, 1000); 4 select* from classroom; Save the db Execute Load an SQLite database file: Choose File No file chosen building room_number capacity Packard 101 500 Painter 514 10 70 Taylor 3128 100 Watson 30 120 50 Watson Anil 786 1000

department table

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



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 --->

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

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	В
BIO-301	1	Summer	2018	Painter	514	A
CS-101	1	Fall	2017	Packard	101	Н
CS-101	1	Spring	2018	Packard	101	F
CS-190	1	Spring	2017	Taylor	3128	E
CS-190	2	Spring	2017	Taylor	3128	Α
CS-315	1	Spring	2018	Watson	120	D
CS-319	1	Spring	2018	Watson	100	В
CS-319	2	Spring	2018	Taylor	3128	С
CS-347	1	Fall	2017	Taylor	3128	А
EE-181	1	Spring	2017	Taylor	3128	С
FIN-201	1	Spring	2018	Packard	101	В
HIS-351	1	Spring	2018	Painter	514	С
MU-199	1	Spring	2018	Packard	101	D
PHY-101	1	Fall	2017	Watson	100	Α

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

 $select~ID,~course_id,~year\\from~teaches~where~semester="Fall";$

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

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	Α
00128	CS-347	1	Fall	2017	Α-
12345	CS-101	1	Fall	2017	С
12345	CS-190	2	Spring	2017	Α
12345	CS-315	1	Spring	2018	Α
12345	CS-347	1	Fall	2017	Α
19991	HIS-351	1	Spring	2018	В
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	В
54321	CS-101	1	Fall	2017	Α-
54321	CS-190	2	Spring	2017	B+
55739	MU-199	1	Spring	2018	Α-
76543	CS-101	1	Fall	2017	Α
76543	CS-319	2	Spring	2018	Α
76653	EE-181	1	Spring	2017	С
98765	CS-101	1	Fall	2017	C-
98765	CS-315	1	Spring	2018	В
98988	BIO-101	1	Summer	2017	Α
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	Α
12345	CS-101	1	Fall	2017	С
45678	CS-101	1	Fall	2017	F
45678	CS-101	1	Spring	2018	B+
54321	CS-101	1	Fall	2017	Δ-
76543	CS-101	1	Fall	2017	Α
98765	CS-101	1	Fall	2017	C-

advisor table

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

s_	_ID	i_	_ID
00	128	45	565
12	345	10	101
23	121	76	543
44	553	22	222
45	678	22	222
76	543	45	565
76	653	98	345
98	765	98	345
98	988	76	766

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
А	М	8	0	8	50
А	W	8	0	8	50
А	F	8	0	8	50
В	М	9	0	9	50
В	W	9	0	9	50
В	F	9	0	9	50
С	М	11	0	11	50
С	W	11	0	11	50
С	F	11	0	11	50
D	М	13	0	13	50
D	W	13	0	13	50
D	F	13	0	13	50
E	Т	10	30	11	45
E	R	10	30	11	45
F	Т	14	30	15	45
F	R	14	30	15	45
G	М	16	0	16	50
G	W	16	0	16	50
G	F	16	0	16	50
Н	W	10	0	12	30

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
А	F	8	0	8	50
А	М	8	0	8	50
А	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

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

```
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"
```

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";

Packard 101