

# Databases and Information Systems

## Lab Assignment 2

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Q1

Table	Primary Key	Domain of PK	Foreign key(Referencing table)	Not null
student	ID	varchar	(dept_name) references department	name
classroom	building, room_number	varchar	-	-
department	dept_name	varchar	-	-
course	course_id	varchar	(dept_name) references department	-
instructor	ID	varchar	(dept_name) references department	name
section	course_id, sec_id, semester, year	varchar,varchar,varchar,numeric	(course_id) references course, (building, room_number) references classroom	-
teaches	ID, course_id, sec_id, semester, year	varchar,varchar,varchar,varchar,numeric	(course_id,sec_id, semester, year) references section, (ID) references instructor	-
takes	ID, course_id, sec_id, semester, year	varchar,varchar,varchar,varchar,numeric	(course_id,sec_id, semester, year) references section, (ID) references student	-
advisor	s_ID	varchar	(i_ID) references instructor (ID), (s_ID) references student (ID)	-
time_slot	time_slot_id, day, start_hr, start_min	varchar, varchar, numeric, numeric	-	-
prereq	course_id, prereq_id	varchar, varchar	(course_id) references course, (prereq_id) references course	-

## Q2

Enter SQL commands here

```
1 enter your commands here
2 ect * from student as s, department as d, takes as t, instructor as i, advisor as a where s.name="Brown" and s.dept_name=d.dept_name and s.ID=t.ID and s.ID=a.s
```

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	ID	name	dept_name	salary	s_ID	i_ID
76543	Brown	Comp. Sci.	58	Comp. Sci.	Taylor	100000	76543	CS-101	1	Fall	2017	A	45565	Katz	Comp. Sci.	75000	76543	45565
76543	Brown	Comp. Sci.	58	Comp. Sci.	Taylor	100000	76543	CS-319	2	Spring	2018	A	45565	Katz	Comp. Sci.	75000	76543	45565

### Query:

select \* from student as s, department as d, takes as t, instructor as i, advisor as a where s.name="Brown" and s.dept\_name=d.dept\_name and s.ID=t.ID and s.ID=a.s.ID and i.ID=a.i.ID;

## Q3

### 1. Query:

```
select * from student;  
insert into student values("19002","Karthik","Comp. Sci.,"252");  
select * from student;
```

Enter SQL commands here

```
1 -- enter your commands here  
2 select * from student;  
3 insert into student values("19002","Karthik","Comp. Sci.,"252");  
4 select * from student;
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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

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
19002	Karthik	Comp. Sci.	252

## 2. Query:

```
select * from course;
insert into course values("CS-313","DBMS Lab","Comp. Sci.,"3");
select course_id,title,dept_name from course where dept_name="Comp.
Sci.";
```

Enter SQL commands here

```
1 -- enter your commands here
2 select * from course;
3 insert into course values("CS-313","DBMS Lab","Comp. Sci.,"3");
4 select course_id,title,dept_name from course where dept_name="Comp. Sci.";
```

Execute

Save the db

Load an SQLite database file:

Choose File

No file chosen

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

course_id	title	dept_name
CS-101	Intro. to Computer Science	Comp. Sci.
CS-190	Game Design	Comp. Sci.
CS-315	Robotics	Comp. Sci.
CS-319	Image Processing	Comp. Sci.
CS-347	Database System Concepts	Comp. Sci.
CS-313	DBMS Lab	Comp. Sci.

## 3. Query:

```
select * from department;
insert into department values("Mus","Keeravani","10000");
select dept_name,budget from department;
```

Enter SQL commands here

```
1 -- enter your commands here
2 select * from department;
3 insert into department values("Mus", "Keeravani", "10000");
4 select dept_name, budget from department;
```

Execute

Save the db

Load an SQLite database 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

dept_name	budget
Biology	90000
Comp. Sci.	100000
Elec. Eng.	85000
Finance	120000
History	50000
Music	80000
Physics	70000
Mus	10000

#### 4. Query:

```
select * from instructor;
insert into instructor values("45578", "Siba", "Comp. Sci.", "99999");
select name, salary from instructor;
```

Enter SQL commands here

```
1 -- enter your commands here
2 select * from instructor;
3 insert into instructor values("45578","Siba","Comp. Sci.,"99999");
4 select name,salary from instructor;
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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
45678	Siba	Comp. Sci.	99999

name	salary
Srinivasan	65000
Wu	90000
Mozart	40000
Einstein	95000
El Said	60000
Gold	87000
Katz	75000
Califieri	62000
Singh	80000
Crick	72000
Brandt	92000
Kim	80000
Siba	99999
Siba	99999

5. Query:

```
select * from advisor;
```

```
insert into advisor values("45528","59999");
```

select s\_id,i\_id from advisor;

Enter SQL commands here

```
1 -- enter your commands here
2 select * from advisor;
3 insert into advisor values("45528","59999");
4 select s_id,i_id from advisor;
```

Execute

Save the db

Load an SQLite database file:

Choose File

No file chosen

s_ID	i_ID
00128	45565
12345	10101
23121	76543
44553	22222
45678	22222
76543	45565
76653	98345
98765	98345
98988	76766
45578	99999

s_ID	i_ID
00128	45565
12345	10101
23121	76543
44553	22222
45678	22222
76543	45565
76653	98345
98765	98345
98988	76766
45578	99999
45528	59999

#### 6. Query:

select \* from section;

insert into section values("CS-101","2","Fall","2020","Home","428","B");

select course\_id,building from section;

Enter SQL commands here

```
1 -- enter your commands here
2 select * from section;
3 insert into section values("CS-101", "2", "Fall", "2020", "Home", "428", "B");
4 select course_id, building from section;
5
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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

course_id	building
BIO-101	Painter
BIO-301	Painter
CS-101	Packard
CS-101	Packard
CS-190	Taylor
CS-190	Taylor
CS-315	Watson
CS-319	Watson
CS-319	Taylor
CS-347	Taylor
EE-181	Taylor
FIN-201	Packard
HIS-351	Painter
MU-199	Packard
PHY-101	Watson
CS-101	Home

## 7. Query:

```
select * from teaches;
insert into teaches values("12301", "CS-303", "2", "Fall", "2020");
select course_id, semester from teaches;
```



Enter SQL commands here

```
1 -- enter your commands here
2 select * from teaches;
3 insert into teaches values("12301","CS-303","2","Fall","2010");
4 select course_id, semester from teaches;
```

Execute

Save the db

Load an SQLite database file:

Choose File

No file chosen

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
12301	CS-303	2	Fall	2020

course_id	semester
CS-101	Fall
CS-315	Spring
CS-347	Fall
FIN-201	Spring
MU-199	Spring
PHY-101	Fall
HIS-351	Spring
CS-101	Spring
CS-319	Spring
BIO-101	Summer
BIO-301	Summer
CS-190	Spring
CS-190	Spring
CS-319	Spring
EE-181	Spring
CS-303	Fall
CS-303	Fall

## 8. Query:

```
select * from time_slot;
```

```
insert into time_slot values("N","P","3","0","8","43");
```

```
select time_slot_id,day from time_slot;
```

Enter SQL commands here

```
1 -- enter your commands here
2 select * from time_slot;
3 insert into time_slot values("N","P","3","0","8","43");
4 select time_slot_id,day from time_slot;
5
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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
N	S	3	0	8	43

time_slot_id	day
A	F
A	M
A	W
B	F
B	M
B	W
C	F
C	M
C	W
D	F
D	M
D	W
E	R
E	T
F	R
F	T
G	F
G	M
G	W
H	W
N	P
N	S

9. Query:

```

select * from prereq;
insert into prereq values("CS-301","CS-401");
select course_id,prereq_id from prereq;

```

Enter SQL commands here

```

1  -- enter your commands here
2  select * from prereq;
3  insert into prereq values("CS-301","CS-401");
4  select course_id,prereq_id from prereq;
5

```

Execute

Save the db

Load an SQLite database file:  No file chosen

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

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
CS-301	CS-401

#### 10. Query:

```

select * from classroom;
insert into classroom values("Keeravani","2","300");
select building,capacity from classroom;

```

Enter SQL commands here

```
1 -- enter your commands here
2 select * from classroom;
3 insert into classroom values("Keeravani","2","300");
4 select building,capacity from classroom;
5
```

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

building	capacity
Packard	500
Painter	10
Taylor	70
Watson	30
Watson	50
Keeravani	300

#### 11. Query:

select \* from takes;

insert into takes values("56152","HL-205","2","Fall","2019","A");

select ID,grade from takes;

Enter SQL commands here

```
1 -- enter your commands here
2 select * from takes;
3 insert into takes values("56152","HL-205","2","Fall","2019","A");
4 select ID,grade from takes;
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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	

ID	grade
00128	A
00128	A-
12345	C
12345	A
12345	A
12345	A
19991	B
23121	C+
44553	B-
45678	F
45678	B+
45678	B
54321	A-
54321	B+
55739	A-
76543	A
76543	A
76653	C
98765	C-
98765	B
98988	A
98988	
56152	A

## Q4

a) **Query:**

select ID, name from student natural join department where dept\_name="Comp. Sci." and building="Taylor"

Enter SQL commands here

```
1 -- enter your commands here
2 select ID, name from student natural join department where dept_name="Comp. Sci." and 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) For A in one course and C in other course:

**Query:**

select distinct ID,name,dept\_name from student natural join takes where grade="A" intersect select distinct ID,name,dept\_name from student natural join takes where grade="C"

Enter SQL commands here

```
1 -- enter your commands here
2 select distinct ID,name,dept_name from student natural join takes where grade="A" intersect select distinct ID,name,dept_name from student natural join takes where grade="C"
```

Execute

Save the db

Load an SQLite database file:

Choose File

No file chosen

ID	name	dept_name
12345	Shankar	Comp. Sci.

For all A or C in courses:

**Query:**

select \* from student natural join takes where grade="A" or grade="C"

Enter SQL commands here

```
1 -- enter your commands here
2 select * from student natural join takes where grade="A" or grade="C"
```

Execute

Save the db

Load an SQLite database file:  No file chosen

ID	name	dept_name	tot_cred	course_id	sec_id	semester	year	grade
00128	Zhang	Comp. Sci.	102	CS-101	1	Fall	2017	A
12345	Shankar	Comp. Sci.	32	CS-101	1	Fall	2017	C
12345	Shankar	Comp. Sci.	32	CS-190	2	Spring	2017	A
12345	Shankar	Comp. Sci.	32	CS-315	1	Spring	2018	A
12345	Shankar	Comp. Sci.	32	CS-347	1	Fall	2017	A
76543	Brown	Comp. Sci.	58	CS-101	1	Fall	2017	A
76543	Brown	Comp. Sci.	58	CS-319	2	Spring	2018	A
76653	Aoi	Elec. Eng.	60	EE-181	1	Spring	2017	C
98988	Tanaka	Biology	120	BIO-101	1	Summer	2017	A

c) **Query:**

select building,room\_number from section natural join time\_slot where  
day="W"

Enter SQL commands here

```
1 -- enter your commands here
2 select distinct building,room_number from section natural join time_slot where day="W";
```

Execute

Save the db

Load an SQLite database file:  No file chosen

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