

Databases and Information Systems

Lab Assignment 4

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Q1

```
mysql> create user 'universityDB0020'@'localhost' identified by 'Root@lab4';  
Query OK, 0 rows affected (0.07 sec)  
  
mysql> █
```

Q2

```
mysql> create database university;  
Query OK, 1 row affected (0.02 sec)
```

Q3

```
mysql> use university;  
Database changed  
mysql> 
```

Q4

```
mysql> source /home/karthik/DBIS Lab/Assignment 4/DDL.sql
Query OK, 0 rows affected (0.10 sec)
```

```
Query OK, 0 rows affected (0.07 sec)
```

```
Query OK, 0 rows affected (0.06 sec)
```

```
Query OK, 0 rows affected (0.05 sec)
```

```
Query OK, 0 rows affected (0.08 sec)
```

```
Query OK, 0 rows affected (0.07 sec)
```

```
Query OK, 0 rows affected (0.05 sec)
```

```
Query OK, 0 rows affected (0.06 sec)
```

```
Query OK, 0 rows affected (0.06 sec)
```

```
Query OK, 0 rows affected (0.04 sec)
```

```
Query OK, 0 rows affected (0.06 sec)
```

```
mysql> show tables;
```

```
+-----+
| Tables_in_university |
+-----+
| advisor               |
| classroom             |
| course                |
| department            |
| instructor            |
| prereq                |
| section               |
| student               |
| takes                 |
| teaches               |
| time_slot             |
+-----+
11 rows in set (0.00 sec)
```

Q5

```
mysql> source /home/karthik/DBIS Lab/Assignment 4/InsertValues.sql
Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```

Q6

```
Activities Terminal Sep 16 19:39
karthik@karthikubuntu: ~/DBIS Lab/Assignment 4

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='advisor';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| advisor     | s_ID        | varchar    |
| advisor     | i_ID        | varchar    |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='classroom';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| classroom   | building    | varchar    |
| classroom   | room_number | varchar    |
| classroom   | capacity    | decimal    |
+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='course';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| course      | course_id   | varchar    |
| course      | title       | varchar    |
| course      | dept_name   | varchar    |
| course      | credits     | decimal    |
+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='department';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| department   | dept_name   | varchar    |
| department   | building    | varchar    |
| department   | budget      | decimal    |
+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='instructor';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| instructor   | ID          | varchar    |
| instructor   | name        | varchar    |
| instructor   | dept_name   | varchar    |
| instructor   | salary      | decimal    |
+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='prereq';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| prereq      | course_id   | varchar    |
| prereq      | prereq_id   | varchar    |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='section';
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| section     | course_id   | varchar    |
| section     | sec_id      | varchar    |
| section     | semester    | varchar    |
| section     | year        | decimal    |
| section     | building    | varchar    |
| section     | room_number | varchar    |
| section     | time_slot_id | varchar    |
+-----+-----+-----+
7 rows in set (0.00 sec)
```

```
mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='student';
```

TABLE_NAME	COLUMN_NAME	DATA_TYPE
student	ID	varchar
student	name	varchar
student	dept_name	varchar
student	tot_cred	decimal

```
4 rows in set (0.01 sec)
```



```
mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='takes';
```

TABLE_NAME	COLUMN_NAME	DATA_TYPE
takes	ID	varchar
takes	course_id	varchar
takes	sec_id	varchar
takes	semester	varchar
takes	year	decimal
takes	grade	varchar

```
6 rows in set (0.00 sec)
```



```
mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='teaches';
```

TABLE_NAME	COLUMN_NAME	DATA_TYPE
teaches	ID	varchar
teaches	course_id	varchar
teaches	sec_id	varchar
teaches	semester	varchar
teaches	year	decimal

```
5 rows in set (0.00 sec)
```



```
mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name='time_slot';
```

TABLE_NAME	COLUMN_NAME	DATA_TYPE
time_slot	time_slot_id	varchar
time_slot	day	varchar
time_slot	start_hr	decimal
time_slot	start_min	decimal
time_slot	end_hr	decimal
time_slot	end_min	decimal

```
6 rows in set (0.00 sec)
```

Q7

phpMyAdmin installation succesful.

The image shows a terminal window with the following output:

```
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
info: Executing deferred 'a2enconf javascript-common' for package javascript-com
mon
Enabling conf javascript-common.
info: Switch to npm prefork for package libapache2-mod-php7.4
Module mpm_event disabled.
Enabling module mpm_prefork.
info: Executing deferred 'a2enmod php7.4' for package libapache2-mod-php7.4
Enabling module php7.4.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /l
ib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.
service → /lib/systemd/system/apache-htcacheclean.service.
Setting up php7.4 (7.4.3-4ubuntu2.6) ...
Setting up php (2:7.4+75) ...
Setting up phpmyadmin (4:4.9.5+dfsg1-2) ...
dbconfig-common: writing config to /etc/dbconfig-common/phpmyadmin.conf
Creating config file /etc/dbconfig-common/phpmyadmin.conf with new version
Creating config file /etc/phpmyadmin/config-db.php with new version
dbconfig-common: flushing administrative password
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
Processing triggers for ufw (0.36-6) ...
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.6) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.6) ...
karthik@karthikubuntu:~/DBIS Lab/Assignment 4$ sudo phpenmod mbstring
karthik@karthikubuntu:~/DBIS Lab/Assignment 4$ sudo systemctl restart apache2
karthik@karthikubuntu:~/DBIS Lab/Assignment 4$ sudo -H gedit /etc/apache2/apache2.conf
```

Below the terminal window, a browser window is open to `localhost/phpmyadmin/`. The page displays the phpMyAdmin logo and the text "Welcome to phpMyAdmin". It includes a "Language" dropdown menu set to "English" and a "Log In" section with fields for "Username:" and "Password:", followed by a "Go" button.

1)

```
karthik@karthikubuntu:~/DBIS Lab/Assignment 4$ mysql -u universityDB0020 -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
Server version: 8.0.26-0ubuntu0.20.04.2 (Ubuntu)

Copyright (c) 2000, 2021, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █

karthik@karthikubuntu:~/DBIS Lab/Assignment 4$ sudo mysql -u root
[sudo] password for karthik:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 19
Server version: 8.0.26-0ubuntu0.20.04.2 (Ubuntu)

Copyright (c) 2000, 2021, Oracle and/or its affiliates.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> grant all privileges on university.* to 'universityDB0020'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> █
```


2)

```
mysql> use university;  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A
```

3)

Insert and select operations on the university database.

Showing rows 0 - 12 (13 total, Query took 0.0004 seconds.)

select * from student

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

+ Options

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

☐ Check all

With selected:

☐ Edit

☐ Copy

☐ Delete

☐ Export

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

Query results operations

Print

Copy to clipboard

Export

Display chart

Create view

1 row inserted. (Query took 0.0007 seconds.)

insert into student values ('19992','Karthik','Comp. Sci.',12121)

Showing rows 0 - 13 (14 total, Query took 0.0004 seconds.)

select * from student

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

+ Options

↩

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↺

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↷

	ID	name	dept_name	tot_cred
<input type="checkbox"/>	00128	Zhang	Comp. Sci.	102
<input type="checkbox"/>	12345	Shankar	Comp. Sci.	32
<input type="checkbox"/>	19992	Karthik	Comp. Sci.	252
<input type="checkbox"/>	19991	Brandt	History	60
<input type="checkbox"/>	23121	Chavez	Finance	110
<input type="checkbox"/>	44553	Peltier	Physics	56
<input type="checkbox"/>	45678	Levy	Physics	46
<input type="checkbox"/>	54321	Williams	Comp. Sci.	54
<input type="checkbox"/>	55739	Sanchez	Music	38
<input type="checkbox"/>	70557	Snow	Physics	0
<input type="checkbox"/>	76543	Brown	Comp. Sci.	58
<input type="checkbox"/>	76653	Aoi	Elec. Eng.	60
<input type="checkbox"/>	98765	Bourikas	Elec. Eng.	98
<input type="checkbox"/>	98988	Tanaka	Biology	120

☐ Check all

With selected:

☐ Edit

☐ Copy

☐ Delete

☐ Export

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

✓ Showing rows 0 - 12 (13 total, Query took 0.0004 seconds.)

```
select * from course
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	course_id	title	dept_name	credits
<input type="checkbox"/> Edit Copy Delete	BIO-101	Intro. to Biology	Biology	4
<input type="checkbox"/> Edit Copy Delete	BIO-301	Genetics	Biology	4
<input type="checkbox"/> Edit Copy Delete	BIO-399	Computational Biology	Biology	3
<input type="checkbox"/> Edit Copy Delete	CS-101	Intro. to Computer Science	Comp. Sci.	4
<input type="checkbox"/> Edit Copy Delete	CS-190	Game Design	Comp. Sci.	4
<input type="checkbox"/> Edit Copy Delete	CS-315	Robotics	Comp. Sci.	3
<input type="checkbox"/> Edit Copy Delete	CS-319	Image Processing	Comp. Sci.	3
<input type="checkbox"/> Edit Copy Delete	CS-347	Database System Concepts	Comp. Sci.	3
<input type="checkbox"/> Edit Copy Delete	EE-181	Intro. to Digital Systems	Elec. Eng.	3
<input type="checkbox"/> Edit Copy Delete	FIN-201	Investment Banking	Finance	3
<input type="checkbox"/> Edit Copy Delete	HIS-351	World History	History	3
<input type="checkbox"/> Edit Copy Delete	MU-199	Music Video Production	Music	3
<input type="checkbox"/> Edit Copy Delete	PHY-101	Physical Principles	Physics	4

☐ Check all | With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

✓ 1 row inserted. (Query took 0.0129 seconds.)

```
insert into course values('CS-313','DBMS Lab','Comp. Sci.',3)
```

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
select course_id,title,dept_name from course where dept_name='Comp.Sci.'
```


Showing rows 0 - 11 (12 total, Query took 0.0006 seconds.)

select * from instructor

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	ID	name	dept_name	salary
<input type="checkbox"/>	10101	Srinivasan	Comp. Sci.	65000.00
<input type="checkbox"/>	12121	Wu	Finance	90000.00
<input type="checkbox"/>	15151	Mozart	Music	40000.00
<input type="checkbox"/>	22222	Einstein	Physics	95000.00
<input type="checkbox"/>	32343	El Said	History	60000.00
<input type="checkbox"/>	33456	Gold	Physics	87000.00
<input type="checkbox"/>	45565	Katz	Comp. Sci.	75000.00
<input type="checkbox"/>	58583	Califeri	History	62000.00
<input type="checkbox"/>	76543	Singh	Finance	80000.00
<input type="checkbox"/>	76766	Crick	Biology	72000.00
<input type="checkbox"/>	83821	Brandt	Comp. Sci.	92000.00
<input type="checkbox"/>	98345	Kim	Elec. Eng.	80000.00

Check all | With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

1 row inserted. (Query took 0.0081 seconds.)

insert into instructor values('99999','Silva','Comp. Sci.',99999)

Showing rows 0 - 12 (13 total, Query took 0.0004 seconds.)

select name,salary from instructor

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	name	salary
<input type="checkbox"/>	Srinivasan	65000.00
<input type="checkbox"/>	Wu	90000.00
<input type="checkbox"/>	Mozart	40000.00
<input type="checkbox"/>	Einstein	95000.00
<input type="checkbox"/>	El Said	60000.00
<input type="checkbox"/>	Gold	87000.00
<input type="checkbox"/>	Katz	75000.00
<input type="checkbox"/>	Silva	99999.00
<input type="checkbox"/>	Califeri	62000.00
<input type="checkbox"/>	Singh	80000.00
<input type="checkbox"/>	Crick	72000.00
<input type="checkbox"/>	Brandt	92000.00
<input type="checkbox"/>	Kim	80000.00

Check all | With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Showing rows 0 - 8 (9 total, Query took 0.0005 seconds.)

```
select * from advisor
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

				s_id	i_id
<input type="checkbox"/>	Edit	Copy	Delete	12345	10101
<input type="checkbox"/>	Edit	Copy	Delete	44553	22222
<input type="checkbox"/>	Edit	Copy	Delete	45678	22222
<input type="checkbox"/>	Edit	Copy	Delete	00128	45565
<input type="checkbox"/>	Edit	Copy	Delete	76543	45565
<input type="checkbox"/>	Edit	Copy	Delete	23121	76543
<input type="checkbox"/>	Edit	Copy	Delete	98988	76766
<input type="checkbox"/>	Edit	Copy	Delete	76653	98345
<input type="checkbox"/>	Edit	Copy	Delete	98765	98345

☐ Check all | With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

[Print](#) [Copy to clipboard](#) [Export](#) [Display chart](#) [Create view](#)

1 row inserted. (Query took 0.0069 seconds.)

```
insert into advisor values('45528','59999')
```

Showing rows 0 - 9 (10 total, Query took 0.0004 seconds.)

```
select s_id,i_id from advisor
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

				s_id	i_id
<input type="checkbox"/>	Edit	Copy	Delete	12345	10101
<input type="checkbox"/>	Edit	Copy	Delete	44553	22222
<input type="checkbox"/>	Edit	Copy	Delete	45678	22222
<input type="checkbox"/>	Edit	Copy	Delete	00128	45565
<input type="checkbox"/>	Edit	Copy	Delete	76543	45565
<input type="checkbox"/>	Edit	Copy	Delete	45528	59999
<input type="checkbox"/>	Edit	Copy	Delete	23121	76543
<input type="checkbox"/>	Edit	Copy	Delete	98988	76766
<input type="checkbox"/>	Edit	Copy	Delete	76653	98345
<input type="checkbox"/>	Edit	Copy	Delete	98765	98345

☐ Check all | With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Showing rows 0 - 14 (15 total, Query took 0.0007 seconds.)

```
select * from section
```

☐ Show all
 Number of rows: 25
 Filter rows: Search this table
 Sort by key: None

+ Options

	course_id	sec_id	semester	year	building	room_number	time_slot_id
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	BIO-101	1	Summer	2009	Painter	514	B
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	BIO-301	1	Summer	2010	Painter	514	A
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-101	1	Fall	2009	Packard	101	H
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-101	1	Spring	2010	Packard	101	F
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-190	1	Spring	2009	Taylor	3128	E
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-190	2	Spring	2009	Taylor	3128	A
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-315	1	Spring	2010	Watson	120	D
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-319	1	Spring	2010	Watson	100	B
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-319	2	Spring	2010	Taylor	3128	C
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-347	1	Fall	2009	Taylor	3128	A
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	EE-181	1	Spring	2009	Taylor	3128	C
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	FIN-201	1	Spring	2010	Packard	101	B
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	HIS-351	1	Spring	2010	Painter	514	C
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	MU-199	1	Spring	2010	Packard	101	D
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	PHY-101	1	Fall	2009	Watson	100	A

☐ Check all
 With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all
 Number of rows: 25
 Filter rows: Search this table
 Sort by key: None

Query results operations

☐ Print
 ☐ Copy to clipboard
 ☐ Export
 ☐ Display chart
 ☐ Create view

1 row inserted. (Query took 0.0007 seconds.)

```
insert into section values('CS-101','2','Fall','2009','None','100','B')
```

Showing rows 0 - 15 (16 total, Query took 0.0004 seconds.)

```
select course_id,building from section
```

☐ Show all
 Number of rows: 25
 Filter rows: Search this table
 Sort by key: None

+ Options

	course_id	building
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-101	None
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-101	Packard
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-101	Packard
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	FIN-201	Packard
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	MU-199	Packard
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	BIO-101	Painter
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	BIO-301	Painter
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	HIS-351	Painter
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-190	Taylor
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-190	Taylor
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-319	Taylor
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-347	Taylor
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	EE-181	Taylor
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-319	Watson
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	PHY-101	Watson
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CS-315	Watson

☐ Check all
 With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

15

✓ Showing rows 0 - 14 (15 total, Query took 0.0005 seconds.)

```
select * from teachers
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

			ID	course_id	sec_id	semester	year
<input type="checkbox"/>	Edit	Copy	Delete	76766	BIO-101	1	Summer 2009
<input type="checkbox"/>	Edit	Copy	Delete	76766	BIO-301	1	Summer 2010
<input type="checkbox"/>	Edit	Copy	Delete	10101	CS-101	1	Fall 2009
<input type="checkbox"/>	Edit	Copy	Delete	45545	CS-101	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	83821	CS-190	1	Spring 2009
<input type="checkbox"/>	Edit	Copy	Delete	83821	CS-190	2	Spring 2009
<input type="checkbox"/>	Edit	Copy	Delete	10101	CS-315	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	45545	CS-319	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	83821	CS-319	2	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	10101	CS-347	1	Fall 2009
<input type="checkbox"/>	Edit	Copy	Delete	98345	EE-181	1	Spring 2009
<input type="checkbox"/>	Edit	Copy	Delete	12121	FIN-201	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	32343	HIS-351	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	15151	MU-199	1	Spring 2010
<input type="checkbox"/>	Edit	Copy	Delete	22222	PHY-101	1	Fall 2009

☐ Check all | With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

☐ Print ☐ Copy to clipboard ☐ Export ☐ Display chart ☐ Create view

✓ 1 row inserted. (Query took 0.0002 seconds.)

```
insert into teachers values('12345','CS-383','2','Fall','2009')
```

✓ Showing rows 0 - 15 (16 total, Query took 0.0002 seconds.)

```
select course_id,semester from teachers
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

			course_id	semester
<input type="checkbox"/>	Edit	Copy	Delete	BIO-101 Summer
<input type="checkbox"/>	Edit	Copy	Delete	BIO-301 Summer
<input type="checkbox"/>	Edit	Copy	Delete	CS-101 Fall
<input type="checkbox"/>	Edit	Copy	Delete	CS-101 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-190 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-190 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-303 Fall
<input type="checkbox"/>	Edit	Copy	Delete	CS-315 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-319 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-319 Spring
<input type="checkbox"/>	Edit	Copy	Delete	CS-347 Fall
<input type="checkbox"/>	Edit	Copy	Delete	EE-181 Spring
<input type="checkbox"/>	Edit	Copy	Delete	FIN-201 Spring
<input type="checkbox"/>	Edit	Copy	Delete	HIS-351 Spring
<input type="checkbox"/>	Edit	Copy	Delete	MU-199 Spring
<input type="checkbox"/>	Edit	Copy	Delete	PHY-101 Fall

Showing rows 0 - 6 (7 total, Query took 0.0004 seconds.)

```
select * from prereq
```

☐ Show all | Number of rows: 25 | Filter rows: Sort by key: None

+ Options

	course_id	prereq_id
<input type="checkbox"/> Edit Copy Delete	BIO-301	BIO-101
<input type="checkbox"/> Edit Copy Delete	BIO-399	BIO-101
<input type="checkbox"/> Edit Copy Delete	CS-190	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-315	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-319	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-347	CS-101
<input type="checkbox"/> Edit Copy Delete	EE-181	PHN-101

☐ Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Sort by key: None

Query results operations

1 row inserted. (Query took 0.0079 seconds.)

```
insert into prereq values('CS-301','CS-302')
```

Showing rows 0 - 7 (8 total, Query took 0.0003 seconds.)

```
select course_id,prereq_id from prereq
```

☐ Show all | Number of rows: 25 | Filter rows: Sort by key: None

+ Options

	course_id	prereq_id
<input type="checkbox"/> Edit Copy Delete	BIO-301	BIO-101
<input type="checkbox"/> Edit Copy Delete	BIO-399	BIO-101
<input type="checkbox"/> Edit Copy Delete	CS-190	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-315	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-319	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-347	CS-101
<input type="checkbox"/> Edit Copy Delete	CS-301	CS-401
<input type="checkbox"/> Edit Copy Delete	EE-181	PHN-101

☐ Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Sort by key: None

Query results operations

✓ Showing rows 0 - 4 (5 total, Query took 0.0004 seconds.)

```
select * from classroom
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	building	room_number	capacity
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Packard	101	500
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Painter	514	10
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Taylor	3128	70
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Watson	100	30
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Watson	120	50

☐ Check all | With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

☐ Print ☐ Copy to clipboard ☐ Export ☐ Display chart ☐ Create view

✓ 1 row inserted. (Query took 0.0059 seconds.)

```
insert into classroom values('Keeravani','21','300')
```

✓ Showing rows 0 - 5 (6 total, Query took 0.0005 seconds.)

```
select building,capacity from classroom
```

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	building	capacity
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Keeravani	300
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Packard	500
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Painter	10
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Taylor	70
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Watson	30
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Watson	50

☐ Check all | With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

☐ Print ☐ Copy to clipboard ☐ Export ☐ Display chart ☐ Create view

	ID	course_id	sec_id	semester	year	grade
<input type="checkbox"/>	12345	CS-347	1	Fall	2009	A
<input type="checkbox"/>	19991	HS-351	1	Spring	2010	B
<input type="checkbox"/>	23121	FIN-201	1	Spring	2010	C+
<input type="checkbox"/>	44553	PHF-101	1	Fall	2009	B-
<input type="checkbox"/>	45678	CS-101	1	Fall	2009	F
<input type="checkbox"/>	45678	CS-101	1	Spring	2010	B+
<input type="checkbox"/>	45678	CS-319	1	Spring	2010	B
<input type="checkbox"/>	54321	CS-101	1	Fall	2009	A-
<input type="checkbox"/>	54321	CS-190	2	Spring	2009	B+
<input type="checkbox"/>	55739	MU-199	1	Spring	2010	A-
<input type="checkbox"/>	76543	CS-101	1	Fall	2009	A
<input type="checkbox"/>	76543	CS-319	2	Spring	2010	A
<input type="checkbox"/>	76653	EE-181	1	Spring	2009	C
<input type="checkbox"/>	98765	CS-101	1	Fall	2009	C-
<input type="checkbox"/>	98765	CS-315	1	Spring	2010	B
<input type="checkbox"/>	98988	BIO-101	1	Summer	2009	A
<input type="checkbox"/>	98988	BIO-301	1	Summer	2010	NULL

☐ Check all
 With selected:
 ☐ Edit
 ☐ Copy
 ☐ Delete
 ☐ Export

☐ Show all |
 Number of rows:
 Filter rows:
 Sort by key:

Query results operations

☐ Print
 ☐ Copy to clipboard
 ☐ Export
 ☐ Display chart
 ☐ Create view

✓ 1 row inserted. (Query took 0.0063 seconds.)

```
insert into takes values('18112','HL-280','12','Fall','2009','A');
```

✓ Showing rows 0 - 22 (23 total, Query took 0.0004 seconds.)

```
select ID,grade from takes
```

☐ Show all |
 Number of rows:
 Filter rows:
 Sort by key:

+ Options

	ID	grade
<input type="checkbox"/>	00128	A
<input type="checkbox"/>	00128	A-
<input type="checkbox"/>	12345	C
<input type="checkbox"/>	12345	A
<input type="checkbox"/>	12345	A
<input type="checkbox"/>	12345	A
<input type="checkbox"/>	19991	B
<input type="checkbox"/>	23121	C+
<input type="checkbox"/>	44553	B-
<input type="checkbox"/>	45678	F
<input type="checkbox"/>	45678	B+
<input type="checkbox"/>	45678	B
<input type="checkbox"/>	54321	A-
<input type="checkbox"/>	54321	B+
<input type="checkbox"/>	55739	A-
<input type="checkbox"/>	56152	A
<input type="checkbox"/>	76543	A
<input type="checkbox"/>	76543	A
<input type="checkbox"/>	76653	C
<input type="checkbox"/>	98765	C-
<input type="checkbox"/>	98765	B
<input type="checkbox"/>	98988	A
<input type="checkbox"/>	98988	NULL

☐ Check all
 With selected:
 ☐ Edit
 ☐ Copy
 ☐ Delete
 ☐ Export

Q8

i)

After inserting courses in civil to the university, i have executed the below query to get the desired result.

✓ Showing rows 0 - 0 (1 total, Query took 0.0006 seconds.) [name: **SRINIVASAN... - SRINIVASAN...**]

```
select course.course_id,course.title,instructor.ID,instructor.name from course,instructor,teaches where instructor.dept_name="Comp. Sci." and instructor.ID=teaches.ID and teaches.course_id=course.course_id and course.dept_name="Civil" order by instructor.name
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [C

☐ Show all | Number of rows: 25 ▾ Filter rows:

+ Options

course_id	title	ID	name
CS-999	Intro to Civil	10101	Srinivasan

ii)

✓ 1 row inserted. (Query took 0.0192 seconds.)

```
insert into course values ("cs333","Computer Architecture","Comp. Sci.", "6")
```

✓ 1 row inserted. (Query took 0.0064 seconds.)

```
insert into course values ("cs303","Comp Arch Prereq","Comp. Sci.", "6")
```

✓ 1 row inserted. (Query took 0.0117 seconds.)

```
insert into prereq values ("cs333","cs303")
```

+ Options

↔ T ↔

▼

course_id








































prereq_id

<input type="checkbox"/>		Edit		Copy		Delete	BIO-301	BIO-101
<input type="checkbox"/>		Edit		Copy		Delete	BIO-399	BIO-101
<input type="checkbox"/>		Edit		Copy		Delete	CS-190	CS-101
<input type="checkbox"/>		Edit		Copy		Delete	CS-315	CS-101
<input type="checkbox"/>		Edit		Copy		Delete	CS-319	CS-101
<input type="checkbox"/>		Edit		Copy		Delete	CS-347	CS-101
<input type="checkbox"/>		Edit		Copy		Delete	CS-301	CS-401
<input type="checkbox"/>		Edit		Copy		Delete	cs333	cs303
<input type="checkbox"/>		Edit		Copy		Delete	EE-181	PHY-101

✓ 6 rows affected. (Query took 0.0084 seconds.)

```
update instructor set salary=1.1*salary where dept_name in (select dept_name from department where budget > 90000)
```

```
update instructor set salary=1.1*salary where dept_name in (select dept_name from department where budget > 90000)
```

					ID	name	dept_name	salary
<input type="checkbox"/>		Edit	 Copy	 Delete	10101	Srinivasan	Comp. Sci.	71500.00
<input type="checkbox"/>		Edit	 Copy	 Delete	12121	Wu	Finance	99000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	15151	Mozart	Music	40000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	22222	Einstein	Physics	95000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	32343	El Said	History	60000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	33456	Gold	Physics	87000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	45565	Katz	Comp. Sci.	82500.00
<input type="checkbox"/>		Edit	 Copy	 Delete	45578	Siba	Comp. Sci.	109998.90
<input type="checkbox"/>		Edit	 Copy	 Delete	58583	Califieri	History	62000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	76543	Singh	Finance	88000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	76766	Crick	Biology	72000.00
<input type="checkbox"/>		Edit	 Copy	 Delete	83821	Brandt	Comp. Sci.	101200.00
<input type="checkbox"/>		Edit	 Copy	 Delete	98345	Kim	Elec. Eng.	80000.00

iv)

As discussed in the class, instead of 2007 we consider 2009 and instead of 15 we consider 5 and proceed:

Showing rows 0 - 0 (1 total, Query took 0.0030 seconds.)

```
select * from (select course.title,course.course_id,count(*) as Student_Count from takes natural join course where dept_name="Comp. Sci." and year="2009" and takes.semester="Fall" group by course_id) as All_courses where All_courses.Student_Count=5 order by course_id
```

☐ Profiling [\[Edit inline\]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 | Filter rows:

+ Options

	course_id	Student_Count
Intro. to Computer Science	CS-101	6