

CS313: Lab Assignment 4

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1 Question 1: Creation of New User

Input Queries:

```
CREATE USER 'universityDB0003'@'localhost' IDENTIFIED BY 'wifelinlooof';
SELECT user FROM mysql.user;
```

Output Screenshots:

```
siddharth@DESKTOP-5490SID:/mnt/c/Users/bsidd/Desktop/CS313 DBIS_Lab/Submissions/Assignment-4$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.30-0ubuntu0.20.04.2 (Ubuntu)

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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> CREATE USER 'universityDB0003'@'localhost' IDENTIFIED BY 'wifelinlooof';
Query OK, 0 rows affected (0.04 sec)
```

Figure 1: Creation of new user ‘UniversityDB0003’ from the root user

```
mysql> SELECT user FROM user;
+-----+
| user |
+-----+
| debian-sys-maint |
| lab3 |
| mysql.infoschema |
| mysql.session |
| mysql.sys |
| root |
| universityDB0003 |
+-----+
7 rows in set (0.00 sec)
```

Figure 2: User ‘universityDB0003’ has been created.

2 Question 2: Creation of New Database

Input Queries:

```
CREATE DATABASE university;
GRANT ALL PRIVILEGES ON university.* TO 'universityDB0003'@'localhost';
```

Output Screenshots:

```
mysql> CREATE DATABASE university;
Query OK, 1 row affected (0.01 sec)
```

Figure 3: New database ‘university’ created

```
mysql> GRANT ALL PRIVILEGES ON university.* TO 'universityDB0003'@'localhost';
Query OK, 0 rows affected (0.00 sec)
```

Figure 4: Granting privileges to the new user

3 Question 3: Connecting to the database

Input Query:

```
USE university;
```

Output Screenshot:

```
mysql> USE university;
Database changed
```

Figure 5: Connected to database.

4 Question 4: Creation of Tables

Input Queries:

```
source DDL.sql;
SHOW TABLES;
```

Output Screenshots:

```
mysql> source DDL.sql;
Query OK, 0 rows affected (0.09 sec)

Query OK, 0 rows affected (0.07 sec)

Query OK, 0 rows affected (0.08 sec)

Query OK, 0 rows affected (0.05 sec)

Query OK, 0 rows affected (0.07 sec)

Query OK, 0 rows affected (0.08 sec)

Query OK, 0 rows affected (0.23 sec)

Query OK, 0 rows affected (0.14 sec)

Query OK, 0 rows affected (0.12 sec)

Query OK, 0 rows affected (0.06 sec)

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

(a) Insertion using ‘source’

```
mysql> SHOW TABLES;
+-----+
| Tables_in_university |
+-----+
| advisor
| classroom
| course
| department
| instructor
| prereq
| section
| student
| takes
| teaches
| time_slot
+-----+
11 rows in set (0.01 sec)
```

(b) Tables have been created

Figure 6: Insertion using `source DDL.sql`

5 Question 5: Insertion into Tables

Input Queries:

```
source InsertValues.sql
```

Output Screenshot:

```
mysql> source InsertValues.sql;
Query OK, 0 rows affected (0.03 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 (0.01 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 1 row affected (0.02 sec)

Query OK, 1 row affected (0.00 sec)

Query OK, 1 row affected (0.02 sec)
```

Figure 7: Insertion using `source InsertValues.sql`

6 Question 6: Insertion into Tables

Input Queries:

```
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'department';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'classroom';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'course';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'section';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'instructor';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'teaches';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'student';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'takes';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'advisor';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'time_slot';
SELECT table_name, column_name, data_type FROM information_schema.columns
WHERE table_name = 'prereq';
```

Output Screenshots:

```
mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name = "department";
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| department | budget      | decimal   |
| department | building    | varchar   |
| department | dept_name   | varchar   |
+-----+-----+-----+
3 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 | capacity    | decimal   |
| classroom | room_number | varchar   |
+-----+-----+-----+
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    | credits     | decimal   |
| course    | dept_name   | varchar   |
| course    | title       | varchar   |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

Figure 8: information_schema for ‘department’, ‘classroom’, and ‘course’

```

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name = "section";
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| section    | building    | varchar   |
| section    | course_id   | varchar   |
| section    | room_number | varchar   |
| section    | sec_id      | varchar   |
| section    | semester    | varchar   |
| section    | time_slot_id| varchar   |
| section    | year        | decimal   |
+-----+-----+-----+
7 rows in set (0.01 sec)

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name = "instructor";
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| instructor | dept_name   | varchar   |
| instructor | ID          | varchar   |
| instructor | 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 = "teaches";
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| teaches    | course_id   | varchar   |
| teaches    | ID          | varchar   |
| teaches    | sec_id      | varchar   |
| teaches    | semester    | varchar   |
| teaches    | year        | decimal   |
+-----+-----+-----+
5 rows in set (0.00 sec)

```

Figure 9: information_schema for ‘section’, ‘instructor’, and ‘teaches’

```

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

mysql> SELECT table_name, column_name, data_type FROM information_schema.columns WHERE table_name = "takes";
+-----+-----+-----+
| TABLE_NAME | COLUMN_NAME | DATA_TYPE |
+-----+-----+-----+
| takes     | course_id   | varchar   |
| takes     | grade        | varchar   |
| takes     | ID          | varchar   |
| takes     | sec_id      | varchar   |
| takes     | semester    | varchar   |
| takes     | year        | decimal   |
+-----+-----+-----+
6 rows in set (0.00 sec)

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

```

Figure 10: information_schema for ‘student’, ‘takes’, and ‘advisor’

```

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 | day | varchar |
| time_slot | end_hr | decimal |
| time_slot | end_min | decimal |
| time_slot | start_hr | decimal |
| time_slot | start_min | decimal |
| time_slot | time_slot_id | varchar |
+-----+-----+-----+
6 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)

```

Figure 11: information_schema for ‘time-slot’ and ‘prereq’

7 Question 7: phpMyAdmin tool for creating databases

Input Queries:

```

-- INSERTION INTO ALL THE TABLES

SELECT * FROM department;
INSERT INTO department VALUES('Biotechnology', 'Swift', 1000000);
SELECT * FROM department;

SELECT * FROM student;
INSERT INTO student VALUES('17685', 'Rohan', 'Biotechnology', 150);
SELECT * FROM student;

SELECT * FROM instructor;
INSERT INTO instructor VALUES('10034', 'Nirmit', 'Biotechnology', 125000);
SELECT * FROM instructor;

SELECT * FROM advisor;
INSERT INTO advisor VALUES('17685', '10034');
SELECT * FROM advisor;

SELECT * FROM course;
INSERT INTO course VALUES('BT-605', 'Biomedical Imaging', 'Biotechnology', 6);
SELECT * FROM course;

SELECT * FROM prereq;
INSERT INTO prereq VALUES('BT-605', 'CS-101');
INSERT INTO prereq VALUES('BT-605', 'BIO-101');
SELECT * FROM prereq;

```

```

SELECT * FROM time_slot;
INSERT INTO time_slot VALUES('E', 'M', 15, 0, 16, 20);
SELECT * FROM time_slot;

SELECT * FROM classroom;
INSERT INTO classroom VALUES('Swift', '2002', 54);
SELECT * FROM classroom;

SELECT * FROM section;
INSERT INTO section VALUES('BT-605', '2', 'Fall', 2011, 'Swift', '2002', 'E');
SELECT * FROM section;

SELECT * FROM takes;
INSERT INTO takes VALUES('17685', 'BT-605', '2', 'Fall', 2011, 'A+');
INSERT INTO takes VALUES('17685', 'BIO-101', '1', 'Summer', 2009, 'A+');
INSERT INTO takes VALUES('17685', 'CS-101', '1', 'Fall', 2009, 'A');
INSERT INTO takes VALUES('17685', 'PHY-101', '1', 'Fall', 2009, 'B');
INSERT INTO takes VALUES('17685', 'CS-315', '1', 'Spring', 2010, 'B+');
SELECT * FROM takes;

SELECT * FROM teaches;
INSERT INTO teaches VALUES('10034', 'BT-605', '2', 'Fall', 2011);
SELECT * FROM teaches;

-- for 8b
INSERT INTO course
VALUES('CS-303', 'Fundamentals of Database Systems', 'Comp. Sci.', 4);

-- for 8a
INSERT INTO department VALUES('Civil', 'Watson', '70000');
INSERT INTO course VALUES('CV-302', 'Design of Steel Structures', 'Civil', '5');
INSERT INTO section VALUES('CV-302', '1', 'Summer', '2009', 'Watson', '100', '6');
INSERT INTO section VALUES('CV-302', '1', 'Spring', '2009', 'Watson', '100', '6');
INSERT INTO teaches VALUES('10101', 'CV-302', '1', 'Summer', '2009');
INSERT INTO teaches VALUES('10101', 'CV-302', '1', 'Spring', '2009');
UPDATE teaches SET ID = '45565' WHERE ID = '10101' AND semester = 'Spring';

-- for 8d
INSERT INTO student VALUES('10012', 'Devdatt', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10013', 'Heisenberg', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10014', 'Narayan', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10015', 'Kalyani', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10016', 'Pai', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10017', 'Prabhu', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10018', 'Kamath', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10019', 'Shetty', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10020', 'Rao', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10021', 'Shenoy', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10022', 'Bhat', 'Comp. Sci.', 150);

```

```

INSERT INTO student VALUES('10023', 'Hegde', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10024', 'Bhakthan', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10025', 'Doraemon', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10026', 'GadgetMan', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10027', 'Aryan', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10028', 'Trimukhe', 'Comp. Sci.', 150);
INSERT INTO student VALUES('10029', 'Dhananjay', 'Comp. Sci.', 150);

INSERT INTO section VALUES('CS-101', '1', 'Fall', 2007, 'Swift', '2002', 'E');
INSERT INTO section VALUES('CS-190', '1', 'Fall', 2007, 'Swift', '2002', 'B');

INSERT INTO teaches VALUES('10101', 'CS-101', '1', 'Fall', '2007');
INSERT INTO teaches VALUES('10101', 'CS-190', '1', 'Fall', '2007');

INSERT INTO takes VALUES('10012', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10013', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10014', 'CS-101', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10015', 'CS-101', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10016', 'CS-101', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10017', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10018', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10019', 'CS-101', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10020', 'CS-101', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10021', 'CS-101', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10022', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10023', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10024', 'CS-101', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10025', 'CS-101', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10026', 'CS-101', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10027', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10028', 'CS-101', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10029', 'CS-101', '1', 'Fall', 2007, 'A');

INSERT INTO takes VALUES('10013', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10012', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10014', 'CS-190', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10015', 'CS-190', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10016', 'CS-190', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10017', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10018', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10019', 'CS-190', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10020', 'CS-190', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10021', 'CS-190', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10022', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10023', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10024', 'CS-190', '1', 'Fall', 2007, 'A');
INSERT INTO takes VALUES('10025', 'CS-190', '1', 'Fall', 2007, 'B');
INSERT INTO takes VALUES('10026', 'CS-190', '1', 'Fall', 2007, 'B+');
INSERT INTO takes VALUES('10027', 'CS-190', '1', 'Fall', 2007, 'A+');
INSERT INTO takes VALUES('10028', 'CS-190', '1', 'Fall', 2007, 'A+');

```

Output Screenshots:

The screenshot shows the phpMyAdmin interface for the 'university' database. The left sidebar lists databases: information_schema, performance_schema, and university. Under 'university', tables are listed: advisor, classroom, course, department, instructor, prereq, section, student, takes, teaches, and time_slot. The main area displays a table of these 11 tables, with columns for Table, Action, Rows, Type, Collation, Size, and Overhead. The 'department' table is selected, highlighted in grey.

Table	Action	Rows	Type	Collation	Size	Overhead
advisor	Browse Structure Search Insert Empty Drop	9	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
classroom	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_0900_ai_ci	16.0 Kib	-
course	Browse Structure Search Insert Empty Drop	13	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
department	Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_0900_ai_ci	16.0 Kib	-
instructor	Browse Structure Search Insert Empty Drop	12	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
prereq	Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
section	Browse Structure Search Insert Empty Drop	15	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
student	Browse Structure Search Insert Empty Drop	13	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
takes	Browse Structure Search Insert Empty Drop	22	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
teaches	Browse Structure Search Insert Empty Drop	15	InnoDB	utf8mb4_0900_ai_ci	32.0 Kib	-
time_slot	Browse Structure Search Insert Empty Drop	28	InnoDB	utf8mb4_0900_ai_ci	16.0 Kib	-
11 tables	Sum	138	InnoDB	utf8mb4_0900_ai_ci	304.0 Kib	0 B

Figure 12: A view of the phpMyAdmin interface, and the Tables in university database

The screenshot shows the 'Department' table in phpMyAdmin. The table has four columns: dept_name, building, and budget. There are seven rows of data. The last row, 'Physics', is currently selected, indicated by a grey background.

	dept_name	building	budget
Edit Copy Delete	Biology	Watson	90000.00
Edit Copy Delete	Comp. Sci.	Taylor	100000.00
Edit Copy Delete	Elec. Eng.	Taylor	85000.00
Edit Copy Delete	Finance	Painter	120000.00
Edit Copy Delete	History	Painter	50000.00
Edit Copy Delete	Music	Packard	80000.00
Edit Copy Delete	Physics	Watson	70000.00

Figure 13: Table ‘Department’ before insertion

The screenshot shows the 'Department' table in phpMyAdmin after an insertion. The table structure and data remain the same as in Figure 13, but the total number of rows is now 12, as indicated by the '12 rows' link at the bottom of the table.

	dept_name	building	budget
Edit Copy Delete	Biology	Watson	90000.00
Edit Copy Delete	Biotechnology	Swift	1000000.00
Edit Copy Delete	Comp. Sci.	Taylor	100000.00
Edit Copy Delete	Elec. Eng.	Taylor	85000.00
Edit Copy Delete	Finance	Painter	120000.00
Edit Copy Delete	History	Painter	50000.00
Edit Copy Delete	Music	Packard	80000.00
Edit Copy Delete	Physics	Watson	70000.00

Figure 14: Tables ‘Department’ after insertion

	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	80
<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

 With selected:

Figure 15: Table ‘Student’ before Insertion

	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"/>	17685	Rohan	Biotechnology	150
<input type="checkbox"/>	19991	Brandt	History	80
<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

 With selected:

Figure 16: Table ‘Student’ after Insertion

	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	Califieri	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:

Figure 17: Table ‘Instructor’ before Insertion

	ID	name	dept_name	salary
<input type="checkbox"/>	10034	Nirmit	Biotechnology	125000.00
<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	Califieri	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:

Figure 18: Table ‘Instructor’ after Insertion

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	s_ID	i_ID
	<input type="checkbox"/>				12345
	<input type="checkbox"/>				22222
	<input type="checkbox"/>				45678
	<input type="checkbox"/>				00128
	<input type="checkbox"/>				45565
	<input type="checkbox"/>				76543
	<input type="checkbox"/>				23121
	<input type="checkbox"/>				98988
	<input type="checkbox"/>				76653
	<input type="checkbox"/>				98345
	<input type="checkbox"/>				98765

Check all With selected: Edit Copy Delete Export

Figure 19: Table ‘advisor’ before Insertion

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	s_ID	i_ID
	<input type="checkbox"/>				17685
	<input type="checkbox"/>				10101
	<input type="checkbox"/>				22222
	<input type="checkbox"/>				45678
	<input type="checkbox"/>				00128
	<input type="checkbox"/>				45565
	<input type="checkbox"/>				76543
	<input type="checkbox"/>				23121
	<input type="checkbox"/>				98988
	<input type="checkbox"/>				76653
	<input type="checkbox"/>				98345
	<input type="checkbox"/>				98765

Check all With selected: Edit Copy Delete Export

Figure 20: Table ‘advisor’ after Insertion

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

Check all With selected: Edit Copy Delete Export

Figure 21: Table ‘course’ before Insertion

	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	course_id	title	dept_name	credits
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BIO-101	Intro. to Biology	Biology	4
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BIO-301	Genetics	Biology	4
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BIO-399	Computational Biology	Biology	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BT-605	Biomedical Imaging	Biotechnology	6
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-101	Intro. to Computer Science	Comp. Sci.	4
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-190	Game Design	Comp. Sci.	4
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-315	Robotics	Comp. Sci.	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-319	Image Processing	Comp. Sci.	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-347	Database System Concepts	Comp. Sci.	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	EE-181	Intro. to Digital Systems	Elec. Eng.	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	FIN-201	Investment Banking	Finance	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	HIS-351	World History	History	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	MU-199	Music Video Production	Music	3
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	PHY-101	Physical Principles	Physics	4

Check all With selected: Edit Copy Delete Export

Figure 22: Table ‘course’ after Insertion

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

Check all With selected: Edit Copy Delete Export

Figure 23: Table ‘prereq’ before Insertion

	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	course_id	prereq_id
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BIO-301	BIO-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BIO-399	BIO-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BT-605	BIO-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	BT-605	CS-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-190	CS-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-315	CS-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-319	CS-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	CS-347	CS-101
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	EE-181	PHY-101

Check all With selected: Edit Copy Delete Export

Figure 24: Table ‘prereq’ after Insertion

	time_slot_id	day	start_hr	start_min	end_hr	end_min
<input type="checkbox"/>	Edit Copy Delete A	F	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete A	M	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete A	W	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete B	F	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete B	M	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete B	W	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete C	F	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete C	M	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete C	W	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete D	F	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete D	M	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete D	W	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete E	R	10	30	11	45
<input type="checkbox"/>	Edit Copy Delete E	T	10	30	11	45
<input type="checkbox"/>	Edit Copy Delete F	R	14	30	15	45
<input type="checkbox"/>	Edit Copy Delete F	T	14	30	15	45
<input type="checkbox"/>	Edit Copy Delete G	F	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete G	M	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete G	W	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete H	W	10	0	12	30

↑ Check all With selected:

Figure 25: Table ‘time_slot’ before Insertion

	time_slot_id	day	start_hr	start_min	end_hr	end_min
<input type="checkbox"/>	Edit Copy Delete A	F	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete A	M	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete A	W	8	0	8	50
<input type="checkbox"/>	Edit Copy Delete B	F	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete B	M	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete B	W	9	0	9	50
<input type="checkbox"/>	Edit Copy Delete C	F	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete C	M	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete C	W	11	0	11	50
<input type="checkbox"/>	Edit Copy Delete D	F	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete D	M	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete D	W	13	0	13	50
<input type="checkbox"/>	Edit Copy Delete E	M	15	0	16	20
<input type="checkbox"/>	Edit Copy Delete E	R	10	30	11	45
<input type="checkbox"/>	Edit Copy Delete E	T	10	30	11	45
<input type="checkbox"/>	Edit Copy Delete F	R	14	30	15	45
<input type="checkbox"/>	Edit Copy Delete F	T	14	30	15	45
<input type="checkbox"/>	Edit Copy Delete G	F	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete G	M	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete G	W	16	0	16	50
<input type="checkbox"/>	Edit Copy Delete H	W	10	0	12	30

↑ Check all With selected:

Figure 26: Table ‘time_slot’ after Insertion

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

Figure 27: Table ‘classroom’ before Insertion

		building	room_number	capacity
<input type="checkbox"/>	Edit Copy Delete	Packard	101	500
<input type="checkbox"/>	Edit Copy Delete	Painter	514	10
<input type="checkbox"/>	Edit Copy Delete	Swift	2002	54
<input type="checkbox"/>	Edit Copy Delete	Taylor	3128	70
<input type="checkbox"/>	Edit Copy Delete	Watson	100	30
<input type="checkbox"/>	Edit Copy Delete	Watson	120	50

Figure 28: Table ‘classroom’ after Insertion

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

Figure 29: Table ‘section’ before Insertion

	course_id	sec_id	semester	year	building	room_number	time_slot_id
<input type="checkbox"/>   	BIO-101	1	Summer	2009	Painter	514	B
<input type="checkbox"/>   	BIO-301	1	Summer	2010	Packard	514	A
<input type="checkbox"/>   	BT-605	2	Fall	2011	Swift	2002	E
<input type="checkbox"/>   	CS-101	1	Fall	2009	Packard	101	H
<input type="checkbox"/>   	CS-101	1	Spring	2010	Packard	101	F
<input type="checkbox"/>   	CS-190	1	Spring	2009	Taylor	3128	E
<input type="checkbox"/>   	CS-190	2	Spring	2009	Taylor	3128	A
<input type="checkbox"/>   	CS-315	1	Spring	2010	Watson	120	D
<input type="checkbox"/>   	CS-319	1	Spring	2010	Watson	100	B
<input type="checkbox"/>   	CS-319	2	Spring	2010	Taylor	3128	C
<input type="checkbox"/>   	CS-347	1	Fall	2009	Taylor	3128	A
<input type="checkbox"/>   	EE-181	1	Spring	2009	Taylor	3128	C
<input type="checkbox"/>   	FIN-201	1	Spring	2010	Packard	101	B
<input type="checkbox"/>   	HIS-351	1	Spring	2010	Packard	514	C
<input type="checkbox"/>   	MU-199	1	Spring	2010	Packard	101	D
<input type="checkbox"/>   	PHY-101	1	Fall	2009	Watson	100	A

↑ Check all With selected:    

Figure 30: Table ‘section’ after Insertion

	ID	course_id	sec_id	semester	year	grade
<input type="checkbox"/>   	00128	CS-101	1	Fall	2009	A
<input type="checkbox"/>   	00128	CS-347	1	Fall	2009	A-
<input type="checkbox"/>   	12345	CS-101	1	Fall	2009	C
<input type="checkbox"/>   	12345	CS-190	2	Spring	2009	A
<input type="checkbox"/>   	12345	CS-315	1	Spring	2010	A
<input type="checkbox"/>   	12345	CS-347	1	Fall	2009	A
<input type="checkbox"/>   	19991	HIS-351	1	Spring	2010	B
<input type="checkbox"/>   	23121	FIN-201	1	Spring	2010	C+
<input type="checkbox"/>   	44553	PHY-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:    

Figure 31: Table ‘takes’ before Insertion

	ID	course_id	sec_id	semester	year	grade
<input type="checkbox"/>	Edit Copy Delete 00128	CS-101	1	Fall	2009	A
<input type="checkbox"/>	Edit Copy Delete 00128	CS-347	1	Fall	2009	A-
<input type="checkbox"/>	Edit Copy Delete 12345	CS-101	1	Fall	2009	C
<input type="checkbox"/>	Edit Copy Delete 12345	CS-190	2	Spring	2009	A
<input type="checkbox"/>	Edit Copy Delete 12345	CS-315	1	Spring	2010	A
<input type="checkbox"/>	Edit Copy Delete 12345	CS-347	1	Fall	2009	A
<input type="checkbox"/>	Edit Copy Delete 17685	BIO-101	1	Summer	2009	A+
<input type="checkbox"/>	Edit Copy Delete 17685	BT-605	2	Fall	2011	A+
<input type="checkbox"/>	Edit Copy Delete 17685	CS-101	1	Fall	2009	A
<input type="checkbox"/>	Edit Copy Delete 17685	CS-315	1	Spring	2010	B+
<input type="checkbox"/>	Edit Copy Delete 17685	PHY-101	1	Fall	2009	B
<input type="checkbox"/>	Edit Copy Delete 19991	HIS-351	1	Spring	2010	B
<input type="checkbox"/>	Edit Copy Delete 23121	FIN-201	1	Spring	2010	C+
<input type="checkbox"/>	Edit Copy Delete 44553	PHY-101	1	Fall	2009	B-
<input type="checkbox"/>	Edit Copy Delete 45678	CS-101	1	Fall	2009	F
<input type="checkbox"/>	Edit Copy Delete 45678	CS-101	1	Spring	2010	B+
<input type="checkbox"/>	Edit Copy Delete 45678	CS-319	1	Spring	2010	B
<input type="checkbox"/>	Edit Copy Delete 54321	CS-101	1	Fall	2009	A-
<input type="checkbox"/>	Edit Copy Delete 54321	CS-190	2	Spring	2009	B+
<input type="checkbox"/>	Edit Copy Delete 55739	MU-199	1	Spring	2010	A-
<input type="checkbox"/>	Edit Copy Delete 76543	CS-101	1	Fall	2009	A
<input type="checkbox"/>	Edit Copy Delete 76543	CS-319	2	Spring	2010	A
<input type="checkbox"/>	Edit Copy Delete 76653	EE-181	1	Spring	2009	C
<input type="checkbox"/>	Edit Copy Delete 98765	CS-101	1	Fall	2009	C-
<input type="checkbox"/>	Edit Copy Delete 98765	CS-315	1	Spring	2010	B

↑ Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

Figure 32: Table ‘takes’ after Insertion

	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 45565	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 45565	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](#)

Figure 33: Table ‘teaches’ before Insertion

Figure 34: Table ‘teaches’ after Insertion

8 Question 8: SQL Queries on phpMyAdmin

(a) Find the course id, title, instructor id and name of those instructors who are from Comp. Sci. department but are teaching a course of Civil department in the year 2009. Arrange results in ascending order of instructor names.

Input Queries:

```
SELECT A.course_id, A.ID, course.title, A.name FROM(
    SELECT * FROM instructor NATURAL JOIN teaches NATURAL JOIN section
) as A, course
WHERE course.course_id = A.course_id
AND course.dept_name = 'Civil'
AND A.dept_name = 'Comp. Sci.'
AND A.year = '2009'
ORDER BY A.name;
```

Output Screenshot:

Figure 35: Required Output

(b) Add a new course with course_id as CS-333 (with suitable values for other attributes) for the Comp. Sci. department which will have CS-303 as a prerequisite. Write insert statements for the same.

Input Queries:

```
SELECT * FROM course;
INSERT INTO course VALUES('CS-333', 'Advanced Database Systems', 'Comp. Sci.', 6);
SELECT * FROM course;
SELECT * FROM prereq;
INSERT INTO prereq VALUES('CS-333', 'CS-303');
SELECT * FROM prereq;
```

Output Screenshots:

	course_id	title	dept_name	credits
<input type="checkbox"/>	Edit Copy Delete	BIO-101	Intro. to Biology	Biology
<input type="checkbox"/>	Edit Copy Delete	BIO-301	Genetics	Biology
<input type="checkbox"/>	Edit Copy Delete	BIO-399	Computational Biology	Biology
<input type="checkbox"/>	Edit Copy Delete	BT-605	Biomedical Imaging	Biotechnology
<input type="checkbox"/>	Edit Copy Delete	CS-101	Intro. to Computer Science	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-190	Game Design	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-303	Fundamentals of Database Systems	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-315	Robotics	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-319	Image Processing	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-347	Database System Concepts	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CV-302	Design of Steel Structures	Civil
<input type="checkbox"/>	Edit Copy Delete	EE-181	Intro. to Digital Systems	Elec. Eng.
<input type="checkbox"/>	Edit Copy Delete	FIN-201	Investment Banking	Finance
<input type="checkbox"/>	Edit Copy Delete	HIS-351	World History	History
<input type="checkbox"/>	Edit Copy Delete	MU-199	Music Video Production	Music
<input type="checkbox"/>	Edit Copy Delete	PHY-101	Physical Principles	Physics

Figure 36: Table 'course' before insertion

	course_id	title	dept_name	credits
<input type="checkbox"/>	Edit Copy Delete	BIO-101	Intro. to Biology	Biology
<input type="checkbox"/>	Edit Copy Delete	BIO-301	Genetics	Biology
<input type="checkbox"/>	Edit Copy Delete	BIO-399	Computational Biology	Biology
<input type="checkbox"/>	Edit Copy Delete	BT-605	Biomedical Imaging	Biotechnology
<input type="checkbox"/>	Edit Copy Delete	CS-101	Intro. to Computer Science	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-190	Game Design	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-303	Fundamentals of Database Systems	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-315	Robotics	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-319	Image Processing	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-333	Advanced Database Systems	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CS-347	Database System Concepts	Comp. Sci.
<input type="checkbox"/>	Edit Copy Delete	CV-302	Design of Steel Structures	Civil
<input type="checkbox"/>	Edit Copy Delete	EE-181	Intro. to Digital Systems	Elec. Eng.
<input type="checkbox"/>	Edit Copy Delete	FIN-201	Investment Banking	Finance
<input type="checkbox"/>	Edit Copy Delete	HIS-351	World History	History
<input type="checkbox"/>	Edit Copy Delete	MU-199	Music Video Production	Music
<input type="checkbox"/>	Edit Copy Delete	PHY-101	Physical Principles	Physics

Figure 37: Table 'course' after insertion

		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	BT-605	BIO-101
<input type="checkbox"/>	Edit Copy Delete	BT-605	CS-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	PHY-101

Check all With selected: Edit Copy Delete Export

Figure 38: Table ‘prereq’ before insertion

		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	BT-605	BIO-101
<input type="checkbox"/>	Edit Copy Delete	BT-605	CS-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-333	CS-303
<input type="checkbox"/>	Edit Copy Delete	EE-181	PHY-101

Check all With selected: Edit Copy Delete Export

Figure 39: Table ‘prereq’ after insertion

(c) Update salaries of instructors by 10% if their departments have a budget of more than 900000. Write the update statements for the same.

Input Queries:

```

SELECT * FROM instructor;
UPDATE instructor
SET salary = 1.1*salary
WHERE dept_name IN(
    SELECT dept_name
    FROM department
    WHERE budget>900000
);
SELECT * FROM instructor;

```

Output Screenshots:

	ID	name	dept_name	salary
<input type="checkbox"/>	10034	Nirmit	Biotechnology	125000.00
<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	Califieri	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

 With selected:

Figure 40: Table ‘instructor’ before insertion

	ID	name	dept_name	salary
<input type="checkbox"/>	10034	Nirmit	Biotechnology	137500.00
<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	Califieri	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

 With selected:

Figure 41: Table ‘instructor’ after insertion

(d) Find CSE department courses (id and title) and number of students taking that course in the year 2007 and semester Fall where the number is greater than 15. Arrange the results in ascending order of course id.

Input Queries:

```
SELECT * FROM(
(
    SELECT course_id, title
    FROM course NATURAL JOIN section
    WHERE year = '2007'
    AND semester = 'Fall'
    AND dept_name = 'Comp. Sci.'
) as A NATURAL JOIN (
    SELECT course_id, COUNT(ID)
        FROM takes
        GROUP BY course_id
        HAVING COUNT(ID)>15
) as B
)
ORDER BY course_id;
```

Output Screenshot:

The screenshot shows a web-based database interface. At the top, there is a green bar indicating 'Showing rows 0 - 1 (2 total, Query took 0.0012 seconds.)'. Below this is a grey header bar with the SQL query text. The main area displays a table with two rows of data. At the bottom, there are navigation and search controls.

course_id			title	COUNT(ID)
CS-101			Intro. to Computer Science	26
CS-190			Game Design	19

Figure 42: Required Output