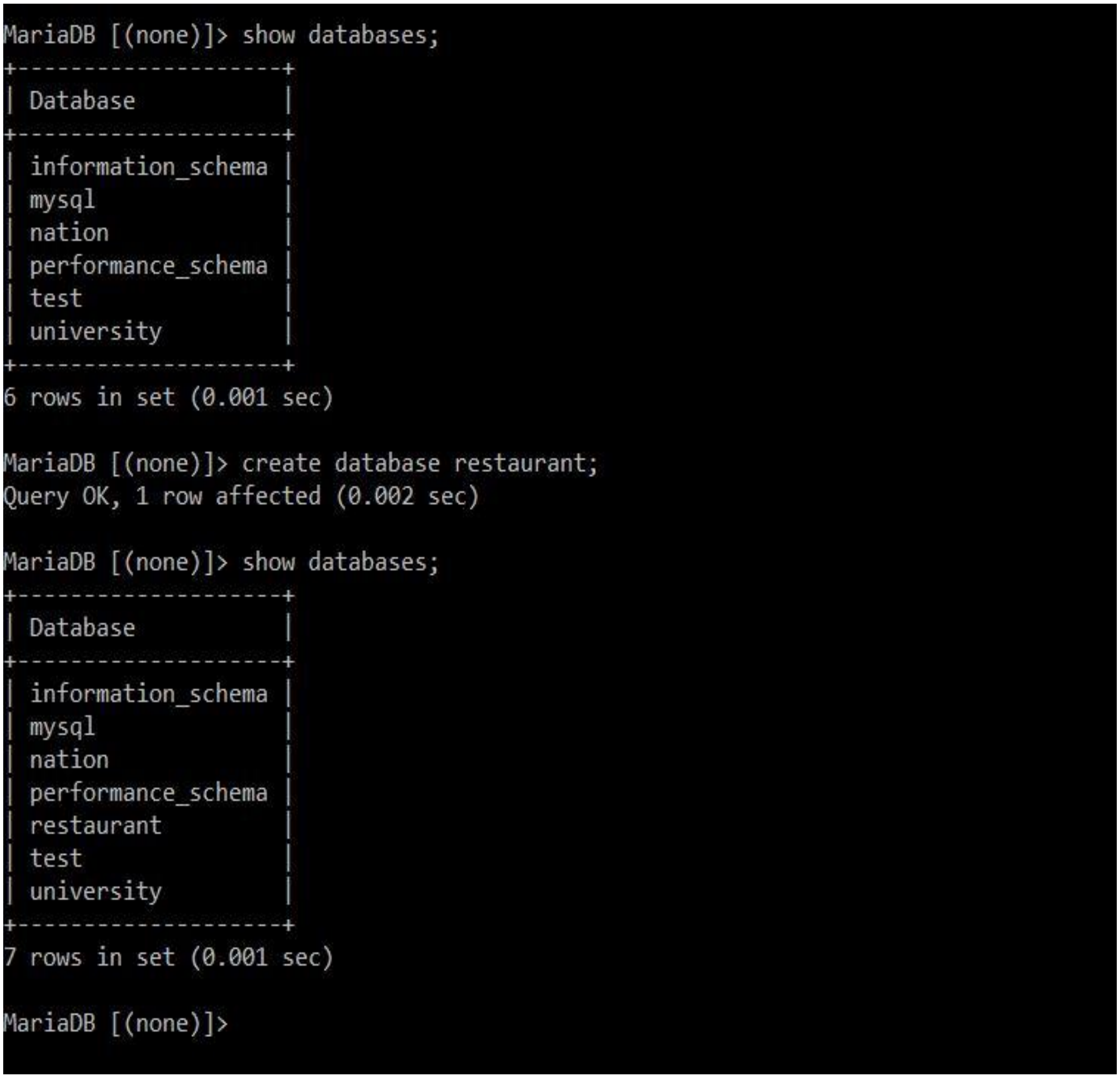
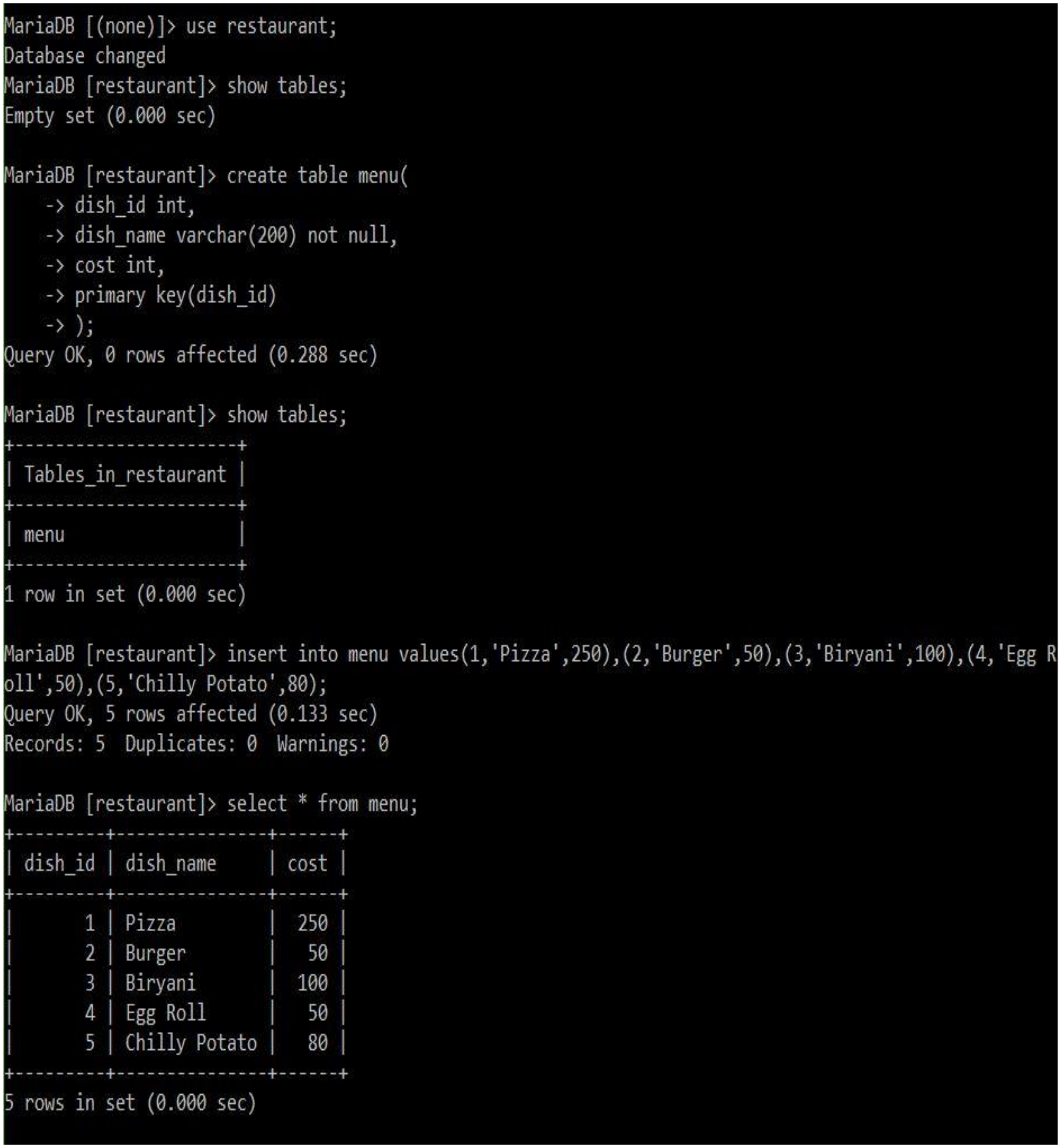
# 1. **USE MARIADB**.

A. CREATE RESTAURANT DATABASE.



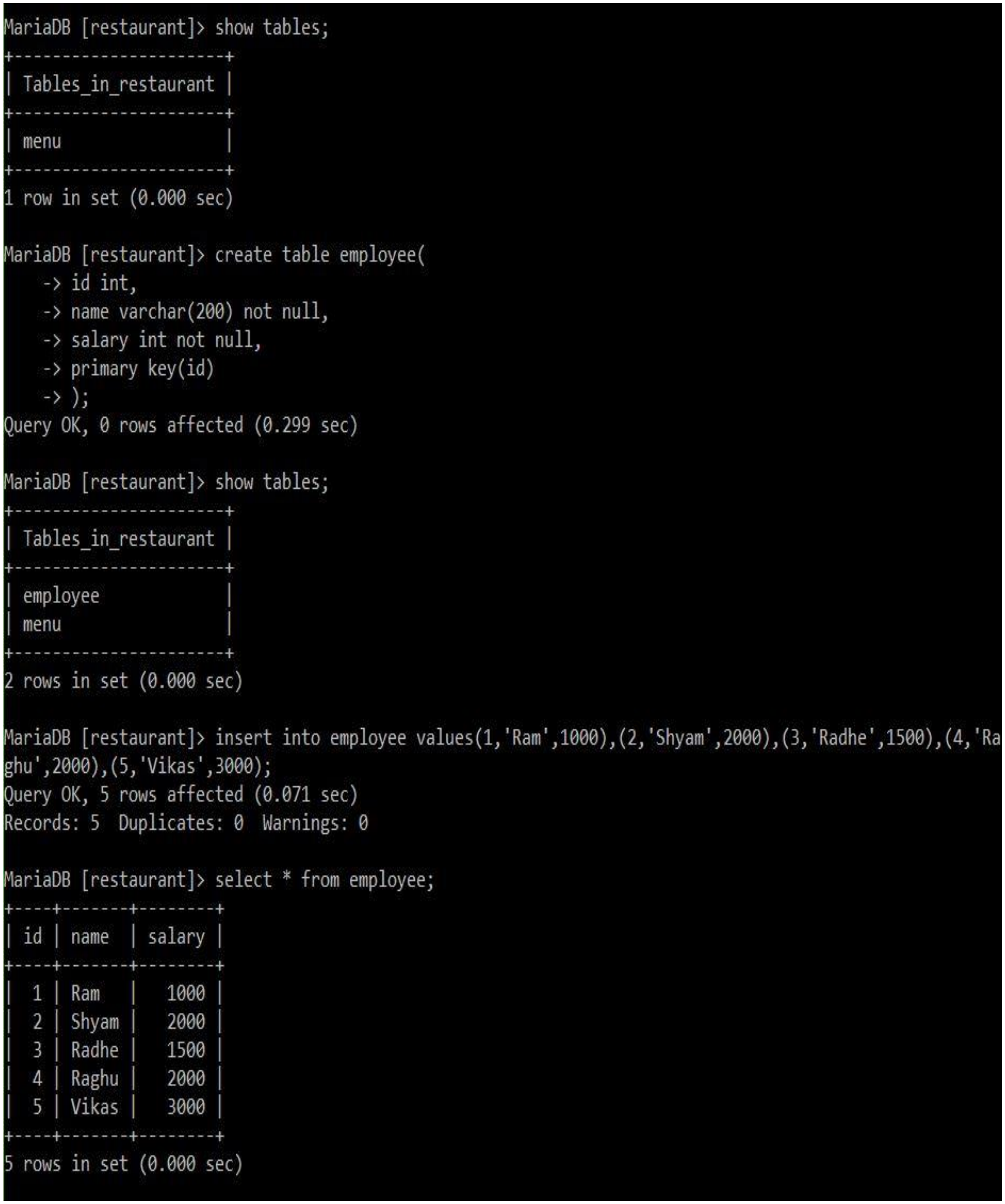
```
MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| nation             |
| performance_schema |
| test               |
| university         |
+--------------------+
6 rows in set (0.001 sec)

MariaDB [(none)]> create database restaurant;
Query OK, 1 row affected (0.002 sec)

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| nation             |
| performance_schema |
| restaurant         |
| test               |
| university         |
+--------------------+
7 rows in set (0.001 sec)

MariaDB [(none)]>
```

B. IN THAT CREATE MENU TABLE. INSERT 5 RECORDS.



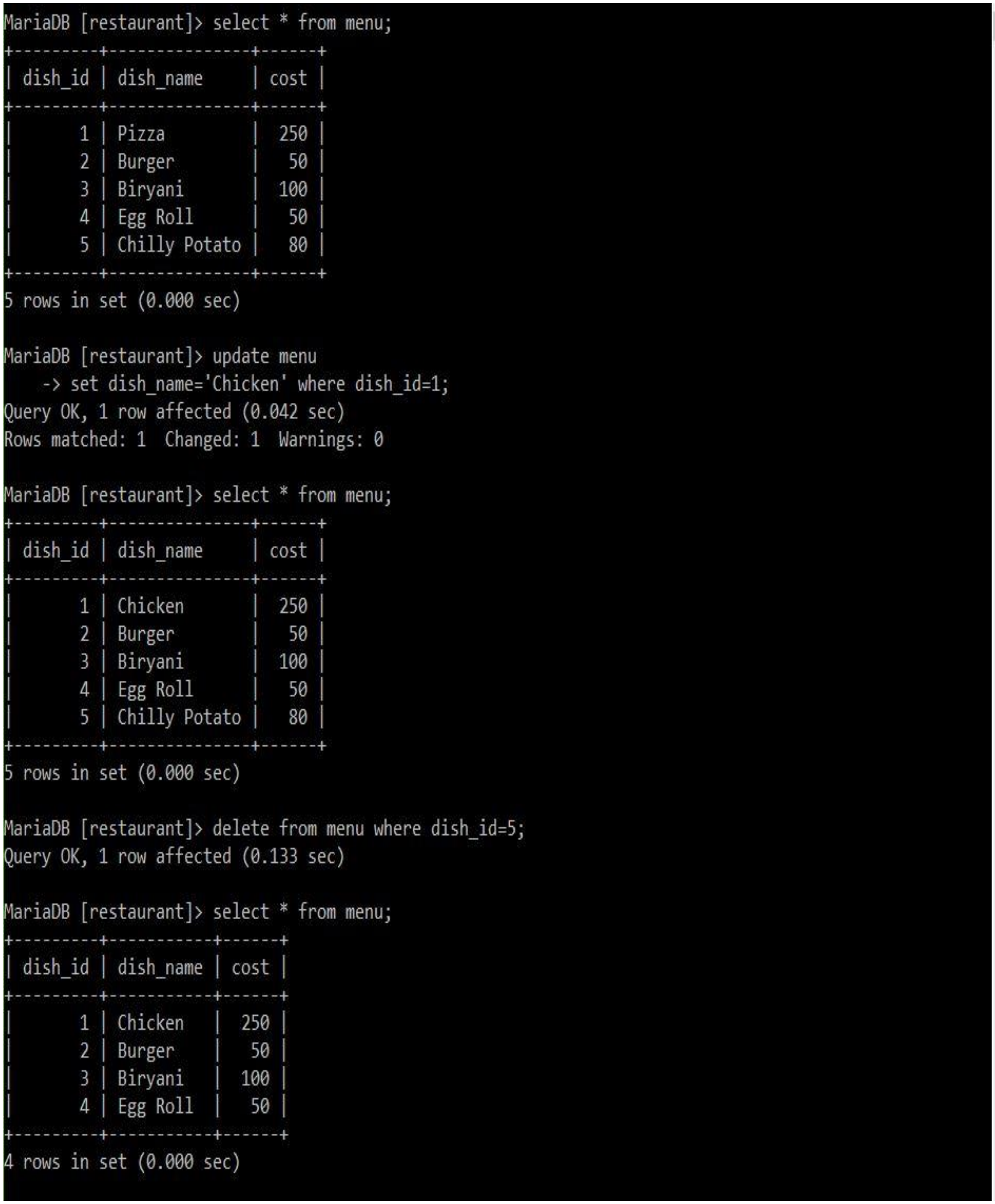
```
MariaDB [(none)]> use restaurant;
Database changed
MariaDB [restaurant]> show tables;
Empty set (0.000 sec)

MariaDB [restaurant]> create table menu(
    -> dish_id int,
    -> dish_name varchar(200) not null,
    -> cost int,
    -> primary key(dish_id)
    -> );
Query OK, 0 rows affected (0.288 sec)

MariaDB [restaurant]> show tables;
+----------------------+
| Tables_in_restaurant |
+----------------------+
| menu                 |
+----------------------+
1 row in set (0.000 sec)

MariaDB [restaurant]> insert into menu values(1,'Pizza',250),(2,'Burger',50),(3,'Biryani',100),(4,'Egg R
oll',50),(5,'Chilly Potato',80);
Query OK, 5 rows affected (0.133 sec)
Records: 5  Duplicates: 0  Warnings: 0

MariaDB [restaurant]> select * from menu;
+---------+---------------+------+
| dish_id | dish_name     | cost |
+---------+---------------+------+
|       1 | Pizza         |  250 |
|       2 | Burger        |   50 |
|       3 | Biryani       |  100 |
|       4 | Egg Roll      |   50 |
|       5 | Chilly Potato |   80 |
+---------+---------------+------+
5 rows in set (0.000 sec)
```

C. CREATE ANOTHER TABLE OF YOUR CHOICE AND INSERT 5 RECORDS.



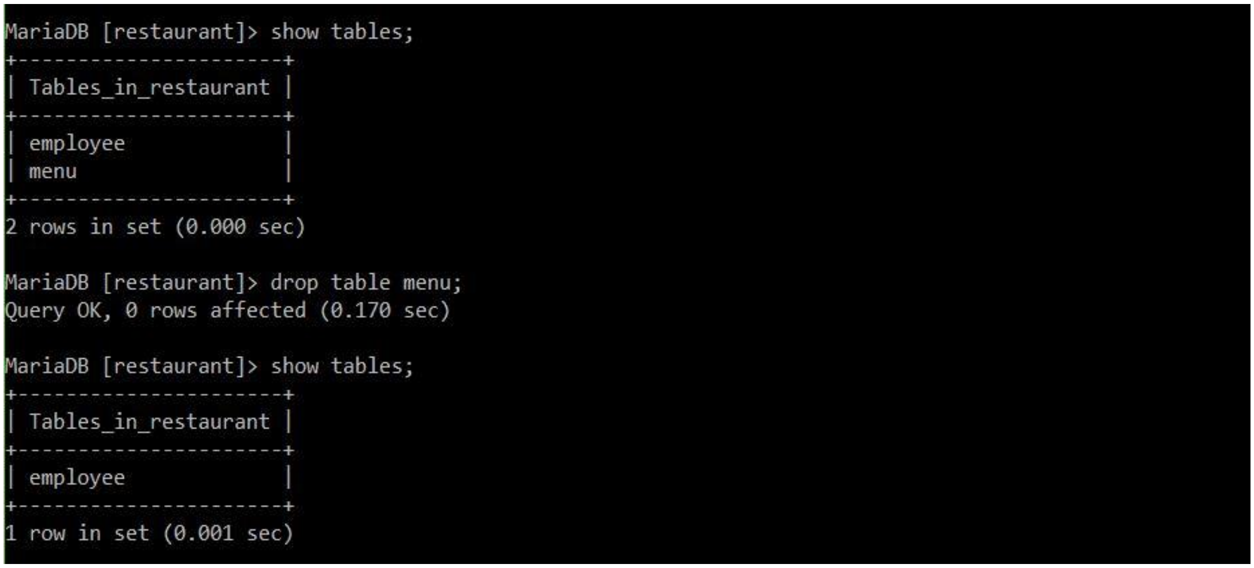
```
MariaDB [restaurant]> show tables;
+----------------------+
| Tables_in_restaurant |
+----------------------+
| menu                 |
+----------------------+
1 row in set (0.000 sec)

MariaDB [restaurant]> create table employee(
    -> id int,
    -> name varchar(200) not null,
    -> salary int not null,
    -> primary key(id)
    -> );
Query OK, 0 rows affected (0.299 sec)

MariaDB [restaurant]> show tables;
+----------------------+
| Tables_in_restaurant |
+----------------------+
| employee             |
| menu                 |
+----------------------+
2 rows in set (0.000 sec)

MariaDB [restaurant]> insert into employee values(1,'Ram',1000),(2,'Shyam',2000),(3,'Radhe',1500),(4,'Ra
ghu',2000),(5,'Vikas',3000);
Query OK, 5 rows affected (0.071 sec)
Records: 5  Duplicates: 0  Warnings: 0

MariaDB [restaurant]> select * from employee;
+----+-------+--------+
| id | name  | salary |
+----+-------+--------+
|  1 | Ram   |   1000 |
|  2 | Shyam |   2000 |
|  3 | Radhe |   1500 |
|  4 | Raghu |   2000 |
|  5 | Vikas |   3000 |
+----+-------+--------+
5 rows in set (0.000 sec)
```

D. MODIFY ONE RECORD, AND DELETE ONE RECORD FROM THE MENU TABLE.



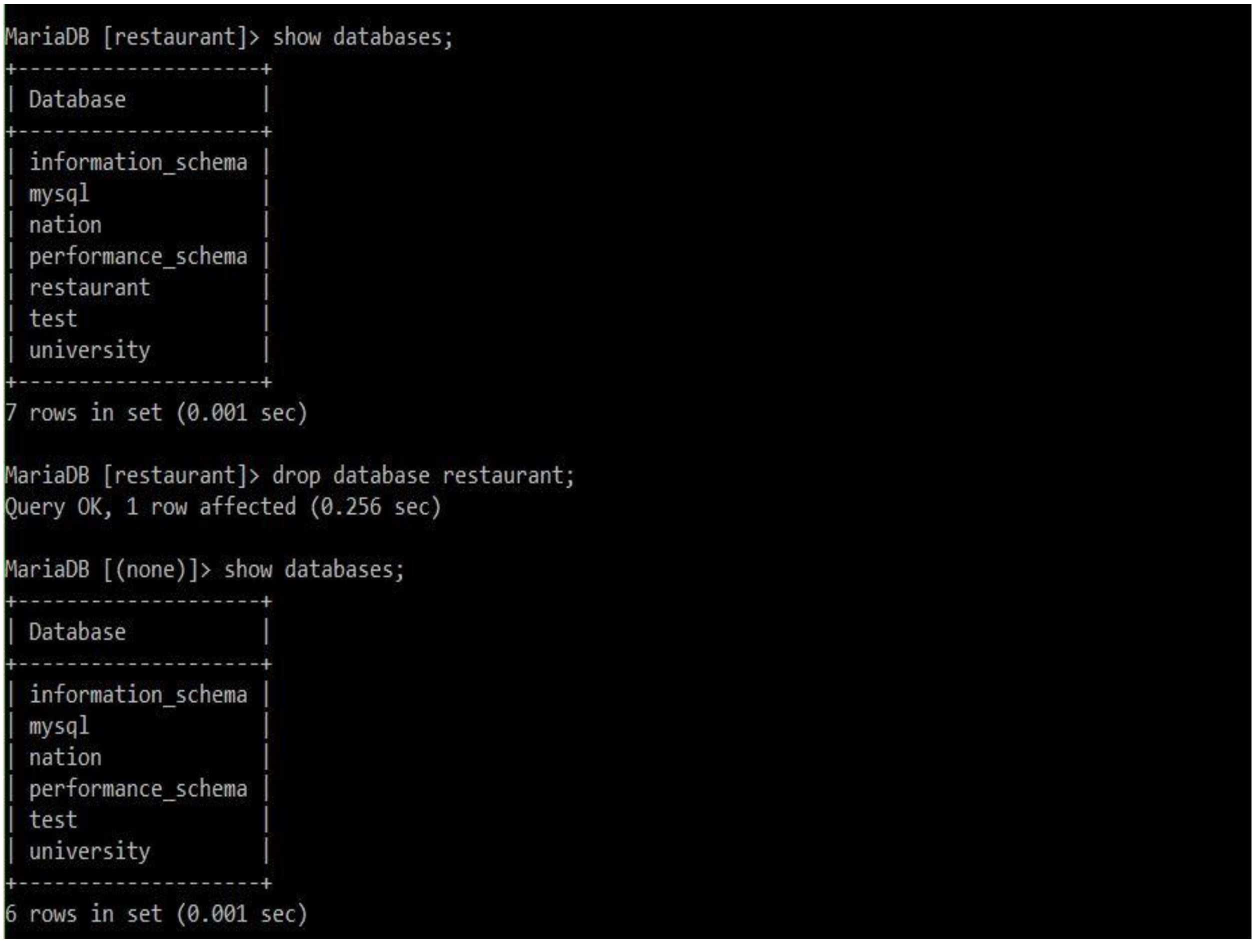
```
MariaDB [restaurant]> select * from menu;
+---------+--------------+------+
| dish_id | dish_name    | cost |
+---------+--------------+------+
|       1 | Pizza        |  250 |
|       2 | Burger       |   50 |
|       3 | Biryani      |  100 |
|       4 | Egg Roll     |   50 |
|       5 | Chilly Potato |   80 |
+---------+--------------+------+
5 rows in set (0.000 sec)

MariaDB [restaurant]> update menu
    -> set dish_name='Chicken' where dish_id=1;
Query OK, 1 row affected (0.042 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [restaurant]> select * from menu;
+---------+--------------+------+
| dish_id | dish_name    | cost |
+---------+--------------+------+
|       1 | Chicken      |  250 |
|       2 | Burger       |   50 |
|       3 | Biryani      |  100 |
|       4 | Egg Roll     |   50 |
|       5 | Chilly Potato |   80 |
+---------+--------------+------+
5 rows in set (0.000 sec)

MariaDB [restaurant]> delete from menu where dish_id=5;
Query OK, 1 row affected (0.133 sec)

MariaDB [restaurant]> select * from menu;
+---------+-----------+------+
| dish_id | dish_name | cost |
+---------+-----------+------+
|       1 | Chicken   |  250 |
|       2 | Burger    |   50 |
|       3 | Biryani   |  100 |
|       4 | Egg Roll  |   50 |
+---------+-----------+------+
4 rows in set (0.000 sec)
```

E. DROP MENU TABLE.



```
MariaDB [restaurant]> show tables;
+----------------------+
| Tables_in_restaurant |
+----------------------+
| employee             |
| menu                 |
+----------------------+
2 rows in set (0.000 sec)

MariaDB [restaurant]> drop table menu;
Query OK, 0 rows affected (0.170 sec)

MariaDB [restaurant]> show tables;
+----------------------+
| Tables_in_restaurant |
+----------------------+
| employee             |
+----------------------+
1 row in set (0.001 sec)
```

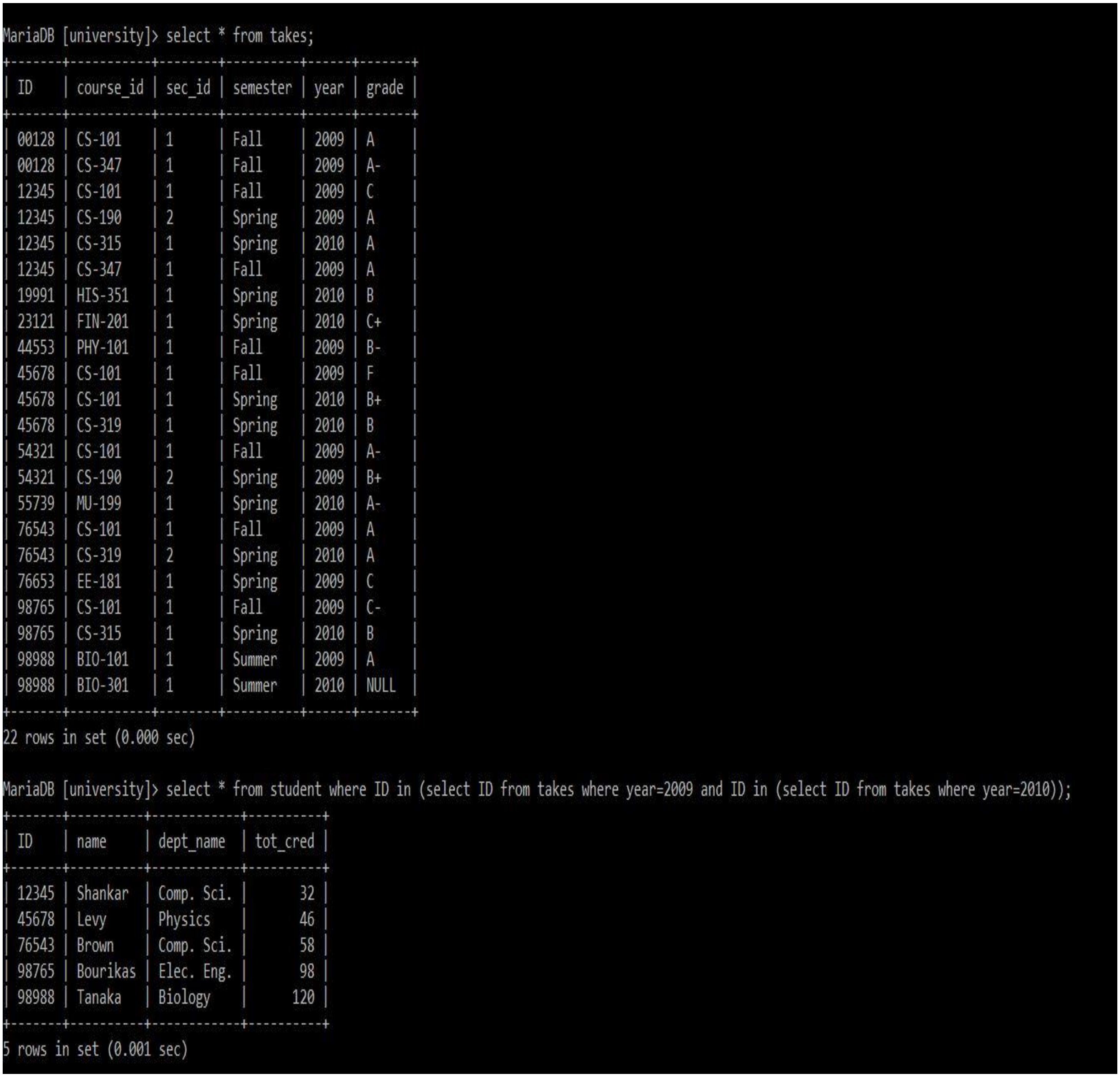
F. DROP THE RESTAURANT DATABASE.



```
MariaDB [restaurant]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| nation             |
| performance_schema |
| restaurant         |
| test               |
| university         |
+--------------------+
7 rows in set (0.001 sec)

MariaDB [restaurant]> drop database restaurant;
Query OK, 1 row affected (0.256 sec)

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| nation             |
| performance_schema |
| test               |
| university         |
+--------------------+
6 rows in set (0.001 sec)
```

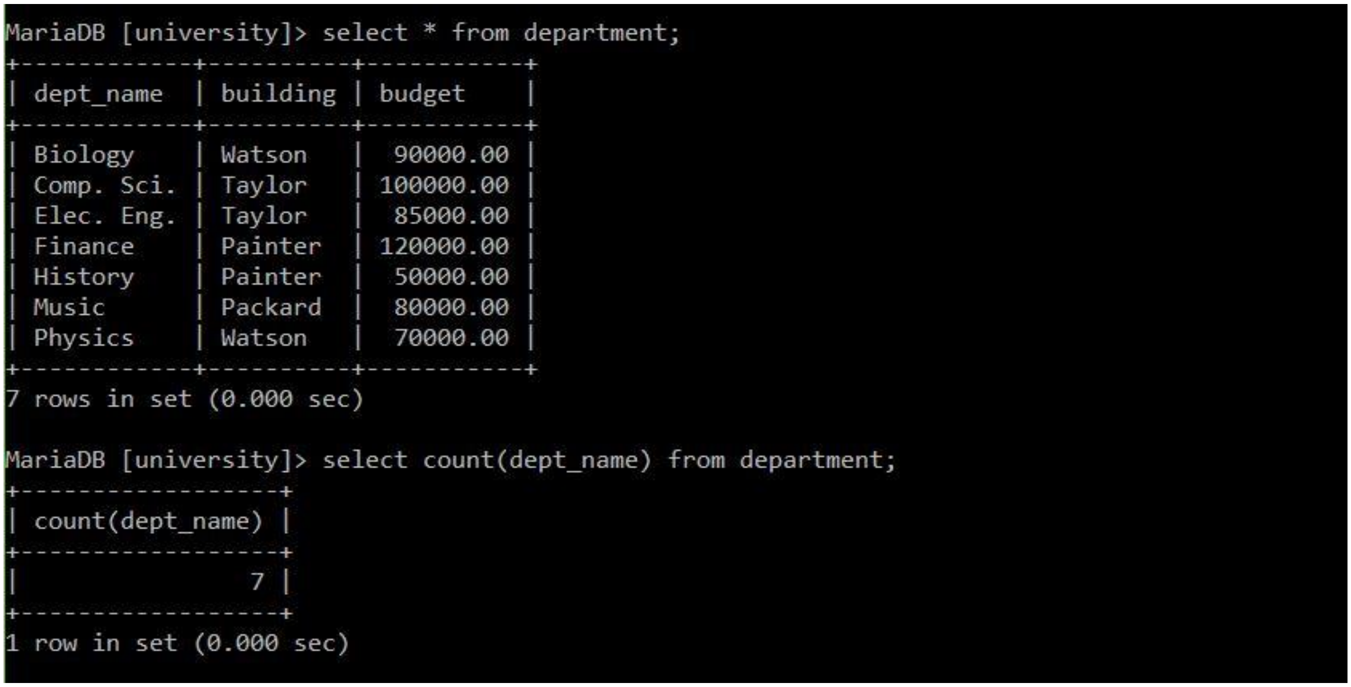
# 2. USE MARIADB AND UNIVERSITY DATABASE PROVIDED.

A. SHOW STUDENTS WHO HAVE TAKEN COURSES IN BOTH 2009 AND 2010.



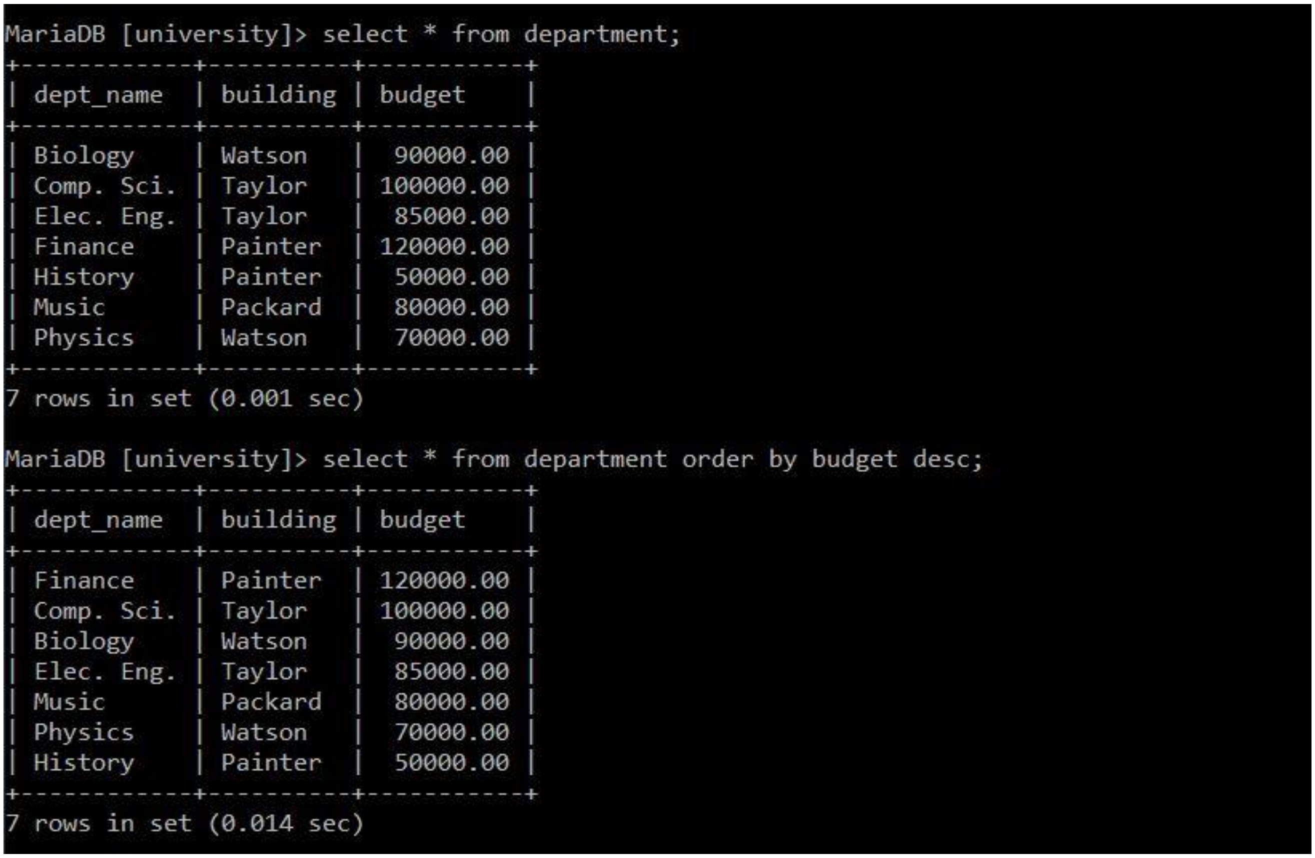
```
MariaDB [university]> select * from takes;
+-------+-----------+--------+----------+------+-------+
| ID    | course_id | sec_id | semester | year | grade |
+-------+-----------+--------+----------+------+-------+
| 00128 | CS-101    | 1      | Fall     | 2009 | A     |
| 00128 | CS-347    | 1      | Fall     | 2009 | A-    |
| 12345 | CS-101    | 1      | Fall     | 2009 | C     |
| 12345 | CS-190    | 2      | Spring   | 2009 | A     |
| 12345 | CS-315    | 1      | Spring   | 2010 | A     |
| 12345 | CS-347    | 1      | Fall     | 2009 | A     |
| 19991 | HIS-351   | 1      | Spring   | 2010 | B     |
| 23121 | FIN-201   | 1      | Spring   | 2010 | C+    |
| 44553 | PHY-101   | 1      | Fall     | 2009 | B-    |
| 45678 | CS-101    | 1      | Fall     | 2009 | F     |
| 45678 | CS-101    | 1      | Spring   | 2010 | B+    |
| 45678 | CS-319    | 1      | Spring   | 2010 | B     |
| 54321 | CS-101    | 1      | Fall     | 2009 | A-    |
| 54321 | CS-190    | 2      | Spring   | 2009 | B+    |
| 55739 | MU-199    | 1      | Spring   | 2010 | A-    |
| 76543 | CS-101    | 1      | Fall     | 2009 | A     |
| 76543 | CS-319    | 2      | Spring   | 2010 | A     |
| 76653 | EE-181    | 1      | Spring   | 2009 | C     |
| 98765 | CS-101    | 1      | Fall     | 2009 | C-    |
| 98765 | CS-315    | 1      | Spring   | 2010 | B     |
| 98988 | BIO-101   | 1      | Summer   | 2009 | A     |
| 98988 | BIO-301   | 1      | Summer   | 2010 | NULL  |
+-------+-----------+--------+----------+------+-------+
22 rows in set (0.000 sec)

MariaDB [university]> select * from student where ID in (select ID from takes where year=2009 and ID in (select ID from takes where year=2010));
+-------+----------+------------+----------+
| ID    | name     | dept_name  | tot_cred |
+-------+----------+------------+----------+
| 12345 | Shankar  | Comp. Sci. |       32 |
| 45678 | Levy     | Physics    |       46 |
| 76543 | Brown    | Comp. Sci. |       58 |
| 98765 | Bourikas | Elec. Eng. |       98 |
| 98988 | Tanaka   | Biology    |      120 |
+-------+----------+------------+----------+
5 rows in set (0.001 sec)
```

B. COUNT NUMBER OF DEPARTMENTS.



```
MariaDB [university]> select * from department;
+------------+----------+-----------+
| dept_name  | building | budget    |
+------------+----------+-----------+
| Biology    | Watson   |  90000.00 |
| Comp. Sci. | Taylor   | 100000.00 |
| Elec. Eng. | Taylor   |  85000.00 |
| Finance    | Painter  | 120000.00 |
| History    | Painter  |  50000.00 |
| Music      | Packard  |  80000.00 |
| Physics    | Watson   |  70000.00 |
+------------+----------+-----------+
7 rows in set (0.000 sec)

MariaDB [university]> select count(dept_name) from department;
+------------------+
| count(dept_name) |
+------------------+
|                7 |
+------------------+
1 row in set (0.000 sec)
```

C. SHOW DEPARTMENTS IN THE DESCENDING ORDER OF BUDGET.

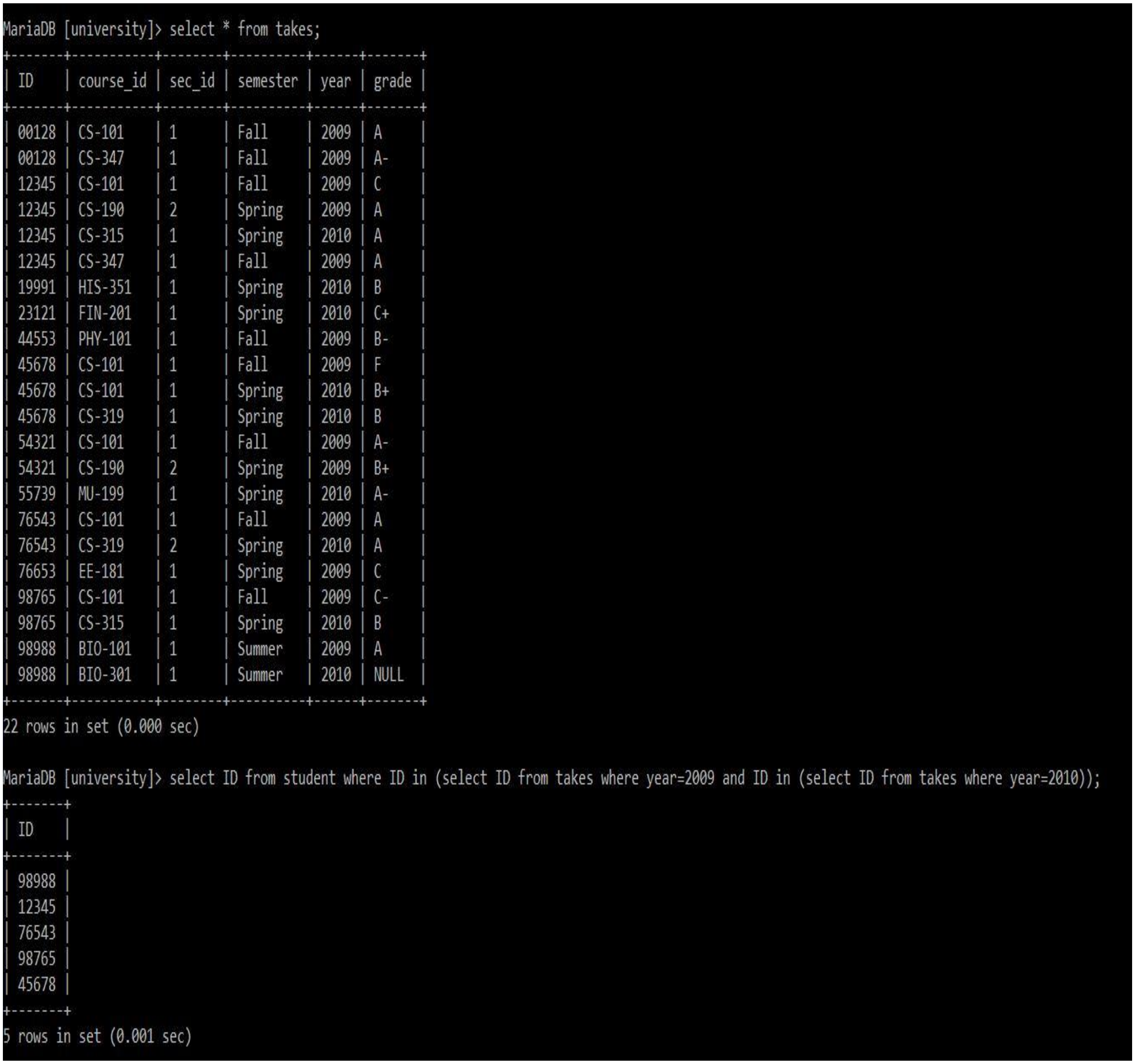


```
MariaDB [university]> select * from department;
+------------+----------+-----------+
| dept_name  | building | budget    |
+------------+----------+-----------+
| Biology    | Watson   |  90000.00 |
| Comp. Sci. | Taylor   | 100000.00 |
| Elec. Eng. | Taylor   |  85000.00 |
| Finance    | Painter  | 120000.00 |
| History    | Painter  |  50000.00 |
| Music      | Packard  |  80000.00 |
| Physics    | Watson   |  70000.00 |
+------------+----------+-----------+
7 rows in set (0.001 sec)

MariaDB [university]> select * from department order by budget desc;
+------------+----------+-----------+
| dept_name  | building | budget    |
+------------+----------+-----------+
| Finance    | Painter  | 120000.00 |
| Comp. Sci. | Taylor   | 100000.00 |
| Biology    | Watson   |  90000.00 |
| Elec. Eng. | Taylor   |  85000.00 |
| Music      | Packard  |  80000.00 |
| Physics    | Watson   |  70000.00 |
| History    | Painter  |  50000.00 |
+------------+----------+-----------+
7 rows in set (0.014 sec)
```

D. DISPLAY RECORDS IN THE ‘TAKES’ TABLE WHERE ORDER OF GRADE AS FOLLOWING [S, A+, A,A-, B+,B,B-, .....]

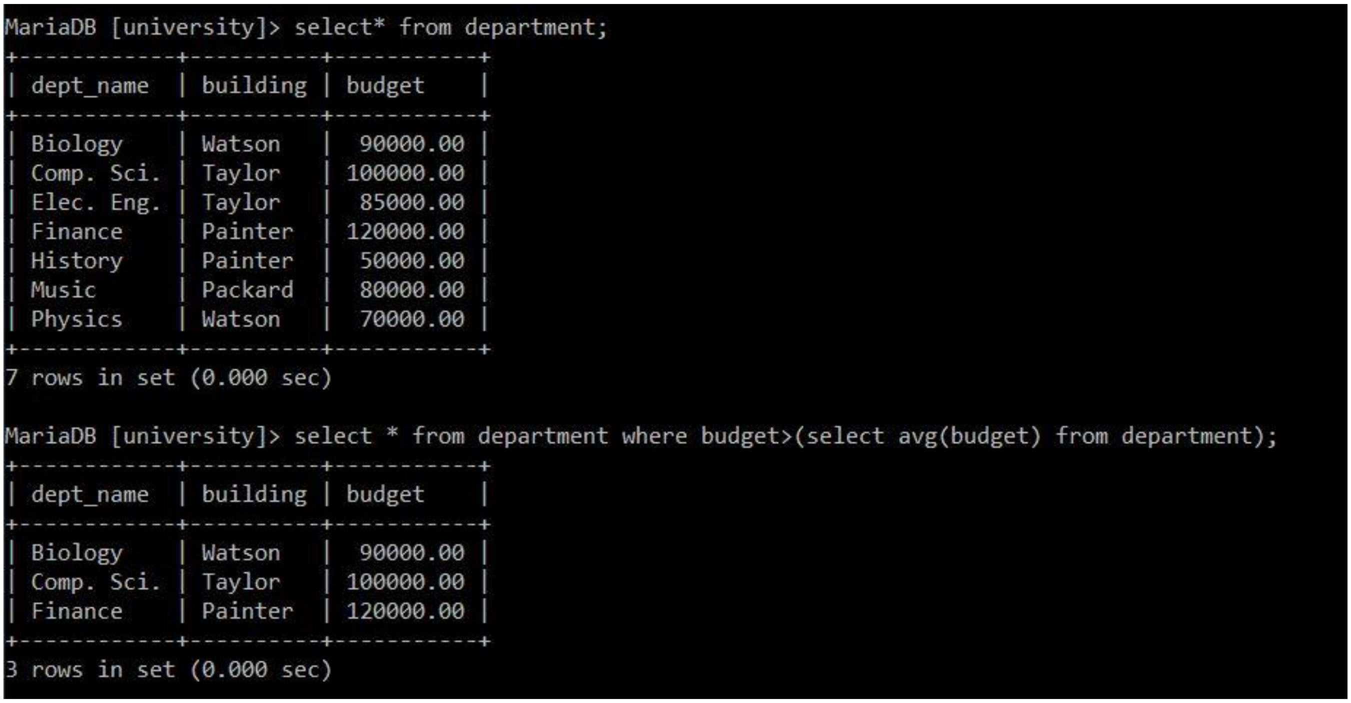
- WE WERE TOLD TO IGNORE THIS QUESTION

E. FIND OUT STUDENTS ID WHO HAS TAKEN SOME COURSES IN BOTH 2009 AND 2010.



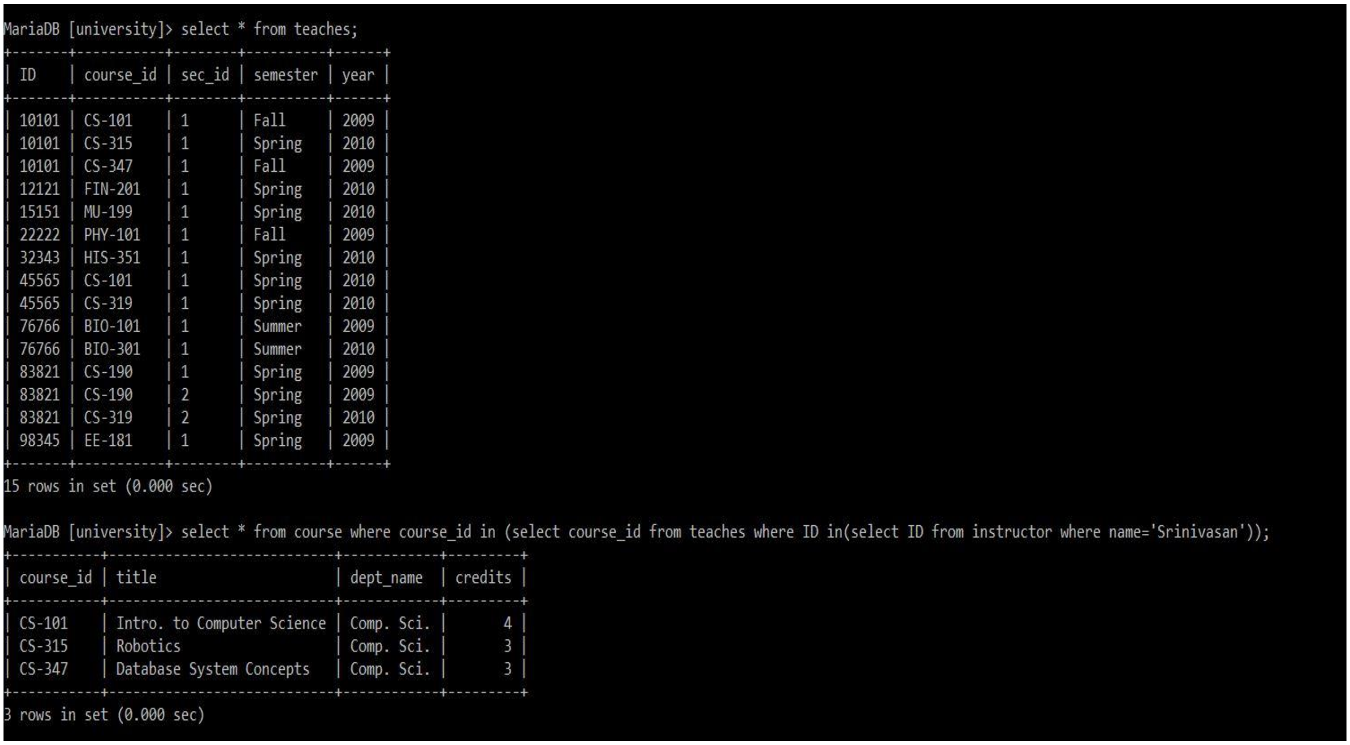
```
MariaDB [university]> select * from takes;
+-------+-----------+--------+----------+------+-------+
| ID    | course_id | sec_id | semester | year | grade |
+-------+-----------+--------+----------+------+-------+
| 00128 | CS-101    | 1      | Fall     | 2009 | A     |
| 00128 | CS-347    | 1      | Fall     | 2009 | A-    |
| 12345 | CS-101    | 1      | Fall     | 2009 | C     |
| 12345 | CS-190    | 2      | Spring   | 2009 | A     |
| 12345 | CS-315    | 1      | Spring   | 2010 | A     |
| 12345 | CS-347    | 1      | Fall     | 2009 | A     |
| 19991 | HIS-351   | 1      | Spring   | 2010 | B     |
| 23121 | FIN-201   | 1      | Spring   | 2010 | C+    |
| 44553 | PHY-101   | 1      | Fall     | 2009 | B-    |
| 45678 | CS-101    | 1      | Fall     | 2009 | F     |
| 45678 | CS-101    | 1      | Spring   | 2010 | B+    |
| 45678 | CS-319    | 1      | Spring   | 2010 | B     |
| 54321 | CS-101    | 1      | Fall     | 2009 | A-    |
| 54321 | CS-190    | 2      | Spring   | 2009 | B+    |
| 55739 | MU-199    | 1      | Spring   | 2010 | A-    |
| 76543 | CS-101    | 1      | Fall     | 2009 | A     |
| 76543 | CS-319    | 2      | Spring   | 2010 | A     |
| 76653 | EE-181    | 1      | Spring   | 2009 | C     |
| 98765 | CS-101    | 1      | Fall     | 2009 | C-    |
| 98765 | CS-315    | 1      | Spring   | 2010 | B     |
| 98988 | BIO-101   | 1      | Summer   | 2009 | A     |
| 98988 | BIO-301   | 1      | Summer   | 2010 | NULL  |
+-------+-----------+--------+----------+------+-------+
22 rows in set (0.000 sec)

MariaDB [university]> select ID from student where ID in (select ID from takes where year=2009 and ID in (select ID from takes where year=2010));
+-------+
| ID    |
+-------+
| 98988 |
| 12345 |
| 76543 |
| 98765 |
| 45678 |
+-------+
5 rows in set (0.001 sec)
```

## F. SHOW DEPARTMENTS WHICH HAVE BUDGET GREATER THAN AVERAGE BUDGET



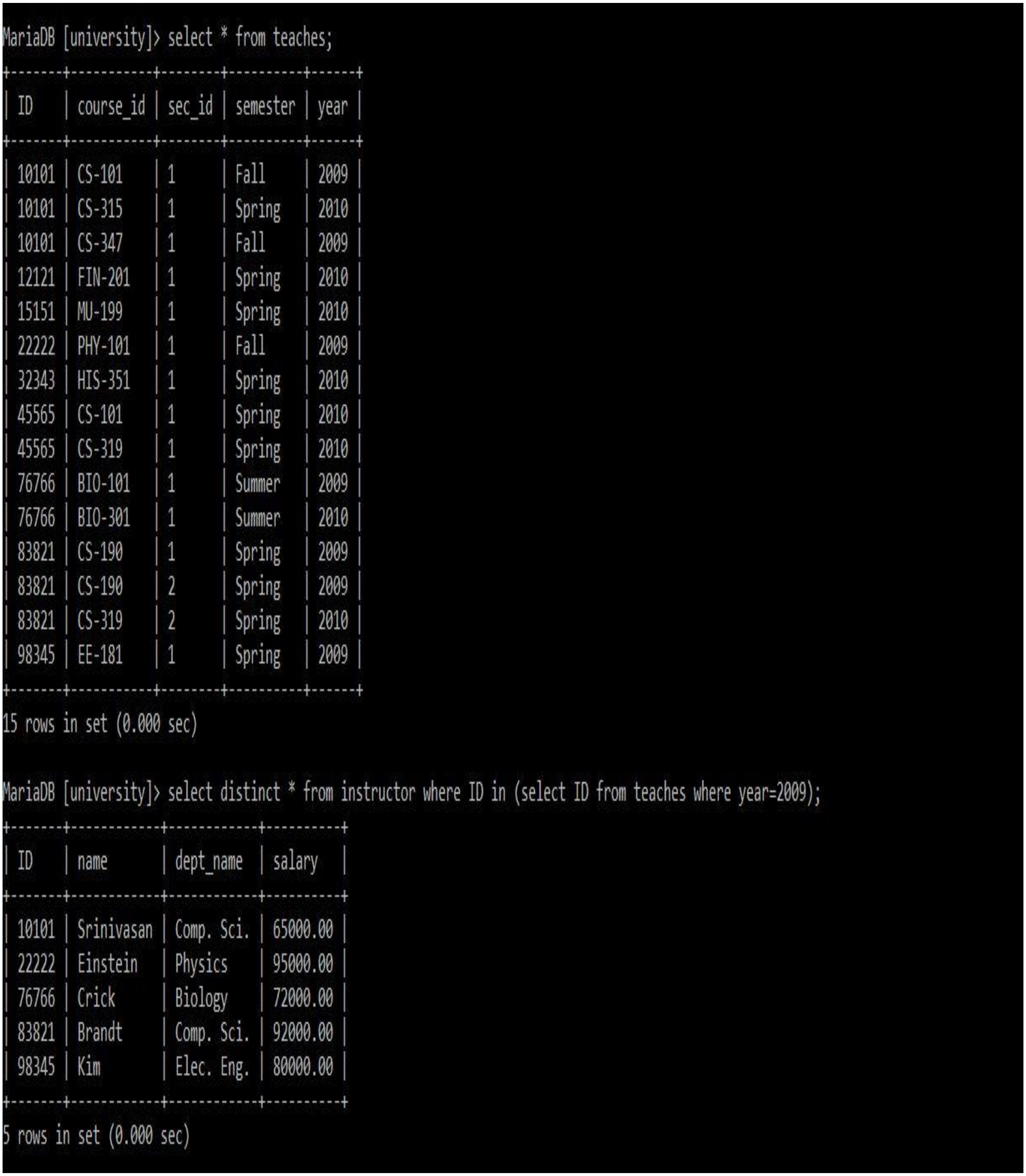
```
MariaDB [university]> select* from department;
+------------+----------+-----------+
| dept_name  | building | budget    |
+------------+----------+-----------+
| Biology    | Watson   |  90000.00 |
| Comp. Sci. | Taylor   | 100000.00 |
| Elec. Eng. | Taylor   |  85000.00 |
| Finance    | Painter  | 120000.00 |
| History    | Painter  |  50000.00 |
| Music      | Packard  |  80000.00 |
| Physics    | Watson   |  70000.00 |
+------------+----------+-----------+
7 rows in set (0.000 sec)

MariaDB [university]> select * from department where budget>(select avg(budget) from department);
+------------+----------+-----------+
| dept_name  | building | budget    |
+------------+----------+-----------+
| Biology    | Watson   |  90000.00 |
| Comp. Sci. | Taylor   | 100000.00 |
| Finance    | Painter  | 120000.00 |
+------------+----------+-----------+
3 rows in set (0.000 sec)
```

## G. DISPLAY ALL COURSES TAUGHT BY ‘SRINIVASAN’



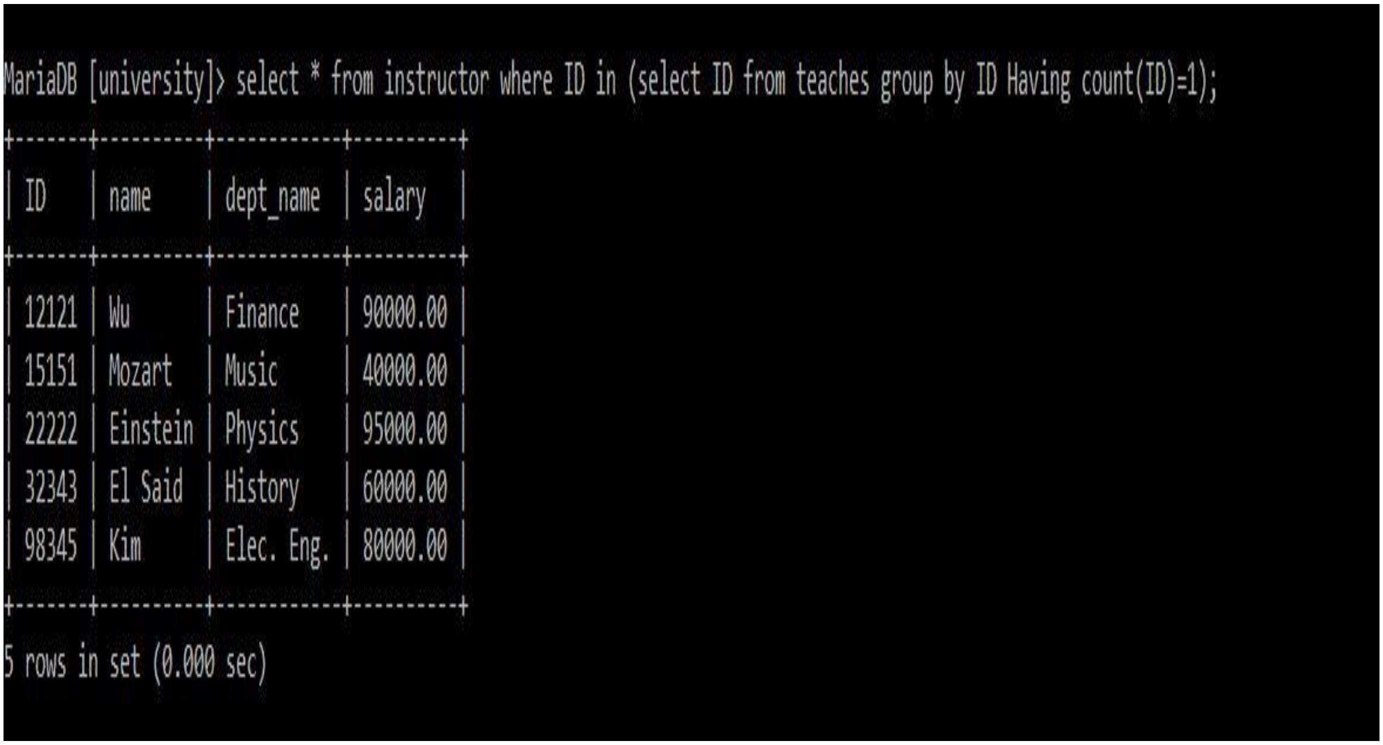
```
MariaDB [university]> select * from teaches;
+-------+-----------+--------+----------+------+
| ID    | course_id | sec_id | semester | year |
+-------+-----------+--------+----------+------+
| 10101 | CS-101    | 1      | Fall     | 2009 |
| 10101 | CS-315    | 1      | Spring   | 2010 |
| 10101 | CS-347    | 1      | Fall     | 2009 |
| 12121 | FIN-201   | 1      | Spring   | 2010 |
| 15151 | MU-199    | 1      | Spring   | 2010 |
| 22222 | PHY-101   | 1      | Fall     | 2009 |
| 32343 | HIS-351   | 1      | Spring   | 2010 |
| 45565 | CS-101    | 1      | Spring   | 2010 |
| 45565 | CS-319    | 1      | Spring   | 2010 |
| 76766 | BIO-101   | 1      | Summer   | 2009 |
| 76766 | BIO-301   | 1      | Summer   | 2010 |
| 83821 | CS-190    | 1      | Spring   | 2009 |
| 83821 | CS-190    | 2      | Spring   | 2009 |
| 83821 | CS-319    | 2      | Spring   | 2010 |
| 98345 | EE-181    | 1      | Spring   | 2009 |
+-------+-----------+--------+----------+------+
15 rows in set (0.000 sec)

MariaDB [university]> select * from course where course_id in (select course_id from teaches where ID in(select ID from instructor where name='Srinivasan'));
+-----------+----------------------------+------------+---------+
| course_id | title                      | dept_name  | credits |
+-----------+----------------------------+------------+---------+
| CS-101    | Intro. to Computer Science | Comp. Sci. |       4 |
| CS-315    | Robotics                   | Comp. Sci. |       3 |
| CS-347    | Database System Concepts   | Comp. Sci. |       3 |
+-----------+----------------------------+------------+---------+
3 rows in set (0.000 sec)
```

H. DISPLAY ALL INSTRUCTORS WHO HAVE TAUGHT IN 2009.



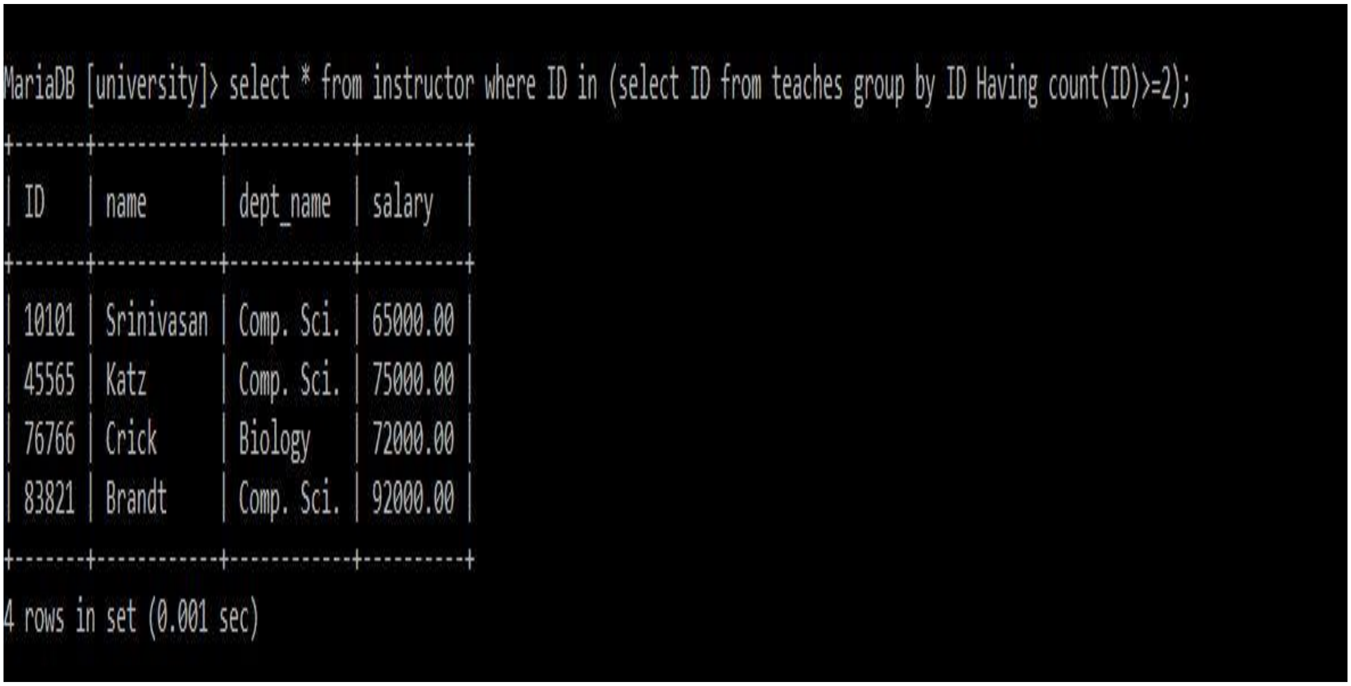
```
MariaDB [university]> select * from teaches;
+-------+-----------+--------+----------+------+
| ID    | course_id | sec_id | semester | year |
+-------+-----------+--------+----------+------+
| 10101 | CS-101    | 1      | Fall     | 2009 |
| 10101 | CS-315    | 1      | Spring   | 2010 |
| 10101 | CS-347    | 1      | Fall     | 2009 |
| 12121 | FIN-201   | 1      | Spring   | 2010 |
| 15151 | MU-199    | 1      | Spring   | 2010 |
| 22222 | PHY-101   | 1      | Fall     | 2009 |
| 32343 | HIS-351   | 1      | Spring   | 2010 |
| 45565 | CS-101    | 1      | Spring   | 2010 |
| 45565 | CS-319    | 1      | Spring   | 2010 |
| 76766 | BIO-101   | 1      | Summer   | 2009 |
| 76766 | BIO-301   | 1      | Summer   | 2010 |
| 83821 | CS-190    | 1      | Spring   | 2009 |
| 83821 | CS-190    | 2      | Spring   | 2009 |
| 83821 | CS-319    | 2      | Spring   | 2010 |
| 98345 | EE-181    | 1      | Spring   | 2009 |
+-------+-----------+--------+----------+------+
15 rows in set (0.000 sec)

MariaDB [university]> select distinct * from instructor where ID in (select ID from teaches where year=2009);
+-------+------------+------------+----------+
| ID    | name       | dept_name  | salary   |
+-------+------------+------------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+------------+----------+
5 rows in set (0.000 sec)
```

I. DISPLAY ALL THE INSTRUCTORS WHO HAVE TAUGHT ONLY ONCE



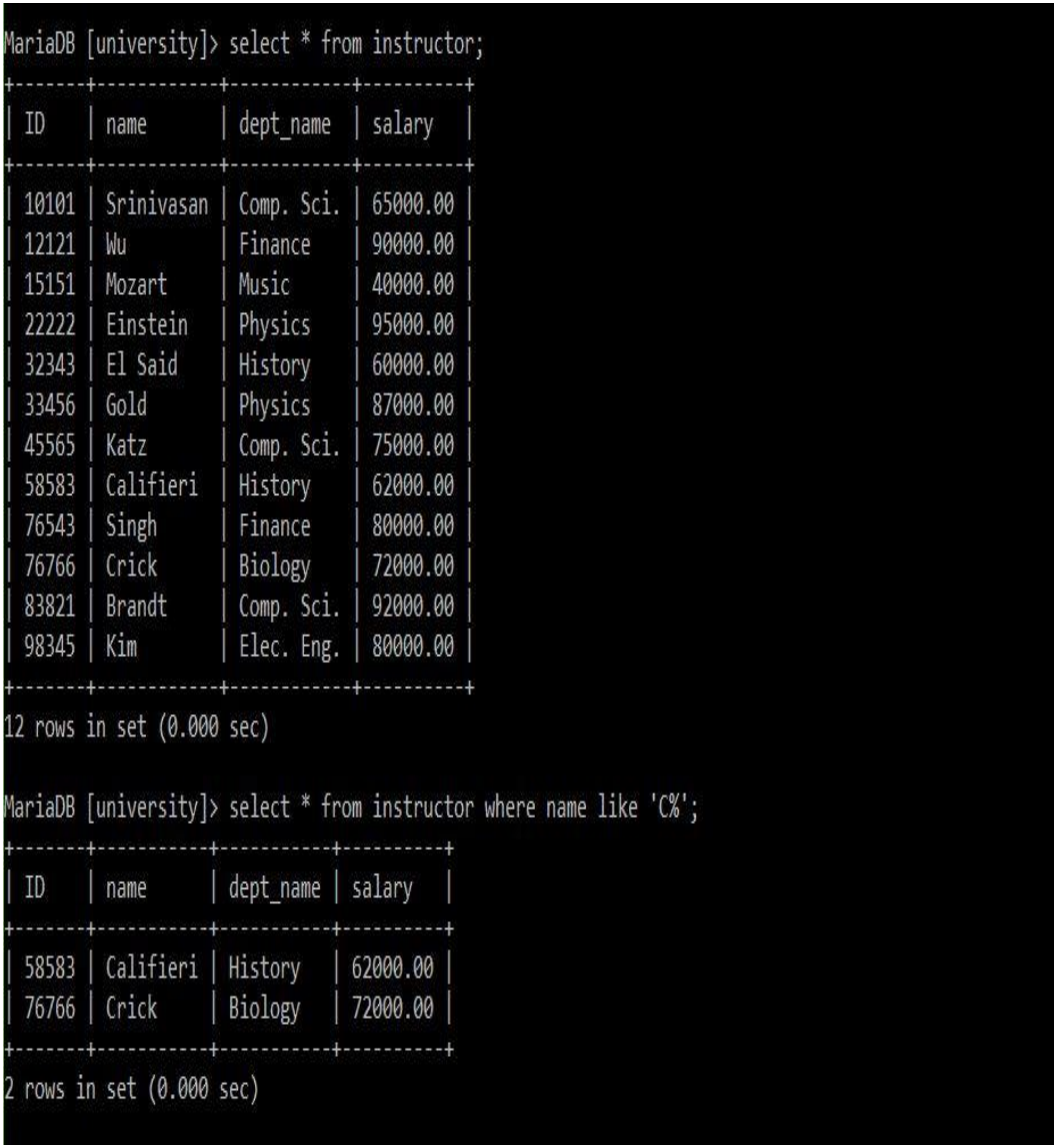
```
MariaDB [university]> select * from instructor where ID in (select ID from teaches group by ID Having count(ID)=1);
+-------+----------+-----------+----------+
| ID    | name     | dept_name | salary   |
+-------+----------+-----------+----------+
| 12121 | Wu       | Finance   | 90000.00 |
| 15151 | Mozart   | Music     | 40000.00 |
| 22222 | Einstein | Physics   | 95000.00 |
| 32343 | El Said  | History   | 60000.00 |
| 98345 | Kim      | Elec. Eng. | 80000.00 |
+-------+----------+-----------+----------+
5 rows in set (0.000 sec)
```

J. DISPLAY ALL THE INSTRUCTORS WHO HAVE TAUGHT TWO OR MORE COURSES.



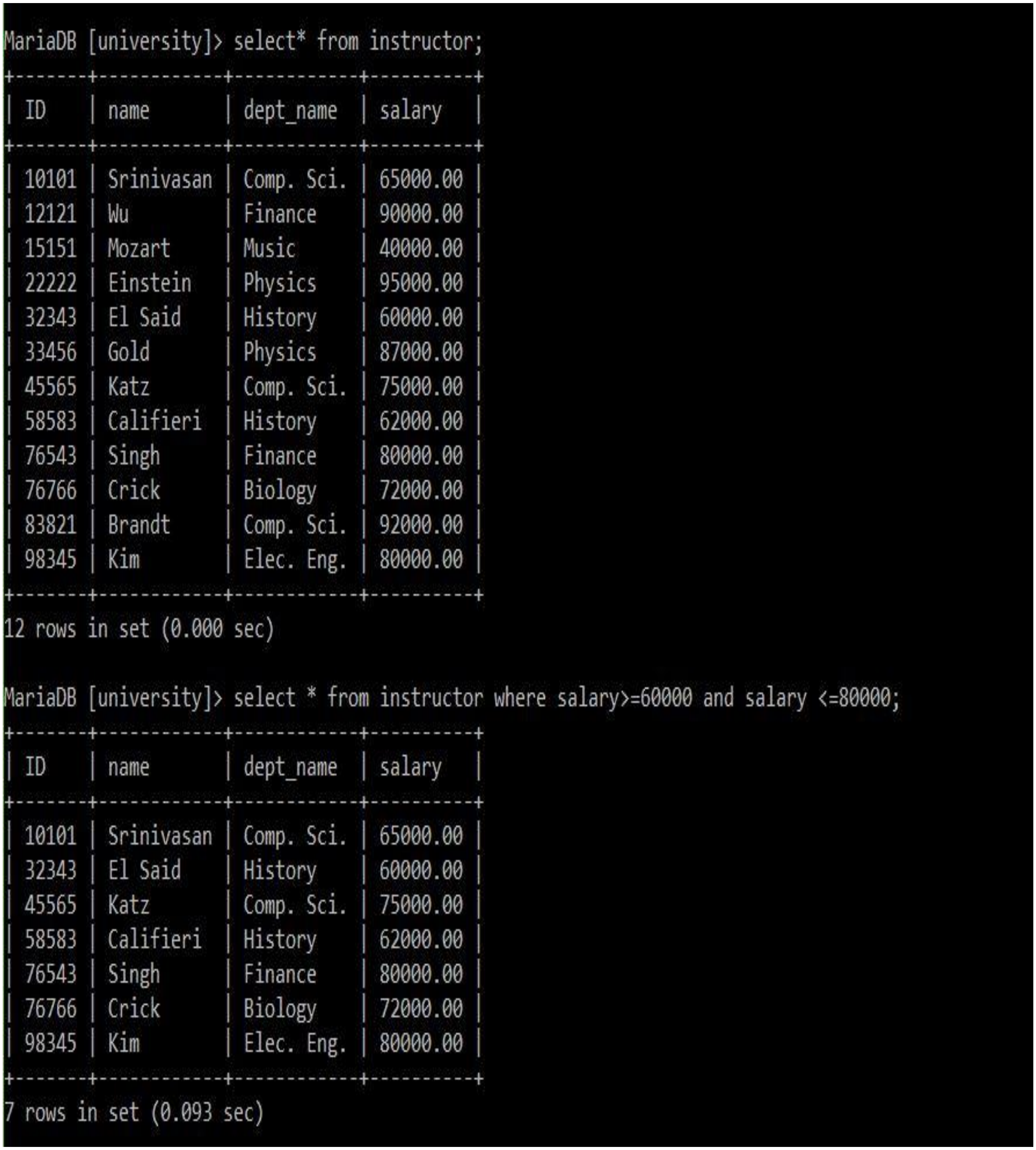
```
MariaDB [university]> select * from instructor where ID in (select ID from teaches group by ID Having count(ID)>=2);
+-------+------------+-----------+----------+
| ID    | name       | dept_name | salary   |
+-------+------------+-----------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 76766 | Crick      | Biology   | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
+-------+------------+-----------+----------+
4 rows in set (0.001 sec)
```

K. DISPLAY ALL THE INSTRUCTORS WHOSE NAME STARTS WITH ‘C’.



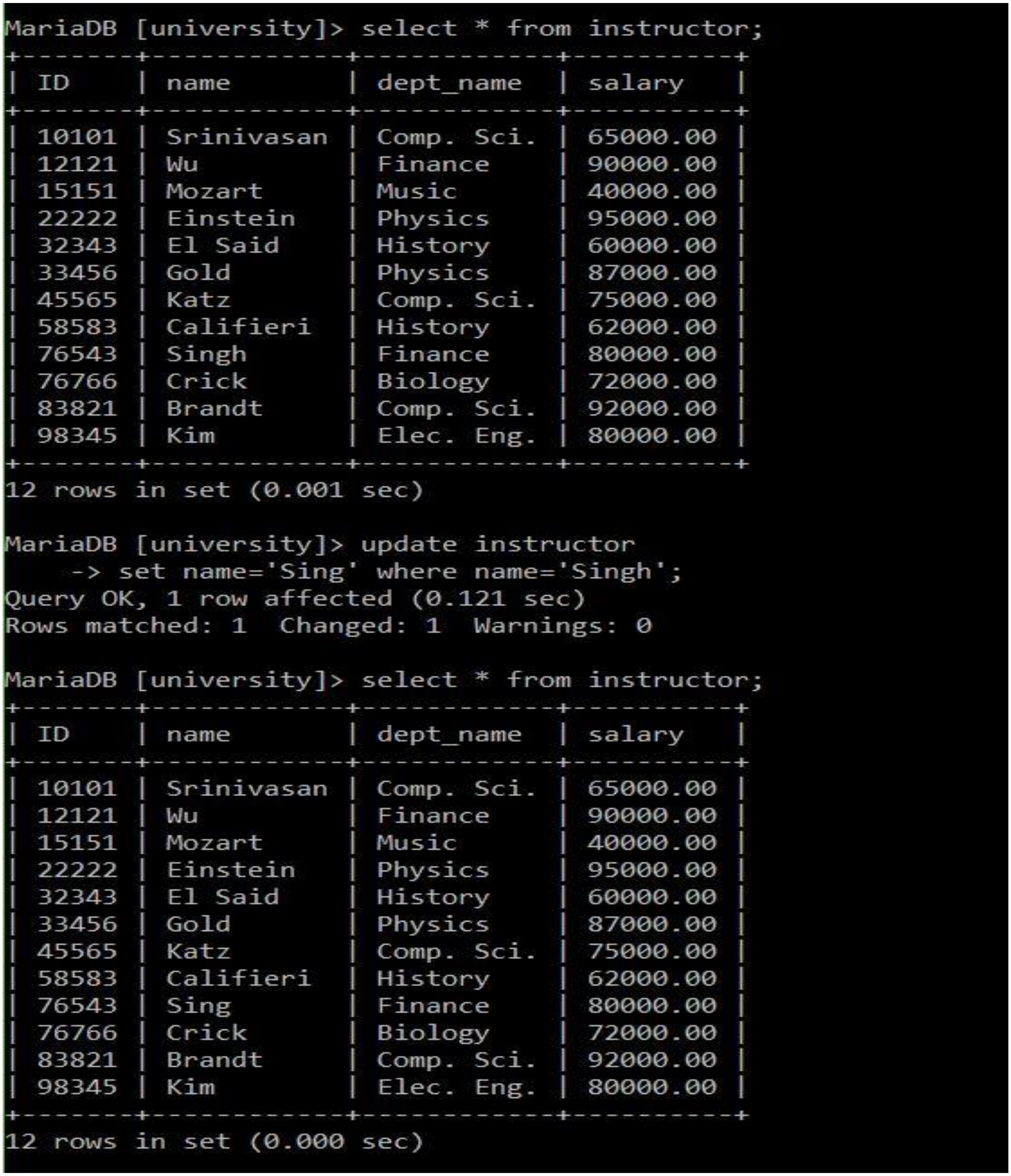
```
MariaDB [university]> select * from instructor;
+-------+------------+------------+----------+
| ID    | name       | dept_name  | salary   |
+-------+------------+------------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 12121 | Wu         | Finance    | 90000.00 |
| 15151 | Mozart     | Music      | 40000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
| 32343 | El Said    | History    | 60000.00 |
| 33456 | Gold       | Physics    | 87000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 58583 | Califieri  | History    | 62000.00 |
| 76543 | Singh      | Finance    | 80000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+------------+----------+
12 rows in set (0.000 sec)

MariaDB [university]> select * from instructor where name like 'C%';
+-------+-----------+-----------+----------+
| ID    | name      | dept_name | salary   |
+-------+-----------+-----------+----------+
| 58583 | Califieri | History   | 62000.00 |
| 76766 | Crick     | Biology   | 72000.00 |
+-------+-----------+-----------+----------+
2 rows in set (0.000 sec)
```

L. DISPLAY ALL INSTRUCTORS WHOSE SALARY IS BETWEEN 60,000 AND 80,000 (INCLUSIVE).



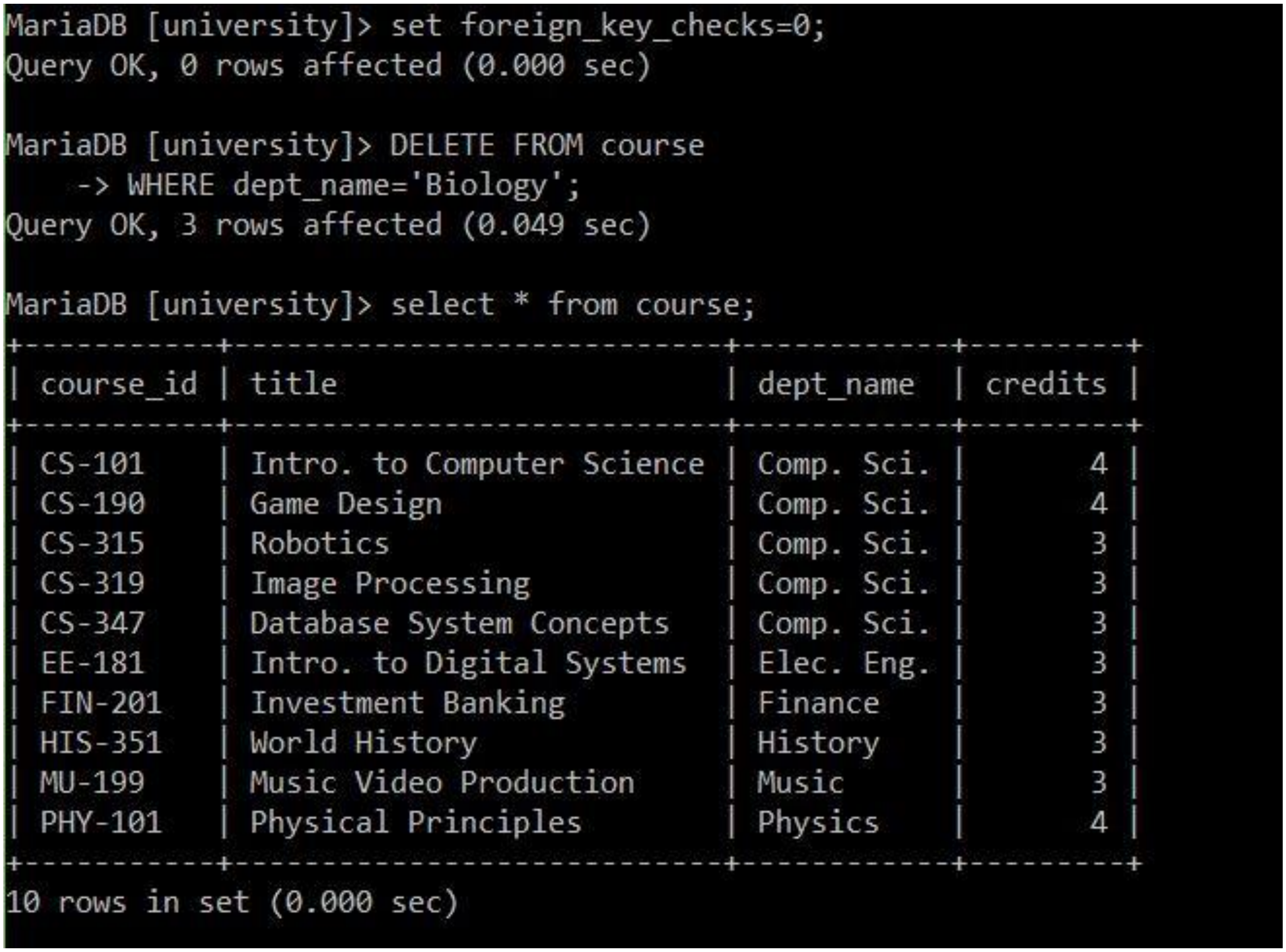
```
MariaDB [university]> select* from instructor;
+-------+------------+-----------+----------+
| ID    | name       | dept_name | salary   |
+-------+------------+-----------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 12121 | Wu         | Finance    | 90000.00 |
| 15151 | Mozart     | Music      | 40000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
| 32343 | El Said    | History    | 60000.00 |
| 33456 | Gold       | Physics    | 87000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 58583 | Califieri  | History    | 62000.00 |
| 76543 | Singh      | Finance    | 80000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+-----------+----------+
12 rows in set (0.000 sec)

MariaDB [university]> select * from instructor where salary>=60000 and salary <=80000;
+-------+------------+-----------+----------+
| ID    | name       | dept_name | salary   |
+-------+------------+-----------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 32343 | El Said    | History    | 60000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 58583 | Califieri  | History    | 62000.00 |
| 76543 | Singh      | Finance    | 80000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+-----------+----------+
7 rows in set (0.093 sec)
```

M. CORRECT THE NAME OF THE INSTRUCTOR FROM ‘SINGH’ TO ‘SING’



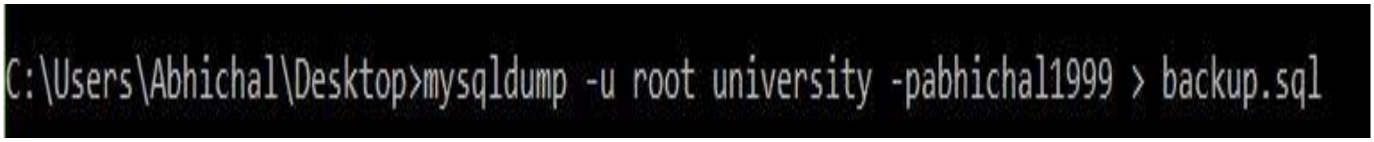
```
MariaDB [university]> select * from instructor;
+-------+------------+------------+----------+
| ID    | name       | dept_name  | salary   |
+-------+------------+------------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 12121 | Wu         | Finance    | 90000.00 |
| 15151 | Mozart     | Music      | 40000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
| 32343 | El Said    | History    | 60000.00 |
| 33456 | Gold       | Physics    | 87000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 58583 | Califieri  | History    | 62000.00 |
| 76543 | Singh      | Finance    | 80000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+------------+----------+
12 rows in set (0.001 sec)

MariaDB [university]> update instructor
    -> set name='Sing' where name='Singh';
Query OK, 1 row affected (0.121 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [university]> select * from instructor;
+-------+------------+------------+----------+
| ID    | name       | dept_name  | salary   |
+-------+------------+------------+----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 12121 | Wu         | Finance    | 90000.00 |
| 15151 | Mozart     | Music      | 40000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
| 32343 | El Said    | History    | 60000.00 |
| 33456 | Gold       | Physics    | 87000.00 |
| 45565 | Katz       | Comp. Sci. | 75000.00 |
| 58583 | Califieri  | History    | 62000.00 |
| 76543 | Sing       | Finance    | 80000.00 |
| 76766 | Crick      | Biology    | 72000.00 |
| 83821 | Brandt     | Comp. Sci. | 92000.00 |
| 98345 | Kim        | Elec. Eng. | 80000.00 |
+-------+------------+------------+----------+
12 rows in set (0.000 sec)
```

N. DELETE THE COURSE ‘BIOLOGY’



```
MariaDB [university]> set foreign_key_checks=0;
Query OK, 0 rows affected (0.000 sec)

MariaDB [university]> DELETE FROM course
    -> WHERE dept_name='Biology';
Query OK, 3 rows affected (0.049 sec)

MariaDB [university]> select * from course;
+-----------+----------------------------+------------+---------+
| course_id | title                      | dept_name  | credits |
+-----------+----------------------------+------------+---------+
| 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 |
+-----------+----------------------------+------------+---------+
10 rows in set (0.000 sec)
```

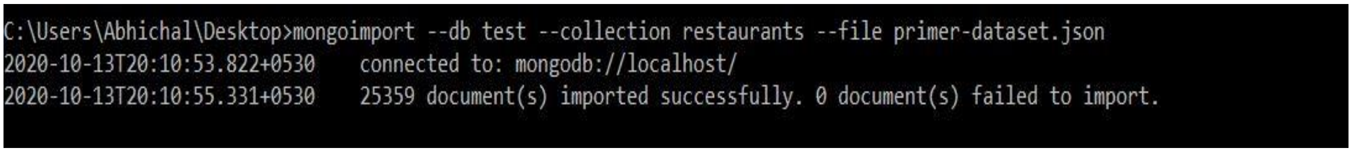
O. BACKUP UNIVERSITY DATABASE.



```
C:\Users\Abhichal\Desktop>mysqldump -u root university -pabhichal1999 > backup.sql
```

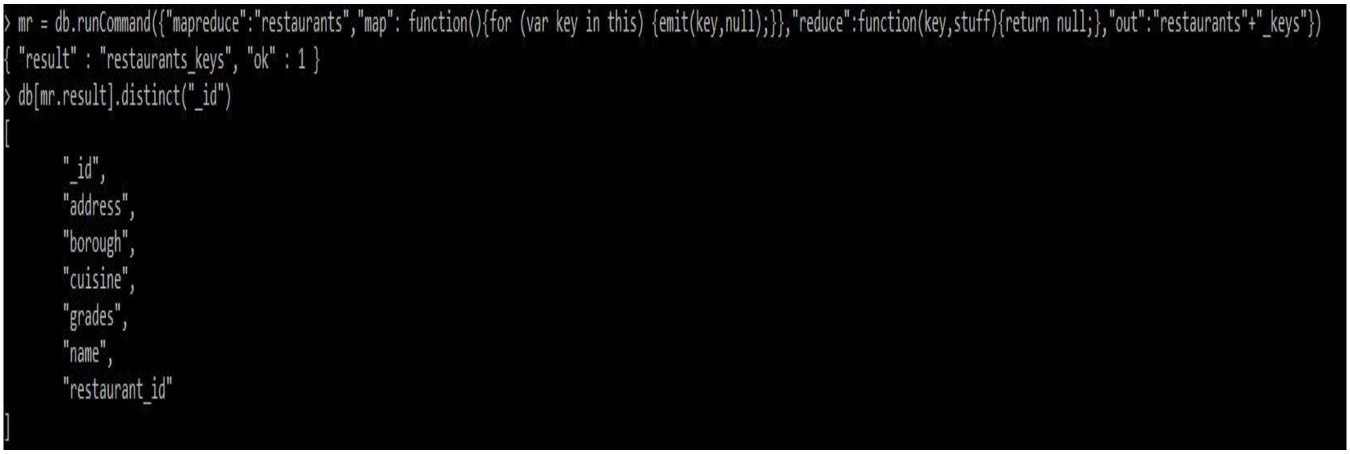
# 3. USE MONGODB

A. IMPORT DATA INTO TEST DATABASE CORRESPONDING TO A RESTAURANTS COLLECTION USING THEPRIMER-DATASET.JSON FILE



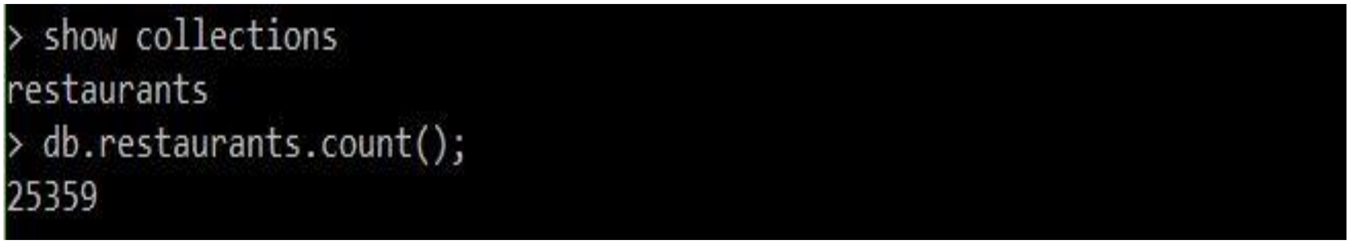
```
C:\Users\Abhichal\Desktop>mongoimport --db test --collection restaurants --file primer-dataset.json
2020-10-13T20:10:53.822+0530    connected to: mongodb://localhost/
2020-10-13T20:10:55.331+0530    25359 document(s) imported successfully. 0 document(s) failed to import.
```

B. LIST ALL THE ATTRIBUTES IN RESTAURANTS  COLLECTION



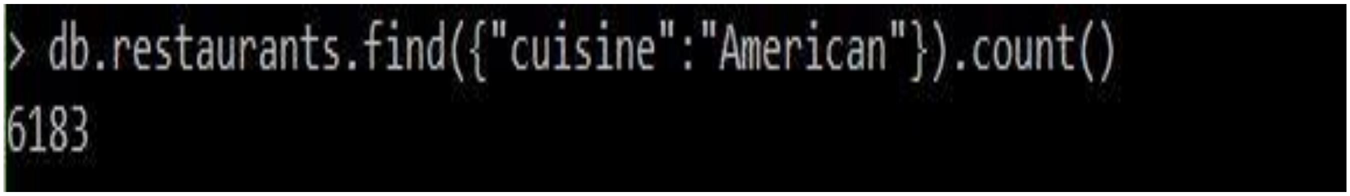
```
> mr = db.runCommand({"mapreduce":"restaurants","map": function(){for (var key in this) {emit(key,null);}},"reduce":function(key,stuff){return null;},"out":"restaurants"+"_keys"})
{ "result" : "restaurants_keys", "ok" : 1 }
> db[mr.result].distinct("_id")
[
        "_id",
        "address",
        "borough",
        "cuisine",
        "grades",
        "name",
        "restaurant_id"
]
```

C. COUNT TOTAL NUMBER OF RESTAURANTS



```
> show collections
restaurants
> db.restaurants.count();
25359
```

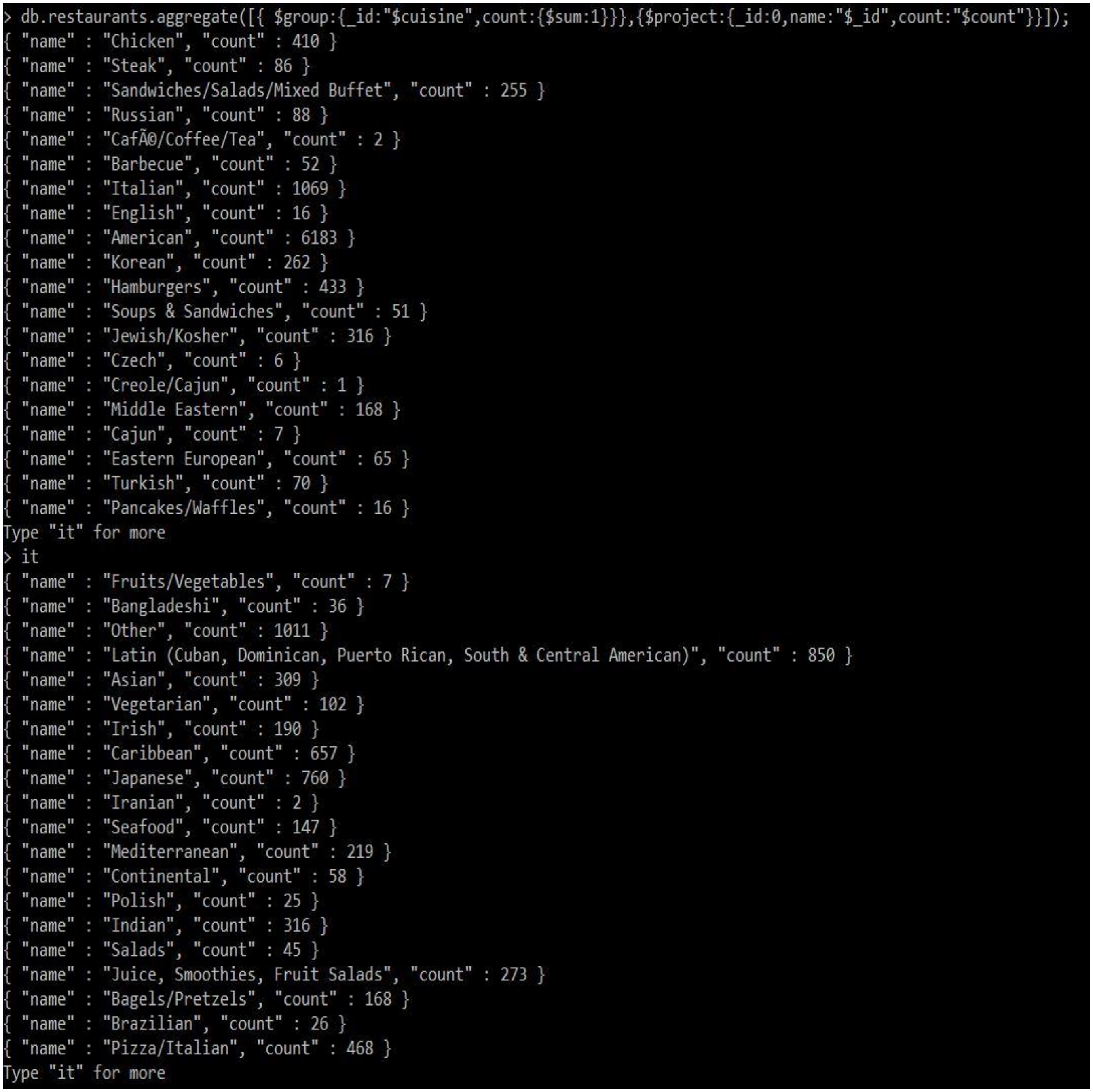
D. COUNT NUMBER OF RESTAURANTS WITH AMERICAN CUISINE



```
> db.restaurants.find({"cuisine":"American"}).count()
6183
```

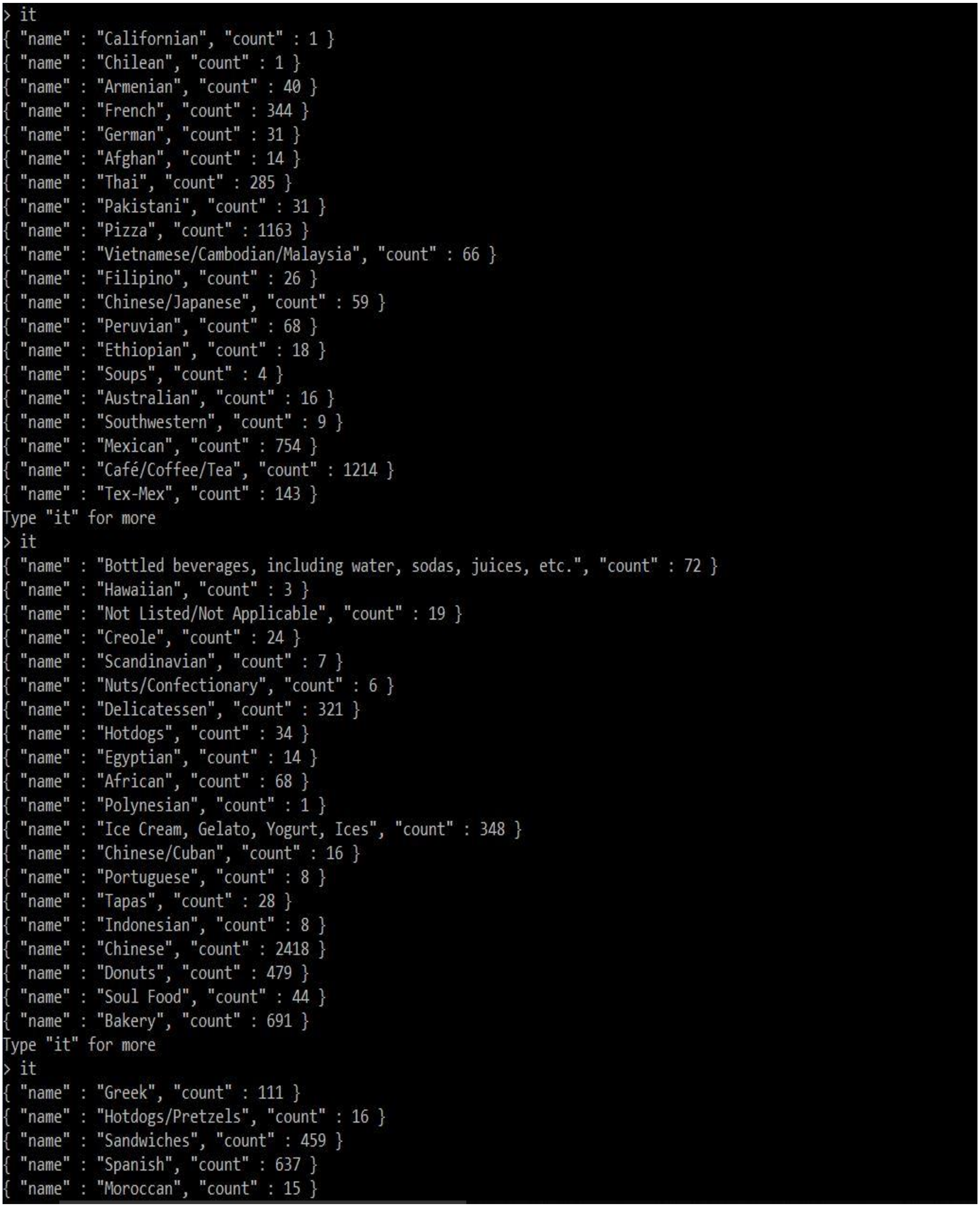
## E. SHOW THE NUMBER OF RESTAURANTS CORRESPONDING TO EACH CUISINE

--FORMAT IS LIKE NAME IS CUISINE AND COUNT IS NO OF RESTAURANTS



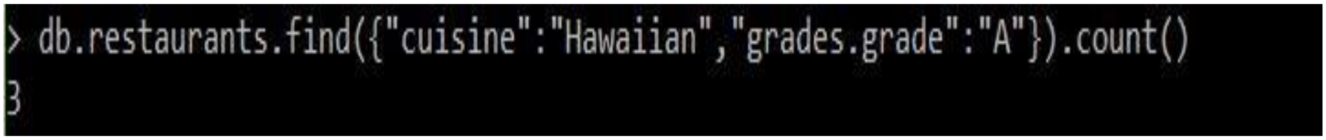
```
> db.restaurants.aggregate([{ $group:{_id:"$cuisine",count:{$sum:1}}},{$project:{_id:0,name:"$_id",count:"$count"}}]);
{ "name" : "Chicken", "count" : 410 }
{ "name" : "Steak", "count" : 86 }
{ "name" : "Sandwiches/Salads/Mixed Buffet", "count" : 255 }
{ "name" : "Russian", "count" : 88 }
{ "name" : "CafÃ©/Coffee/Tea", "count" : 2 }
{ "name" : "Barbecue", "count" : 52 }
{ "name" : "Italian", "count" : 1069 }
{ "name" : "English", "count" : 16 }
{ "name" : "American", "count" : 6183 }
{ "name" : "Korean", "count" : 262 }
{ "name" : "Hamburgers", "count" : 433 }
{ "name" : "Soups & Sandwiches", "count" : 51 }
{ "name" : "Jewish/Kosher", "count" : 316 }
{ "name" : "Czech", "count" : 6 }
{ "name" : "Creole/Cajun", "count" : 1 }
{ "name" : "Middle Eastern", "count" : 168 }
{ "name" : "Cajun", "count" : 7 }
{ "name" : "Eastern European", "count" : 65 }
{ "name" : "Turkish", "count" : 70 }
{ "name" : "Pancakes/Waffles", "count" : 16 }
Type "it" for more
> it
{ "name" : "Fruits/Vegetables", "count" : 7 }
{ "name" : "Bangladeshi", "count" : 36 }
{ "name" : "Other", "count" : 1011 }
{ "name" : "Latin (Cuban, Dominican, Puerto Rican, South & Central American)", "count" : 850 }
{ "name" : "Asian", "count" : 309 }
{ "name" : "Vegetarian", "count" : 102 }
{ "name" : "Irish", "count" : 190 }
{ "name" : "Caribbean", "count" : 657 }
{ "name" : "Japanese", "count" : 760 }
{ "name" : "Iranian", "count" : 2 }
{ "name" : "Seafood", "count" : 147 }
{ "name" : "Mediterranean", "count" : 219 }
{ "name" : "Continental", "count" : 58 }
{ "name" : "Polish", "count" : 25 }
{ "name" : "Indian", "count" : 316 }
{ "name" : "Salads", "count" : 45 }
{ "name" : "Juice, Smoothies, Fruit Salads", "count" : 273 }
{ "name" : "Bagels/Pretzels", "count" : 168 }
{ "name" : "Brazilian", "count" : 26 }
{ "name" : "Pizza/Italian", "count" : 468 }
Type "it" for more
```

CONTINUE ON NEXT PAGE…..



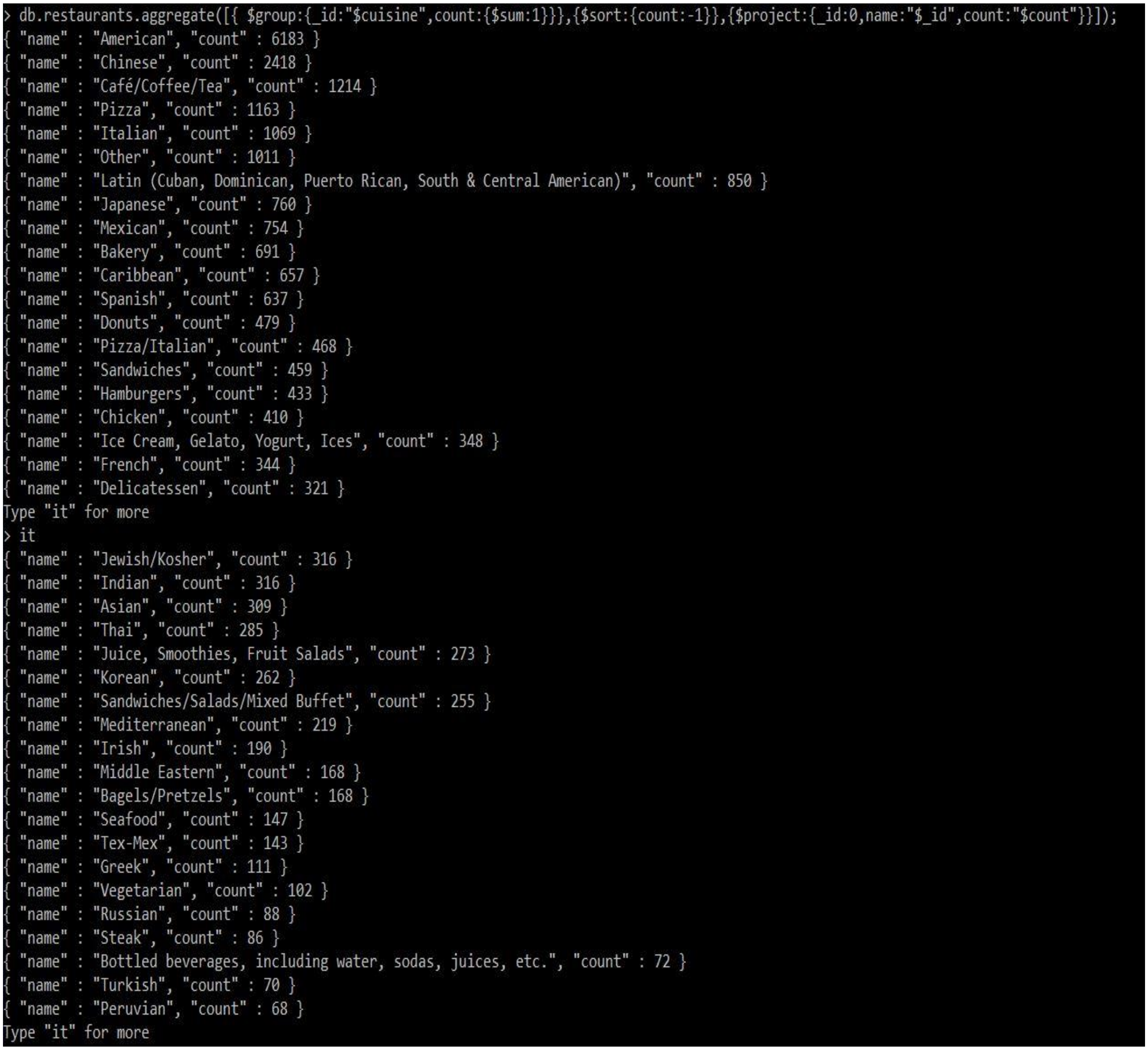
```
> it
{ "name" : "Californian", "count" : 1 }
{ "name" : "Chilean", "count" : 1 }
{ "name" : "Armenian", "count" : 40 }
{ "name" : "French", "count" : 344 }
{ "name" : "German", "count" : 31 }
{ "name" : "Afghan", "count" : 14 }
{ "name" : "Thai", "count" : 285 }
{ "name" : "Pakistani", "count" : 31 }
{ "name" : "Pizza", "count" : 1163 }
{ "name" : "Vietnamese/Cambodian/Malaysia", "count" : 66 }
{ "name" : "Filipino", "count" : 26 }
{ "name" : "Chinese/Japanese", "count" : 59 }
{ "name" : "Peruvian", "count" : 68 }
{ "name" : "Ethiopian", "count" : 18 }
{ "name" : "Soups", "count" : 4 }
{ "name" : "Australian", "count" : 16 }
{ "name" : "Southwestern", "count" : 9 }
{ "name" : "Mexican", "count" : 754 }
{ "name" : "Café/Coffee/Tea", "count" : 1214 }
{ "name" : "Tex-Mex", "count" : 143 }
Type "it" for more
> it
{ "name" : "Bottled beverages, including water, sodas, juices, etc.", "count" : 72 }
{ "name" : "Hawaiian", "count" : 3 }
{ "name" : "Not Listed/Not Applicable", "count" : 19 }
{ "name" : "Creole", "count" : 24 }
{ "name" : "Scandinavian", "count" : 7 }
{ "name" : "Nuts/Confectionary", "count" : 6 }
{ "name" : "Delicatessen", "count" : 321 }
{ "name" : "Hotdogs", "count" : 34 }
{ "name" : "Egyptian", "count" : 14 }
{ "name" : "African", "count" : 68 }
{ "name" : "Polynesian", "count" : 1 }
{ "name" : "Ice Cream, Gelato, Yogurt, Ices", "count" : 348 }
{ "name" : "Chinese/Cuban", "count" : 16 }
{ "name" : "Portuguese", "count" : 8 }
{ "name" : "Tapas", "count" : 28 }
{ "name" : "Indonesian", "count" : 8 }
{ "name" : "Chinese", "count" : 2418 }
{ "name" : "Donuts", "count" : 479 }
{ "name" : "Soul Food", "count" : 44 }
{ "name" : "Bakery", "count" : 691 }
Type "it" for more
> it
{ "name" : "Greek", "count" : 111 }
{ "name" : "Hotdogs/Pretzels", "count" : 16 }
{ "name" : "Sandwiches", "count" : 459 }
{ "name" : "Spanish", "count" : 637 }
{ "name" : "Moroccan", "count" : 15 }
```

F. COUNT NUMBER OF HAWAIIAN CUISINE RESTAURANTS WITH GRADE=A

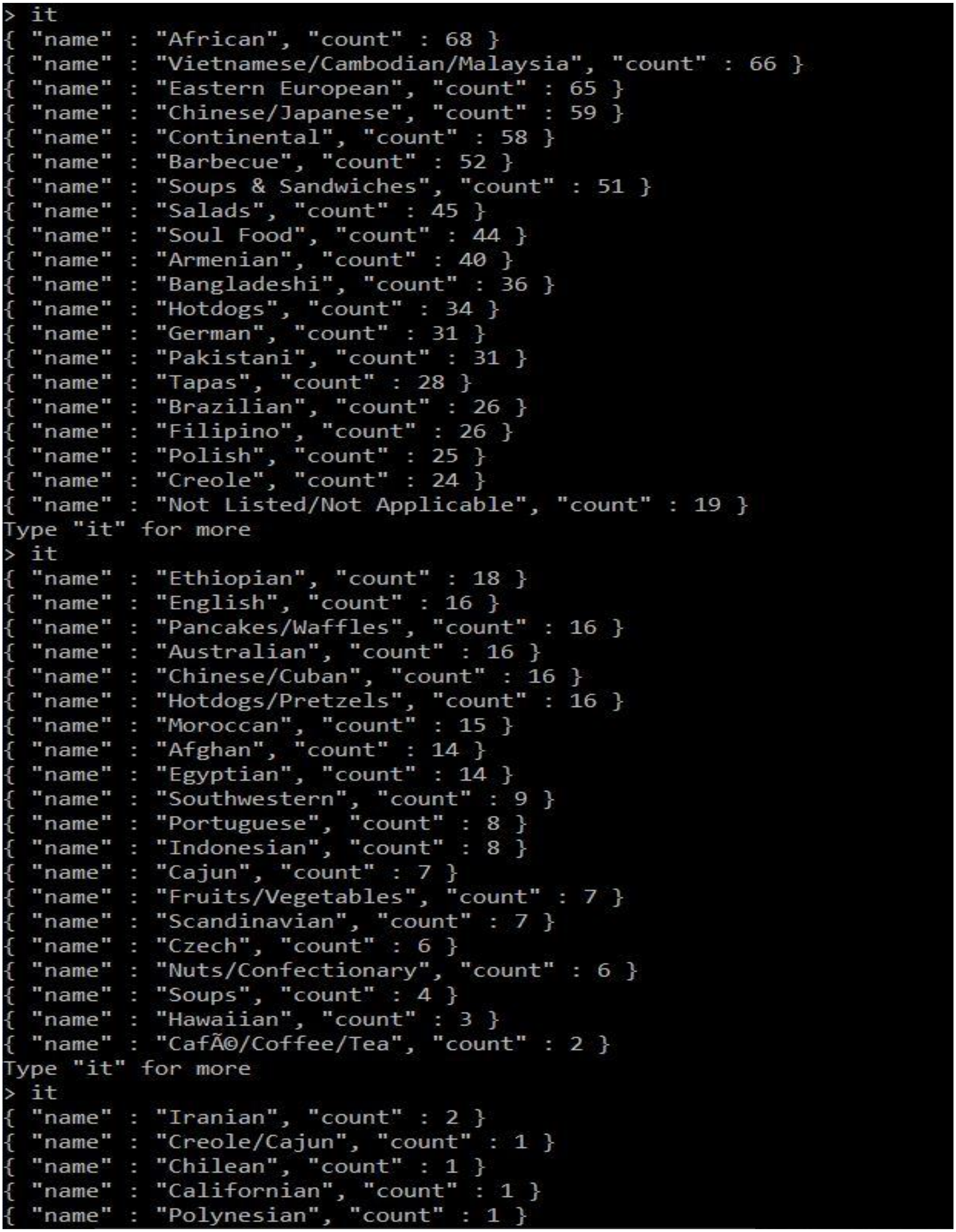


```
> db.restaurants.find({"cuisine":"Hawaiian","grades.grade":"A"}).count()
3
```

G. SHOW THE NUMBER OF RESTAURANTS CORRESPONDING TO EACH CUISINE USING ‘CURSOR’ MODE (YOUCAN VIEW IT IN PARTS AND SHOW MORE LIKE SETTING) IN SORTED ORDER SO THAT HIGHEST NUMBERCUISINES APPEAR FIRST.



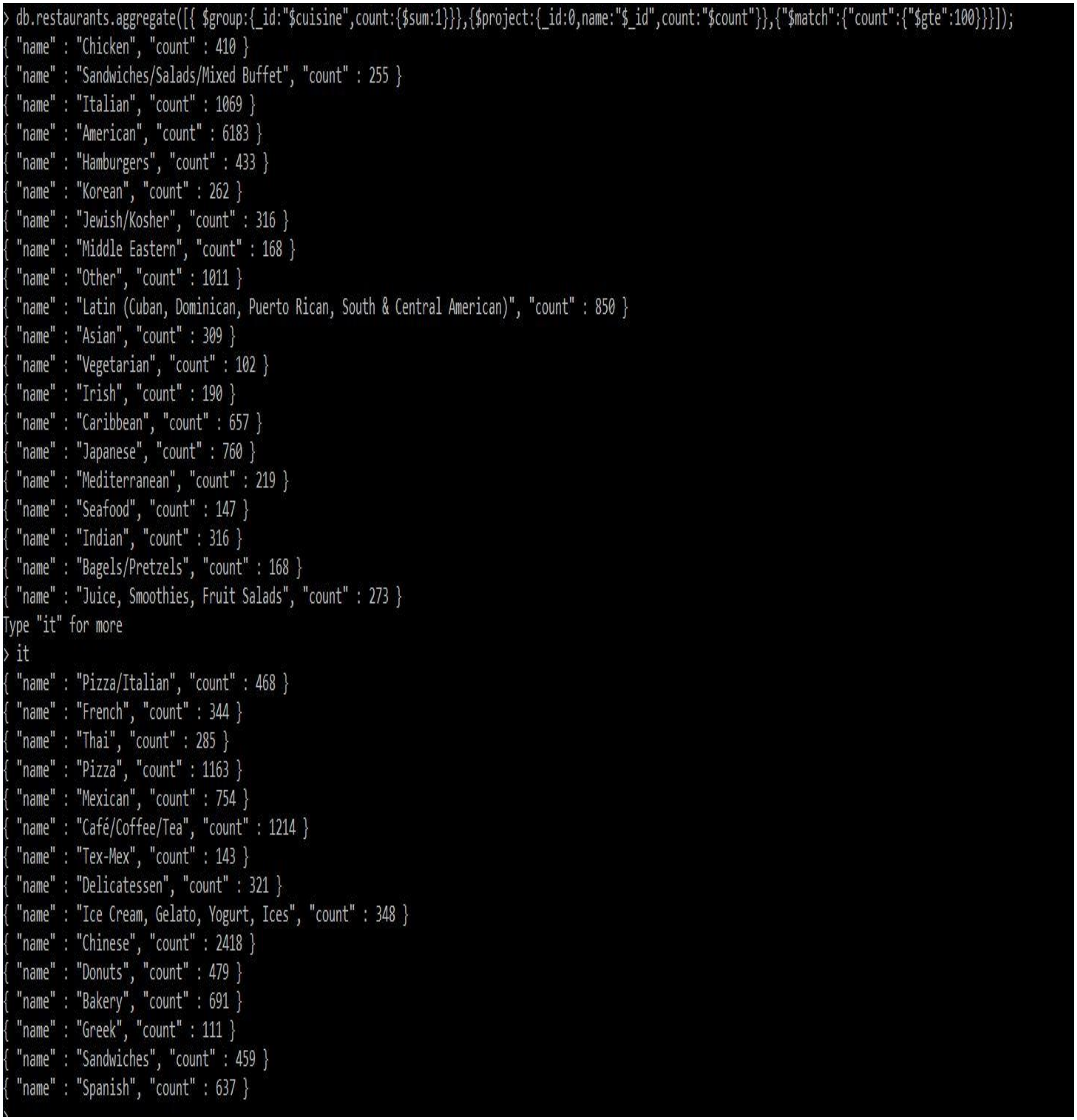
```
> db.restaurants.aggregate([{ $group:{_id:"$cuisine",count:{$sum:1}}},{$sort:{count:-1}},{$project:{_id:0,name:"$_id",count:"$count"}}]);
{ "name" : "American", "count" : 6183 }
{ "name" : "Chinese", "count" : 2418 }
{ "name" : "Café/Coffee/Tea", "count" : 1214 }
{ "name" : "Pizza", "count" : 1163 }
{ "name" : "Italian", "count" : 1069 }
{ "name" : "Other", "count" : 1011 }
{ "name" : "Latin (Cuban, Dominican, Puerto Rican, South & Central American)", "count" : 850 }
{ "name" : "Japanese", "count" : 760 }
{ "name" : "Mexican", "count" : 754 }
{ "name" : "Bakery", "count" : 691 }
{ "name" : "Caribbean", "count" : 657 }
{ "name" : "Spanish", "count" : 637 }
{ "name" : "Donuts", "count" : 479 }
{ "name" : "Pizza/Italian", "count" : 468 }
{ "name" : "Sandwiches", "count" : 459 }
{ "name" : "Hamburgers", "count" : 433 }
{ "name" : "Chicken", "count" : 410 }
{ "name" : "Ice Cream, Gelato, Yogurt, Ices", "count" : 348 }
{ "name" : "French", "count" : 344 }
{ "name" : "Delicatessen", "count" : 321 }
Type "it" for more
> it
{ "name" : "Jewish/Kosher", "count" : 316 }
{ "name" : "Indian", "count" : 316 }
{ "name" : "Asian", "count" : 309 }
{ "name" : "Thai", "count" : 285 }
{ "name" : "Juice, Smoothies, Fruit Salads", "count" : 273 }
{ "name" : "Korean", "count" : 262 }
{ "name" : "Sandwiches/Salads/Mixed Buffet", "count" : 255 }
{ "name" : "Mediterranean", "count" : 219 }
{ "name" : "Irish", "count" : 190 }
{ "name" : "Middle Eastern", "count" : 168 }
{ "name" : "Bagels/Pretzels", "count" : 168 }
{ "name" : "Seafood", "count" : 147 }
{ "name" : "Tex-Mex", "count" : 143 }
{ "name" : "Greek", "count" : 111 }
{ "name" : "Vegetarian", "count" : 102 }
{ "name" : "Russian", "count" : 88 }
{ "name" : "Steak", "count" : 86 }
{ "name" : "Bottled beverages, including water, sodas, juices, etc.", "count" : 72 }
{ "name" : "Turkish", "count" : 70 }
{ "name" : "Peruvian", "count" : 68 }
Type "it" for more
```



```
> it
{ "name" : "African", "count" : 68 }
{ "name" : "Vietnamese/Cambodian/Malaysia", "count" : 66 }
{ "name" : "Eastern European", "count" : 65 }
{ "name" : "Chinese/Japanese", "count" : 59 }
{ "name" : "Continental", "count" : 58 }
{ "name" : "Barbecue", "count" : 52 }
{ "name" : "Soups & Sandwiches", "count" : 51 }
{ "name" : "Salads", "count" : 45 }
{ "name" : "Soul Food", "count" : 44 }
{ "name" : "Armenian", "count" : 40 }
{ "name" : "Bangladeshi", "count" : 36 }
{ "name" : "Hotdogs", "count" : 34 }
{ "name" : "German", "count" : 31 }
{ "name" : "Pakistani", "count" : 31 }
{ "name" : "Tapas", "count" : 28 }
{ "name" : "Brazilian", "count" : 26 }
{ "name" : "Filipino", "count" : 26 }
{ "name" : "Polish", "count" : 25 }
{ "name" : "Creole", "count" : 24 }
{ "name" : "Not Listed/Not Applicable", "count" : 19 }
Type "it" for more
> it
{ "name" : "Ethiopian", "count" : 18 }
{ "name" : "English", "count" : 16 }
{ "name" : "Pancakes/Waffles", "count" : 16 }
{ "name" : "Australian", "count" : 16 }
{ "name" : "Chinese/Cuban", "count" : 16 }
{ "name" : "Hotdogs/Pretzels", "count" : 16 }
{ "name" : "Moroccan", "count" : 15 }
{ "name" : "Afghan", "count" : 14 }
{ "name" : "Egyptian", "count" : 14 }
{ "name" : "Southwestern", "count" : 9 }
{ "name" : "Portuguese", "count" : 8 }
{ "name" : "Indonesian", "count" : 8 }
{ "name" : "Cajun", "count" : 7 }
{ "name" : "Fruits/Vegetables", "count" : 7 }
{ "name" : "Scandinavian", "count" : 7 }
{ "name" : "Czech", "count" : 6 }
{ "name" : "Nuts/Confectionary", "count" : 6 }
{ "name" : "Soups", "count" : 4 }
{ "name" : "Hawaiian", "count" : 3 }
{ "name" : "CafÃ©/Coffee/Tea", "count" : 2 }
Type "it" for more
> it
{ "name" : "Iranian", "count" : 2 }
{ "name" : "Creole/Cajun", "count" : 1 }
{ "name" : "Chilean", "count" : 1 }
{ "name" : "Californian", "count" : 1 }
{ "name" : "Polynesian", "count" : 1 }
```

## H. SHOW CUISINES WITH RESTAURANTS MORE THAN 100.

--FORMAT IS LIKE NAME IS CUISINE AND COUNT IS NO OF RESTAURANTS



```
> db.restaurants.aggregate([{ $group:{_id:"$cuisine",count:{$sum:1}}},{$project:{_id:0,name:"$_id",count:"$count"}},{"$match":{"count":{"$gte":100}}}]);
{ "name" : "Chicken", "count" : 410 }
{ "name" : "Sandwiches/Salads/Mixed Buffet", "count" : 255 }
{ "name" : "Italian", "count" : 1069 }
{ "name" : "American", "count" : 6183 }
{ "name" : "Hamburgers", "count" : 433 }
{ "name" : "Korean", "count" : 262 }
{ "name" : "Jewish/Kosher", "count" : 316 }
{ "name" : "Middle Eastern", "count" : 168 }
{ "name" : "Other", "count" : 1011 }
{ "name" : "Latin (Cuban, Dominican, Puerto Rican, South & Central American)", "count" : 850 }
{ "name" : "Asian", "count" : 309 }
{ "name" : "Vegetarian", "count" : 102 }
{ "name" : "Irish", "count" : 190 }
{ "name" : "Caribbean", "count" : 657 }
{ "name" : "Japanese", "count" : 760 }
{ "name" : "Mediterranean", "count" : 219 }
{ "name" : "Seafood", "count" : 147 }
{ "name" : "Indian", "count" : 316 }
{ "name" : "Bagels/Pretzels", "count" : 168 }
{ "name" : "Juice, Smoothies, Fruit Salads", "count" : 273 }
Type "it" for more
> it
{ "name" : "Pizza/Italian", "count" : 468 }
{ "name" : "French", "count" : 344 }
{ "name" : "Thai", "count" : 285 }
{ "name" : "Pizza", "count" : 1163 }
{ "name" : "Mexican", "count" : 754 }
{ "name" : "Café/Coffee/Tea", "count" : 1214 }
{ "name" : "Tex-Mex", "count" : 143 }
{ "name" : "Delicatessen", "count" : 321 }
{ "name" : "Ice Cream, Gelato, Yogurt, Ices", "count" : 348 }
{ "name" : "Chinese", "count" : 2418 }
{ "name" : "Donuts", "count" : 479 }
{ "name" : "Bakery", "count" : 691 }
{ "name" : "Greek", "count" : 111 }
{ "name" : "Sandwiches", "count" : 459 }
{ "name" : "Spanish", "count" : 637 }
>
```