DBMS LAB QUERIES

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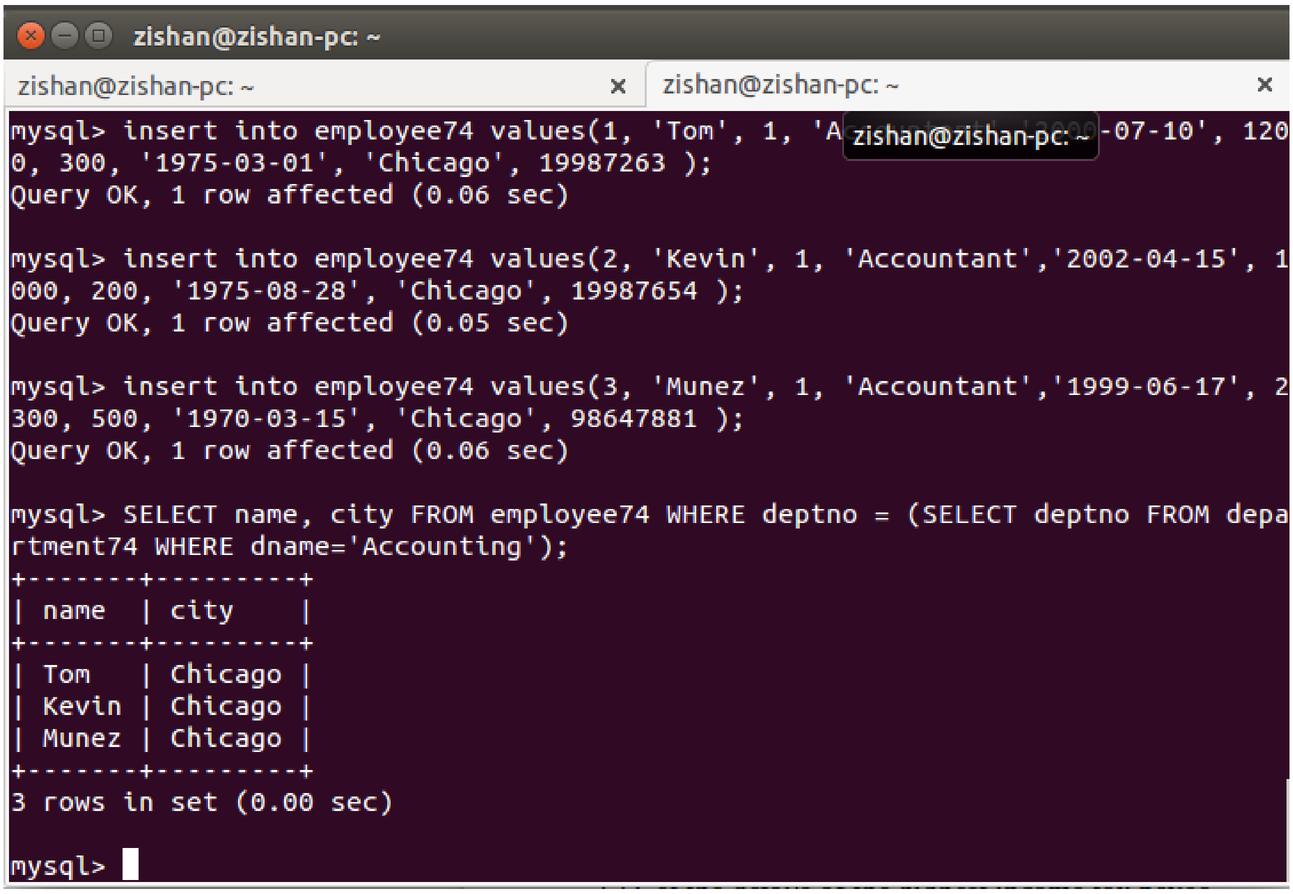
Q1. Consider the following three tables.
EMPLOYEE (empno, name, deptno,job,hiredate, sal , comission, dob, city , phone)
DEPARTMENT (deptno, dname, manager,loc)
SALARY (eno, basic,HR,DA,tax).

Write equivalent SQL for the following query. (Use foreign key to join the tables.)

1) Get the name and city of the employee working for the accounting de partment?

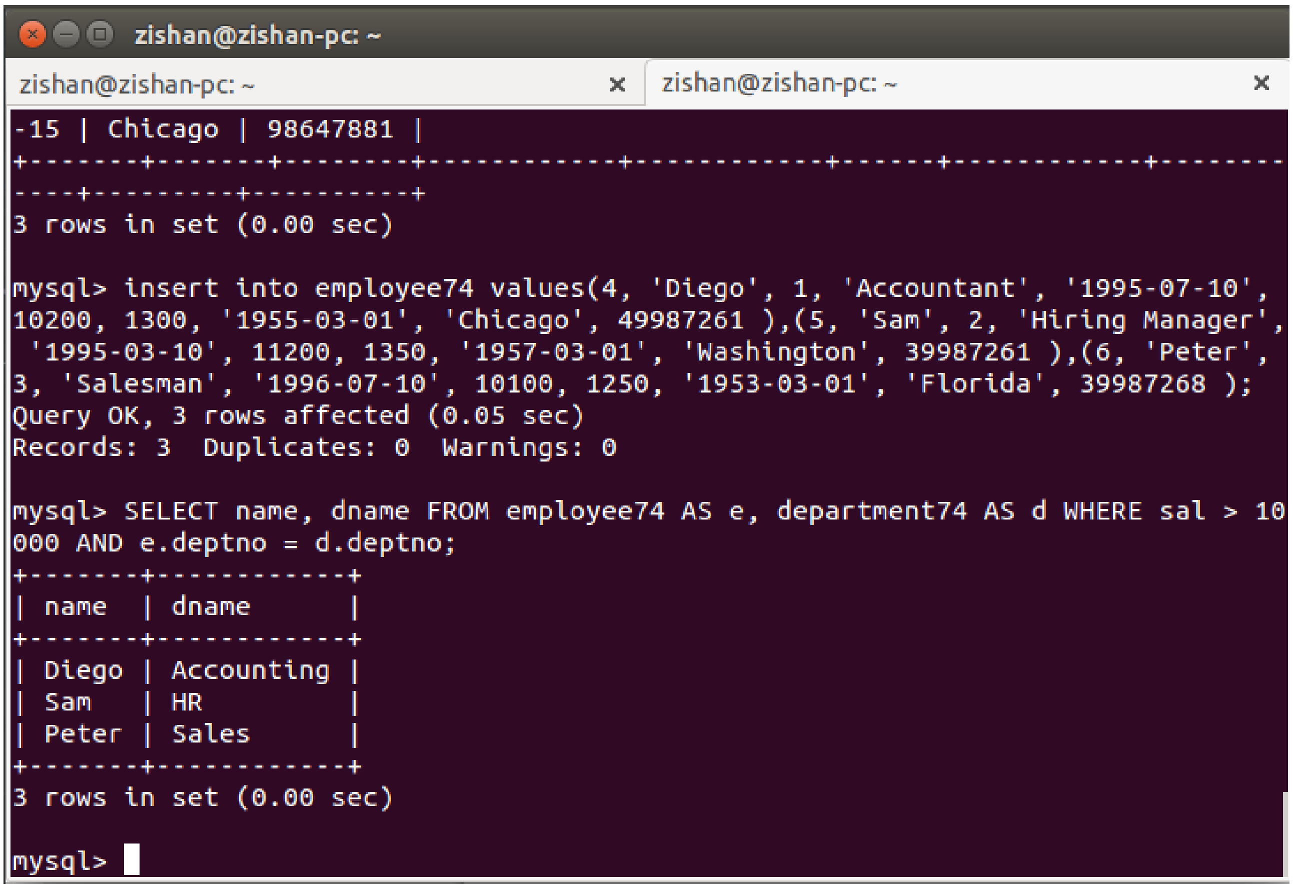
```
SELECT name, city FROM employee74 WHERE deptno = (
        SELECT deptno FROM department74 WHERE dname='Accounting'
);
```



```
mysql> insert into employee74 values(1, 'Tom', 1, 'A                -07-10', 120
0, 300, '1975-03-01', 'Chicago', 19987263 );
Query OK, 1 row affected (0.06 sec)

mysql> insert into employee74 values(2, 'Kevin', 1, 'Accountant','2002-04-15', 1
000, 200, '1975-08-28', 'Chicago', 19987654 );
Query OK, 1 row affected (0.05 sec)

mysql> insert into employee74 values(3, 'Munez', 1, 'Accountant','1999-06-17', 2
300, 500, '1970-03-15', 'Chicago', 98647881 );
Query OK, 1 row affected (0.06 sec)

mysql> SELECT name, city FROM employee74 WHERE deptno = (SELECT deptno FROM depa
rtment74 WHERE dname='Accounting');
+-------+---------+
| name  | city    |
+-------+---------+
| Tom   | Chicago |
| Kevin | Chicago |
| Munez | Chicago |
+-------+---------+
3 rows in set (0.00 sec)

mysql> 
```

2) Get the name, department name of all the employees whose pay is gre ater than 10000.

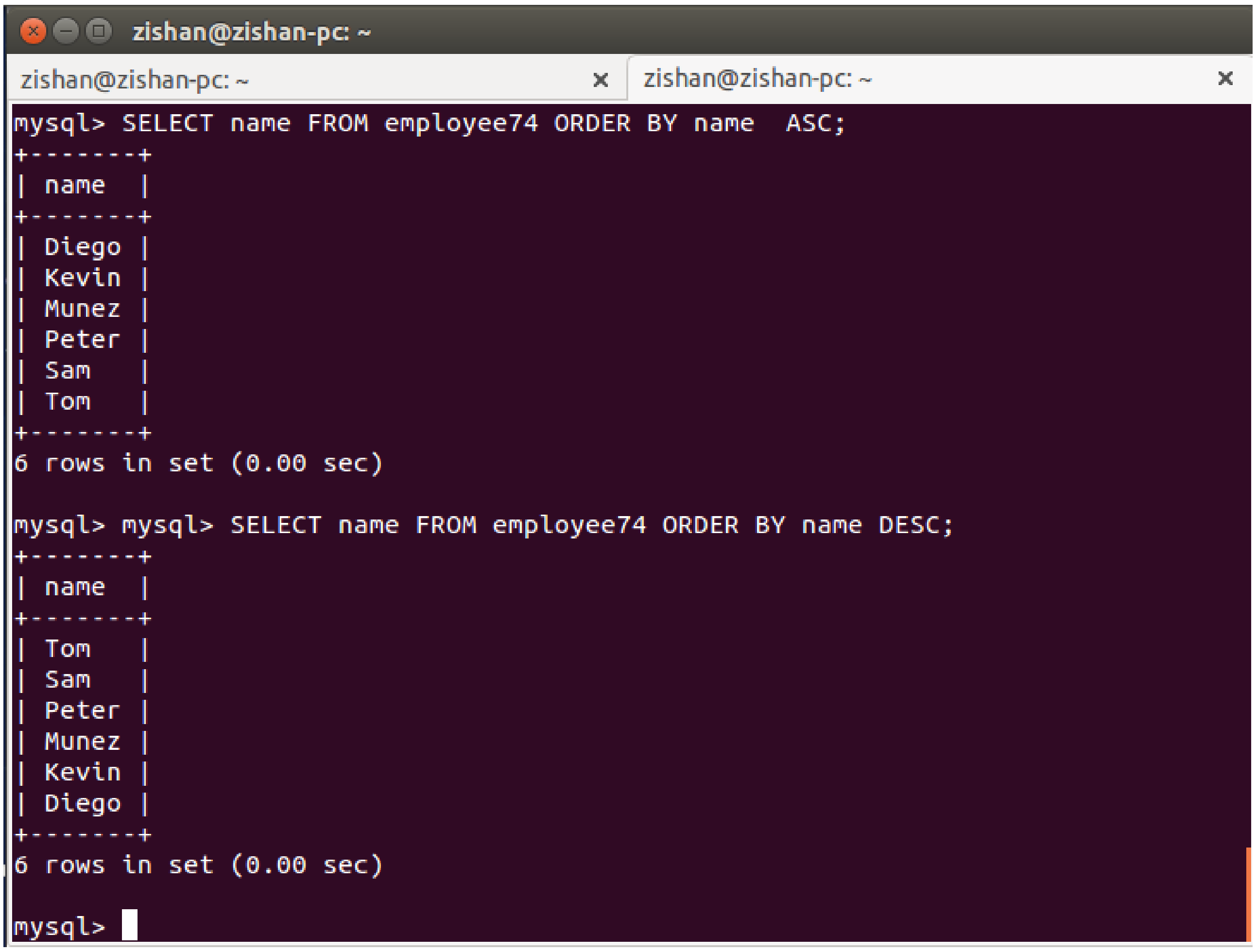
SELECT name, dname FROM employee74 AS e,
department74 AS d WHERE sal > 10000 AND
e.deptno = d.deptno;



```
-15 | Chicago | 98647881 |
+-------+-------+--------+------------+------------+------+------------+--------
----+---------+----------+
3 rows in set (0.00 sec)

mysql> insert into employee74 values(4, 'Diego', 1, 'Accountant', '1995-07-10',
10200, 1300, '1955-03-01', 'Chicago', 49987261 ),(5, 'Sam', 2, 'Hiring Manager',
 '1995-03-10', 11200, 1350, '1957-03-01', 'Washington', 39987261 ),(6, 'Peter',
3, 'Salesman', '1996-07-10', 10100, 1250, '1953-03-01', 'Florida', 39987268 );
Query OK, 3 rows affected (0.05 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> SELECT name, dname FROM employee74 AS e, department74 AS d WHERE sal > 10
000 AND e.deptno = d.deptno;
+-------+------------+
| name  | dname      |
+-------+------------+
| Diego | Accounting |
| Sam   | HR         |
| Peter | Sales      |
+-------+------------+
3 rows in set (0.00 sec)

mysql> 
```

3) Get the name of the employee in ascending and descending order.

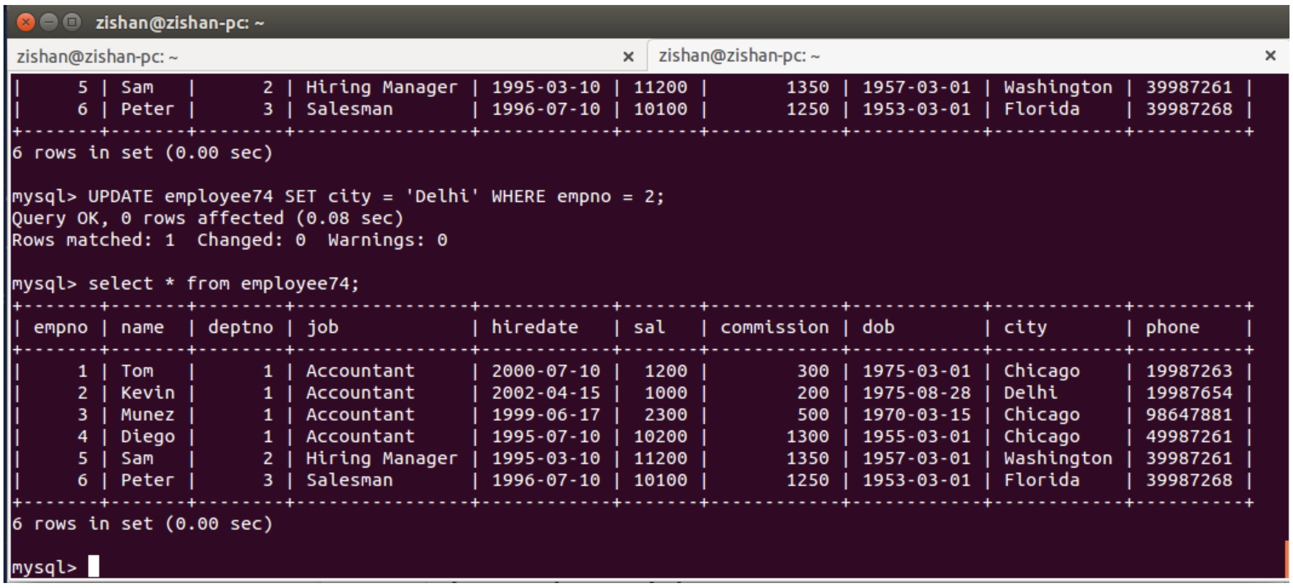
SELECT name FROM employee74 ORDER BY name ASC;
SELECT name FROM employee74 ORDER BY name DESC;



```
mysql> SELECT name FROM employee74 ORDER BY name  ASC;
+-------+
| name  |
+-------+
| Diego |
| Kevin |
| Munez |
| Peter |
| Sam   |
| Tom   |
+-------+
6 rows in set (0.00 sec)

mysql> mysql> SELECT name FROM employee74 ORDER BY name DESC;
+-------+
| name  |
+-------+
| Tom   |
| Sam   |
| Peter |
| Munez |
| Kevin |
| Diego |
+-------+
6 rows in set (0.00 sec)

mysql> 
```

4) Update the city of the employee no. 2 from Mumbai to Delhi.

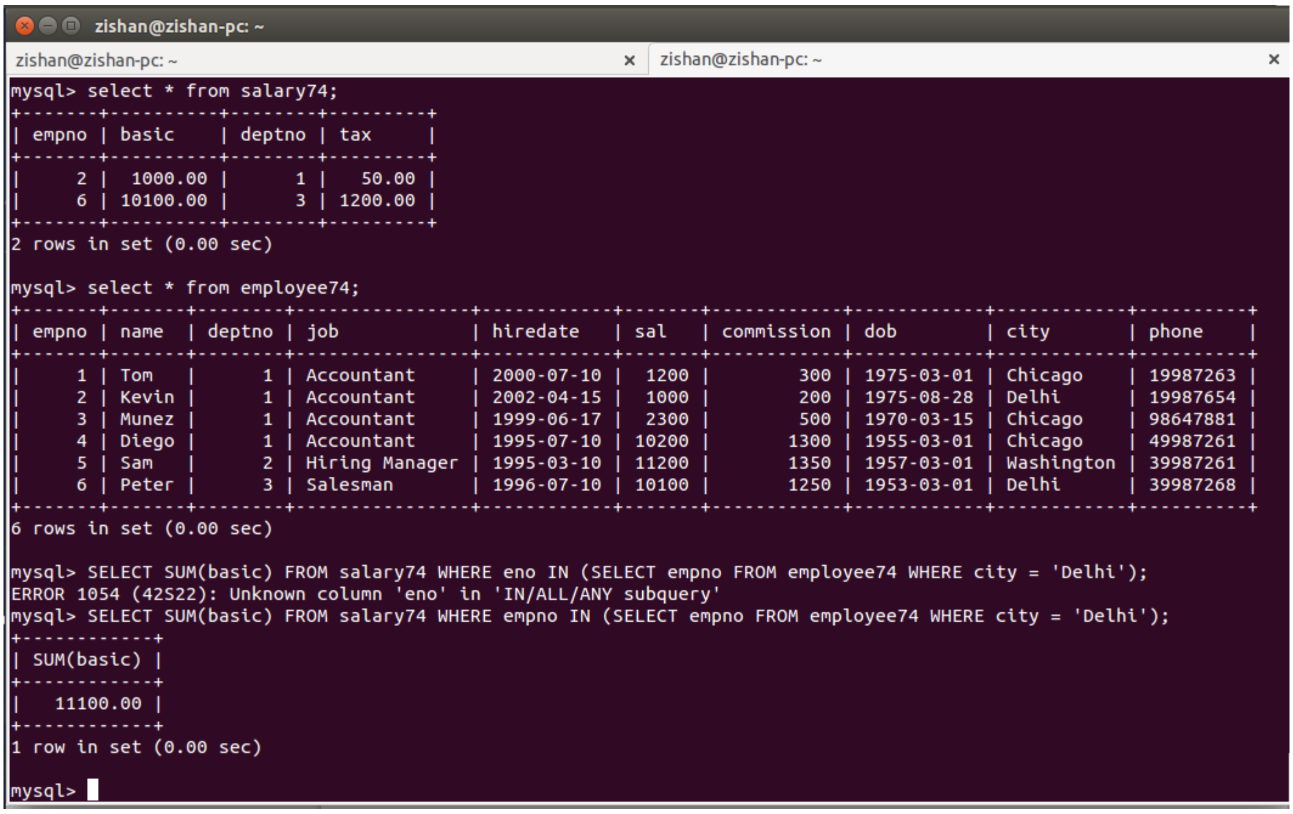
UPDATE employee74 SET city = 'Delhi' WHERE empno = 2;



```
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Florida    | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> UPDATE employee74 SET city = 'Delhi' WHERE empno = 2;
Query OK, 0 rows affected (0.08 sec)
Rows matched: 1  Changed: 0  Warnings: 0

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Florida    | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> 
```

5) Get the sum of the basic salary of the employees belongs to Delhi c ity.

```
SELECT SUM(basic) FROM salary74 WHERE eno IN (
        SELECT empno FROM employee74 WHERE city = 'Delhi'
);
```

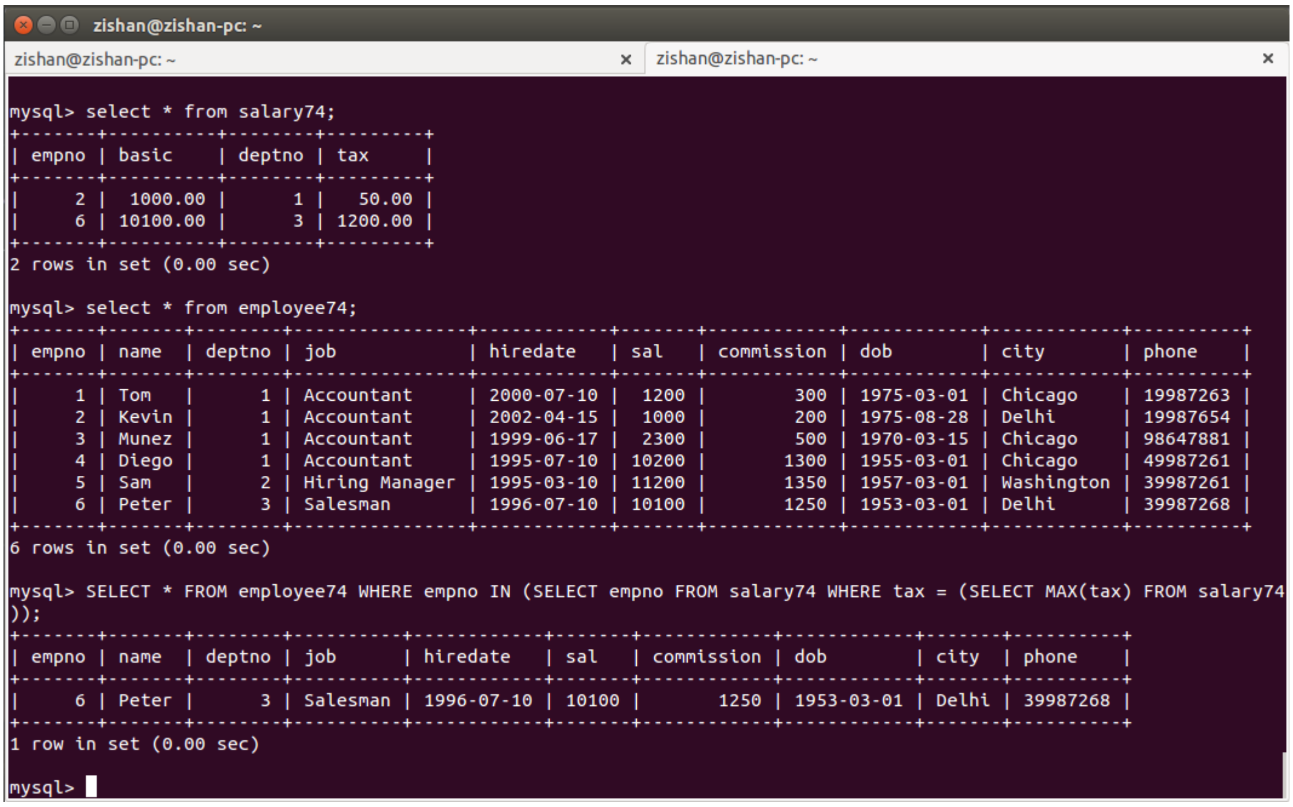


zishan@zishan-pc: ~

```
mysql> select * from salary74;
+-------+----------+--------+---------+
| empno | basic    | deptno | tax     |
+-------+----------+--------+---------+
|     2 |  1000.00 |      1 |   50.00 |
|     6 | 10100.00 |      3 | 1200.00 |
+-------+----------+--------+---------+
2 rows in set (0.00 sec)

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> SELECT SUM(basic) FROM salary74 WHERE eno IN (SELECT empno FROM employee74 WHERE city = 'Delhi');
ERROR 1054 (42S22): Unknown column 'eno' in 'IN/ALL/ANY subquery'
mysql> SELECT SUM(basic) FROM salary74 WHERE empno IN (SELECT empno FROM employee74 WHERE city = 'Delhi');
+------------+
| SUM(basic) |
+------------+
|   11100.00 |
+------------+
1 row in set (0.00 sec)

mysql> 
```

6) Get the details of the highest income tax payee.

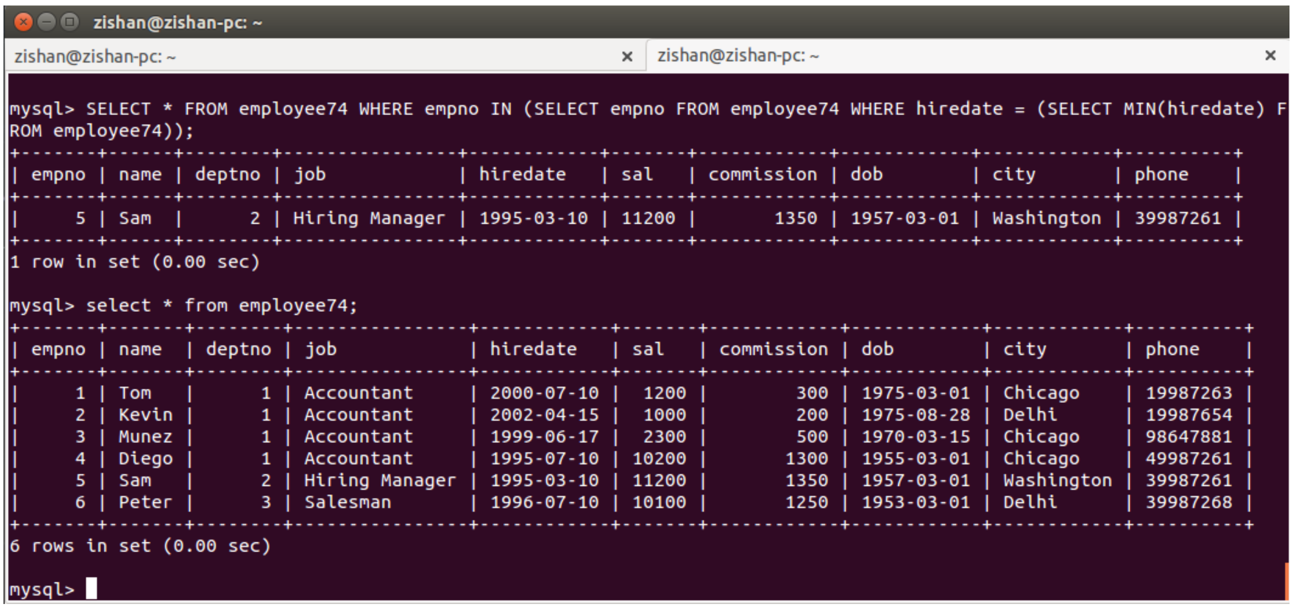
```
SELECT * FROM employee74 WHERE empno IN (
        SELECT empno FROM salary74 WHERE tax = (
                SELECT MAX(tax) FROM salary74
        )
);
```



```
mysql> select * from salary74;
+-------+----------+--------+---------+
| empno | basic    | deptno | tax     |
+-------+----------+--------+---------+
|     2 |  1000.00 |      1 |   50.00 |
|     6 | 10100.00 |      3 | 1200.00 |
+-------+----------+--------+---------+
2 rows in set (0.00 sec)

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM employee74 WHERE empno IN (SELECT empno FROM salary74 WHERE tax = (SELECT MAX(tax) FROM salary74
));
+-------+-------+--------+----------+------------+-------+------------+------------+-------+----------+
| empno | name  | deptno | job      | hiredate   | sal   | commission | dob        | city  | phone    |
+-------+-------+--------+----------+------------+-------+------------+------------+-------+----------+
|     6 | Peter |      3 | Salesman | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi | 39987268 |
+-------+-------+--------+----------+------------+-------+------------+------------+-------+----------+
1 row in set (0.00 sec)

mysql> 
```

7) Which employee is the senior most?

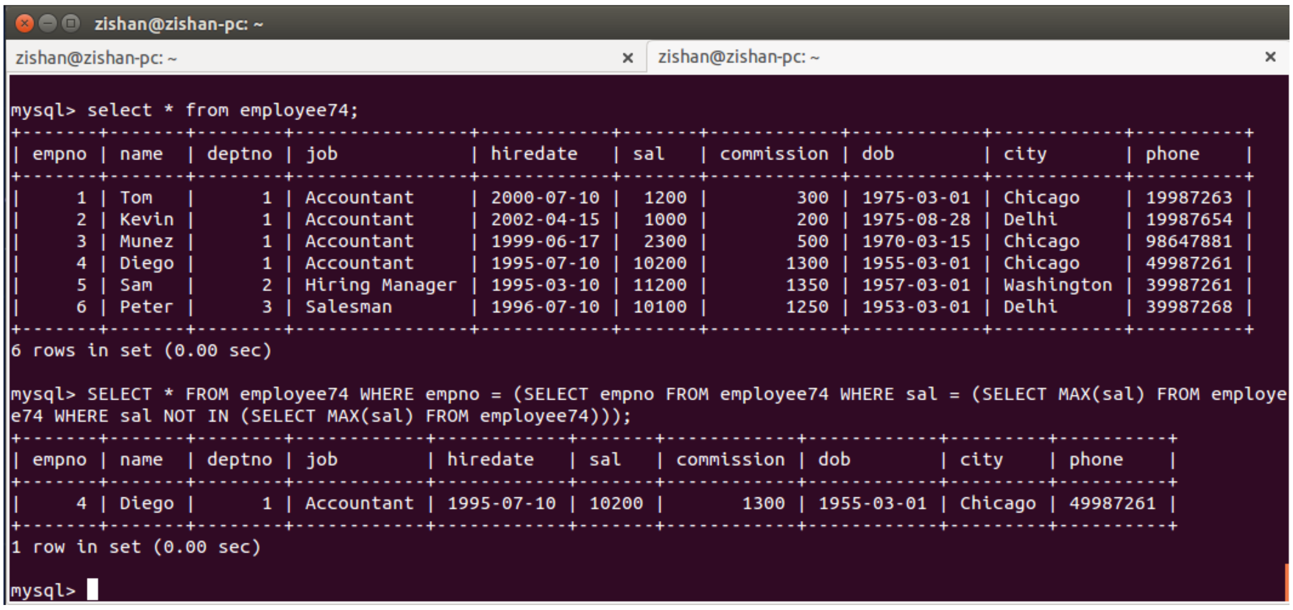
```
SELECT * FROM employee74 WHERE empno IN (
        SELECT empno FROM employee74 WHERE hiredate = (
                SELECT MIN(hiredate) FROM employee74
        )
);
```



```
mysql> SELECT * FROM employee74 WHERE empno IN (SELECT empno FROM employee74 WHERE hiredate = (SELECT MIN(hiredate) F
ROM employee74));
+-------+------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     5 | Sam  |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
+-------+------+--------+----------------+------------+-------+------------+------------+------------+----------+
1 row in set (0.00 sec)

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> 
```

8) Give the details of second highest salary employee (without use of < operator).

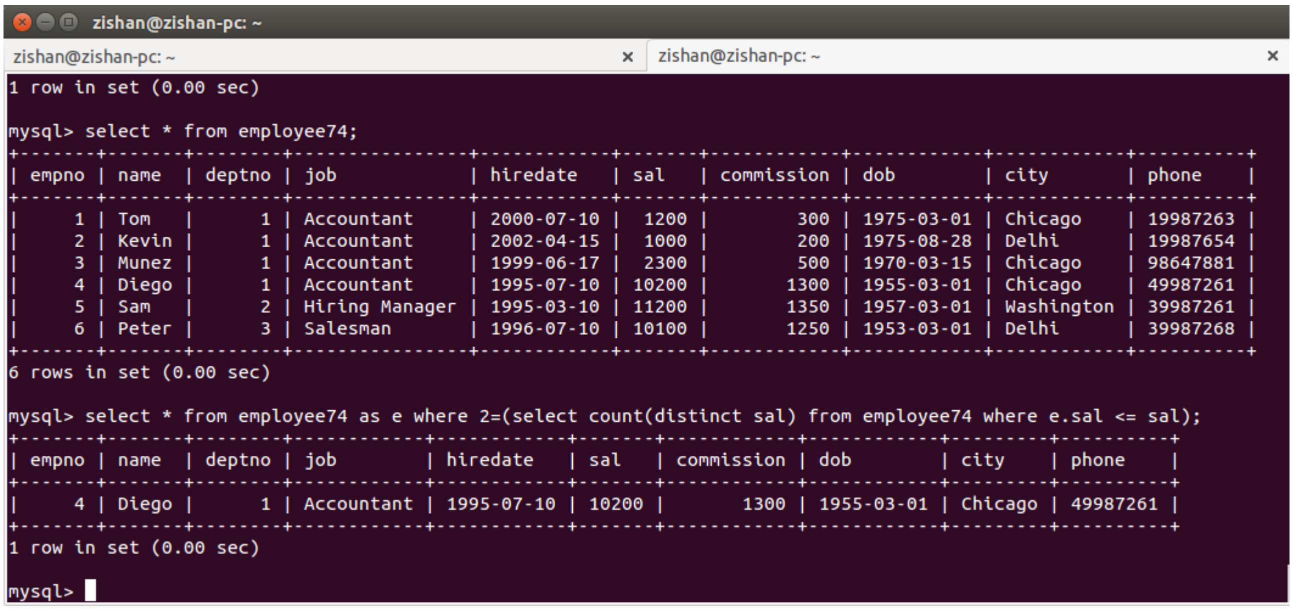
```
SELECT * FROM employee74 WHERE empno = (
        SELECT empno FROM employee74 WHERE sal = (
                SELECT MAX(sal) FROM employee74 WHERE sal NOT IN (
                        SELECT MAX(sal) FROM employee74
                )
        )
);
```



```
mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM employee74 WHERE empno = (SELECT empno FROM employee74 WHERE sal = (SELECT MAX(sal) FROM employe
e74 WHERE sal NOT IN (SELECT MAX(sal) FROM employee74)));
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
| empno | name  | deptno | job        | hiredate   | sal   | commission | dob        | city    | phone    |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
|     4 | Diego |      1 | Accountant | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago | 49987261 |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
1 row in set (0.00 sec)

mysql> 
```

9) Give the details of second highest salary employee (without use of max and limit operator).

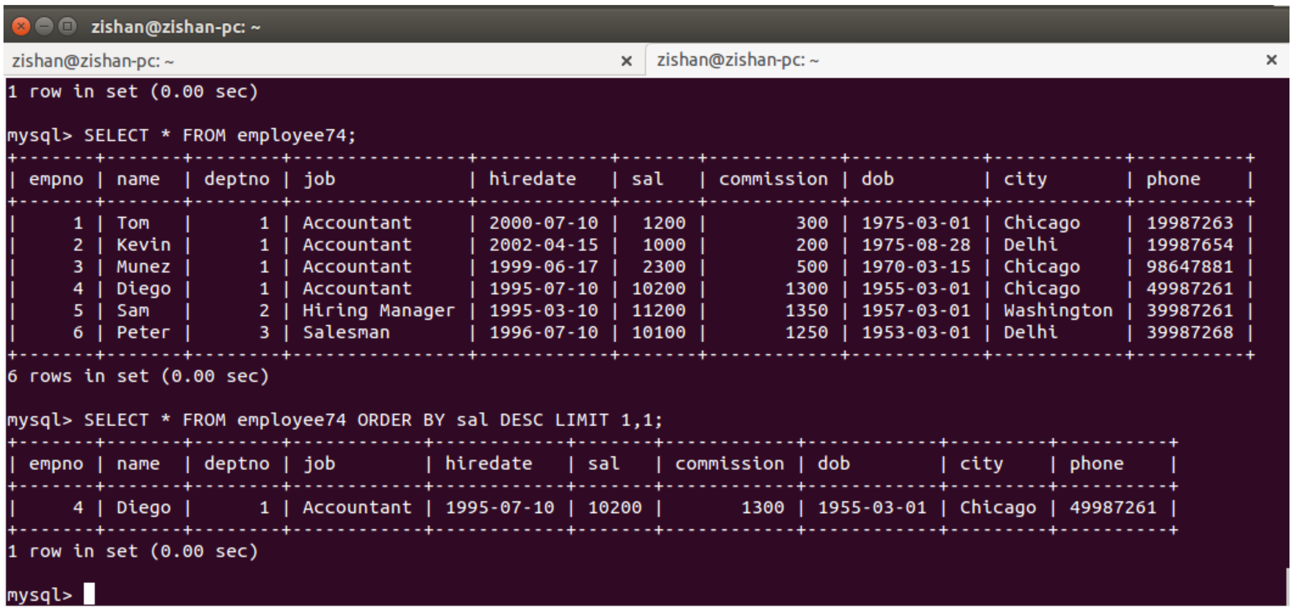
```
SELECT * FROM employee74 AS e WHERE 2 = (
        SELECT COUNT(DISTINCT sal) FROM employee74 WHERE e.sal <= sal
);
```



```
1 row in set (0.00 sec)

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> select * from employee74 as e where 2=(select count(distinct sal) from employee74 where e.sal <= sal);
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
| empno | name  | deptno | job        | hiredate   | sal   | commission | dob        | city    | phone    |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
|     4 | Diego |      1 | Accountant | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago | 49987261 |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
1 row in set (0.00 sec)

mysql> 
```

10) Give the details of second highest salary employee (with the use o f MINUS operator).

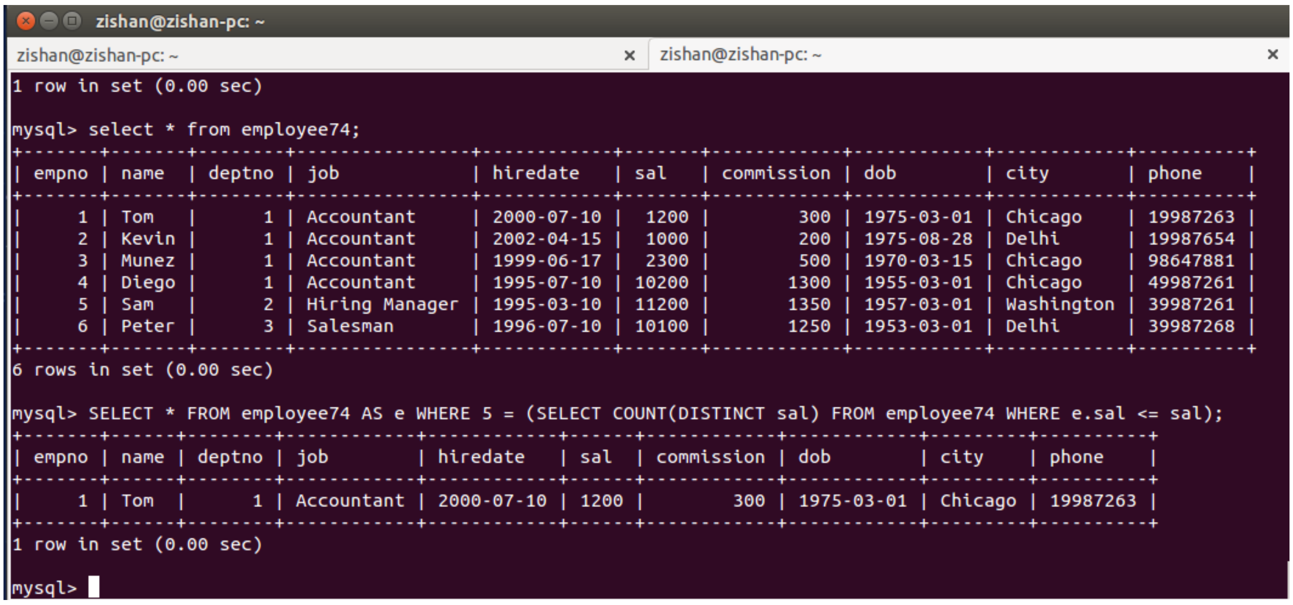
SELECT * FROM employee74 ORDER BY sal DESC LIMIT 1,1;



```
1 row in set (0.00 sec)

mysql> SELECT * FROM employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM employee74 ORDER BY sal DESC LIMIT 1,1;
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
| empno | name  | deptno | job        | hiredate   | sal   | commission | dob        | city    | phone    |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
|     4 | Diego |      1 | Accountant | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago | 49987261 |
+-------+-------+--------+------------+------------+-------+------------+------------+---------+----------+
1 row in set (0.00 sec)

mysql> 
```

11) Give the details of all employees of 5th highest salary (or nth h ighest salary).

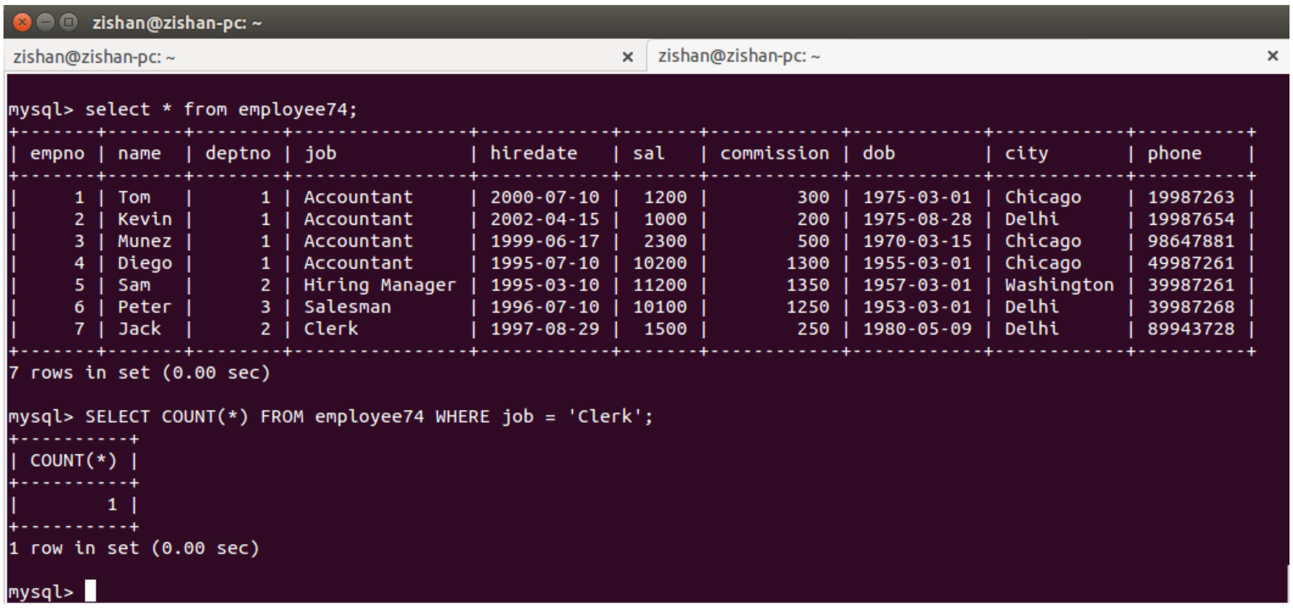
```
SELECT * FROM employee74 AS e WHERE 5 = (
        SELECT COUNT(DISTINCT sal) FROM employee74 WHERE e.sal <= sal
);
```



```
1 row in set (0.00 sec)

mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM employee74 AS e WHERE 5 = (SELECT COUNT(DISTINCT sal) FROM employee74 WHERE e.sal <= sal);
+-------+------+--------+------------+------------+------+------------+------------+---------+----------+
| empno | name | deptno | job        | hiredate   | sal  | commission | dob        | city    | phone    |
+-------+------+--------+------------+------------+------+------------+------------+---------+----------+
|     1 | Tom  |      1 | Accountant | 2000-07-10 | 1200 |        300 | 1975-03-01 | Chicago | 19987263 |
+-------+------+--------+------------+------------+------+------------+------------+---------+----------+
1 row in set (0.00 sec)

mysql> 
```

12) How many clerks are there in the company?

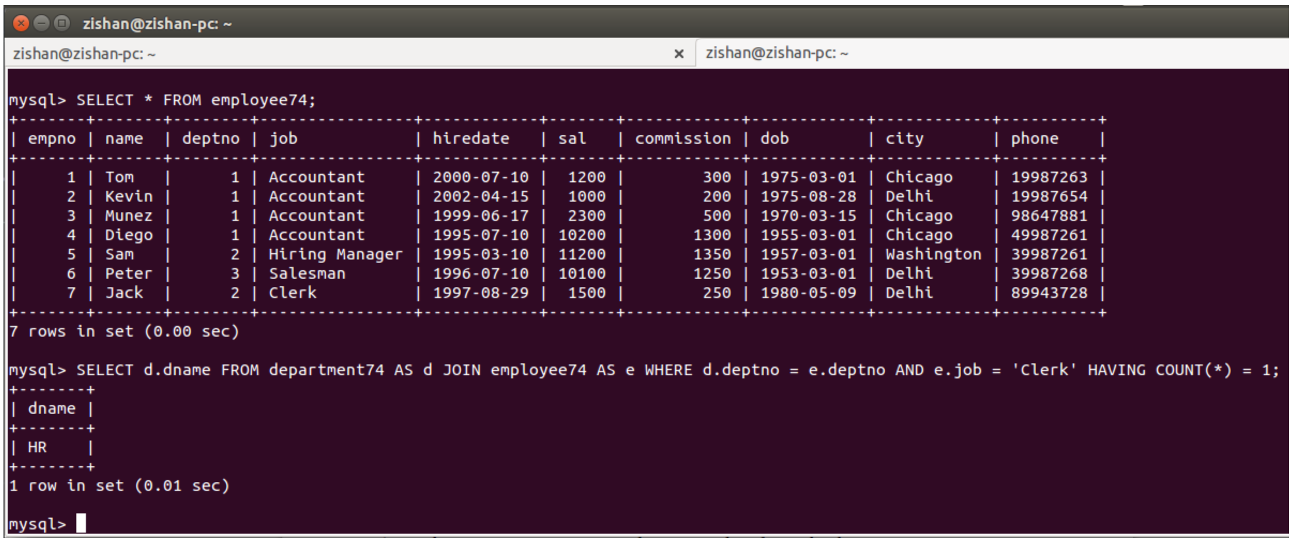
SELECT COUNT(*) FROM employee74 WHERE job = 'Clerk';



```
mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
7 rows in set (0.00 sec)

mysql> SELECT COUNT(*) FROM employee74 WHERE job = 'Clerk';
+----------+
| COUNT(*) |
+----------+
|        1 |
+----------+
1 row in set (0.00 sec)

mysql> 
```

13) Which department has exactly one employee as clerk?

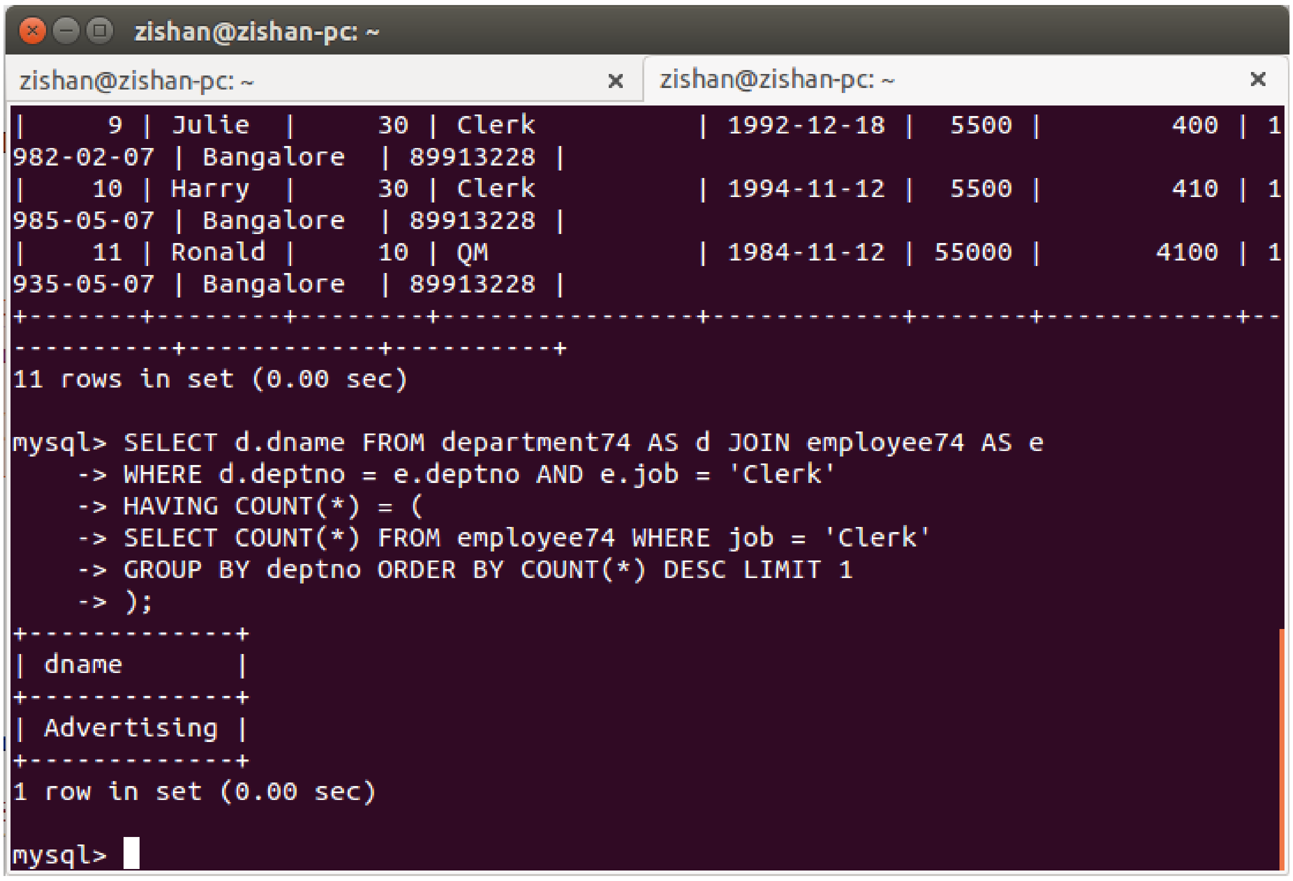
```
SELECT d.dname FROM department74 AS d JOIN employee74 AS e
        WHERE d.deptno = e.deptno AND e.job = 'Clerk'
HAVING COUNT(*) = 1;
```



```
mysql> SELECT * FROM employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
7 rows in set (0.00 sec)

mysql> SELECT d.dname FROM department74 AS d JOIN employee74 AS e WHERE d.deptno = e.deptno AND e.job = 'Clerk' HAVING COUNT(*) = 1;
+-------+
| dname |
+-------+
| HR    |
+-------+
1 row in set (0.01 sec)

mysql> 
```

14) Which department has the highest number of clerks? Show the deptno and count.

```
SELECT d.dname FROM department74 AS d JOIN employee74 AS e
        WHERE d.deptno = e.deptno AND e.job = 'Clerk'
        HAVING COUNT(*) = (
                SELECT COUNT(*) FROM employee74 WHERE job = 'Clerk'
                GROUP BY deptno ORDER BY COUNT(*) DESC LIMIT 1
        );
```

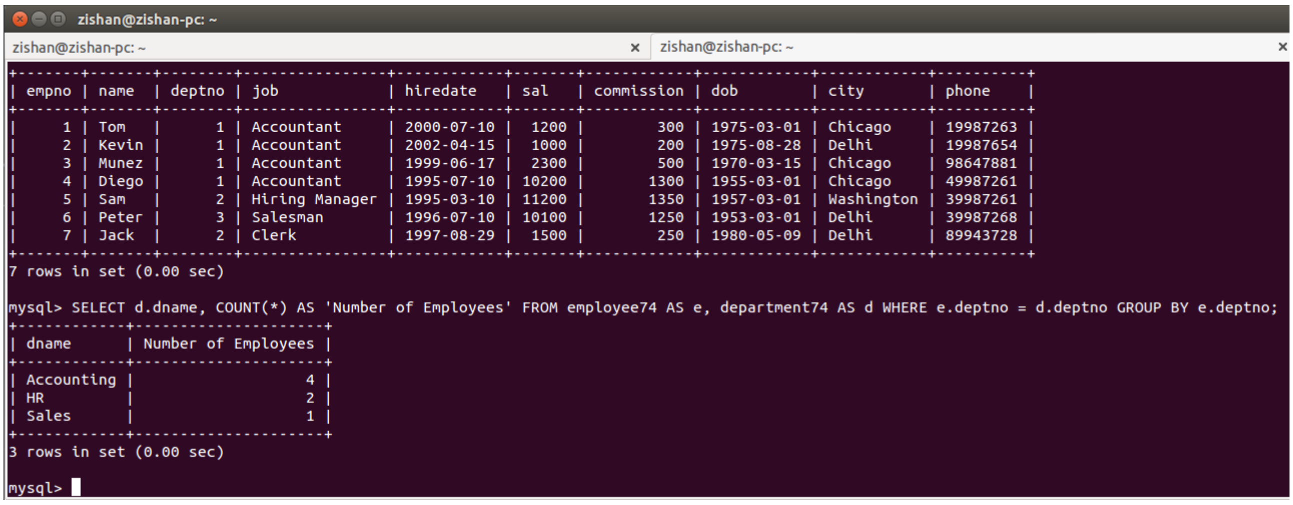


zishan@zishan-pc: ~

```
|      9 | Julie  |      30 | Clerk            | 1992-12-18 |  5500 |          400 | 1
982-02-07 | Bangalore  | 89913228 |
|     10 | Harry  |      30 | Clerk            | 1994-11-12 |  5500 |          410 | 1
985-05-07 | Bangalore  | 89913228 |
|     11 | Ronald |      10 | QM               | 1984-11-12 | 55000 |         4100 | 1
935-05-07 | Bangalore  | 89913228 |
+--------+--------+--------+-----------------+------------+-------+-------------+--
----------+------------+----------+
11 rows in set (0.00 sec)

mysql> SELECT d.dname FROM department74 AS d JOIN employee74 AS e
    -> WHERE d.deptno = e.deptno AND e.job = 'Clerk'
    -> HAVING COUNT(*) = (
    -> SELECT COUNT(*) FROM employee74 WHERE job = 'Clerk'
    -> GROUP BY deptno ORDER BY COUNT(*) DESC LIMIT 1
    -> );
+-------------+
| dname       |
+-------------+
| Advertising |
+-------------+
1 row in set (0.00 sec)

mysql> 
```

15) How many employees are there in each department?

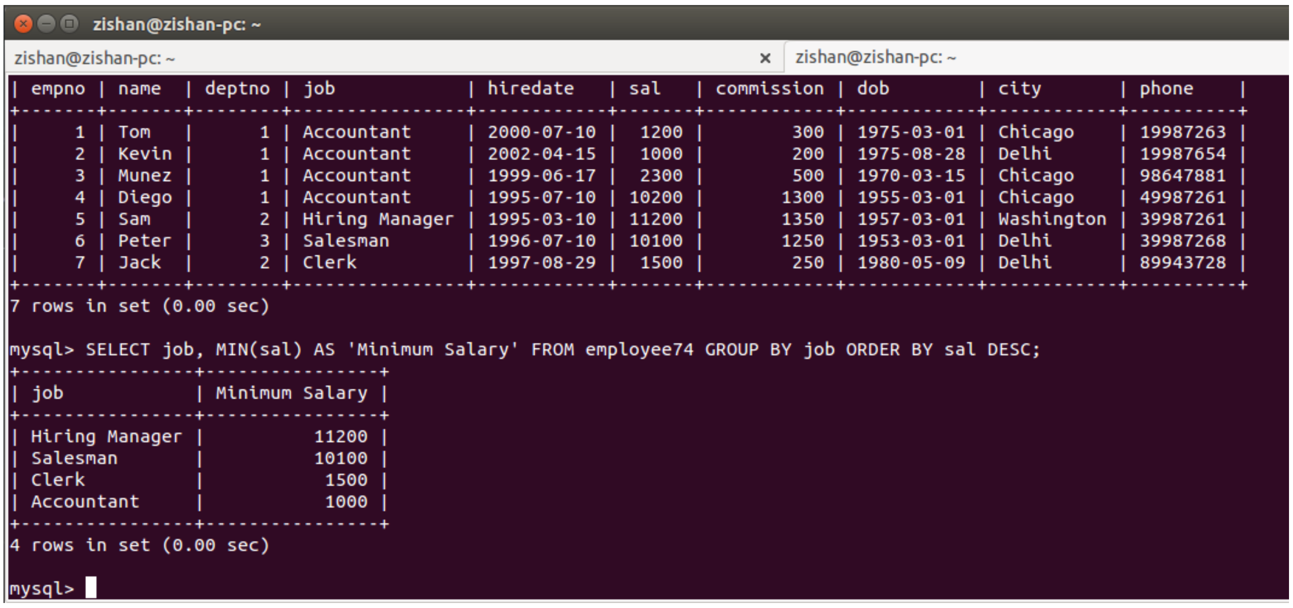
SELECT d.dname, COUNT(*) AS 'Number of Employees'
          FROM employee74 AS e, department74 AS d
WHERE e.deptno = d.deptno GROUP BY e.deptno;



```
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
7 rows in set (0.00 sec)

mysql> SELECT d.dname, COUNT(*) AS 'Number of Employees' FROM employee74 AS e, department74 AS d WHERE e.deptno = d.deptno GROUP BY e.deptno;
+------------+---------------------+
| dname      | Number of Employees |
+------------+---------------------+
| Accounting |                   4 |
| HR         |                   2 |
| Sales      |                   1 |
+------------+---------------------+
3 rows in set (0.00 sec)

mysql> 
```

16) List the lowest salary for different jobs used in a company and li st them in descending order.

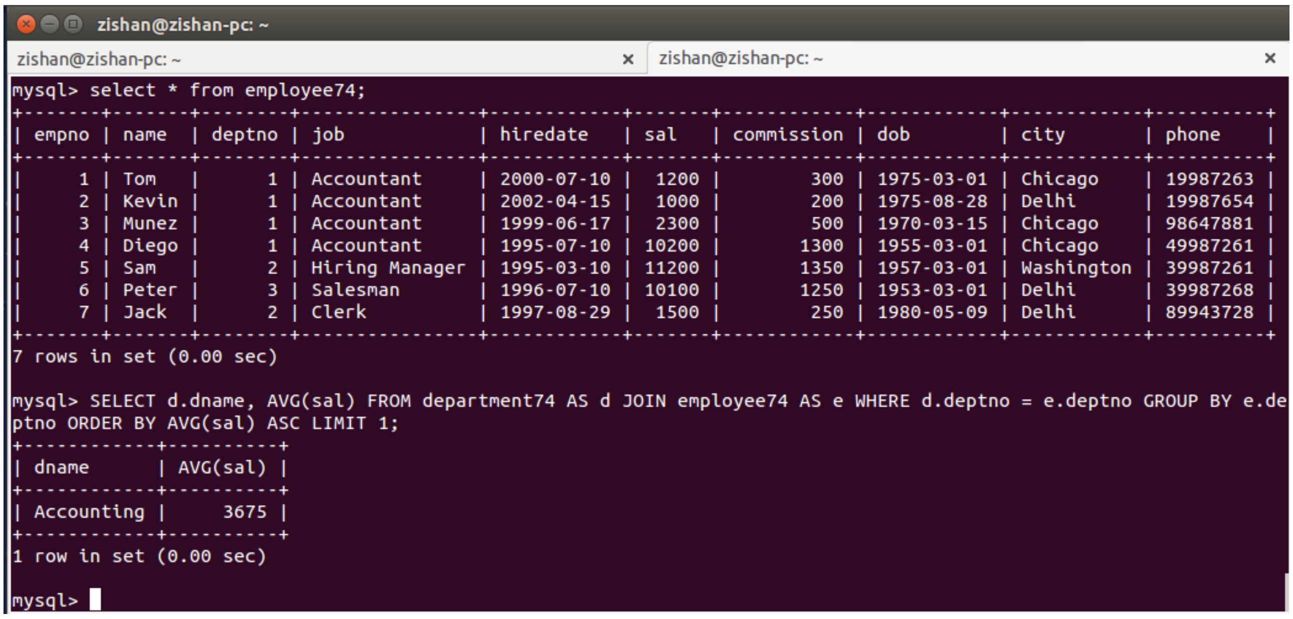
```
SELECT job, MIN(sal) AS 'Minimum Salary' FROM employee74
         GROUP BY job ORDER BY sal DESC;
```



```
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
7 rows in set (0.00 sec)

mysql> SELECT job, MIN(sal) AS 'Minimum Salary' FROM employee74 GROUP BY job ORDER BY sal DESC;
+----------------+----------------+
| job            | Minimum Salary |
+----------------+----------------+
| Hiring Manager |          11200 |
| Salesman       |          10100 |
| Clerk          |           1500 |
| Accountant     |           1000 |
+----------------+----------------+
4 rows in set (0.00 sec)

mysql> 
```

17) Which department average salary is the lowest among all? Show the deptno,average salary.

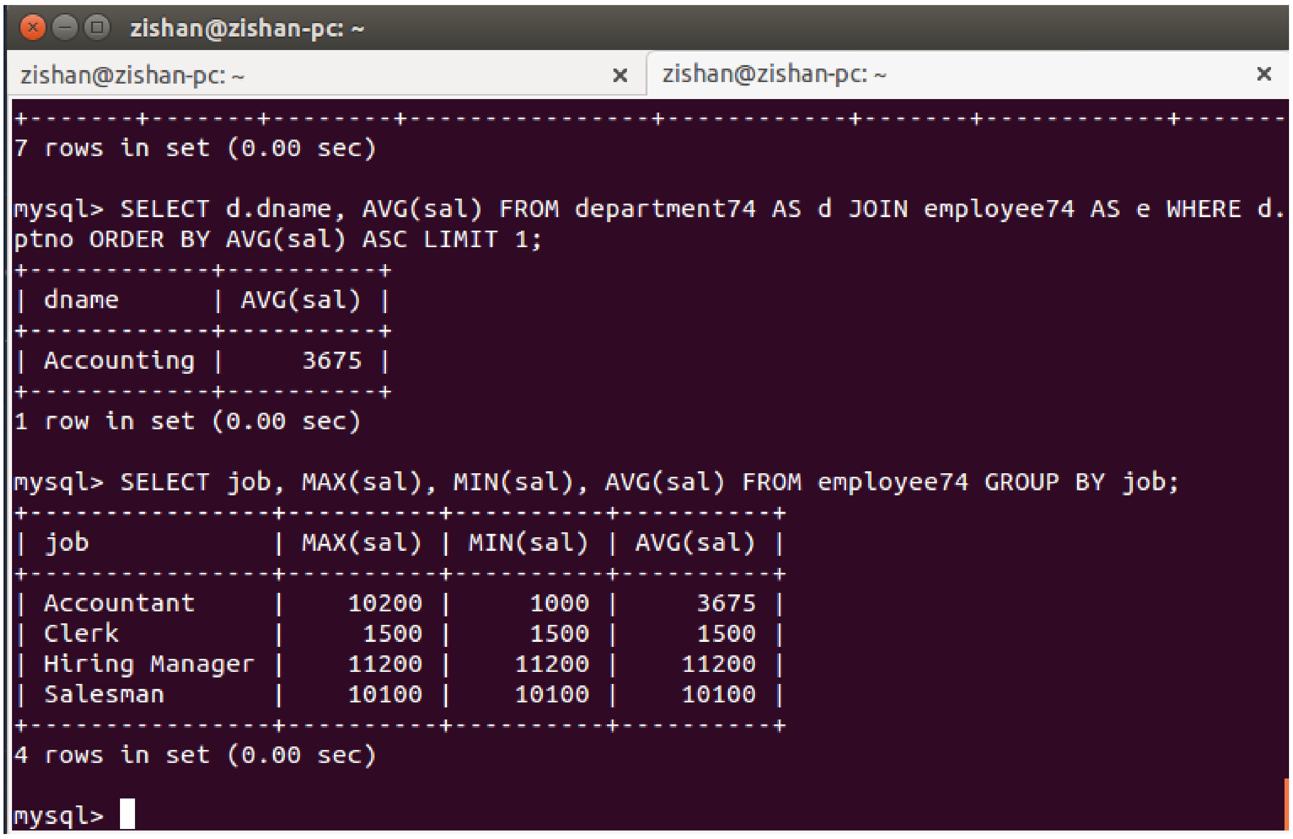
SELECT d.dname, AVG(sal) FROM department74 AS d JOIN employee74 AS e
        WHERE d.deptno = e.deptno
GROUP BY e.deptno ORDER BY AVG(sal) ASC LIMIT 1;



```
mysql> select * from employee74;
+-------+-------+--------+-----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job             | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+-----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant      | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant      | 2002-04-15 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant      | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant      | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager  | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman        | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk           | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
+-------+-------+--------+-----------------+------------+-------+------------+------------+------------+----------+
7 rows in set (0.00 sec)

mysql> SELECT d.dname, AVG(sal) FROM department74 AS d JOIN employee74 AS e WHERE d.deptno = e.deptno GROUP BY e.de
ptno ORDER BY AVG(sal) ASC LIMIT 1;
+------------+----------+
| dname      | AVG(sal) |
+------------+----------+
| Accounting |     3675 |
+------------+----------+
1 row in set (0.00 sec)

mysql> 
```

18) List the minimum, maximum and average salary for each job.

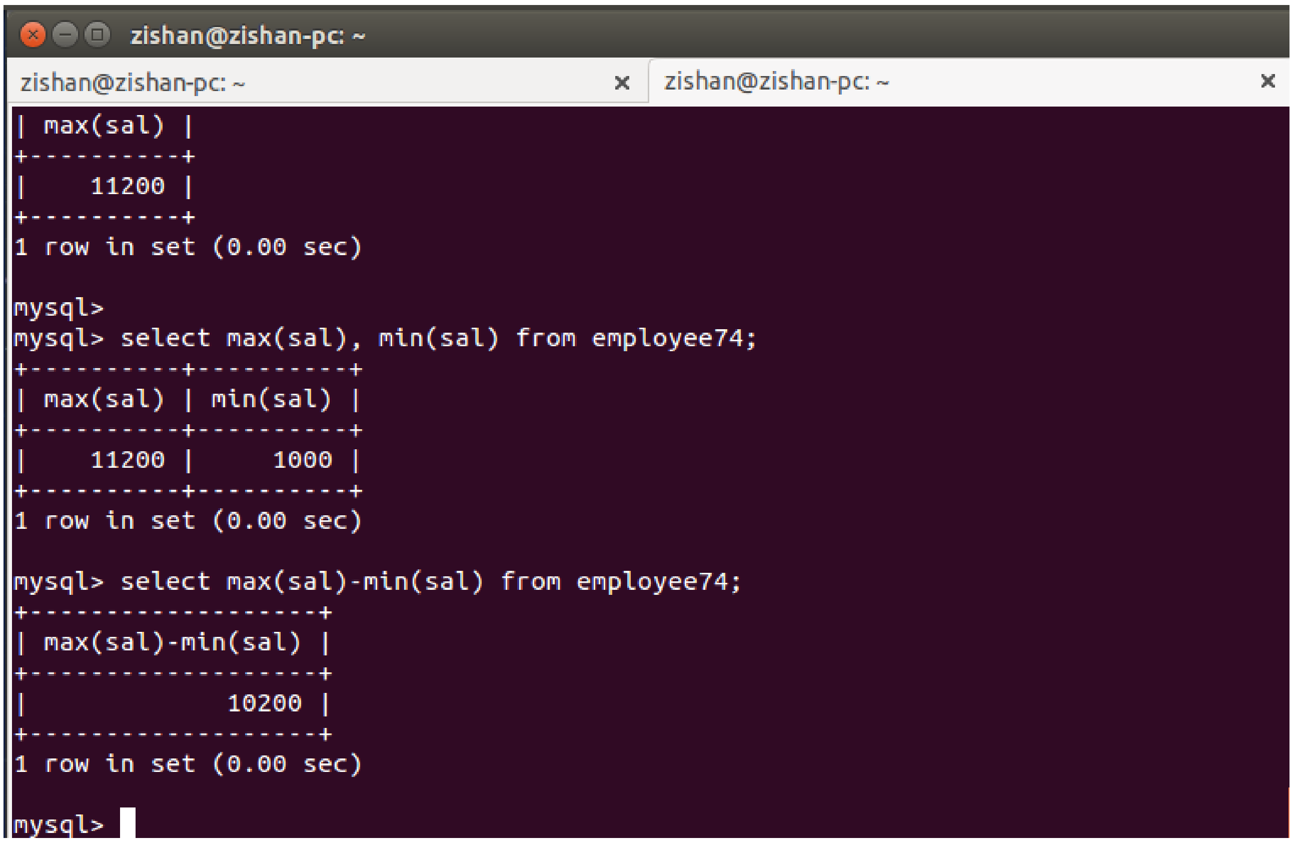
SELECT job, MAX(sal), MIN(sal), AVG(sal) FROM employee74 GROUP BY job;



```
+-------+-------+--------+----------------+------------+-------+------------+-------
7 rows in set (0.00 sec)

mysql> SELECT d.dname, AVG(sal) FROM department74 AS d JOIN employee74 AS e WHERE d.
ptno ORDER BY AVG(sal) ASC LIMIT 1;
+------------+----------+
| dname      | AVG(sal) |
+------------+----------+
| Accounting |     3675 |
+------------+----------+
1 row in set (0.00 sec)

mysql> SELECT job, MAX(sal), MIN(sal), AVG(sal) FROM employee74 GROUP BY job;
+----------------+----------+----------+----------+
| job            | MAX(sal) | MIN(sal) | AVG(sal) |
+----------------+----------+----------+----------+
| Accountant     |    10200 |     1000 |     3675 |
| Clerk          |     1500 |     1500 |     1500 |
| Hiring Manager |    11200 |    11200 |    11200 |
| Salesman       |    10100 |    10100 |    10100 |
+----------------+----------+----------+----------+
4 rows in set (0.00 sec)

mysql> 
```

19) Compute the difference between maximum and minimum salary.

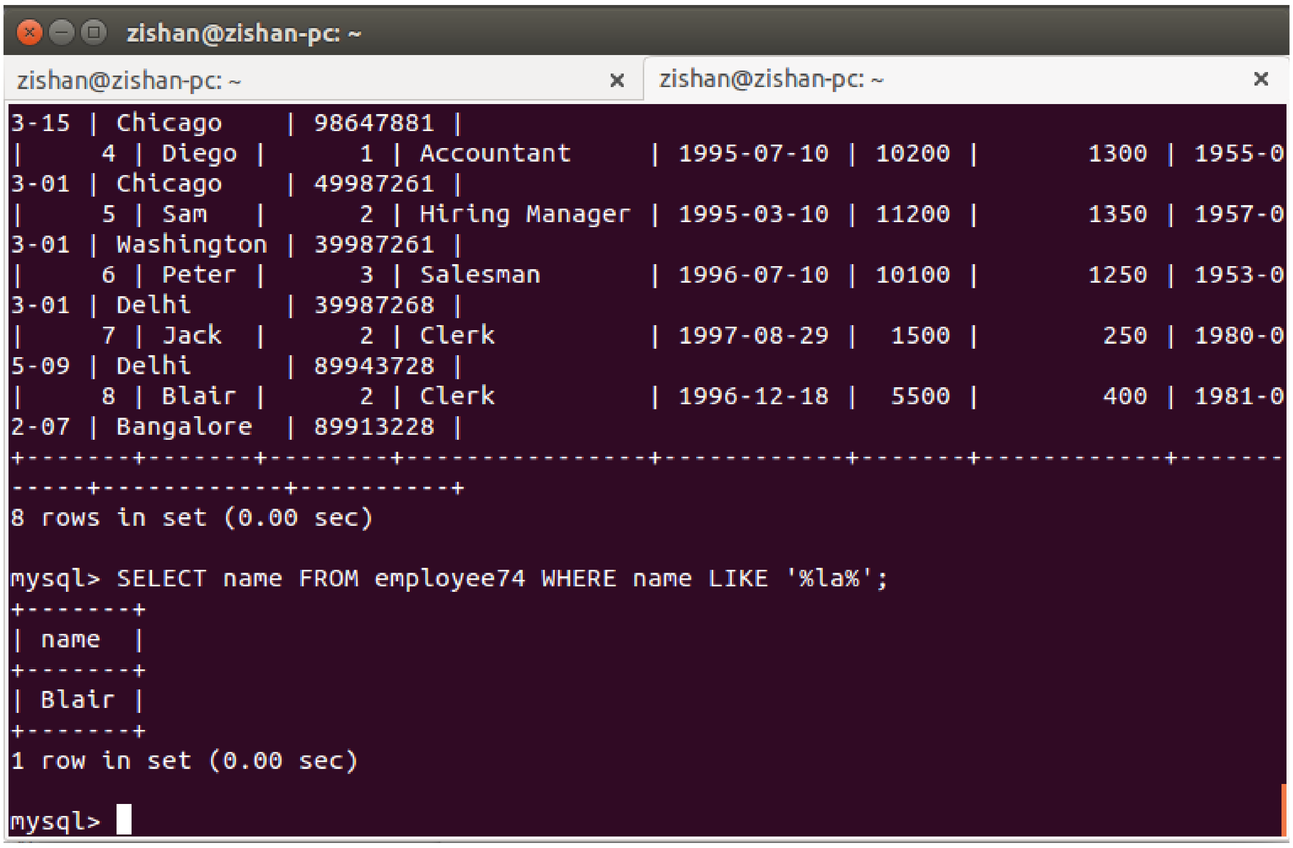
SELECT MAX(sal) - MIN(sal) FROM employee74;



```
| max(sal) |
+----------+
|    11200 |
+----------+
1 row in set (0.00 sec)

mysql>
mysql> select max(sal), min(sal) from employee74;
+----------+----------+
| max(sal) | min(sal) |
+----------+----------+
|    11200 |     1000 |
+----------+----------+
1 row in set (0.00 sec)

mysql> select max(sal)-min(sal) from employee74;
+-------------------+
| max(sal)-min(sal) |
+-------------------+
|             10200 |
+-------------------+
1 row in set (0.00 sec)

mysql>
```

20) List the names of the employees whose name contains LA.

SELECT name FROM employee74 WHERE name LIKE '%la%';



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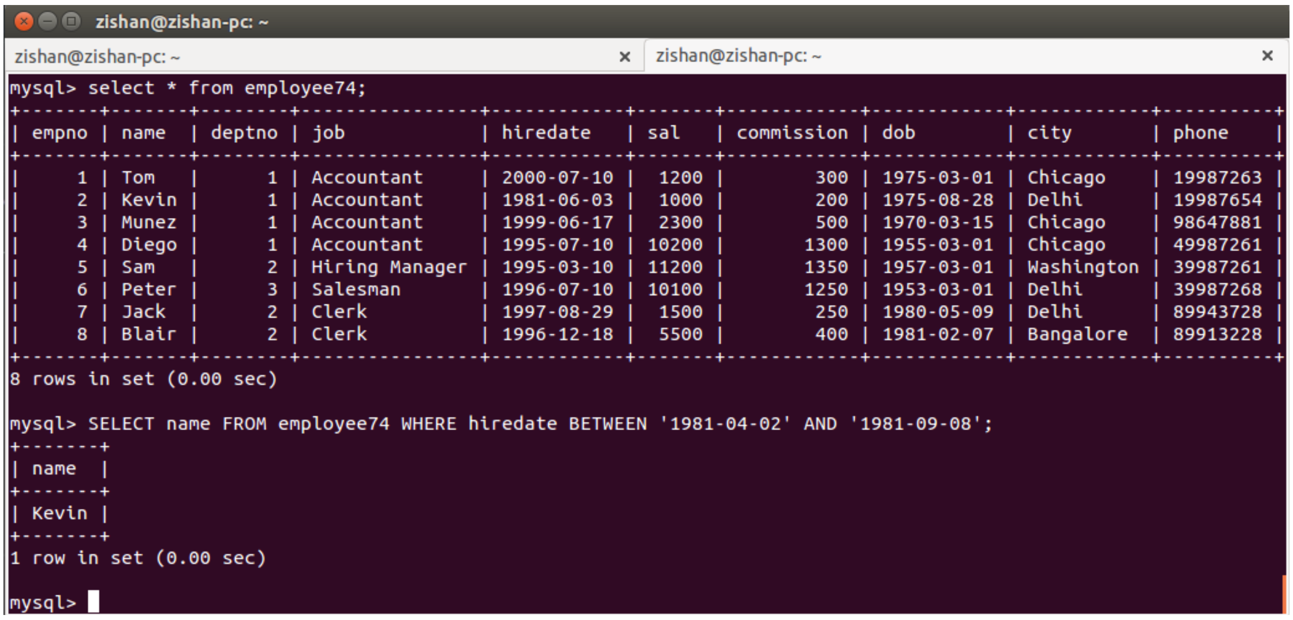
```
3-15 | Chicago    | 98647881 |
|      4 | Diego |        1 | Accountant      | 1995-07-10 | 10200 |        1300 | 1955-0
3-01 | Chicago    | 49987261 |
|      5 | Sam   |        2 | Hiring Manager | 1995-03-10 | 11200 |        1350 | 1957-0
3-01 | Washington | 39987261 |
|      6 | Peter |        3 | Salesman        | 1996-07-10 | 10100 |        1250 | 1953-0
3-01 | Delhi      | 39987268 |
|      7 | Jack  |        2 | Clerk           | 1997-08-29 |  1500 |         250 | 1980-0
5-09 | Delhi      | 89943728 |
|      8 | Blair |        2 | Clerk           | 1996-12-18 |  5500 |         400 | 1981-0
2-07 | Bangalore  | 89913228 |
+-------+-------+--------+----------------+------------+-------+------------+-------
-----+------------+----------+
8 rows in set (0.00 sec)

mysql> SELECT name FROM employee74 WHERE name LIKE '%la%';
+-------+
| name  |
+-------+
| Blair |
+-------+
1 row in set (0.00 sec)

mysql> 
```

21) List the names of the employees whose joining date is between 2nd April,1981 and 8th Sept,1981.

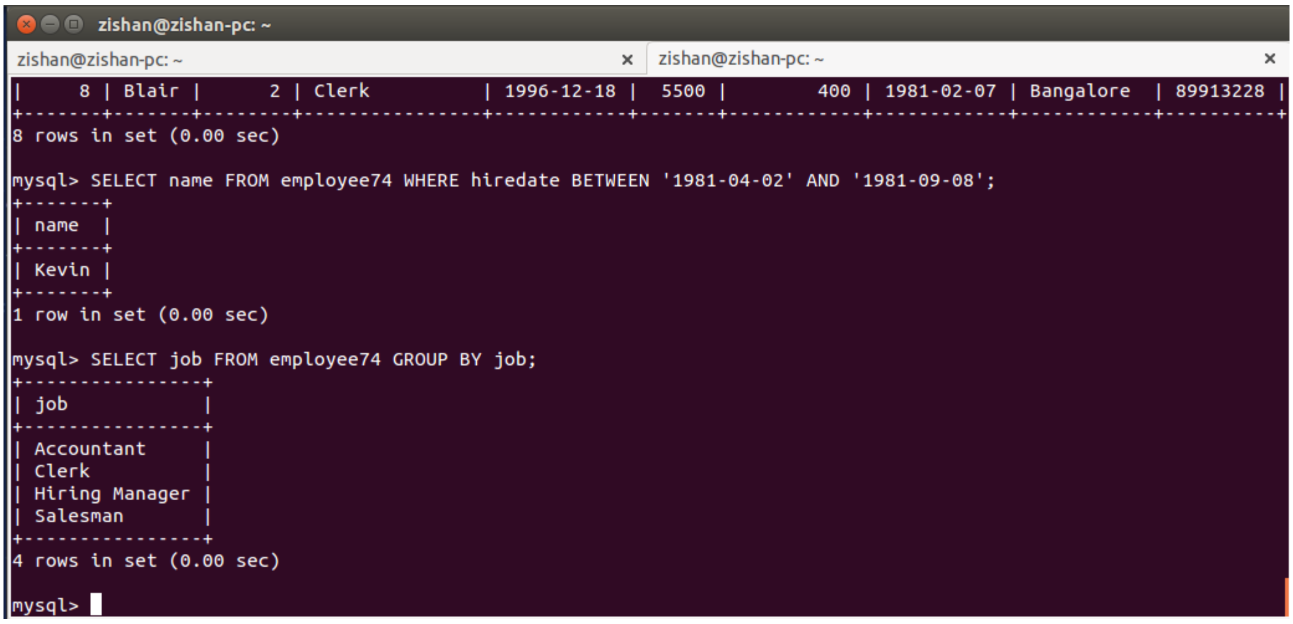
SELECT name FROM employee74 WHERE hitedate
    BETWEEN '1981-04-02' AND '1981-09-08';



```
mysql> select * from employee74;
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 1981-06-03 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
|     8 | Blair |      2 | Clerk          | 1996-12-18 |  5500 |        400 | 1981-02-07 | Bangalore  | 89913228 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
8 rows in set (0.00 sec)

mysql> SELECT name FROM employee74 WHERE hiredate BETWEEN '1981-04-02' AND '1981-09-08';
+-------+
| name  |
+-------+
| Kevin |
+-------+
1 row in set (0.00 sec)

mysql> 
```

22) How many different job titles exist in the employee table?

SELECT job FROM employee74 GROUP BY job;

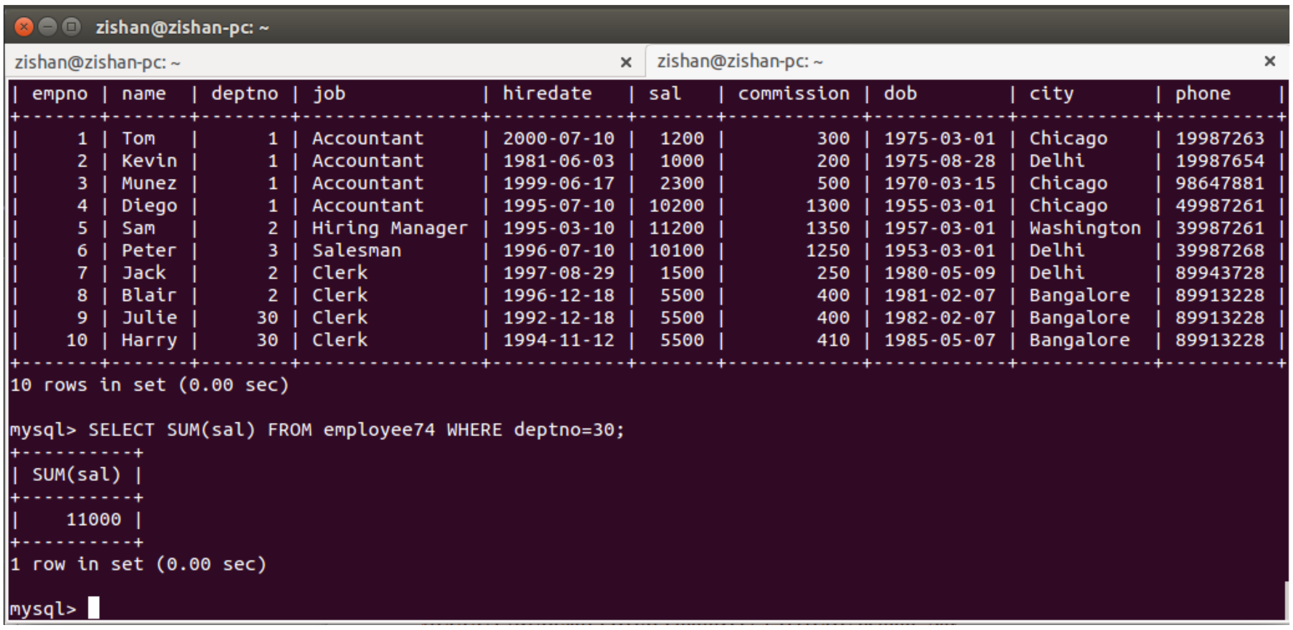


zishan@zishan-pc: ~

```
|     8 | Blair |       2 | Clerk            | 1996-12-18 |  5500 |          400 | 1981-02-07 | Bangalore    | 89913228 |
+-------+-------+--------+-----------------+------------+-------+-------------+------------+------------+----------+
8 rows in set (0.00 sec)

mysql> SELECT name FROM employee74 WHERE hiredate BETWEEN '1981-04-02' AND '1981-09-08';
+-------+
| name  |
+-------+
| Kevin |
+-------+
1 row in set (0.00 sec)

mysql> SELECT job FROM employee74 GROUP BY job;
+----------------+
| job            |
+----------------+
| Accountant     |
| Clerk          |
| Hiring Manager |
| Salesman       |
+----------------+
4 rows in set (0.00 sec)

mysql> 
```

23) Compute the sum of all salaries of employee working under deptno=3 0.

SELECT SUM(sal) FROM employee74 WHERE deptno=30;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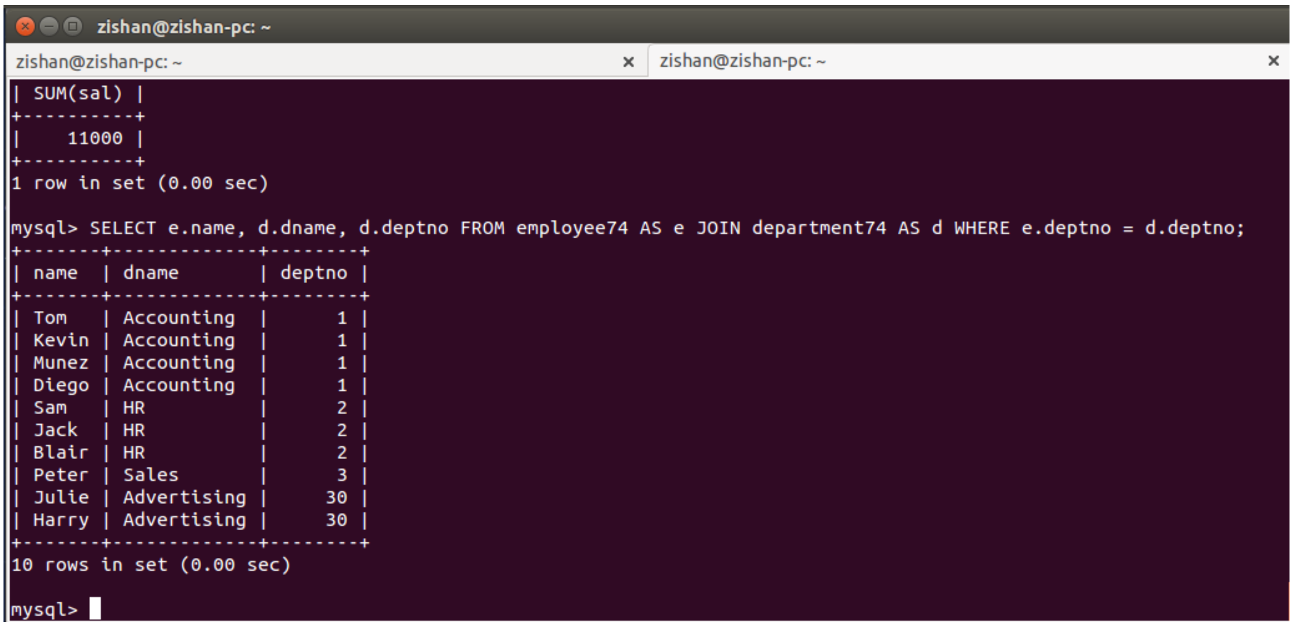
```
| empno | name  | deptno | job            | hiredate   | sal   | commission | dob        | city       | phone    |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
|     1 | Tom   |      1 | Accountant     | 2000-07-10 |  1200 |        300 | 1975-03-01 | Chicago    | 19987263 |
|     2 | Kevin |      1 | Accountant     | 1981-06-03 |  1000 |        200 | 1975-08-28 | Delhi      | 19987654 |
|     3 | Munez |      1 | Accountant     | 1999-06-17 |  2300 |        500 | 1970-03-15 | Chicago    | 98647881 |
|     4 | Diego |      1 | Accountant     | 1995-07-10 | 10200 |       1300 | 1955-03-01 | Chicago    | 49987261 |
|     5 | Sam   |      2 | Hiring Manager | 1995-03-10 | 11200 |       1350 | 1957-03-01 | Washington | 39987261 |
|     6 | Peter |      3 | Salesman       | 1996-07-10 | 10100 |       1250 | 1953-03-01 | Delhi      | 39987268 |
|     7 | Jack  |      2 | Clerk          | 1997-08-29 |  1500 |        250 | 1980-05-09 | Delhi      | 89943728 |
|     8 | Blair |      2 | Clerk          | 1996-12-18 |  5500 |        400 | 1981-02-07 | Bangalore  | 89913228 |
|     9 | Julie |     30 | Clerk          | 1992-12-18 |  5500 |        400 | 1982-02-07 | Bangalore  | 89913228 |
|    10 | Harry |     30 | Clerk          | 1994-11-12 |  5500 |        410 | 1985-05-07 | Bangalore  | 89913228 |
+-------+-------+--------+----------------+------------+-------+------------+------------+------------+----------+
10 rows in set (0.00 sec)

mysql> SELECT SUM(sal) FROM employee74 WHERE deptno=30;
+----------+
| SUM(sal) |
+----------+
|    11000 |
+----------+
1 row in set (0.00 sec)

mysql> 
```

24) For each salesman in the emp table retrieve the deptno and departm ent name.

SELECT e.name, d.dname, d.deptno FROM employee74 AS e
JOIN department74 AS d WHERE e.deptno = d.deptno;



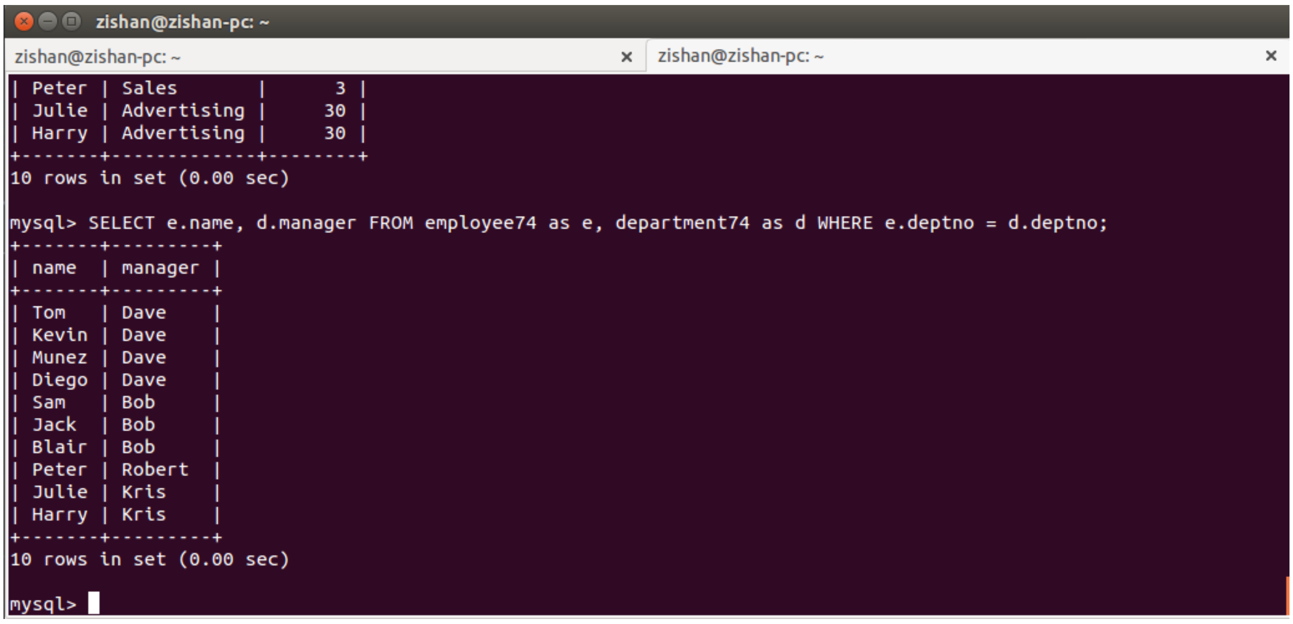
```
| SUM(sal) |
+----------+
|    11000 |
+----------+
1 row in set (0.00 sec)

mysql> SELECT e.name, d.dname, d.deptno FROM employee74 AS e JOIN department74 AS d WHERE e.deptno = d.deptno;
+-------+-------------+--------+
| name  | dname       | deptno |
+-------+-------------+--------+
| Tom   | Accounting  |      1 |
| Kevin | Accounting  |      1 |
| Munez | Accounting  |      1 |
| Diego | Accounting  |      1 |
| Sam   | HR          |      2 |
| Jack  | HR          |      2 |
| Blair | HR          |      2 |
| Peter | Sales       |      3 |
| Julie | Advertising |     30 |
| Harry | Advertising |     30 |
+-------+-------------+--------+
10 rows in set (0.00 sec)

mysql>
```

25) List the names of all the employees with their name of the manager .

```
SELECT e.name, d.manager FROM employee74 as e, department74 as d
        WHERE e.deptno = d.deptno;
```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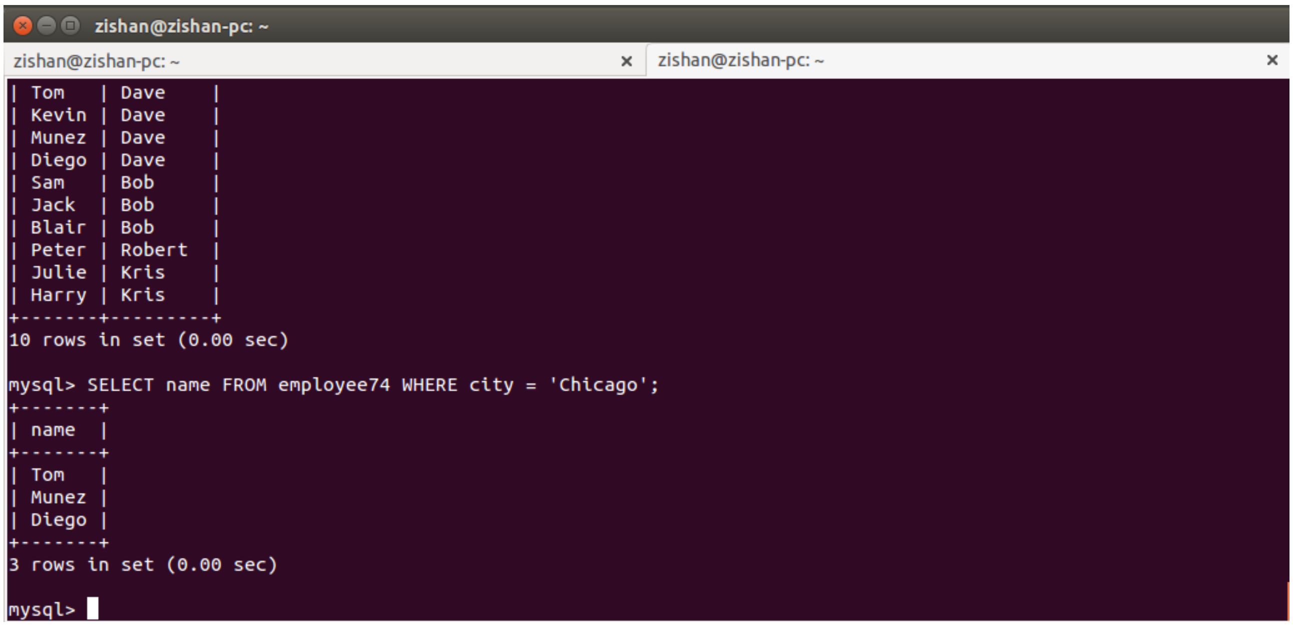
```
| Peter | Sales       |      3 |
| Julie | Advertising |     30 |
| Harry | Advertising |     30 |
+-------+-------------+--------+
10 rows in set (0.00 sec)

mysql> SELECT e.name, d.manager FROM employee74 as e, department74 as d WHERE e.deptno = d.deptno;
+-------+---------+
| name  | manager |
+-------+---------+
| Tom   | Dave    |
| Kevin | Dave    |
| Munez | Dave    |
| Diego | Dave    |
| Sam   | Bob     |
| Jack  | Bob     |
| Blair | Bob     |
| Peter | Robert  |
| Julie | Kris    |
| Harry | Kris    |
+-------+---------+
10 rows in set (0.00 sec)

mysql> 
```

26) List all employees who are working in department located at CHICAG O.

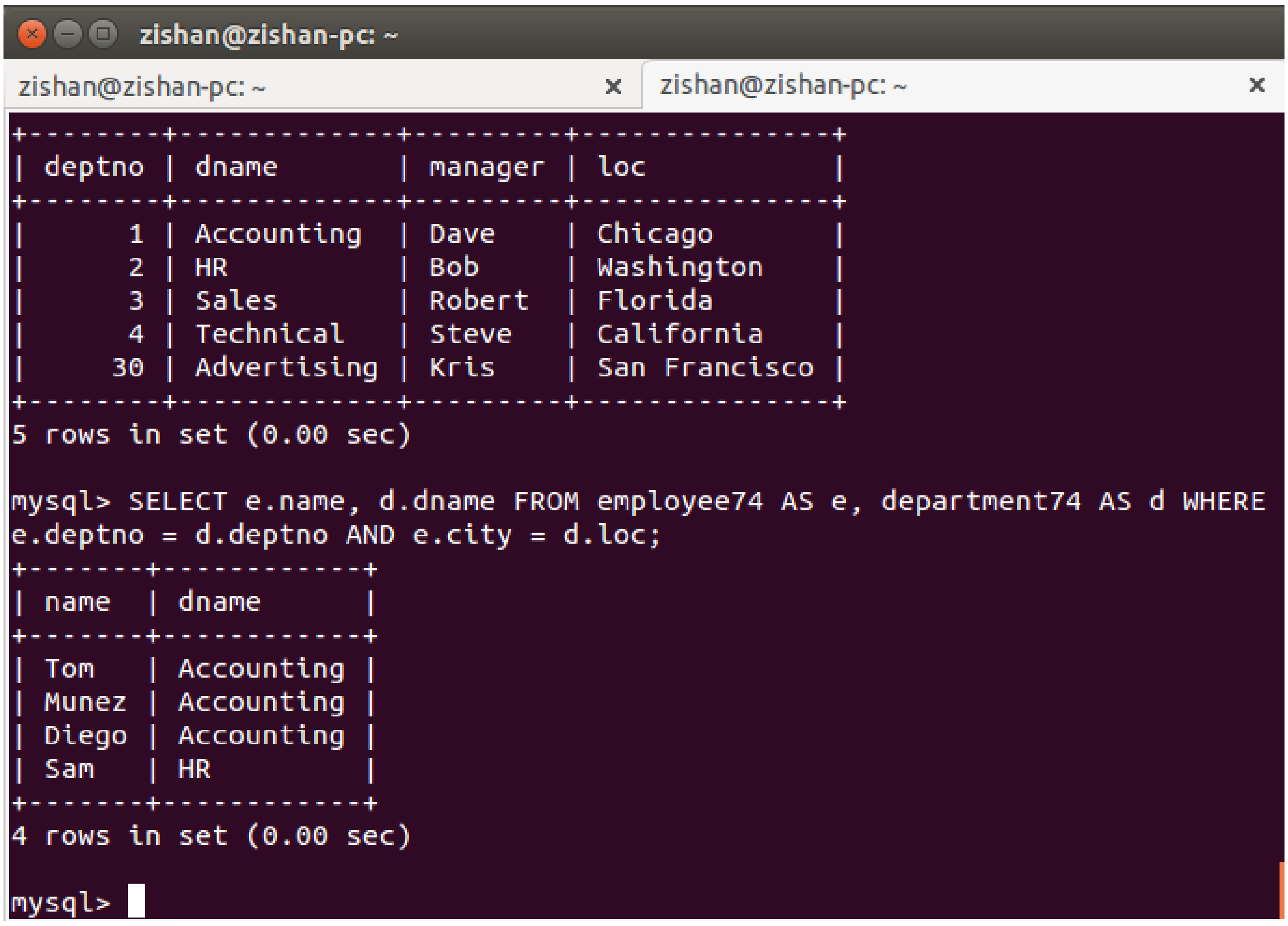
SELECT name FROM employee74 WHERE city = 'Chicago';



```
| Tom   | Dave    |
| Kevin | Dave    |
| Munez | Dave    |
| Diego | Dave    |
| Sam   | Bob     |
| Jack  | Bob     |
| Blair | Bob     |
| Peter | Robert  |
| Julie | Kris    |
| Harry | Kris    |
+-------+---------+
10 rows in set (0.00 sec)

mysql> SELECT name FROM employee74 WHERE city = 'Chicago';
+-------+
| name  |
+-------+
| Tom   |
| Munez |
| Diego |
+-------+
3 rows in set (0.00 sec)

mysql> 
```

27) List all the employees who are working in same department as their managers.

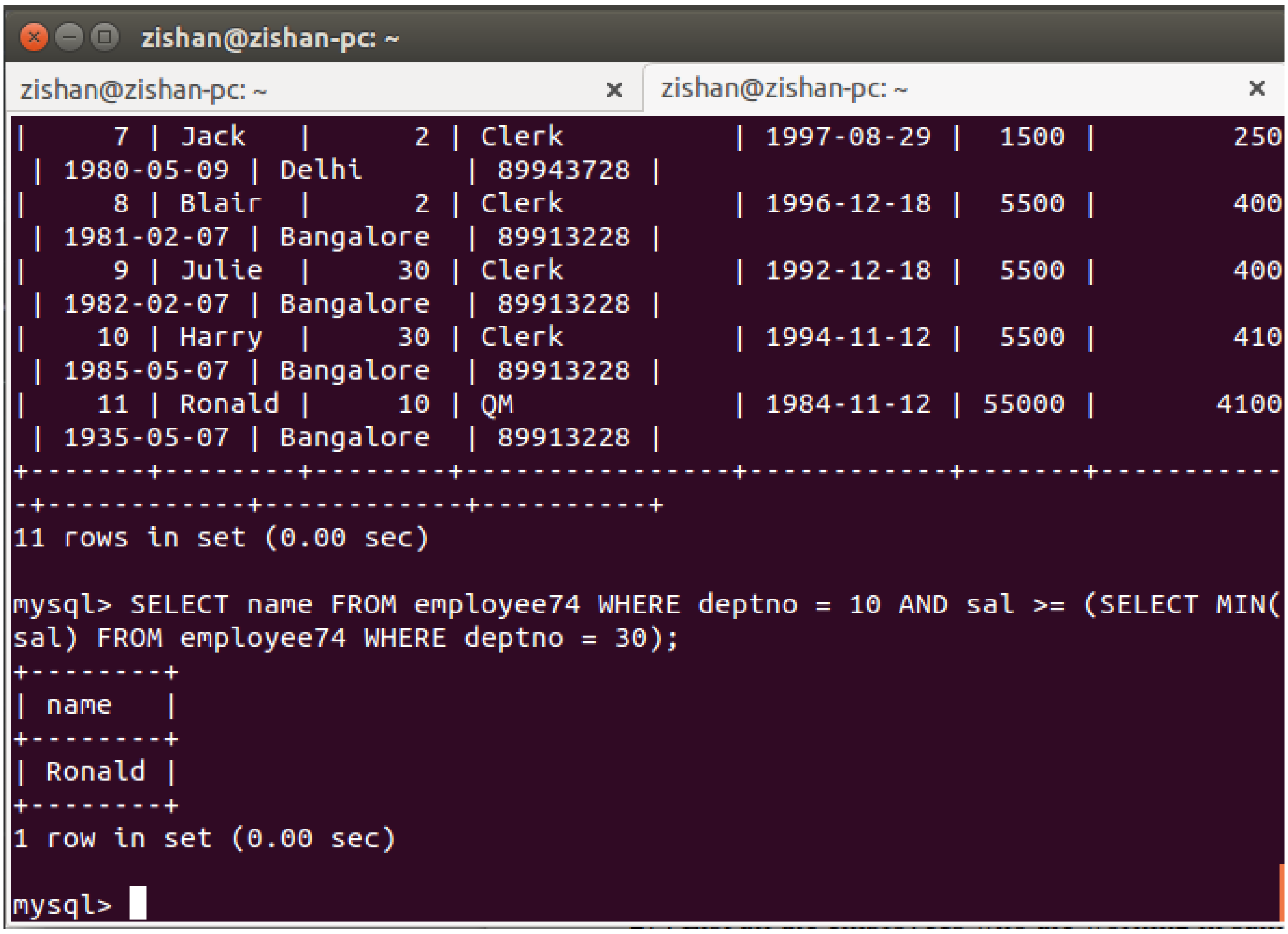
SELECT e.name, d.dname FROM employee74 AS e, department74 AS d
WHERE e.deptno = d.deptno AND e.city = d.loc;



```
+--------+-------------+---------+---------------+
| deptno | dname       | manager | loc           |
+--------+-------------+---------+---------------+
|      1 | Accounting  | Dave    | Chicago       |
|      2 | HR          | Bob     | Washington    |
|      3 | Sales       | Robert  | Florida       |
|      4 | Technical   | Steve   | California    |
|     30 | Advertising | Kris    | San Francisco |
+--------+-------------+---------+---------------+
5 rows in set (0.00 sec)

mysql> SELECT e.name, d.dname FROM employee74 AS e, department74 AS d WHERE
e.deptno = d.deptno AND e.city = d.loc;
+-------+------------+
| name  | dname      |
+-------+------------+
| Tom   | Accounting |
| Munez | Accounting |
| Diego | Accounting |
| Sam   | HR         |
+-------+------------+
4 rows in set (0.00 sec)

mysql> 
```

28) Retrieve all the employees who are working in deptno=10 and who ea rn salary atleast as much as any employee working in deptno=30.

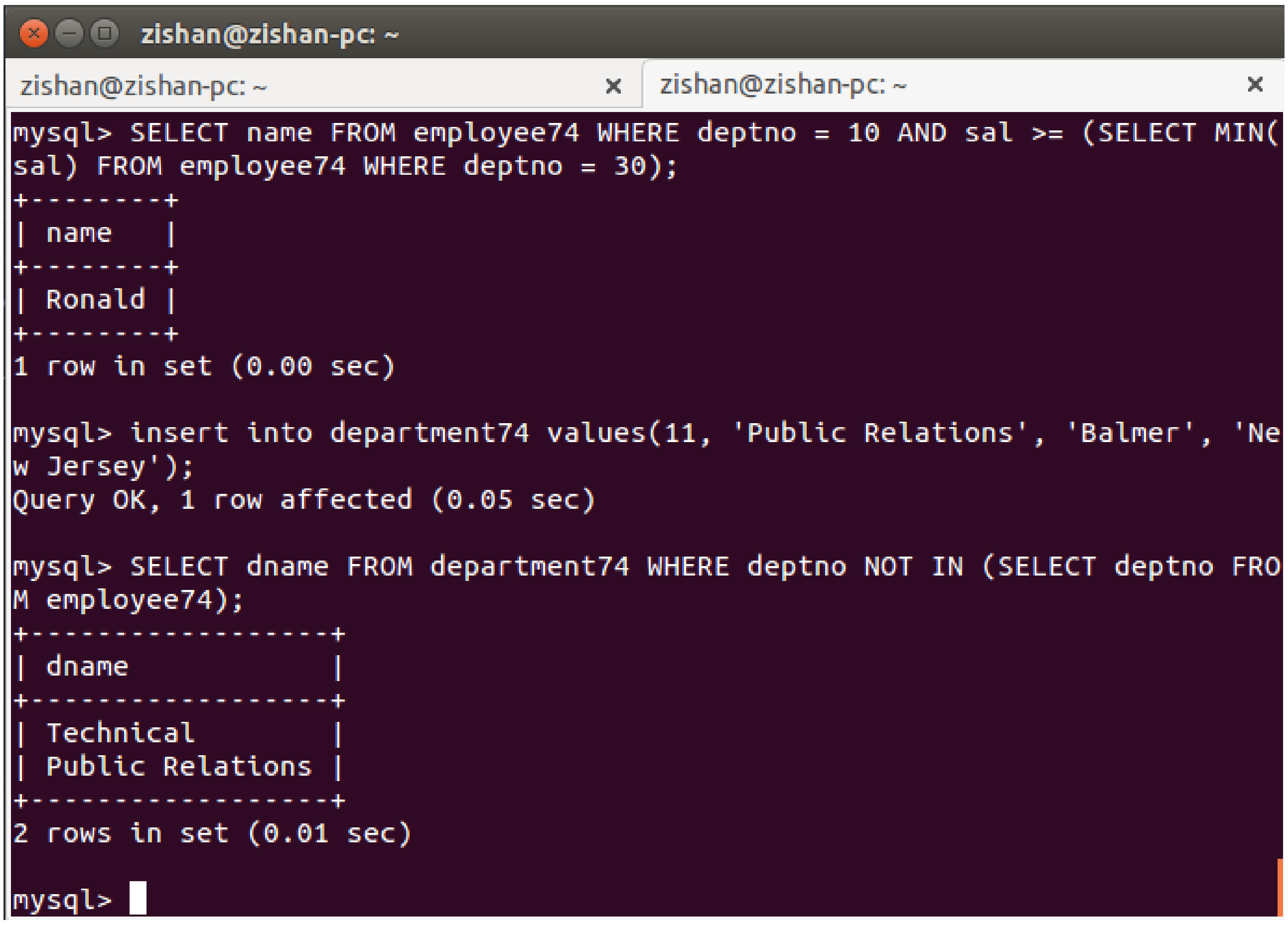
```
SELECT name FROM employee74 WHERE deptno = 10
        AND sal >= (
                SELECT MIN(sal) FROM employee74 WHERE deptno = 30
);
```



```
|      7 | Jack    |       2 | Clerk           | 1997-08-29 |   1500 |        250
 | 1980-05-09 | Delhi        | 89943728 |
|      8 | Blair   |       2 | Clerk           | 1996-12-18 |   5500 |        400
 | 1981-02-07 | Bangalore    | 89913228 |
|      9 | Julie   |      30 | Clerk           | 1992-12-18 |   5500 |        400
 | 1982-02-07 | Bangalore    | 89913228 |
|     10 | Harry   |      30 | Clerk           | 1994-11-12 |   5500 |        410
 | 1985-05-07 | Bangalore    | 89913228 |
|     11 | Ronald  |      10 | QM              | 1984-11-12 |  55000 |       4100
 | 1935-05-07 | Bangalore    | 89913228 |
+--------+---------+--------+-----------------+------------+--------+-----------
-+------------+------------+----------+
11 rows in set (0.00 sec)

mysql> SELECT name FROM employee74 WHERE deptno = 10 AND sal >= (SELECT MIN(
sal) FROM employee74 WHERE deptno = 30);
+--------+
| name   |
+--------+
| Ronald |
+--------+
1 row in set (0.00 sec)

mysql> 
```

29) List all the department who have no employees

```
SELECT dname FROM department74 WHERE deptno
        NOT IN (
                SELECT deptno FROM employee74
);
```



zishan@zishan-pc: ~

zishan@zishan-pc: ~

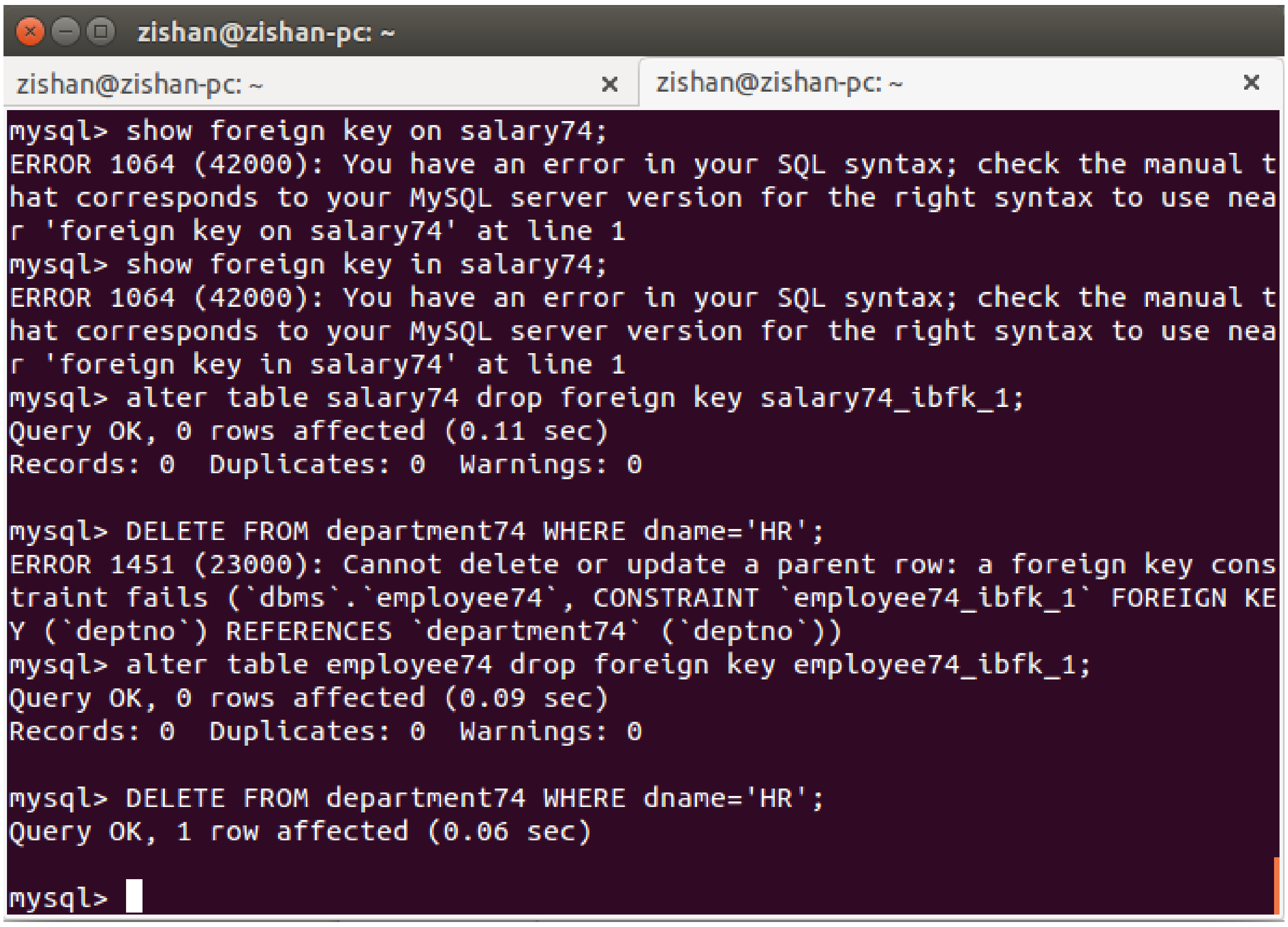
zishan@zishan-pc: ~

```
mysql> SELECT name FROM employee74 WHERE deptno = 10 AND sal >= (SELECT MIN(
sal) FROM employee74 WHERE deptno = 30);
+--------+
| name   |
+--------+
| Ronald |
+--------+
1 row in set (0.00 sec)

mysql> insert into department74 values(11, 'Public Relations', 'Balmer', 'Ne
w Jersey');
Query OK, 1 row affected (0.05 sec)

mysql> SELECT dname FROM department74 WHERE deptno NOT IN (SELECT deptno FRO
M employee74);
+------------------+
| dname            |
+------------------+
| Technical        |
| Public Relations |
+------------------+
2 rows in set (0.01 sec)

mysql> 
```

30) Delete the HR department.

ALTER TABLE employee74 DROP FOREIGN KEY employee74_ibfk_1;
ALTER TABLE salary74 DROP FOREIGN KEY salary74_ibfk_1;
DELETE FROM department74 WHERE dname='HR';

NOTE: Each table name end with your roll no. e.g. roll no is 11CSS23 t
hen table name should be Employee123.

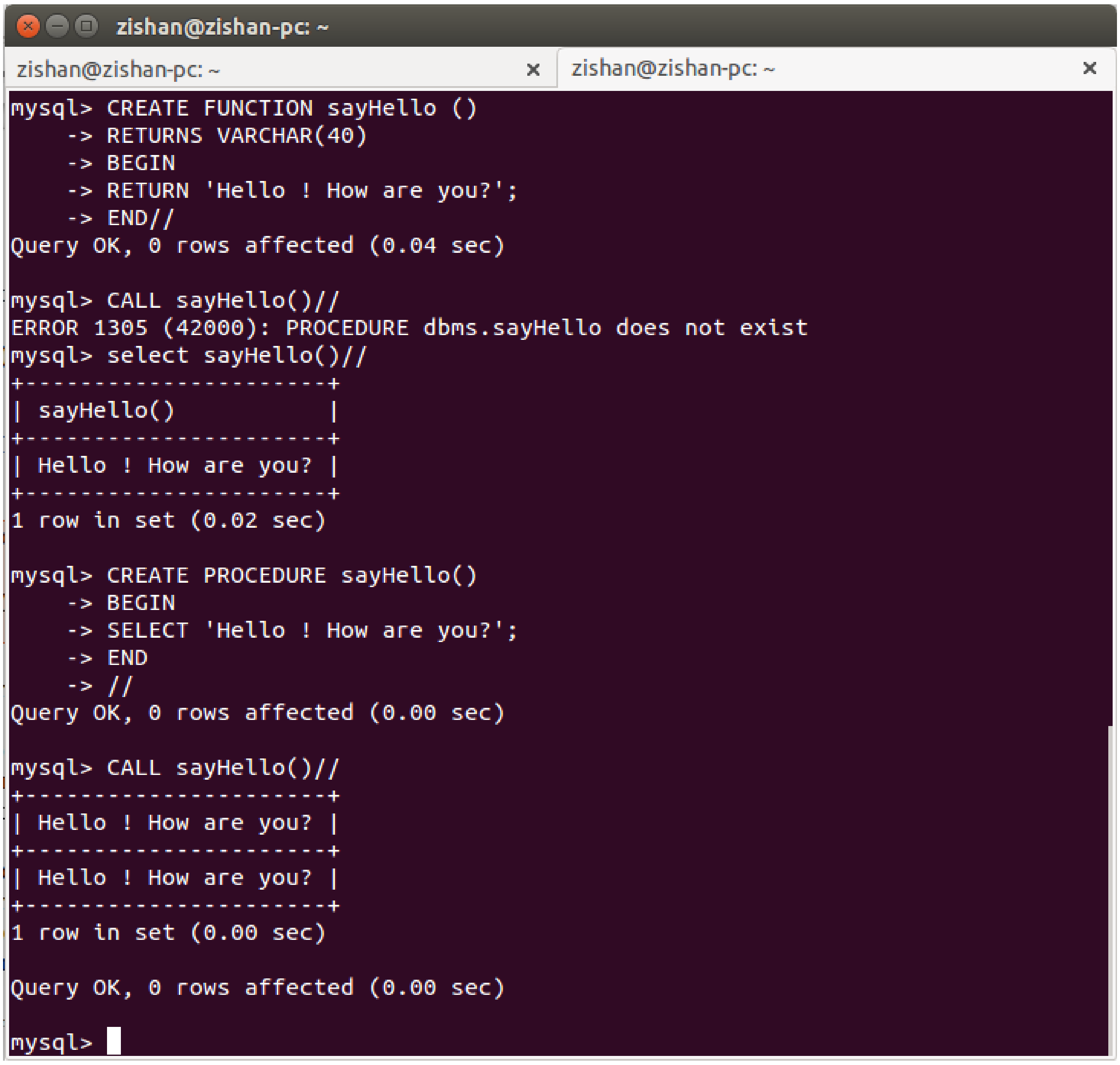


```
mysql> show foreign key on salary74;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual t
hat corresponds to your MySQL server version for the right syntax to use nea
r 'foreign key on salary74' at line 1
mysql> show foreign key in salary74;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual t
hat corresponds to your MySQL server version for the right syntax to use nea
r 'foreign key in salary74' at line 1
mysql> alter table salary74 drop foreign key salary74_ibfk_1;
Query OK, 0 rows affected (0.11 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DELETE FROM department74 WHERE dname='HR';
ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key cons
traint fails (`dbms`.`employee74`, CONSTRAINT `employee74_ibfk_1` FOREIGN KE
Y (`deptno`) REFERENCES `department74` (`deptno`))
mysql> alter table employee74 drop foreign key employee74_ibfk_1;
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DELETE FROM department74 WHERE dname='HR';
Query OK, 1 row affected (0.06 sec)

mysql> 
```

Q2.

i. Write a function and a stored procedure to print Hello ! How are you?.

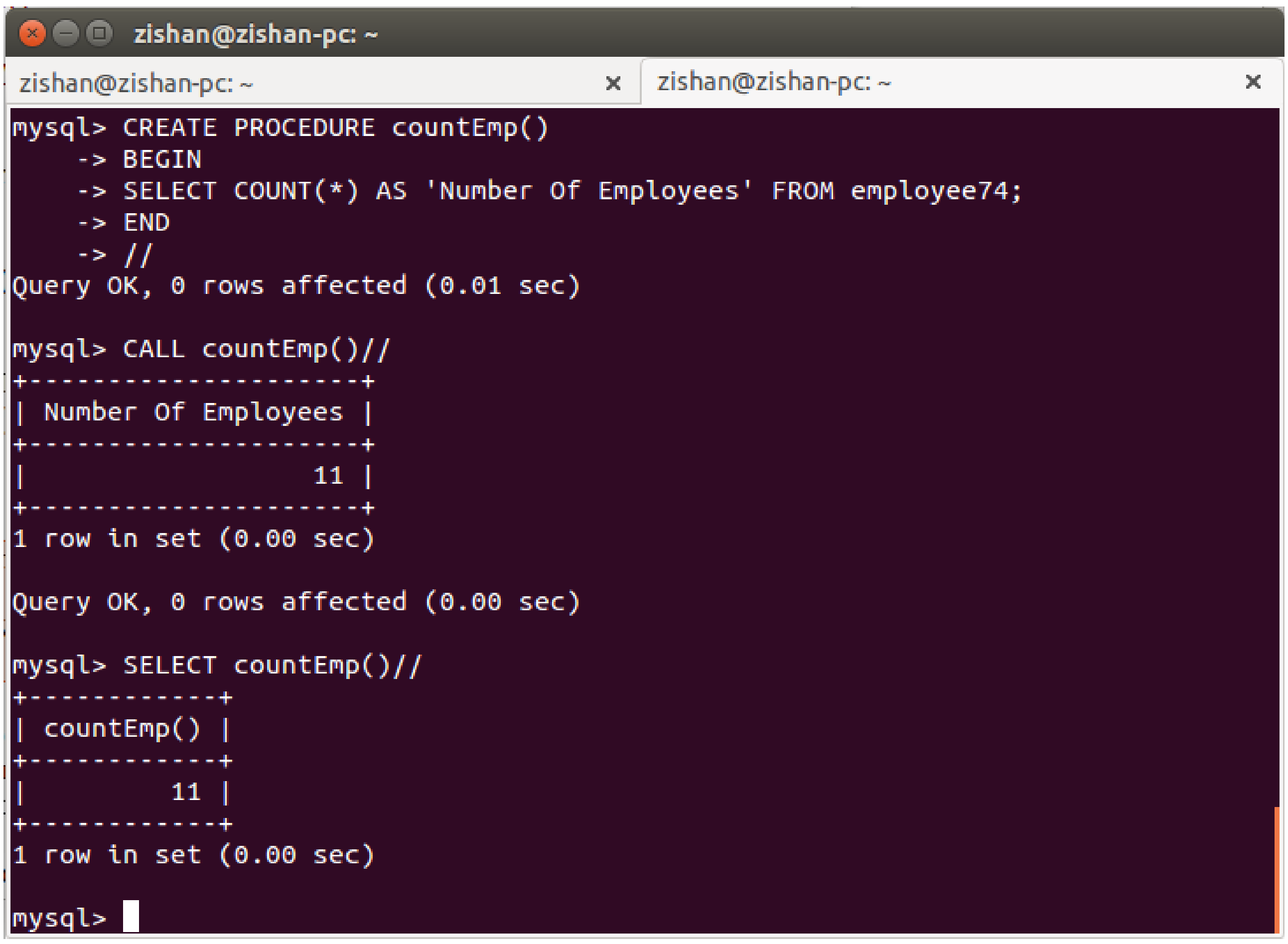
```
CREATE FUNCTION sayHello ()
RETURNS VARCHAR(40)
        BEGIN
                RETURN 'Hello ! How are you?';
        END

CREATE PROCEDURE sayHello()
BEGIN
        SELECT 'Hello ! How are you?';
END
```



```
mysql> CREATE FUNCTION sayHello ()
    -> RETURNS VARCHAR(40)
    -> BEGIN
    -> RETURN 'Hello ! How are you?';
    -> END//
Query OK, 0 rows affected (0.04 sec)

mysql> CALL sayHello()//
ERROR 1305 (42000): PROCEDURE dbms.sayHello does not exist
mysql> select sayHello()//
+----------------------+
| sayHello()           |
+----------------------+
| Hello ! How are you? |
+----------------------+
1 row in set (0.02 sec)

mysql> CREATE PROCEDURE sayHello()
    -> BEGIN
    -> SELECT 'Hello ! How are you?';
    -> END
    -> //
Query OK, 0 rows affected (0.00 sec)

mysql> CALL sayHello()//
+----------------------+
| Hello ! How are you? |
+----------------------+
| Hello ! How are you? |
+----------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> 
```

ii. Write a function and a stored procedure to count the number of employees in the table employee.

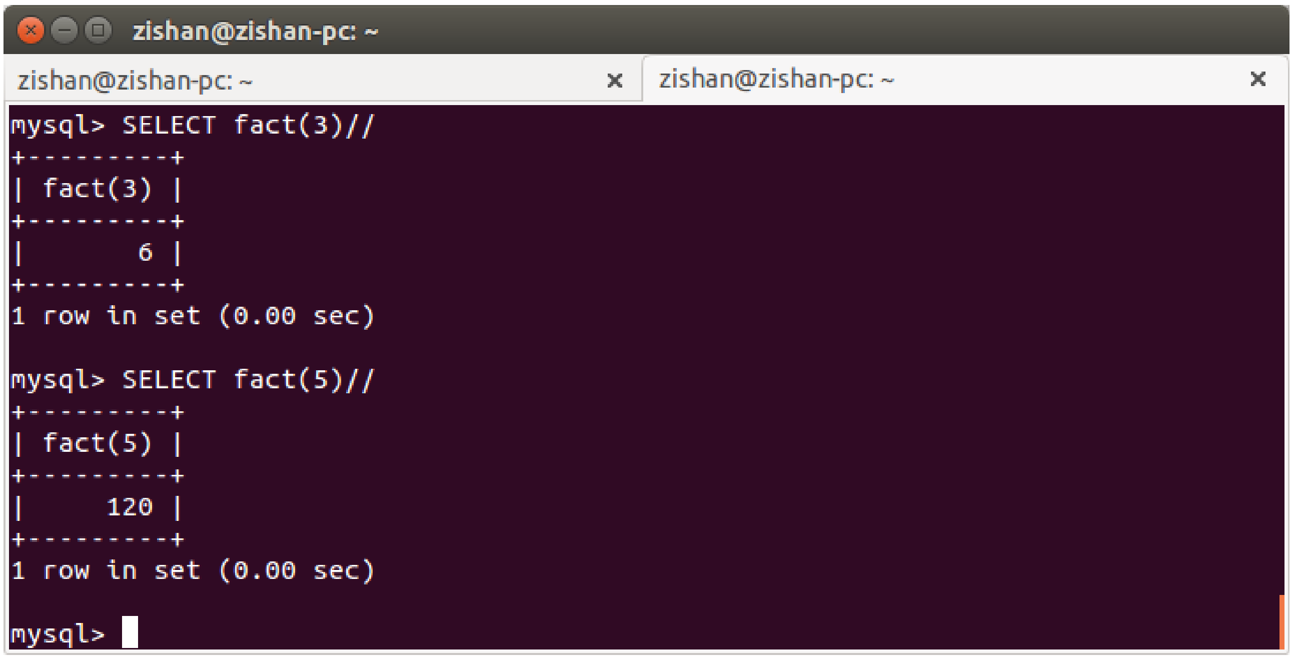
```
CREATE FUNCTION countEmp()
RETURNS INT
        BEGIN
                DECLARE num INT DEFAULT 0;
                SELECT COUNT(*) FROM employee74 INTO num;
                RETURN num;
        END

CREATE PROCEDURE countEmp()
BEGIN
        SELECT COUNT(*) AS 'Number Of Employees' FROM employee74;
END
```



```
mysql> CREATE PROCEDURE countEmp()
    -> BEGIN
    -> SELECT COUNT(*) AS 'Number Of Employees' FROM employee74;
    -> END
    -> //
Query OK, 0 rows affected (0.01 sec)

mysql> CALL countEmp()//
+---------------------+
| Number Of Employees |
+---------------------+
|                  11 |
+---------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> SELECT countEmp()//
+------------+
| countEmp() |
+------------+
|         11 |
+------------+
1 row in set (0.00 sec)

mysql> 
```

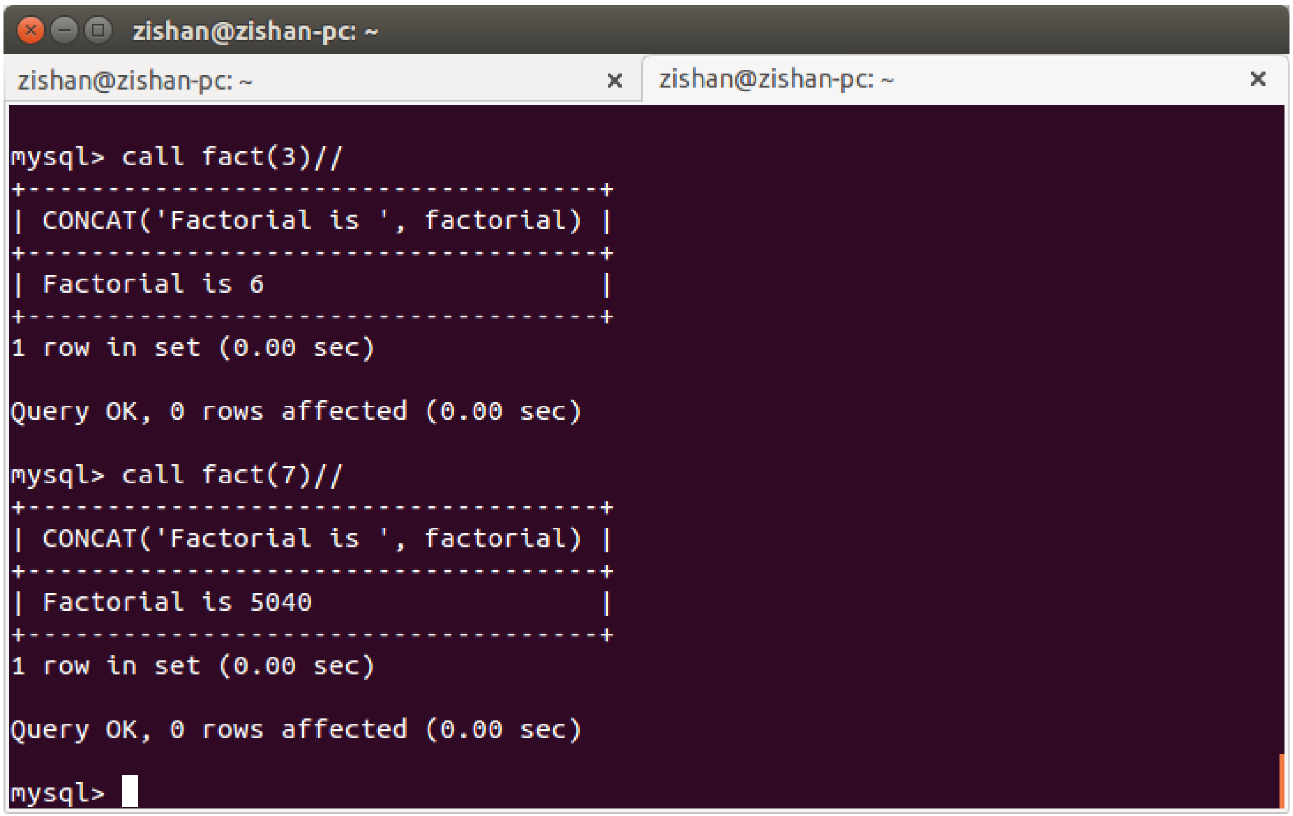
iii. Write a function and a stored procedure to calculate the factorial of the given number.

```
CREATE FUNCTION fact(num INT)
RETURNS INT
        BEGIN
                IF num = 0 THEN RETURN (num+1) END IF;
                DECLARE factorial INT DEFAULT 1;
                WHILE num > 1 DO
                        SET factorial = factorial * num;
                        SET num = num - 1;
                END WHILE;
                RETURN factorial;
        END
```



```
mysql> SELECT fact(3)//
+---------+
| fact(3) |
+---------+
|       6 |
+---------+
1 row in set (0.00 sec)

mysql> SELECT fact(5)//
+---------+
| fact(5) |
+---------+
|     120 |
+---------+
1 row in set (0.00 sec)

mysql> 
```

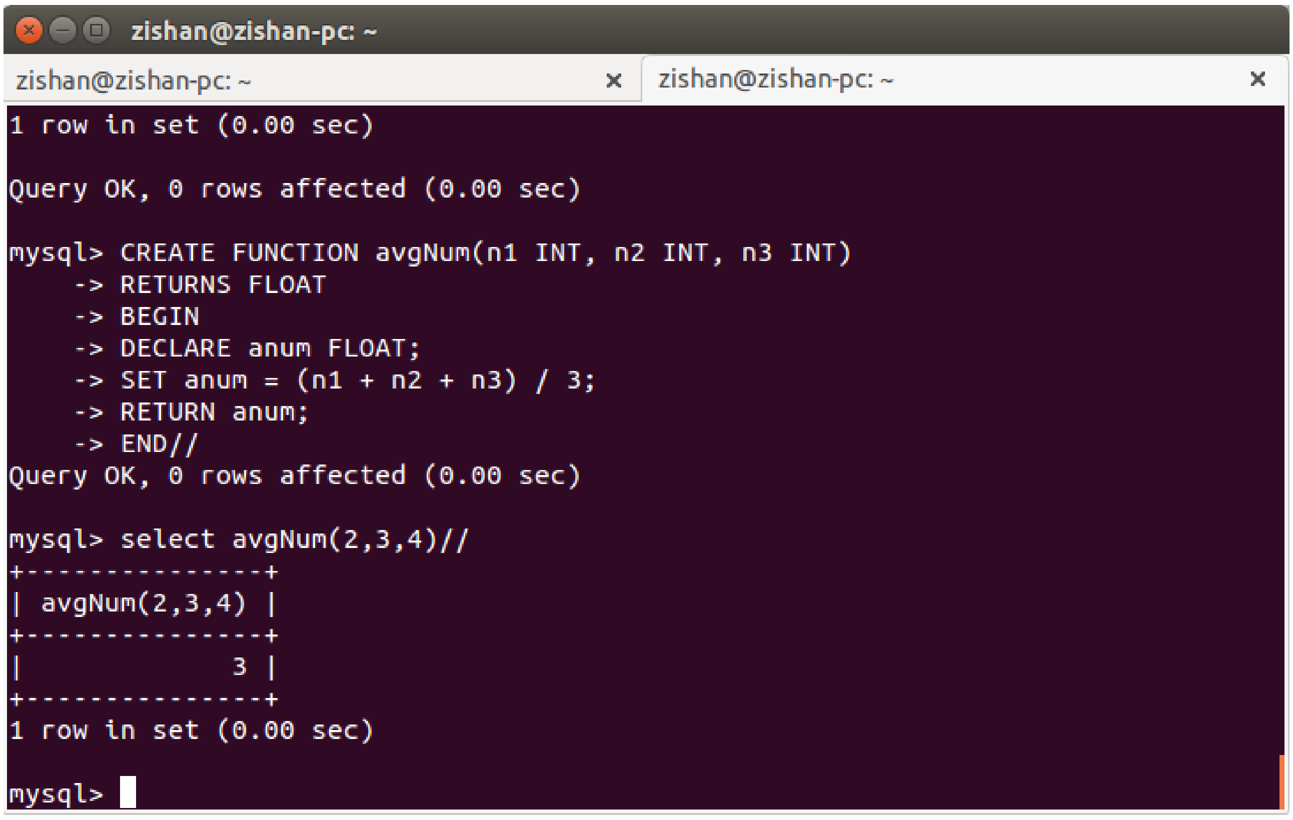
```
CREATE PROCEDURE fact (IN num INT)
BEGIN
        DECLARE factorial INT DEFAULT 1;
        IF num = 0 THEN
                SELECT 'Factorial is 1';
        ELSE
                WHILE num > 1 DO
                        SET factorial = factorial * num;
                        SET num = num - 1;
                END WHILE;
                SELECT CONCAT('Factorial is ', factorial);
        END IF;
END
```



```
mysql> call fact(3)//
+------------------------------------+
| CONCAT('Factorial is ', factorial) |
+------------------------------------+
| Factorial is 6                     |
+------------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> call fact(7)//
+------------------------------------+
| CONCAT('Factorial is ', factorial) |
+------------------------------------+
| Factorial is 5040                  |
+------------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> 
```

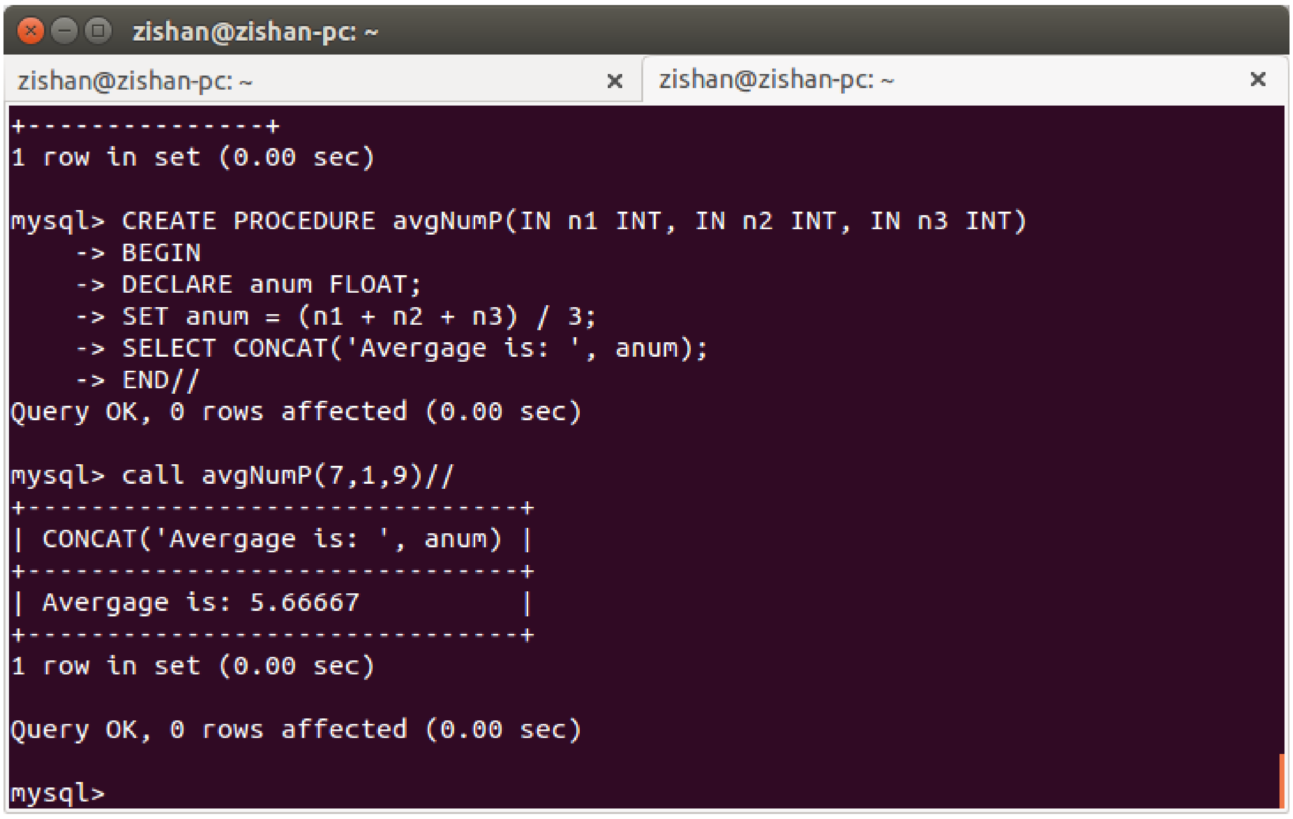
iv. Write a function and a stored procedure to calculate the average of three numbers.

```
CREATE FUNCTION avgNum(n1 INT, n2 INT, n3 INT)
RETURNS FLOAT
BEGIN
        DECLARE anum FLOAT;
        SET anum = (n1 + n2 + n3) / 3;
        RETURN anum;
END
```



```
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> CREATE FUNCTION avgNum(n1 INT, n2 INT, n3 INT)
    -> RETURNS FLOAT
    -> BEGIN
    -> DECLARE anum FLOAT;
    -> SET anum = (n1 + n2 + n3) / 3;
    -> RETURN anum;
    -> END//
Query OK, 0 rows affected (0.00 sec)

mysql> select avgNum(2,3,4)//
+---------------+
| avgNum(2,3,4) |
+---------------+
|             3 |
+---------------+
1 row in set (0.00 sec)

mysql> 
```

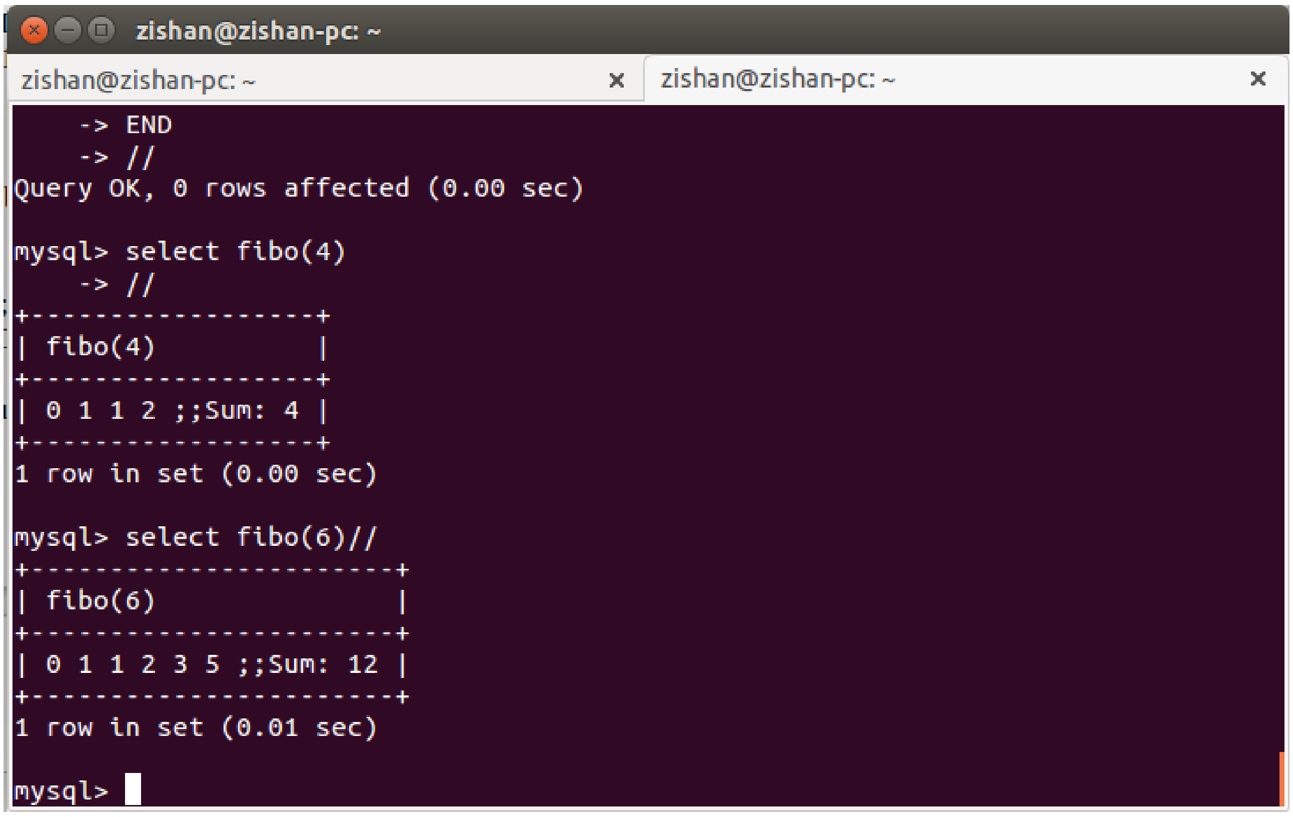
```
CREATE PROCEDURE avgNumP(IN n1 INT, IN n2 INT, IN n3 INT)
BEGIN
        DECLARE anum FLOAT;
        SET anum = (n1 + n2 + n3) / 3;
        SELECT CONCAT('Avergage is: ', anum);
END
```



```
+---------------+
1 row in set (0.00 sec)

mysql> CREATE PROCEDURE avgNumP(IN n1 INT, IN n2 INT, IN n3 INT)
    -> BEGIN
    -> DECLARE anum FLOAT;
    -> SET anum = (n1 + n2 + n3) / 3;
    -> SELECT CONCAT('Avergage is: ', anum);
    -> END//
Query OK, 0 rows affected (0.00 sec)

mysql> call avgNumP(7,1,9)//
+--------------------------------+
| CONCAT('Avergage is: ', anum) |
+--------------------------------+
| Avergage is: 5.66667          |
+--------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

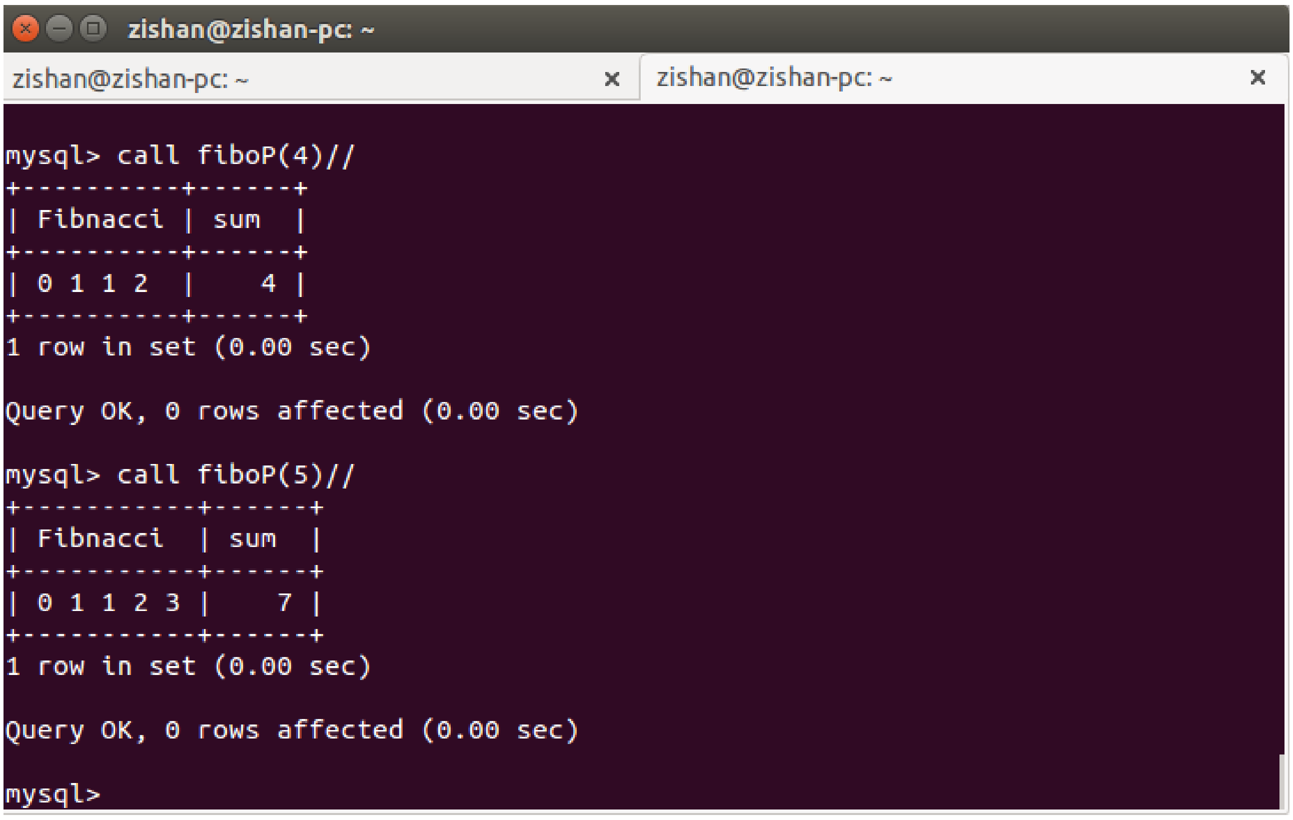
v. Write a function and stored procedure to find fibonacci series and its sum.

```
CREATE FUNCTION fibo (num INT)
RETURNS VARCHAR(100)
BEGIN
        DECLARE n1 INT DEFAULT 0;
        DECLARE n2 INT DEFAULT 1;
        DECLARE fib INT DEFAULT 0;
        DECLARE sum INT DEFAULT 1;
        DECLARE output VARCHAR(100) DEFAULT ' ';
        SET output =  CONCAT(n1, ' ', n2);
        SET num = num - 2;
        WHILE num > 0 DO
                SET fib = n1 + n2;
                SET sum = sum + fib;
                SET n1= n2;
                SET n2 = fib;
                SET num = num - 1;
                SET output = CONCAT(output, ' ',n2);
        END WHILE;
        SET output = CONCAT(output, ' ;;Sum: ',sum);
        RETURN output;
END
```


zishan@zishan-pc: ~

```
    -> END
    -> //
Query OK, 0 rows affected (0.00 sec)

mysql> select fibo(4)
    -> //
+-------------------+
| fibo(4)           |
+-------------------+
| 0 1 1 2 ;;Sum: 4 |
+-------------------+
1 row in set (0.00 sec)

mysql> select fibo(6)//
+------------------------+
| fibo(6)                |
+------------------------+
| 0 1 1 2 3 5 ;;Sum: 12 |
+------------------------+
1 row in set (0.01 sec)

mysql> 
```

```
CREATE PROCEDURE fiboP (IN num INT)
BEGIN
        DECLARE n1 INT DEFAULT 0;
        DECLARE n2 INT DEFAULT 1;
        DECLARE fib INT DEFAULT 0;
        DECLARE sum INT DEFAULT 1;
        DECLARE output VARCHAR(100) DEFAULT ' ';
        SET output =  CONCAT(n1, ' ', n2);
        SET num = num - 2;
        WHILE num > 0 DO
                SET fib = n1 + n2;
                SET sum = sum + fib;
                SET n1= n2;
                SET n2 = fib;
                SET num = num - 1;
                SET output = CONCAT(output, ' ',n2);
        END WHILE;
        SELECT output AS Fibnacci, sum;
END
```



zishan@zishan-pc: ~

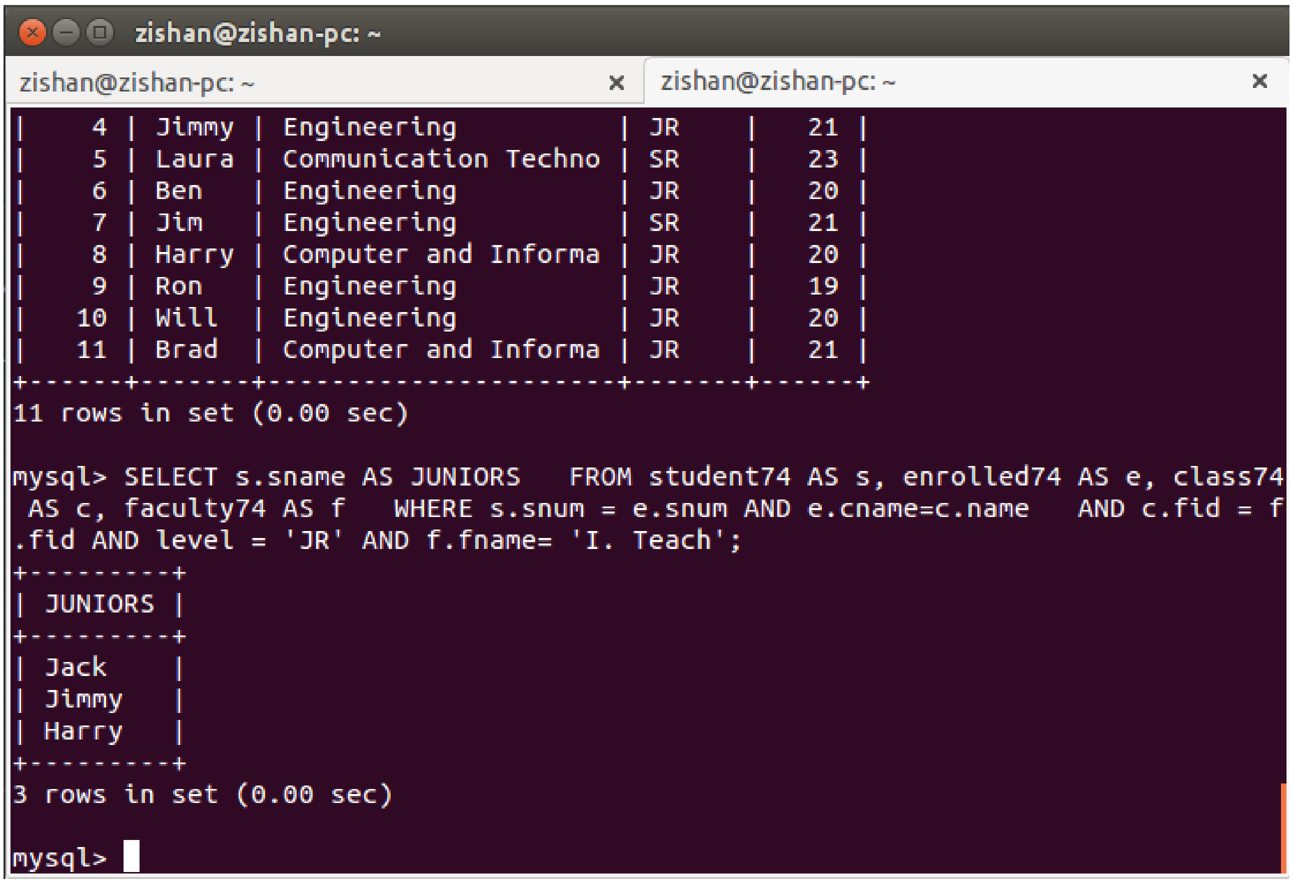
```
mysql> call fiboP(4)//
+----------+------+
| Fibnacci | sum  |
+----------+------+
| 0 1 1 2  |    4 |
+----------+------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> call fiboP(5)//
+-----------+------+
| Fibnacci  | sum  |
+-----------+------+
| 0 1 1 2 3 |    7 |
+-----------+------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

Q3. Consider the following relations
Student (snum: integer, sname: string, major: string, level: string, age: integer),
Class (name: string, meets_at: time, room: string, fid: integer).
Enrolled (snum: integer, cname: string).
Faculty (fid: intger, fname: string, deptid: integer);

Enrolled has on record per student class pair such that the student is enrolled in the class.

Write the SQL queries. No duplicates should be printed.(use foreign key)
1. Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach.

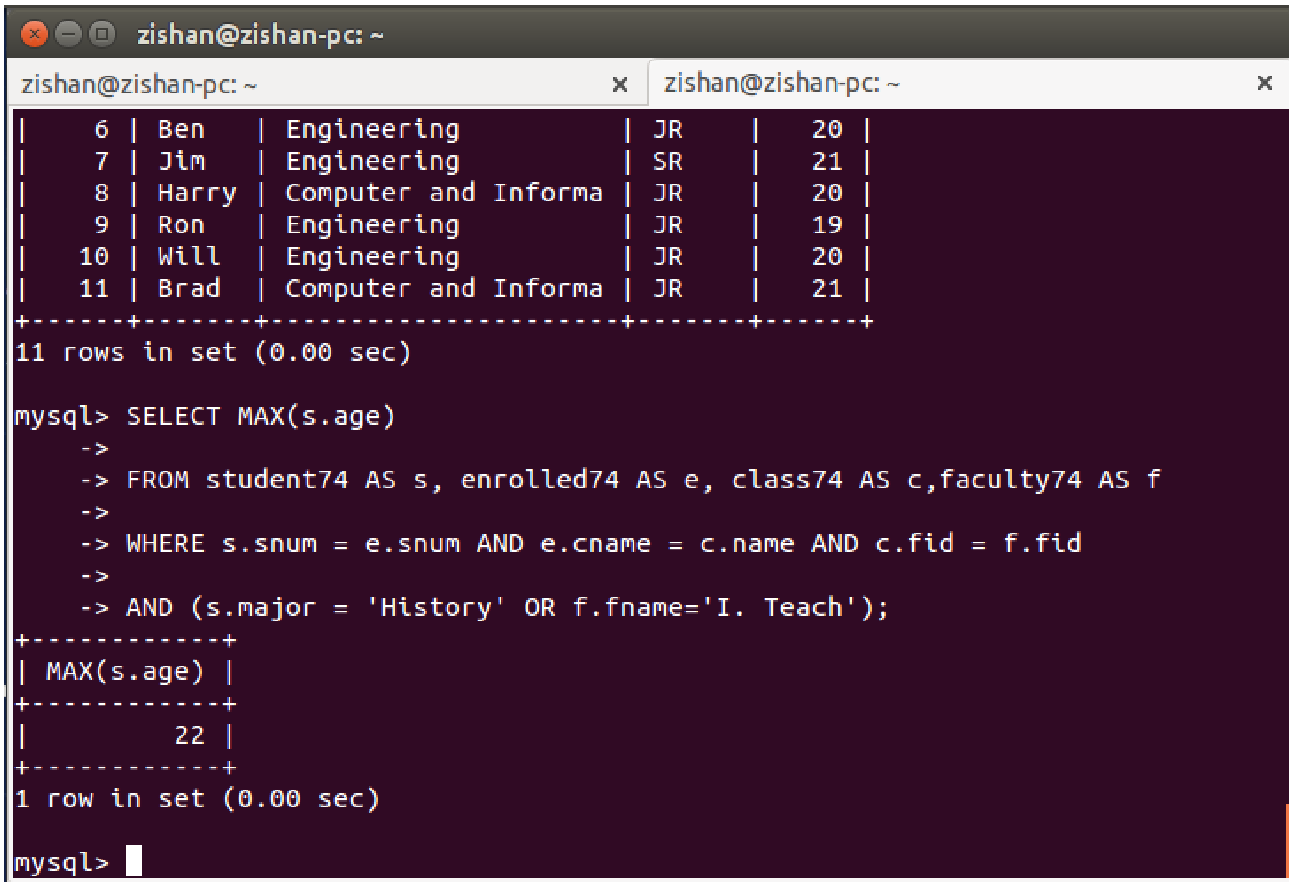
```
SELECT s.sname AS JUNIORS
        FROM student74 AS s, enrolled74 AS e, class74 AS c, faculty74 AS f
        WHERE s.snum = e.snum AND e.cname=c.name
AND c.fid = f.fid AND level = 'JR' AND f.fname= 'I. Teach';
```



```
|     4 | Jimmy | Engineering             | JR     |    21 |
|     5 | Laura | Communication Techno    | SR     |    23 |
|     6 | Ben   | Engineering             | JR     |    20 |
|     7 | Jim   | Engineering             | SR     |    21 |
|     8 | Harry | Computer and Informa    | JR     |    20 |
|     9 | Ron   | Engineering             | JR     |    19 |
|    10 | Will  | Engineering             | JR     |    20 |
|    11 | Brad  | Computer and Informa    | JR     |    21 |
+-------+-------+-------------------------+--------+-------+
11 rows in set (0.00 sec)

mysql> SELECT s.sname AS JUNIORS   FROM student74 AS s, enrolled74 AS e, class74
 AS c, faculty74 AS f   WHERE s.snum = e.snum AND e.cname=c.name   AND c.fid = f
.fid AND level = 'JR' AND f.fname= 'I. Teach';
+----------+
| JUNIORS |
+----------+
| Jack     |
| Jimmy    |
| Harry    |
+----------+
3 rows in set (0.00 sec)

mysql> 
```

2. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. Teach.

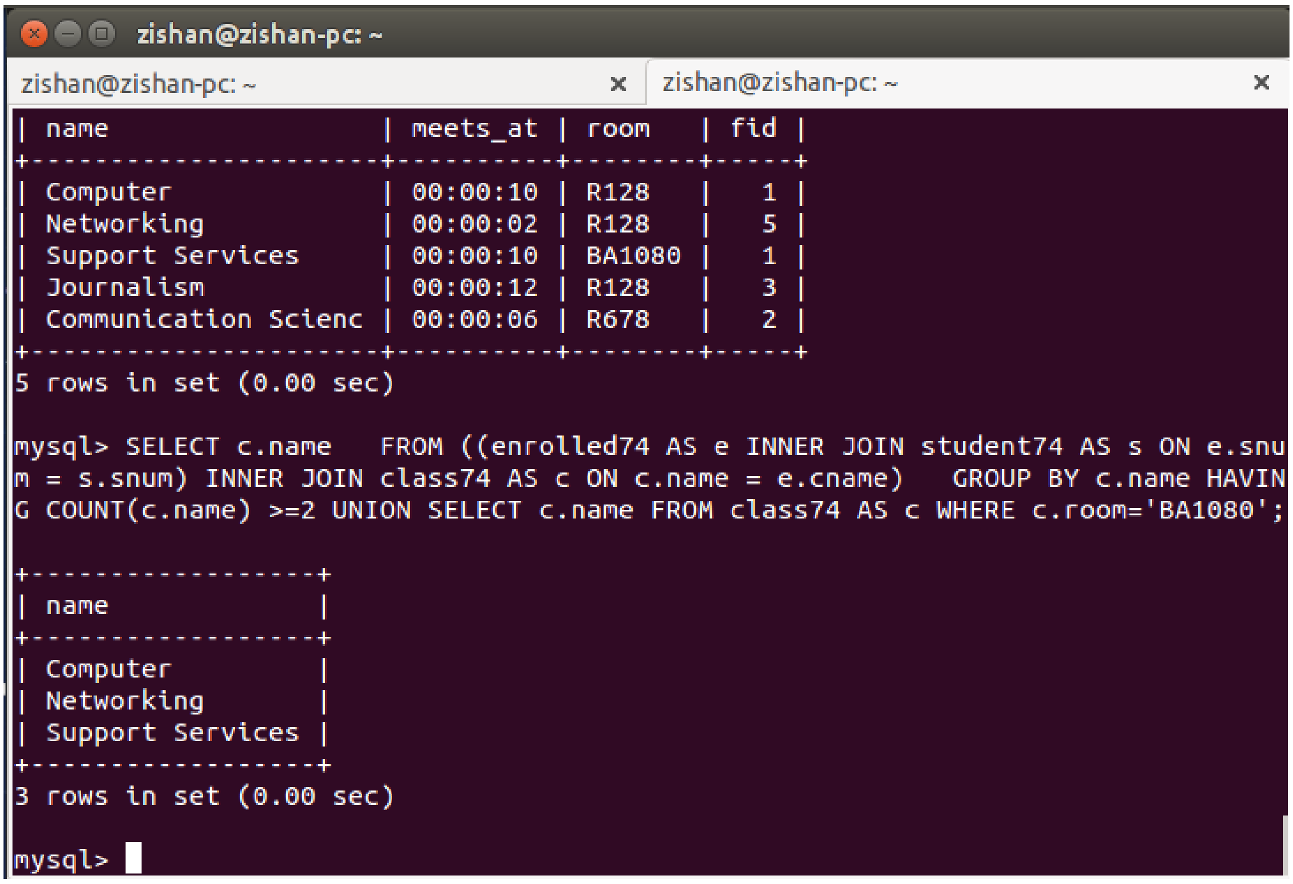
```
SELECT MAX(s.age)
        FROM student74 AS s, enrolled74 AS e, class74 AS c,faculty74 AS f
        WHERE s.snum = e.snum AND e.cname = c.name AND c.fid = f.fid
AND (s.major = 'History' OR f.fname='I. Teach');
```


zishan@zishan-pc: ~

```
|     6 | Ben   | Engineering          | JR     |    20 |
|     7 | Jim   | Engineering          | SR     |    21 |
|     8 | Harry | Computer and Informa | JR     |    20 |
|     9 | Ron   | Engineering          | JR     |    19 |
|    10 | Will  | Engineering          | JR     |    20 |
|    11 | Brad  | Computer and Informa | JR     |    21 |
+------+-------+----------------------+-------+------+
11 rows in set (0.00 sec)

mysql> SELECT MAX(s.age)
    ->
    -> FROM student74 AS s, enrolled74 AS e, class74 AS c,faculty74 AS f
    ->
    -> WHERE s.snum = e.snum AND e.cname = c.name AND c.fid = f.fid
    ->
    -> AND (s.major = 'History' OR f.fname='I. Teach');
+------------+
| MAX(s.age) |
+------------+
|         22 |
+------------+
1 row in set (0.00 sec)

mysql>
```

3. Find the names of all classes that either meet in room BA1080 or have 2 or more students enrolled.

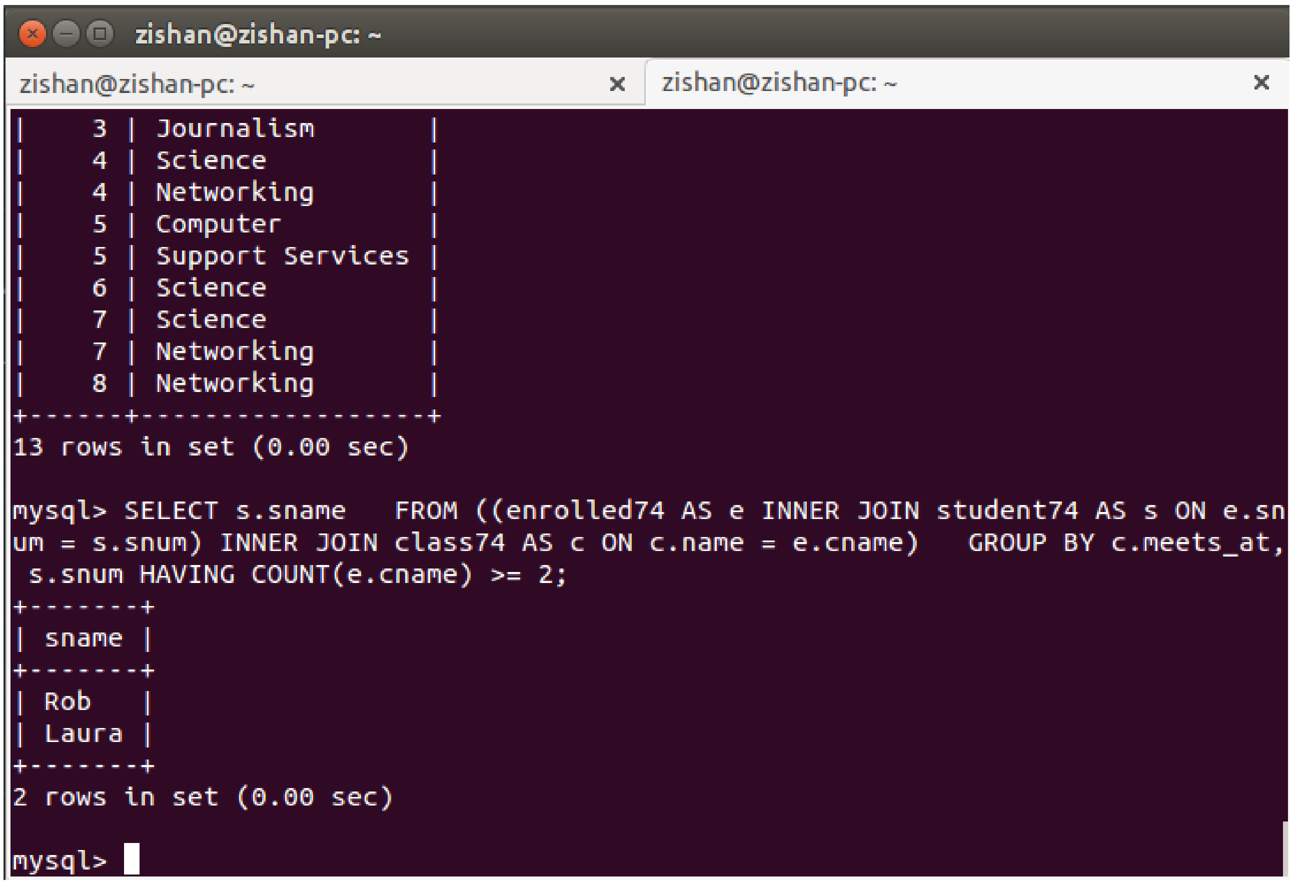
SELECT c.name
FROM ((enrolled74 AS e INNER JOIN student74 AS s ON e.snum = s.snum)
INNER JOIN class74 AS c ON c.name = e.cname)
GROUP BY c.name HAVING COUNT(c.name) >=2 UNION SELECT c.name
FROM class74 AS c WHERE c.room='BA1080';



```
| name                 | meets_at | room   | fid |
+----------------------+----------+--------+-----+
| Computer             | 00:00:10 | R128   |   1 |
| Networking           | 00:00:02 | R128   |   5 |
| Support Services     | 00:00:10 | BA1080 |   1 |
| Journalism           | 00:00:12 | R128   |   3 |
| Communication Scienc | 00:00:06 | R678   |   2 |
+----------------------+----------+--------+-----+
5 rows in set (0.00 sec)

mysql> SELECT c.name   FROM ((enrolled74 AS e INNER JOIN student74 AS s ON e.snu
m = s.snum) INNER JOIN class74 AS c ON c.name = e.cname)    GROUP BY c.name HAVIN
G COUNT(c.name) >=2 UNION SELECT c.name FROM class74 AS c WHERE c.room='BA1080';

+------------------+
| name             |
+------------------+
| Computer         |
| Networking       |
| Support Services |
+------------------+
3 rows in set (0.00 sec)

mysql> 
```

4. Find the names of all students who are enrolled in two classes that meet at the same time.

```
SELECT s.sname FROM (
        (enrolled74 AS e INNER JOIN student74 AS s ON e.snum = s.snum)
        INNER JOIN class74 AS c ON c.name = e.cname
)  GROUP BY c.meets_at, s.snum HAVING COUNT(e.cname) >= 2;
```

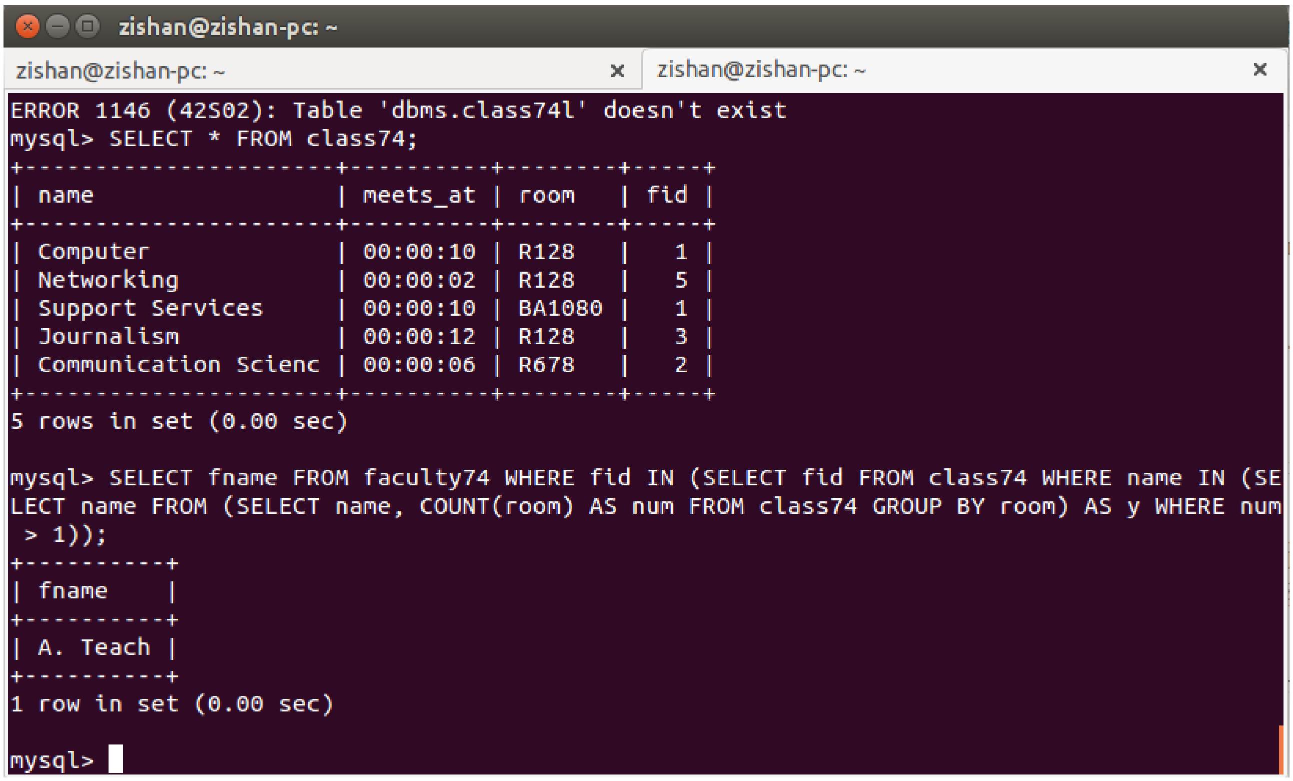


zishan@zishan-pc: ~

```
|     3 | Journalism        |
|     4 | Science           |
|     4 | Networking        |
|     5 | Computer          |
|     5 | Support Services  |
|     6 | Science           |
|     7 | Science           |
|     7 | Networking        |
|     8 | Networking        |
+------+------------------+
13 rows in set (0.00 sec)

mysql> SELECT s.sname   FROM ((enrolled74 AS e INNER JOIN student74 AS s ON e.sn
um = s.snum) INNER JOIN class74 AS c ON c.name = e.cname)   GROUP BY c.meets_at,
 s.snum HAVING COUNT(e.cname) >= 2;
+-------+
| sname |
+-------+
| Rob   |
| Laura |
+-------+
2 rows in set (0.00 sec)

mysql> 
```

5. Find the names of faculty members who teach in every room in which some class is taught.

```
SELECT fname FROM faculty74 WHERE fid IN (
        SELECT fid FROM class74 WHERE name IN (
                SELECT name FROM (
                        SELECT name, COUNT(room) AS num FROM class74
                        GROUP BY room
                ) AS y WHERE num > 1
        )
);
```



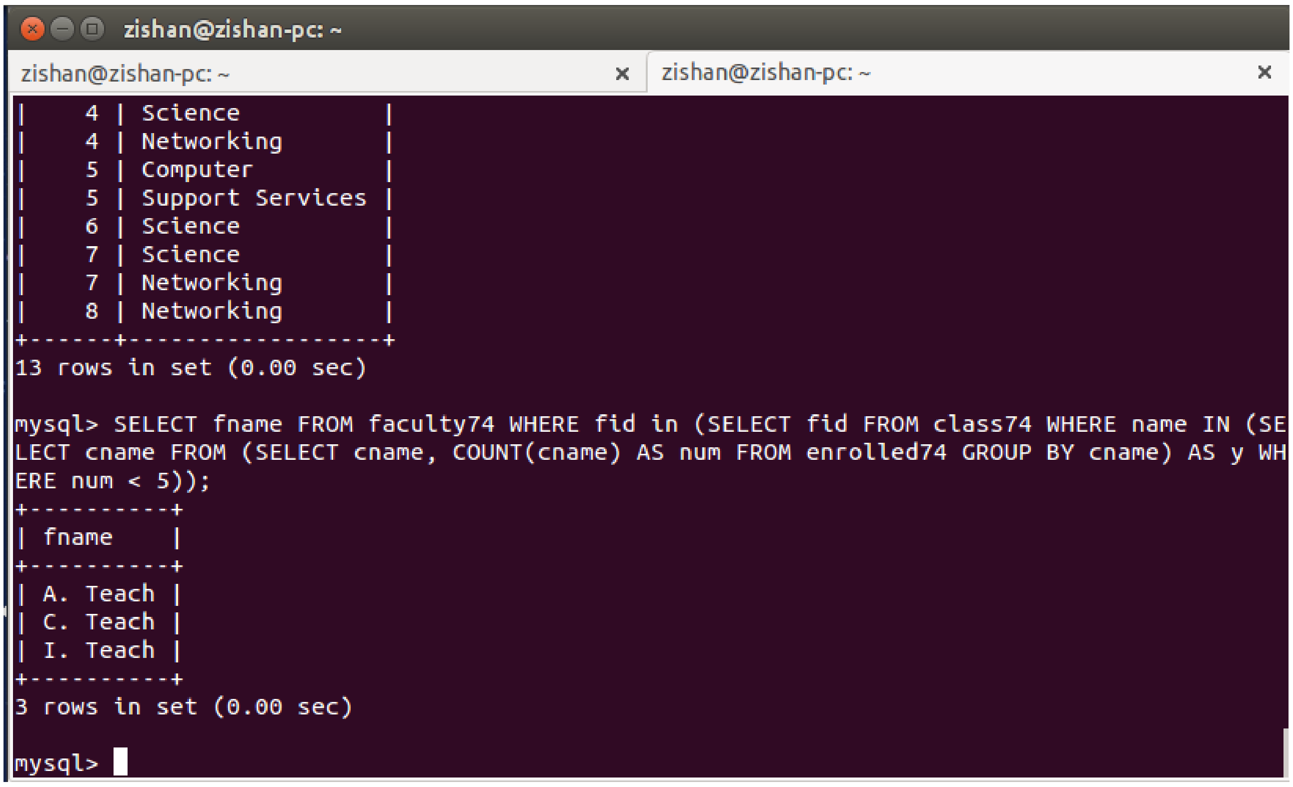
zishan@zishan-pc: ~

zishan@zishan-pc: ~ | zishan@zishan-pc: ~

```
ERROR 1146 (42S02): Table 'dbms.class74l' doesn't exist
mysql> SELECT * FROM class74;
+-----------------------+----------+--------+-----+
| name                  | meets_at | room   | fid |
+-----------------------+----------+--------+-----+
| Computer              | 00:00:10 | R128   |   1 |
| Networking            | 00:00:02 | R128   |   5 |
| Support Services      | 00:00:10 | BA1080 |   1 |
| Journalism            | 00:00:12 | R128   |   3 |
| Communication Scienc  | 00:00:06 | R678   |   2 |
+-----------------------+----------+--------+-----+
5 rows in set (0.00 sec)

mysql> SELECT fname FROM faculty74 WHERE fid IN (SELECT fid FROM class74 WHERE name IN (SE
LECT name FROM (SELECT name, COUNT(room) AS num FROM class74 GROUP BY room) AS y WHERE num
 > 1));
+----------+
| fname    |
+----------+
| A. Teach |
+----------+
1 row in set (0.00 sec)

mysql> 
```

6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.

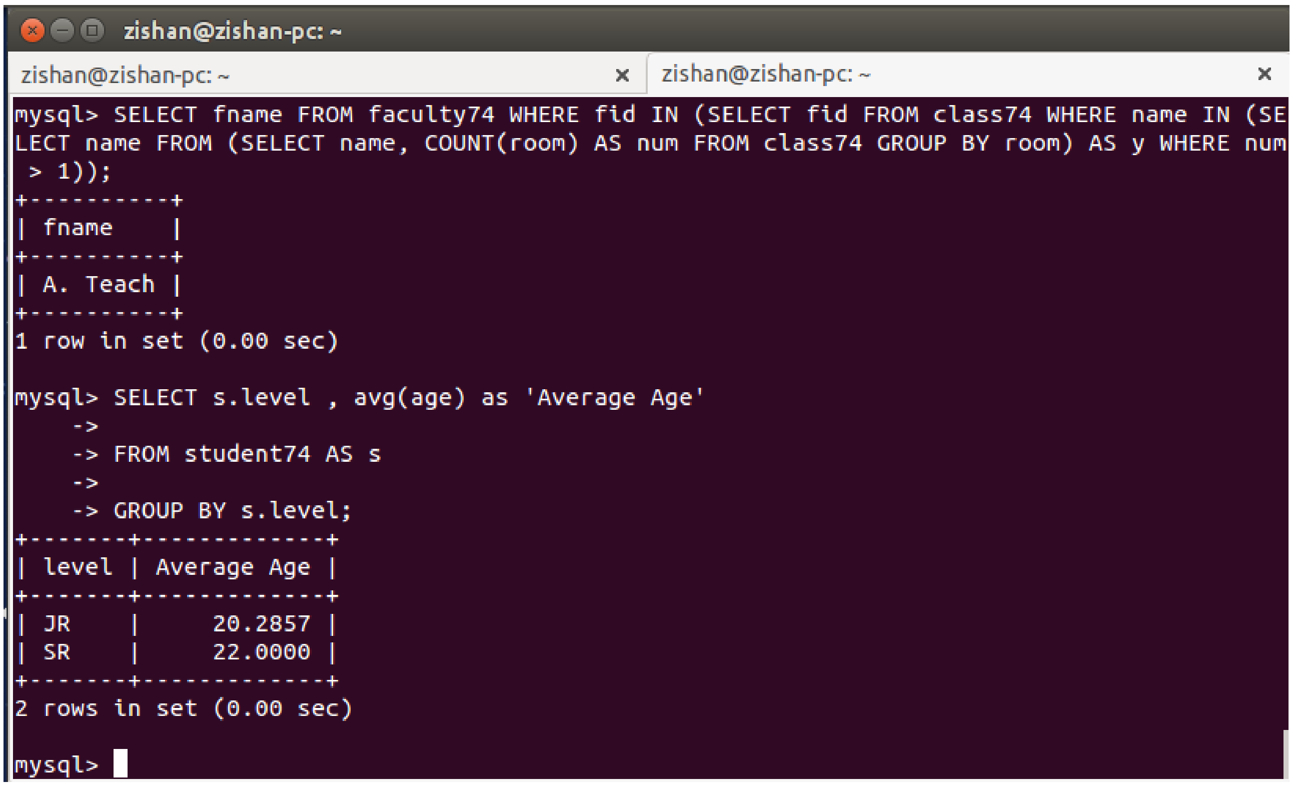
```
SELECT fname FROM faculty74 WHERE fid in (
        SELECT fid FROM class74 WHERE name IN (
                SELECT cname FROM (
                        SELECT cname, COUNT(cname) AS num FROM enrolled74
                        GROUP BY cname
                ) AS y WHERE num < 5
        )
);
```



```
|     4 | Science          |
|     4 | Networking       |
|     5 | Computer         |
|     5 | Support Services |
|     6 | Science          |
|     7 | Science          |
|     7 | Networking       |
|     8 | Networking       |
+------+------------------+
13 rows in set (0.00 sec)

mysql> SELECT fname FROM faculty74 WHERE fid in (SELECT fid FROM class74 WHERE name IN (SE
LECT cname FROM (SELECT cname, COUNT(cname) AS num FROM enrolled74 GROUP BY cname) AS y WH
ERE num < 5));
+----------+
| fname    |
+----------+
| A. Teach |
| C. Teach |
| I. Teach |
+----------+
3 rows in set (0.00 sec)

mysql> 
```

7. For each level, print the level and the average age of student s for that level.

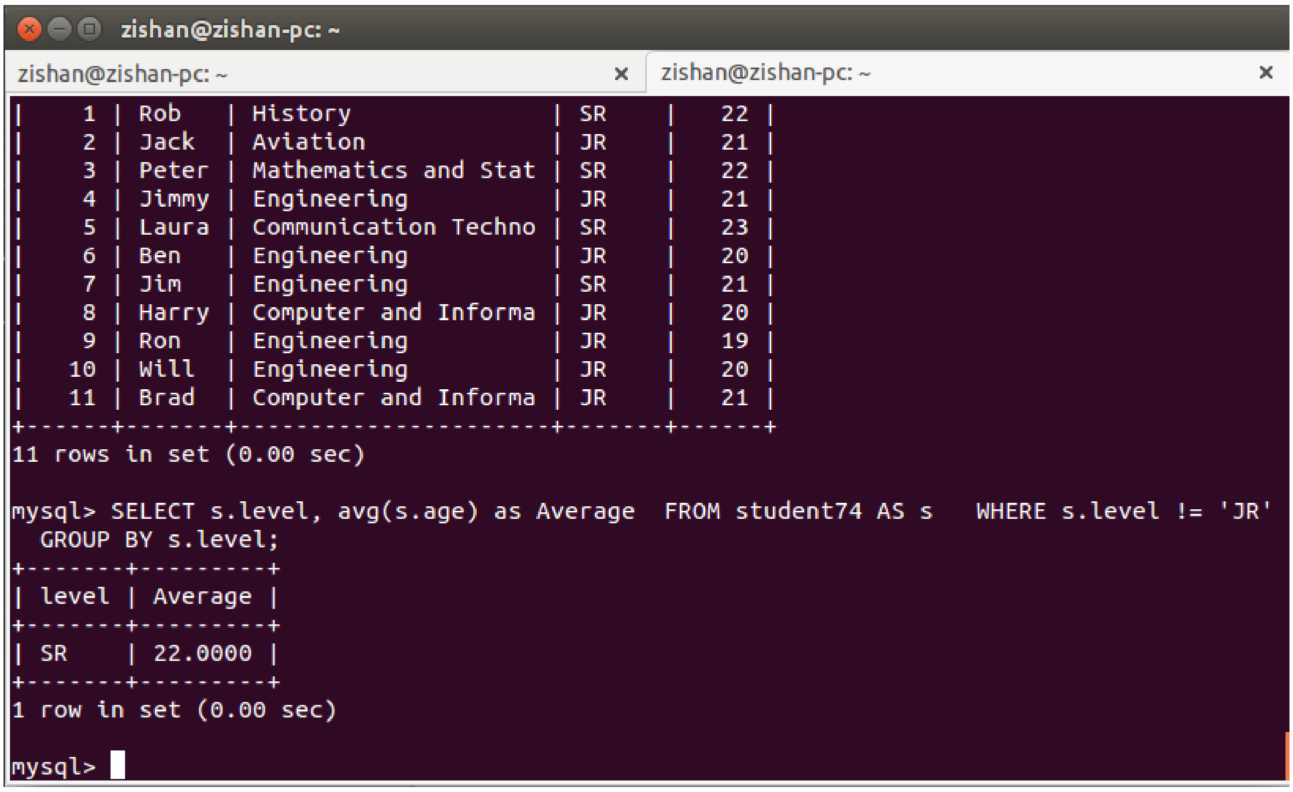
```
SELECT s.level , avg(age) as 'Average Age'
        FROM student74 AS s
GROUP BY s.level;
```



```
mysql> SELECT fname FROM faculty74 WHERE fid IN (SELECT fid FROM class74 WHERE name IN (SE
LECT name FROM (SELECT name, COUNT(room) AS num FROM class74 GROUP BY room) AS y WHERE num
 > 1));
+----------+
| fname    |
+----------+
| A. Teach |
+----------+
1 row in set (0.00 sec)

mysql> SELECT s.level , avg(age) as 'Average Age'
    ->
    -> FROM student74 AS s
    ->
    -> GROUP BY s.level;
+-------+-------------+
| level | Average Age |
+-------+-------------+
| JR    |     20.2857 |
| SR    |     22.0000 |
+-------+-------------+
2 rows in set (0.00 sec)

mysql> 
```

8. For all levels except JR, print the level and the average age of students for that level.

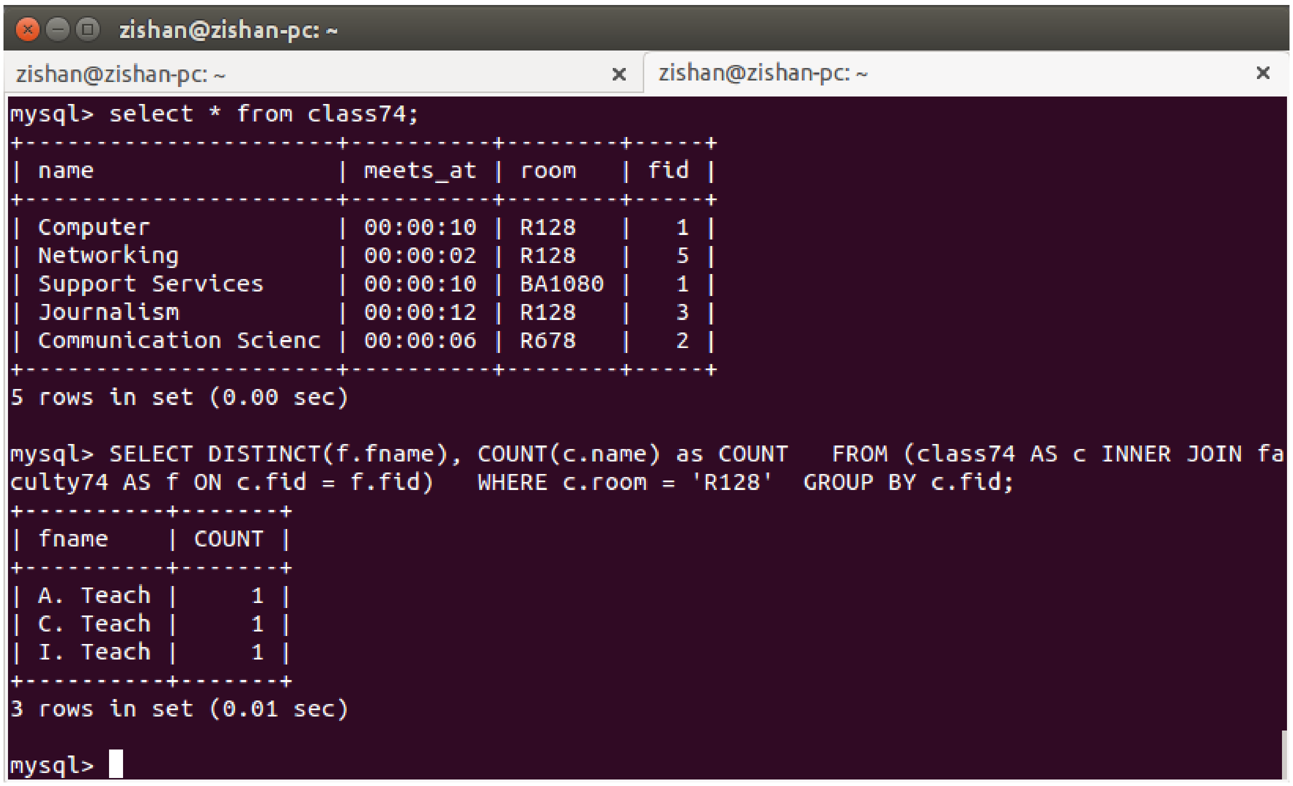
```
SELECT s.level, avg(s.age) as Average FROM student74 AS s
        WHERE s.level != 'JR'
GROUP BY s.level;
```



```
|     1 | Rob   | History              | SR     |    22 |
|     2 | Jack  | Aviation             | JR     |    21 |
|     3 | Peter | Mathematics and Stat | SR     |    22 |
|     4 | Jimmy | Engineering          | JR     |    21 |
|     5 | Laura | Communication Techno | SR     |    23 |
|     6 | Ben   | Engineering          | JR     |    20 |
|     7 | Jim   | Engineering          | SR     |    21 |
|     8 | Harry | Computer and Informa | JR     |    20 |
|     9 | Ron   | Engineering          | JR     |    19 |
|    10 | Will  | Engineering          | JR     |    20 |
|    11 | Brad  | Computer and Informa | JR     |    21 |
+------+-------+----------------------+-------+------+
11 rows in set (0.00 sec)

mysql> SELECT s.level, avg(s.age) as Average  FROM student74 AS s   WHERE s.level != 'JR'
  GROUP BY s.level;
+-------+---------+
| level | Average |
+-------+---------+
| SR    | 22.0000 |
+-------+---------+
1 row in set (0.00 sec)

mysql> 
```

9. For each faculty member that has taught classes only in room R128, print the faculty members name and the total number of classes she or he has taught.

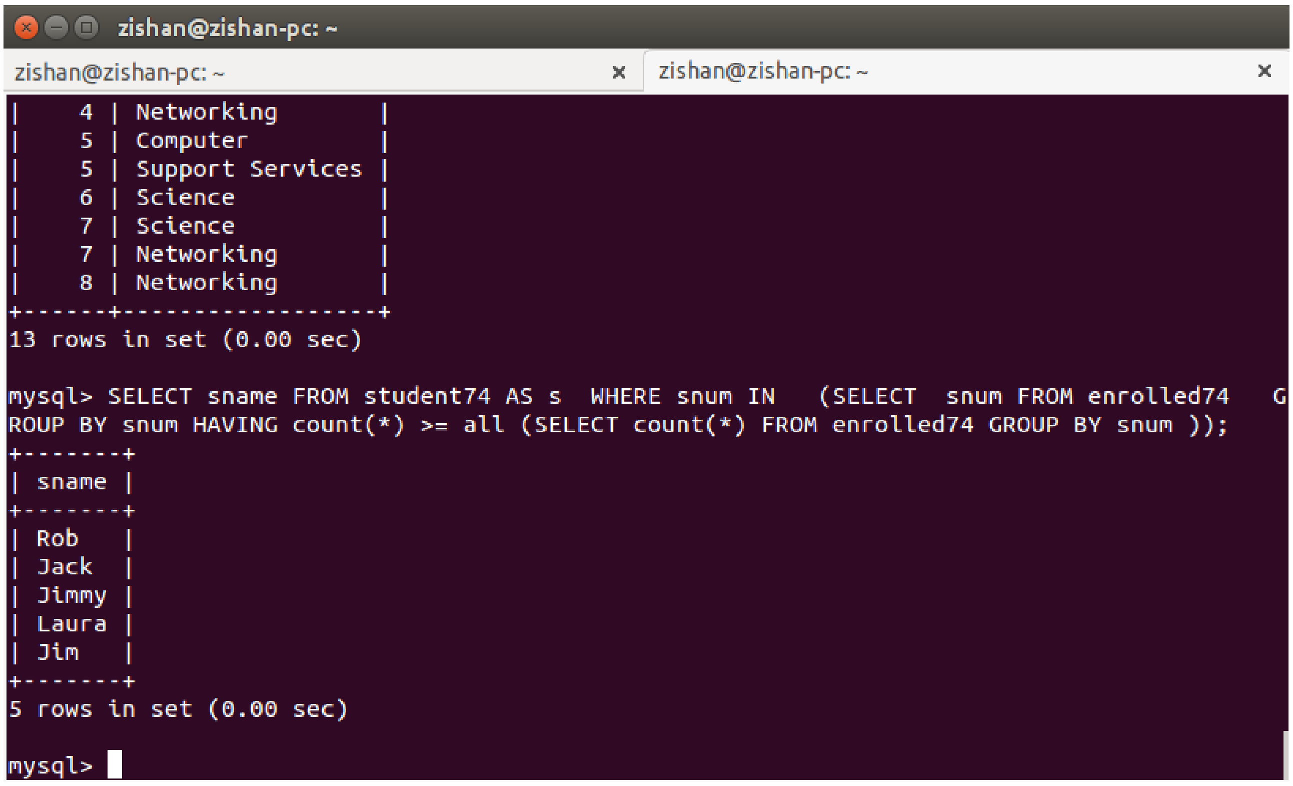
```
SELECT DISTINCT(f.fname), COUNT(c.name) as COUNT
        FROM (class74 AS c INNER JOIN faculty74 AS f ON c.fid = f.fid)
        WHERE c.room = 'R128'
GROUP BY c.fid;
```



```
mysql> select * from class74;
+----------------------+----------+--------+-----+
| name                 | meets_at | room   | fid |
+----------------------+----------+--------+-----+
| Computer             | 00:00:10 | R128   |   1 |
| Networking           | 00:00:02 | R128   |   5 |
| Support Services     | 00:00:10 | BA1080 |   1 |
| Journalism           | 00:00:12 | R128   |   3 |
| Communication Scienc | 00:00:06 | R678   |   2 |
+----------------------+----------+--------+-----+
5 rows in set (0.00 sec)

mysql> SELECT DISTINCT(f.fname), COUNT(c.name) as COUNT   FROM (class74 AS c INNER JOIN fa
culty74 AS f ON c.fid = f.fid)   WHERE c.room = 'R128'   GROUP BY c.fid;
+----------+-------+
| fname    | COUNT |
+----------+-------+
| A. Teach |     1 |
| C. Teach |     1 |
| I. Teach |     1 |
+----------+-------+
3 rows in set (0.01 sec)

mysql> 
```

10. Find the names of students enrolled in the maximum number of classes.

```
SELECT sname FROM student74 AS s  WHERE snum IN  (
        SELECT  snum FROM enrolled74   GROUP BY snum
        HAVING count(*) >= all (
                SELECT count(*) FROM enrolled74 GROUP BY snum
        )
);
```

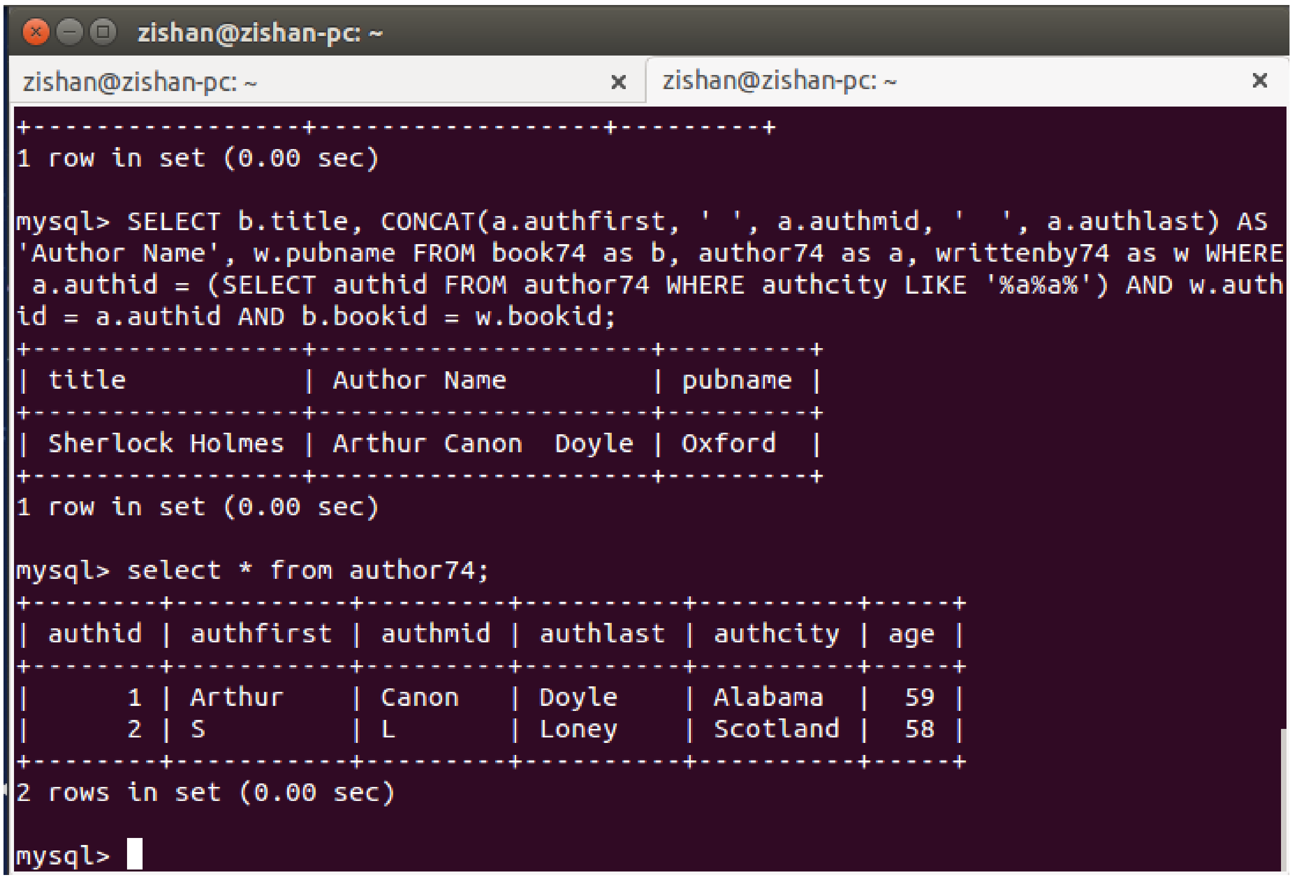


```
|     4 | Networking       |
|     5 | Computer         |
|     5 | Support Services |
|     6 | Science          |
|     7 | Science          |
|     7 | Networking       |
|     8 | Networking       |
+------+------------------+
13 rows in set (0.00 sec)

mysql> SELECT sname FROM student74 AS s  WHERE snum IN   (SELECT  snum FROM enrolled74   G
ROUP BY snum HAVING count(*) >= all (SELECT count(*) FROM enrolled74 GROUP BY snum ));
+-------+
| sname |
+-------+
| Rob   |
| Jack  |
| Jimmy |
| Laura |
| Jim   |
+-------+
5 rows in set (0.00 sec)

mysql> 
```

Q4. Write equivalent SQL for the following query.

1. Get the title,author name,publisher name for author whose city contain total no of a=2?

```
SELECT b.title, CONCAT(a.authfirst, ' ', a.authmid, '  ', a.authlast)
        AS 'Author Name', w.pubname FROM book74 as b, author74 as a, writtenby74 as w
        WHERE a.authid = (
                SELECT authid FROM author74 WHERE authcity LIKE '%a%a%'
                )
        AND w.authid = a.authid AND b.bookid = w.bookid;
```

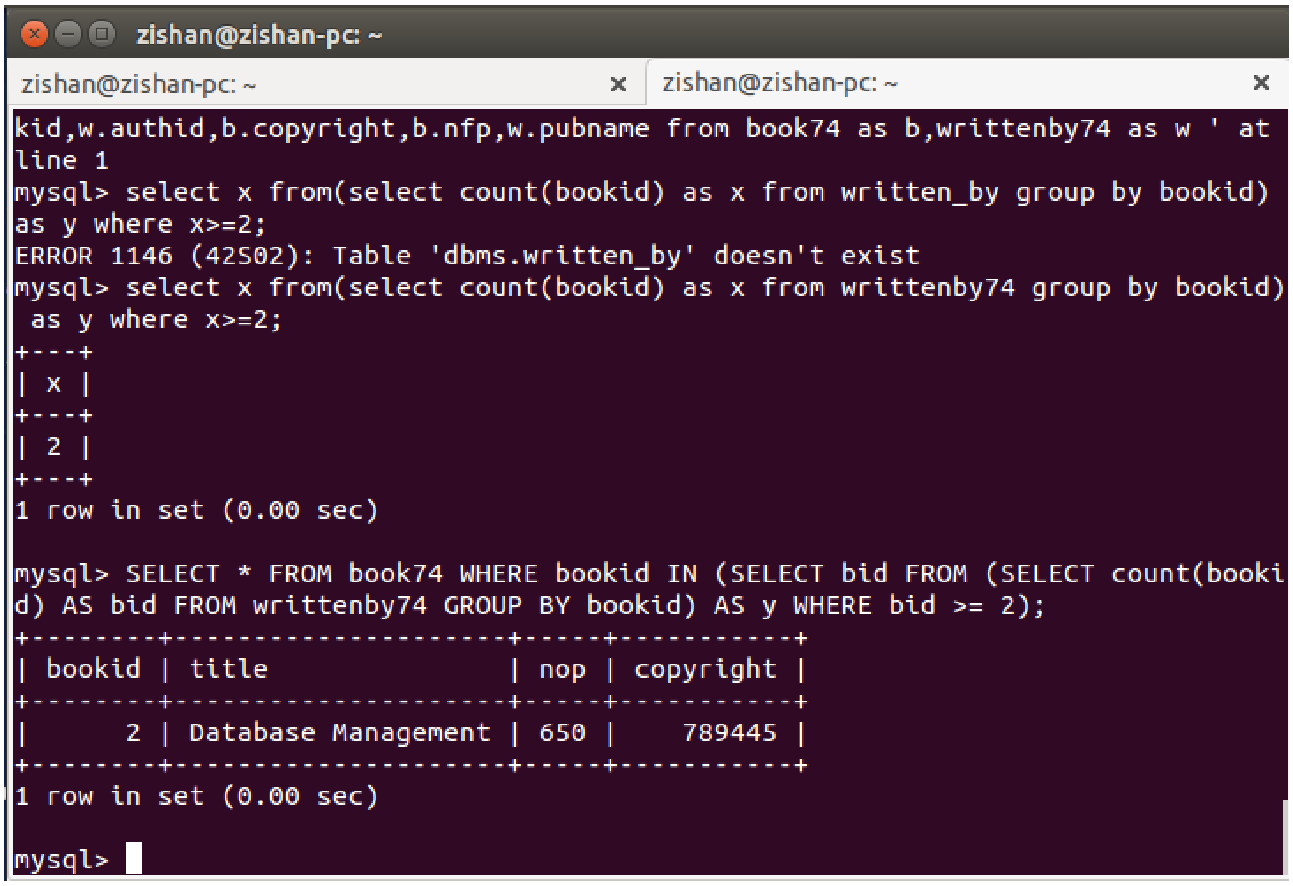

zishan@zishan-pc: ~

zishan@zishan-pc: ~ | zishan@zishan-pc: ~

```
+-----------------+-----------------+---------+
1 row in set (0.00 sec)

mysql> SELECT b.title, CONCAT(a.authfirst, ' ', a.authmid, '  ', a.authlast) AS
'Author Name', w.pubname FROM book74 as b, author74 as a, writtenby74 as w WHERE
 a.authid = (SELECT authid FROM author74 WHERE authcity LIKE '%a%a%') AND w.auth
id = a.authid AND b.bookid = w.bookid;
+-----------------+----------------------+---------+
| title           | Author Name          | pubname |
+-----------------+----------------------+---------+
| Sherlock Holmes | Arthur Canon  Doyle  | Oxford  |
+-----------------+----------------------+---------+
1 row in set (0.00 sec)

mysql> select * from author74;
+--------+-----------+---------+----------+----------+-----+
| authid | authfirst | authmid | authlast | authcity | age |
+--------+-----------+---------+----------+----------+-----+
|      1 | Arthur    | Canon   | Doyle    | Alabama  |  59 |
|      2 | S         | L       | Loney    | Scotland |  58 |
+--------+-----------+---------+----------+----------+-----+
2 rows in set (0.00 sec)

mysql> 
```

2. Give the details of the book which is written by at least two authors.

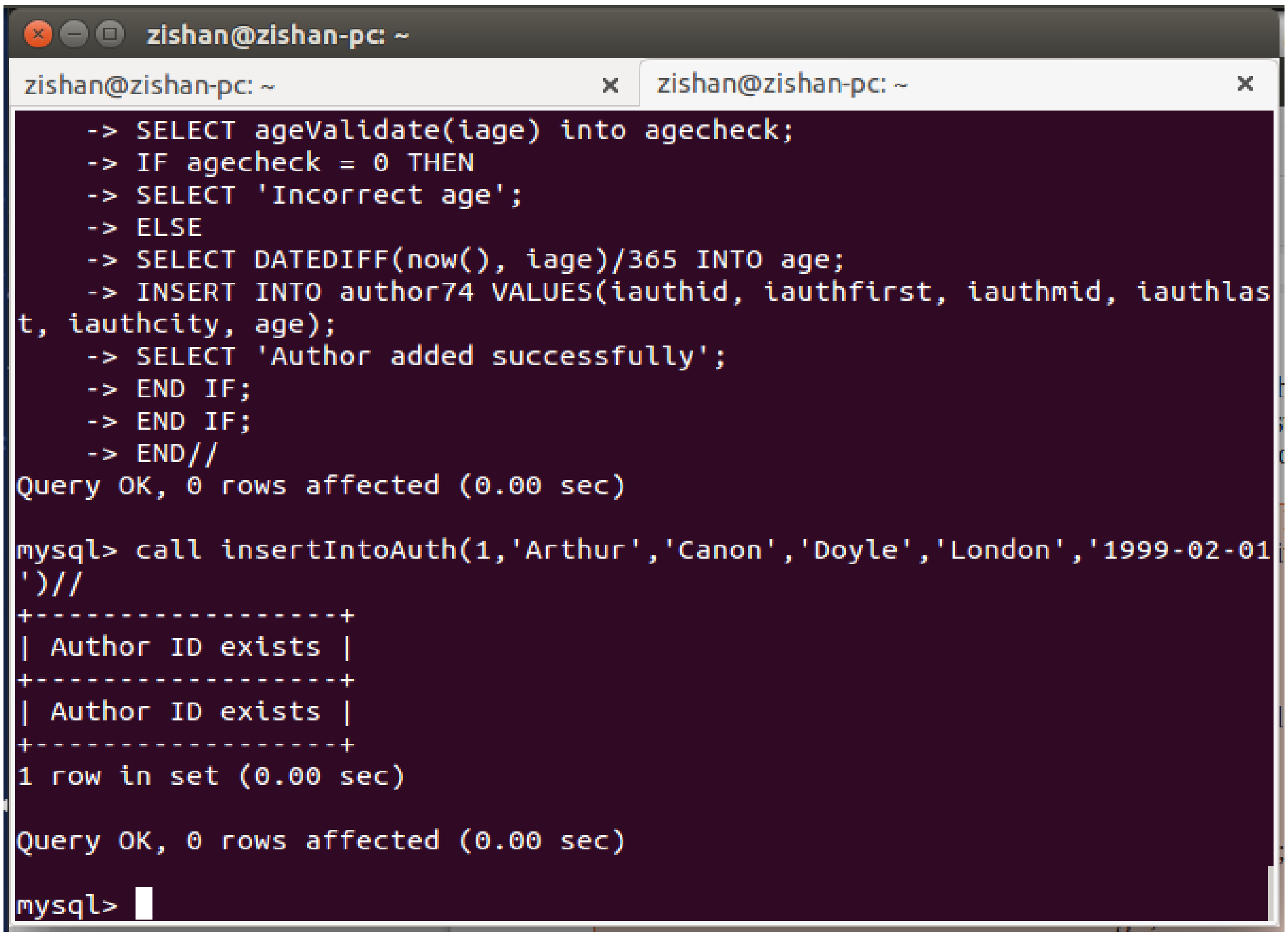
```
SELECT * FROM book74 WHERE bookid IN (
        SELECT bid FROM (
                SELECT count(bookid) AS bid FROM writtenby74 GROUP BY bookid
        ) AS y WHERE bid >= 2
);
```



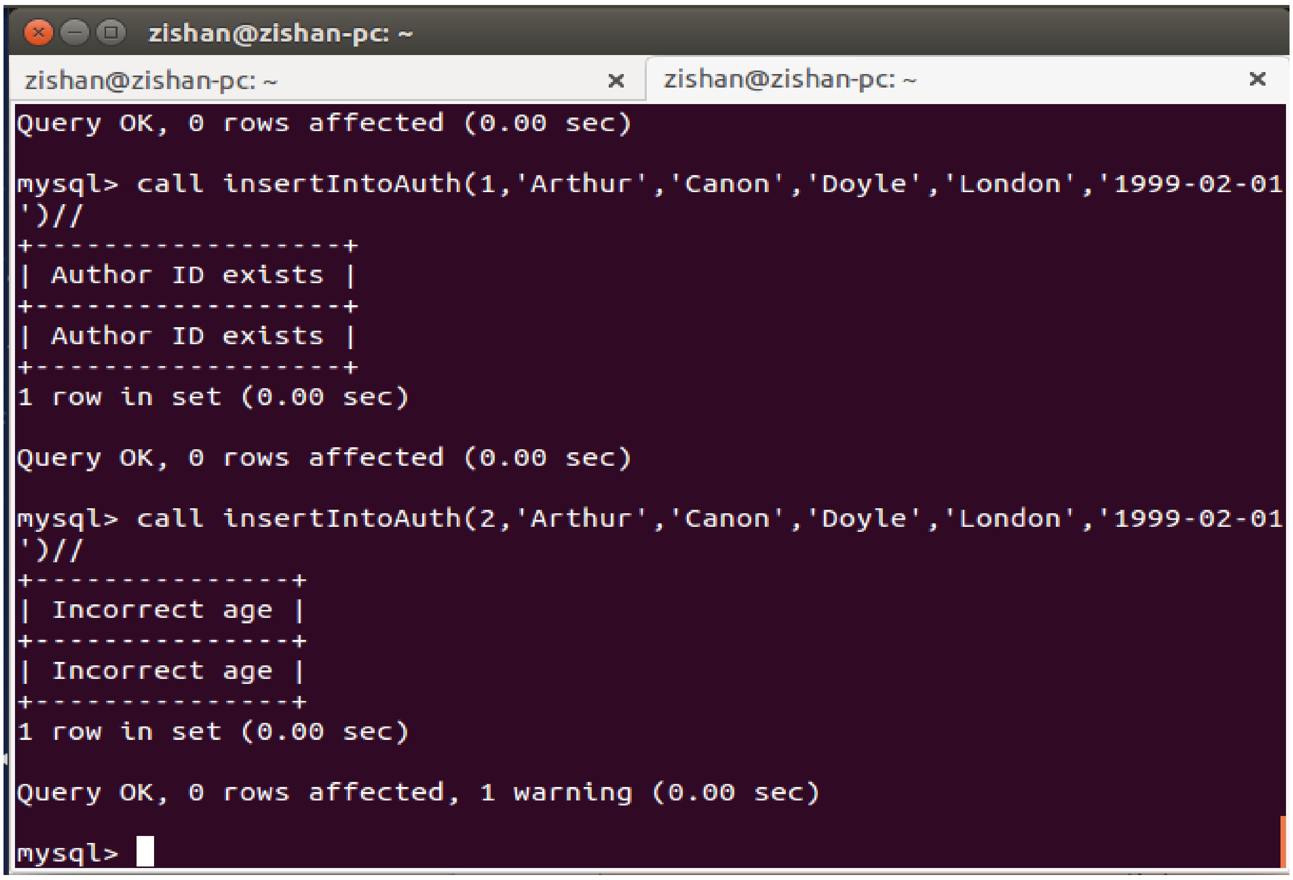
```
kid,w.authid,b.copyright,b.nfp,w.pubname from book74 as b,writtenby74 as w ' at
line 1
mysql> select x from(select count(bookid) as x from written_by group by bookid)
as y where x>=2;
ERROR 1146 (42S02): Table 'dbms.written_by' doesn't exist
mysql> select x from(select count(bookid) as x from writtenby74 group by bookid)
 as y where x>=2;
+---+
| x |
+---+
| 2 |
+---+
1 row in set (0.00 sec)

mysql> SELECT * FROM book74 WHERE bookid IN (SELECT bid FROM (SELECT count(booki
d) AS bid FROM writtenby74 GROUP BY bookid) AS y WHERE bid >= 2);
+--------+---------------------+-----+-----------+
| bookid | title               | nop | copyright |
+--------+---------------------+-----+-----------+
|      2 | Database Management | 650 |    789445 |
+--------+---------------------+-----+-----------+
1 row in set (0.00 sec)

mysql> 
```

3. Write a stored procedure (SP Name : insertIntoAuth) to insert the Author information.

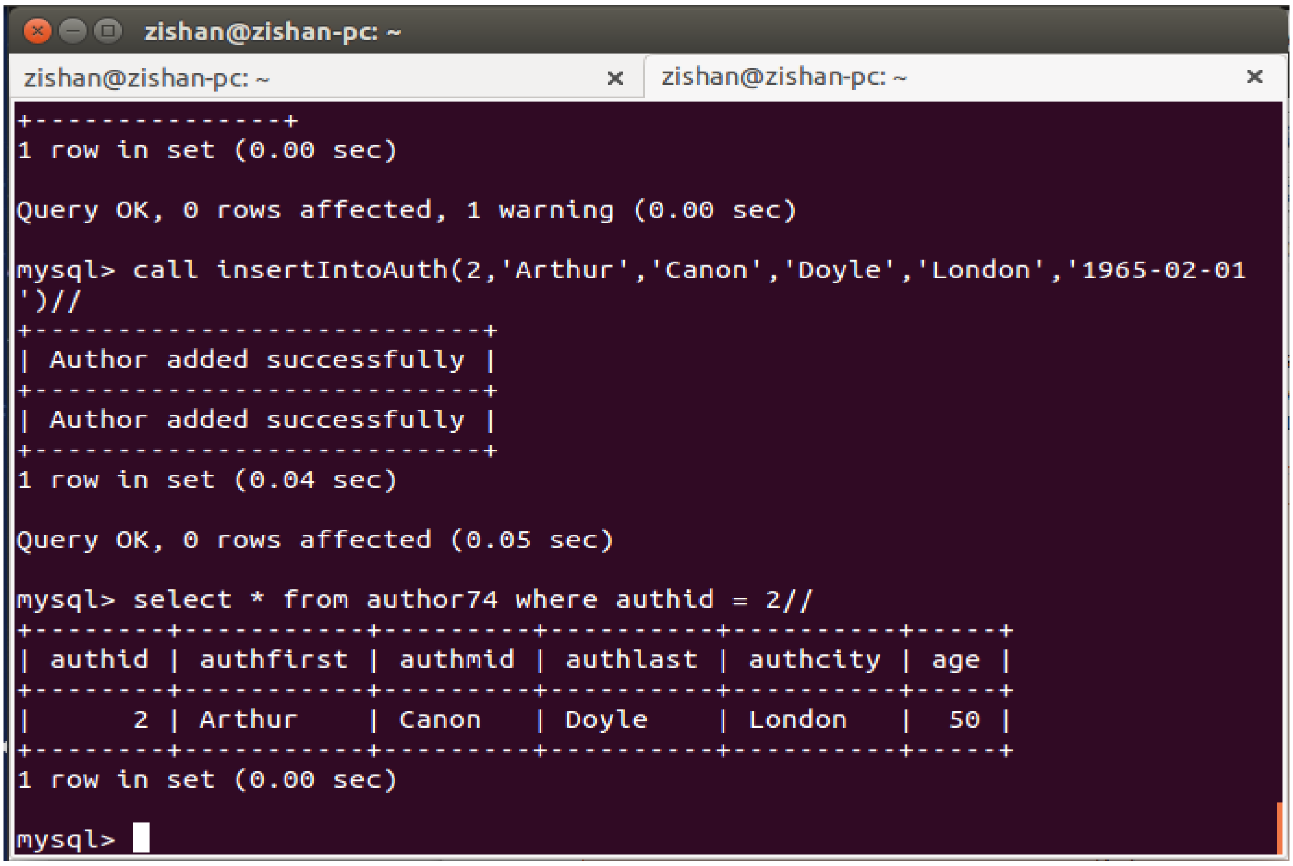
```
CREATE PROCEDURE insertIntoAuth(IN iauthid INT, IN iauthfirst VARCHAR(10), IN
iauthmid VARCHAR(10), IN iauthlast VARCHAR(10), IN iauthcity VARCHAR(15), IN
iage DATE)
BEGIN
        DECLARE agecheck INT DEFAULT 0;
        DECLARE idcheck INT DEFAULT 0;
        DECLARE age INT DEFAULT 0;
        SELECT authid FROM author74 WHERE authid = iauthid INTO idcheck;
        IF idcheck != 0 THEN
                SELECT 'Author ID exists';
        ELSE
                SELECT ageValidate(iage) into agecheck;
                IF agecheck = 0 THEN
                        SELECT 'Incorrect age';
                ELSE
                        SELECT DATEDIFF(now(), iage)/365 INTO age;
                        INSERT INTO author74 VALUES(iauthid, iauthfirst, iauthmid,
iauthlast, iauthcity, age);
                        SELECT 'Author added successfully';
                END IF;
        END IF;
END
```



```
    -> SELECT ageValidate(iage) into agecheck;
    -> IF agecheck = 0 THEN
    -> SELECT 'Incorrect age';
    -> ELSE
    -> SELECT DATEDIFF(now(), iage)/365 INTO age;
    -> INSERT INTO author74 VALUES(iauthid, iauthfirst, iauthmid, iauthlas
t, iauthcity, age);
    -> SELECT 'Author added successfully';
    -> END IF;
    -> END IF;
    -> END//
Query OK, 0 rows affected (0.00 sec)

mysql> call insertIntoAuth(1,'Arthur','Canon','Doyle','London','1999-02-01
')//
+------------------+
| Author ID exists |
+------------------+
| Author ID exists |
+------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```



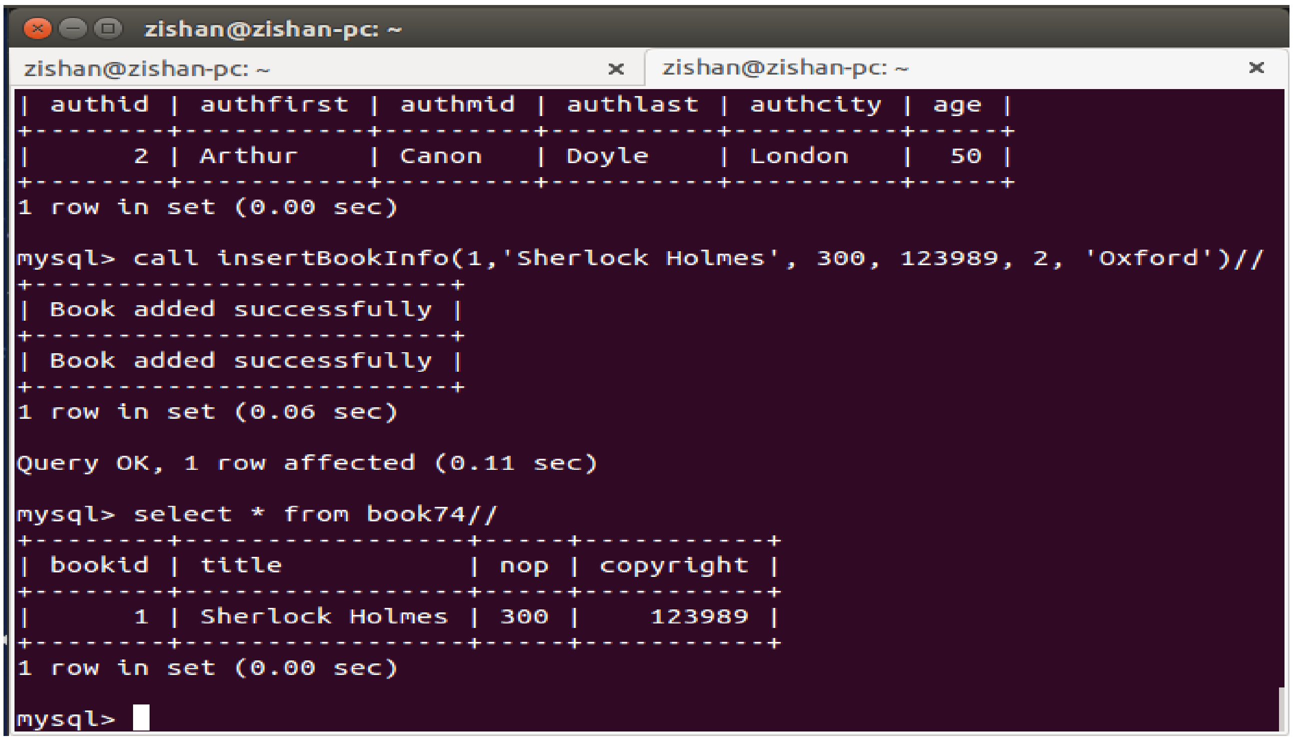
```
Query OK, 0 rows affected (0.00 sec)

mysql> call insertIntoAuth(1,'Arthur','Canon','Doyle','London','1999-02-01
')//
+-----------------+
| Author ID exists |
+-----------------+
| Author ID exists |
+-----------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> call insertIntoAuth(2,'Arthur','Canon','Doyle','London','1999-02-01
')//
+---------------+
| Incorrect age |
+---------------+
| Incorrect age |
+---------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> 
```



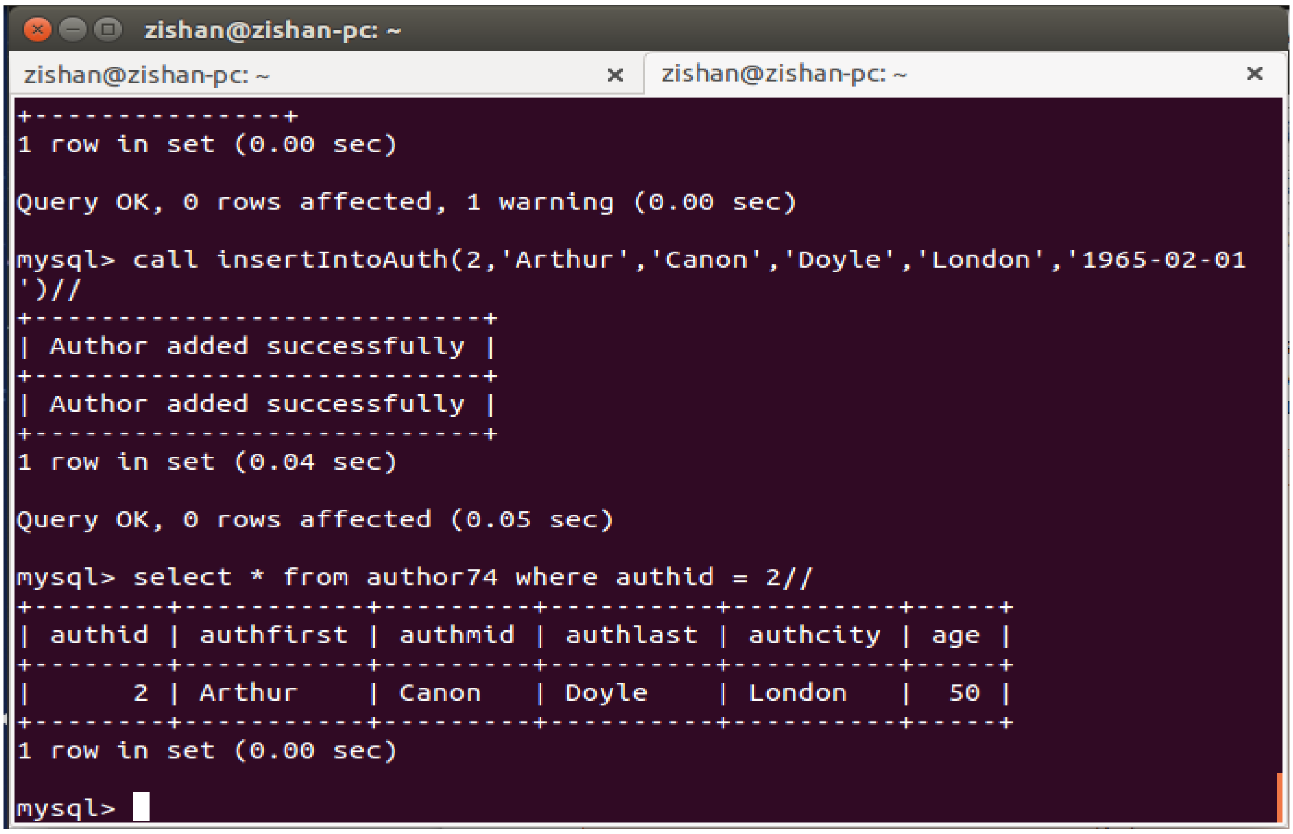
```
+---------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> call insertIntoAuth(2,'Arthur','Canon','Doyle','London','1965-02-01
')//
+----------------------------+
| Author added successfully |
+----------------------------+
| Author added successfully |
+----------------------------+
1 row in set (0.04 sec)

Query OK, 0 rows affected (0.05 sec)

mysql> select * from author74 where authid = 2//
+--------+-----------+---------+----------+----------+-----+
| authid | authfirst | authmid | authlast | authcity | age |
+--------+-----------+---------+----------+----------+-----+
|      2 | Arthur    | Canon   | Doyle    | London   |  50 |
+--------+-----------+---------+----------+----------+-----+
1 row in set (0.00 sec)

mysql> 
```

4. Write a stored procedure (SP Name : insertBookInfo) to insert the book information such as bookid, title, no. of pages, copyright, authorId, Publisher Name. (Use two stored procedure and call it from o ne stored procedure i.e nested SP). (SP Name : insertBook, insertWBy).

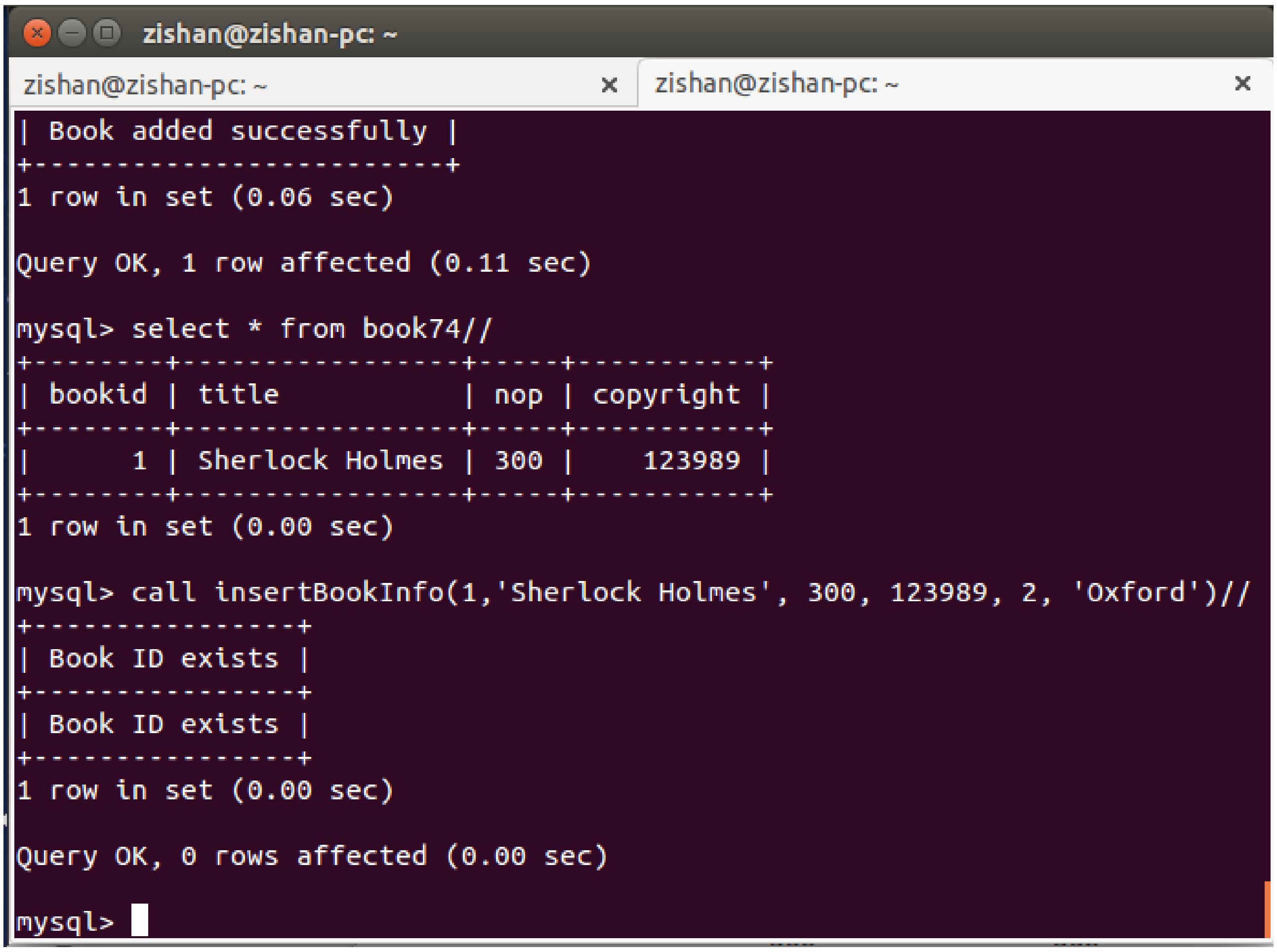
```
CREATE PROCEDURE insertBookInfo (IN ibookid INT, IN itittle varchar(20), IN inop
INT, IN icopyright INT, IN iauthid INT, IN ipubname VARCHAR(20))
BEGIN
	DECLARE bidcheck INT DEFAULT 0;
	DECLARE aidcheck INT DEFAULT 0;
	SELECT bookid FROM book74 WHERE bookid = ibookid INTO bidcheck;
	IF bidcheck != 0 THEN
		SELECT 'Book ID exists';
	ELSE
		SELECT authid FROM author74 WHERE authid = iauthid INTO aidcheck;
		IF aidcheck = 0 THEN
			SELECT 'Author ID does not exist';
		ELSE
			INSERT INTO book74 VALUES(ibookid, itittle, inop, icopyright);
			SELECT 'Book added successfully';
			CALL insertWBy(ibookid, iauthid, ipubname);
		END IF;
	END IF;
END

CREATE PROCEDURE insertWBy(IN ibookid INT, IN iauthid INT, IN ipubname
VARCHAR(20))
BEGIN
	INSERT INTO writtenby74 VALUES(iauthid, ibookid, ipubname);
END
```



```
| authid | authfirst | authmid | authlast | authcity | age |
+--------+-----------+---------+----------+----------+-----+
|      2 | Arthur    | Canon   | Doyle    | London   |  50 |
+--------+-----------+---------+----------+----------+-----+
1 row in set (0.00 sec)

mysql> call insertBookInfo(1,'Sherlock Holmes', 300, 123989, 2, 'Oxford')//
+-------------------------+
| Book added successfully |
+-------------------------+
| Book added successfully |
+-------------------------+
1 row in set (0.06 sec)

Query OK, 1 row affected (0.11 sec)

mysql> select * from book74//
+--------+-----------------+-----+-----------+
| bookid | title           | nop | copyright |
+--------+-----------------+-----+-----------+
|      1 | Sherlock Holmes | 300 |    123989 |
+--------+-----------------+-----+-----------+
1 row in set (0.00 sec)

mysql> 
```



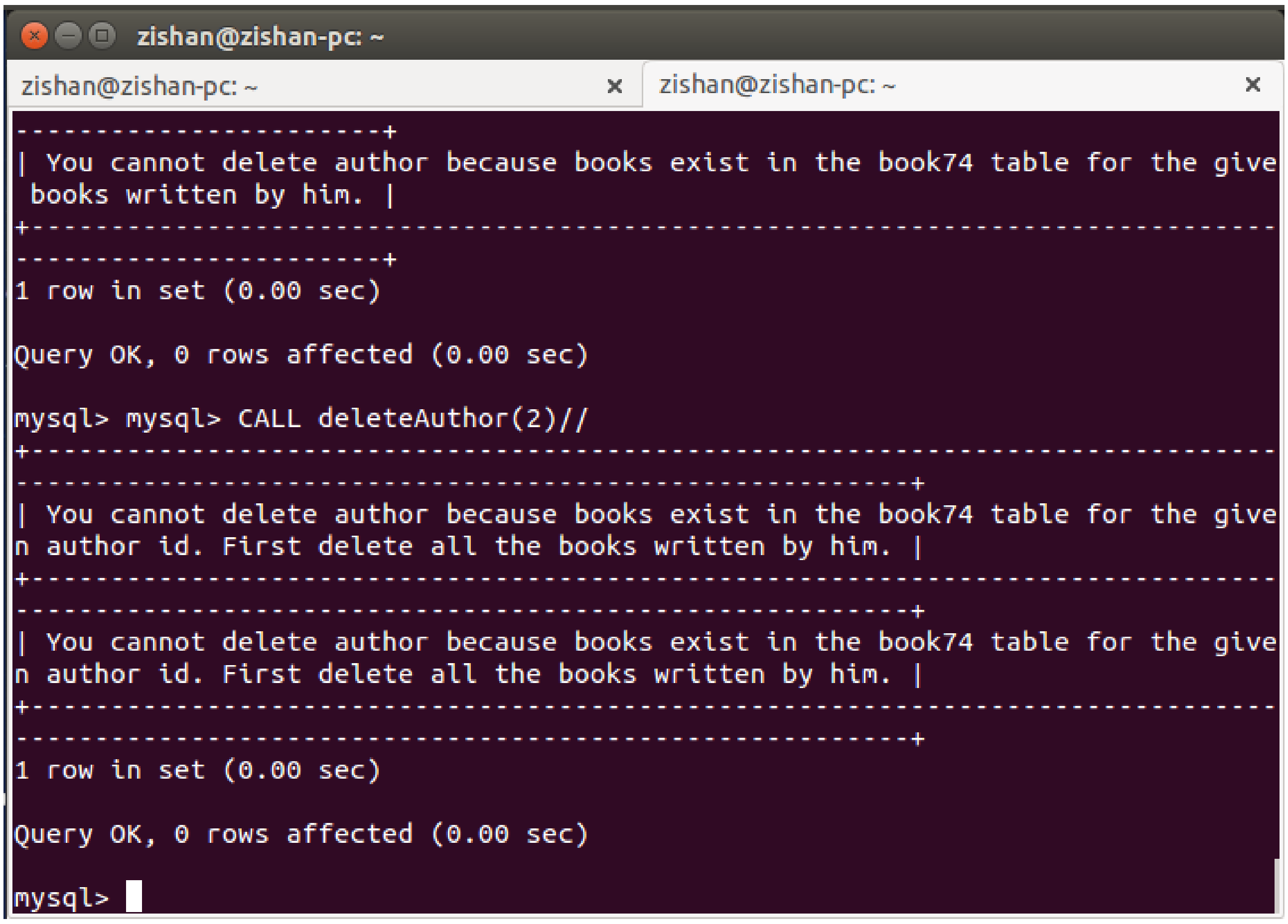
```
+---------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> call insertIntoAuth(2,'Arthur','Canon','Doyle','London','1965-02-01
')//
+---------------------------+
| Author added successfully |
+---------------------------+
| Author added successfully |
+---------------------------+
1 row in set (0.04 sec)

Query OK, 0 rows affected (0.05 sec)

mysql> select * from author74 where authid = 2//
+--------+-----------+---------+----------+----------+-----+
| authid | authfirst | authmid | authlast | authcity | age |
+--------+-----------+---------+----------+----------+-----+
|      2 | Arthur    | Canon   | Doyle    | London   |  50 |
+--------+-----------+---------+----------+----------+-----+
1 row in set (0.00 sec)

mysql> 
```



```
| Book added successfully |
+-------------------------+
1 row in set (0.06 sec)

Query OK, 1 row affected (0.11 sec)

mysql> select * from book74//
+--------+-----------------+-----+-----------+
| bookid | title           | nop | copyright |
+--------+-----------------+-----+-----------+
|      1 | Sherlock Holmes | 300 |    123989 |
+--------+-----------------+-----+-----------+
1 row in set (0.00 sec)

mysql> call insertBookInfo(1,'Sherlock Holmes', 300, 123989, 2, 'Oxford')//
+----------------+
| Book ID exists |
+----------------+
| Book ID exists |
+----------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> 
```

5. Write a stored procedure to delete the Author information usin g its AuthID. (Notr: If Author book(in Book Table) exists for AuthID, then it should display message as You cant delete Author because total no book exist in BookTable. First delete all the books written by him).

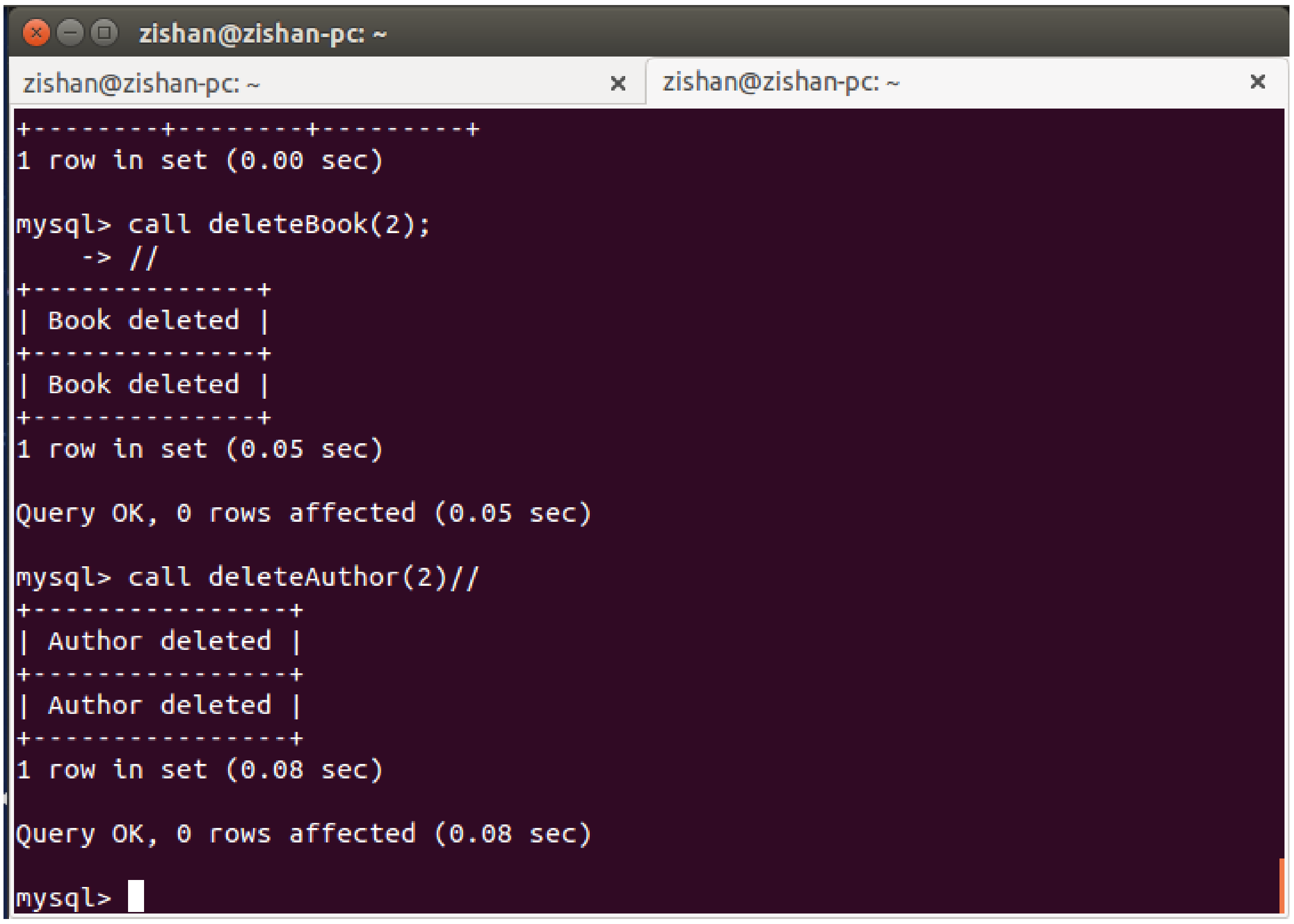
```
CREATE PROCEDURE deleteAuthor (IN iauthid INT)
BEGIN
        DECLARE bcheck INT DEFAULT 0;
        SELECT COUNT(*) FROM writtenby74 WHERE authid=iauthid INTO bcheck;
        IF bcheck > 0 THEN
                SELECT 'You cannot delete author because books exist in the book74 table for the given author id. First delete all the books written by him.';
        ELSE
                DELETE FROM author74 WHERE authid = iauthid;
                SELECT 'Author deleted';
        END IF;
END
```



zishan@zishan-pc: ~

zishan@zishan-pc: ~ | zishan@zishan-pc: ~

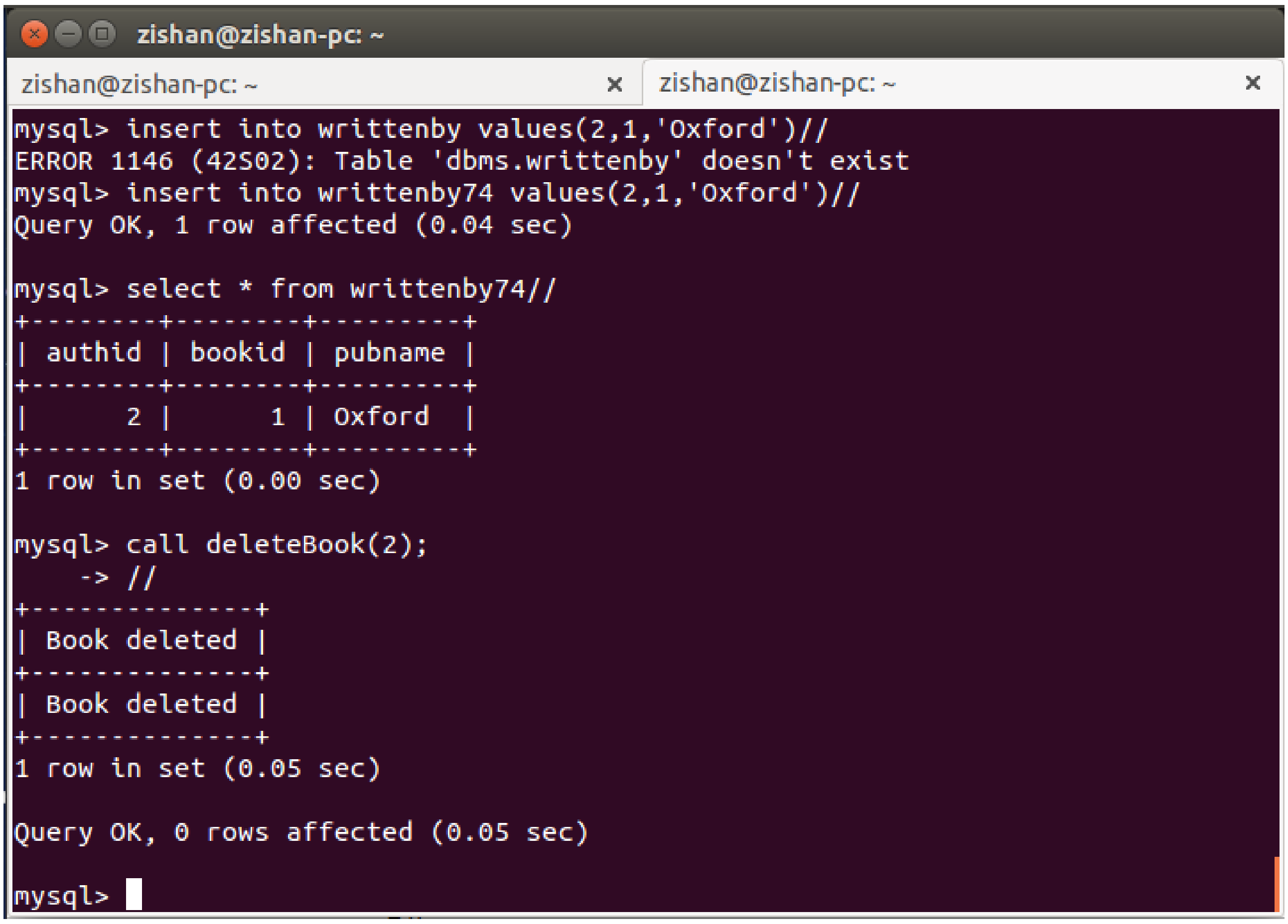
```
-----------------------+
| You cannot delete author because books exist in the book74 table for the give
 books written by him. |
+-------------------------------------------------------------------------------
-----------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> mysql> CALL deleteAuthor(2)//
+-------------------------------------------------------------------------------
--------------------------------------------------------+
| You cannot delete author because books exist in the book74 table for the give
n author id. First delete all the books written by him. |
+-------------------------------------------------------------------------------
--------------------------------------------------------+
| You cannot delete author because books exist in the book74 table for the give
n author id. First delete all the books written by him. |
+-------------------------------------------------------------------------------
--------------------------------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> 
```



```
+--------+--------+---------+
1 row in set (0.00 sec)

mysql> call deleteBook(2);
    -> //
+--------------+
| Book deleted |
+--------------+
| Book deleted |
+--------------+
1 row in set (0.05 sec)

Query OK, 0 rows affected (0.05 sec)

mysql> call deleteAuthor(2)//
+----------------+
| Author deleted |
+----------------+
| Author deleted |
+----------------+
1 row in set (0.08 sec)

Query OK, 0 rows affected (0.08 sec)

mysql> 
```

6. Write a stored procedure to delete the Book using AuthID.

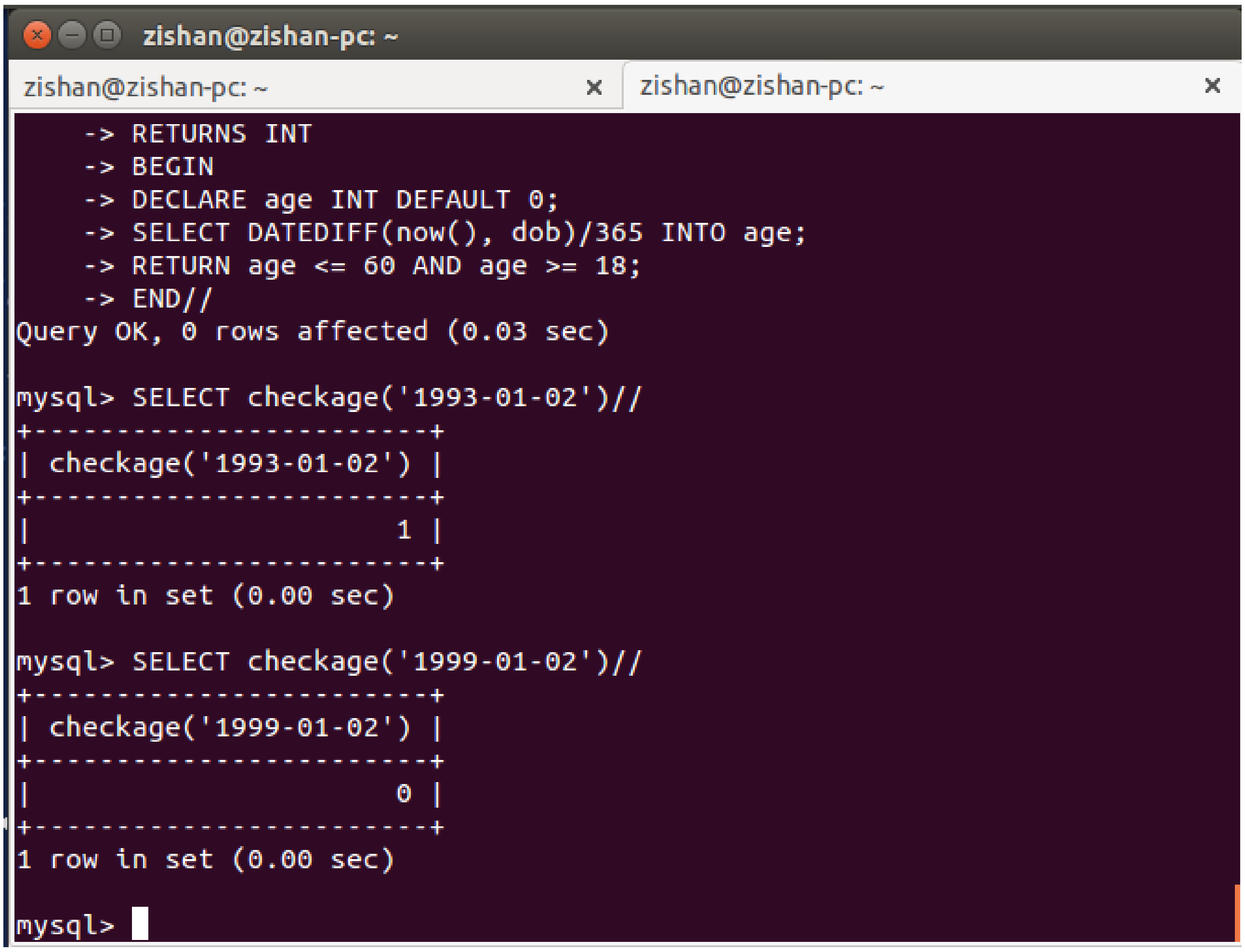
```
CREATE PROCEDURE deleteBook(IN iauthid INT)
BEGIN
        DECLARE bid INT;
        SELECT bookid FROM writtenby74 WHERE authid = iauthid INTO bid;
        DELETE FROM book74 WHERE bookid = bid;
        SELECT 'Book deleted';
END
```



```
mysql> insert into writtenby values(2,1,'Oxford')//
ERROR 1146 (42S02): Table 'dbms.writtenby' doesn't exist
mysql> insert into writtenby74 values(2,1,'Oxford')//
Query OK, 1 row affected (0.04 sec)

mysql> select * from writtenby74//
+--------+--------+---------+
| authid | bookid | pubname |
+--------+--------+---------+
|      2 |      1 | Oxford  |
+--------+--------+---------+
1 row in set (0.00 sec)

mysql> call deleteBook(2);
    -> //
+--------------+
| Book deleted |
+--------------+
| Book deleted |
+--------------+
1 row in set (0.05 sec)

Query OK, 0 rows affected (0.05 sec)

mysql> 
```

Q5. Create function that validate the age of employee. Function accept the dob of employee and
return 1 if age is lies between 18 and 60 else re turn 0

```
CREATE FUNCTION checkage(dob date)
RETURNS INT
BEGIN
        DECLARE age INT DEFAULT 0;
        SELECT DATEDIFF(now(), dob)/365 INTO age;
        RETURN age <= 60 AND age >= 18;
END
```

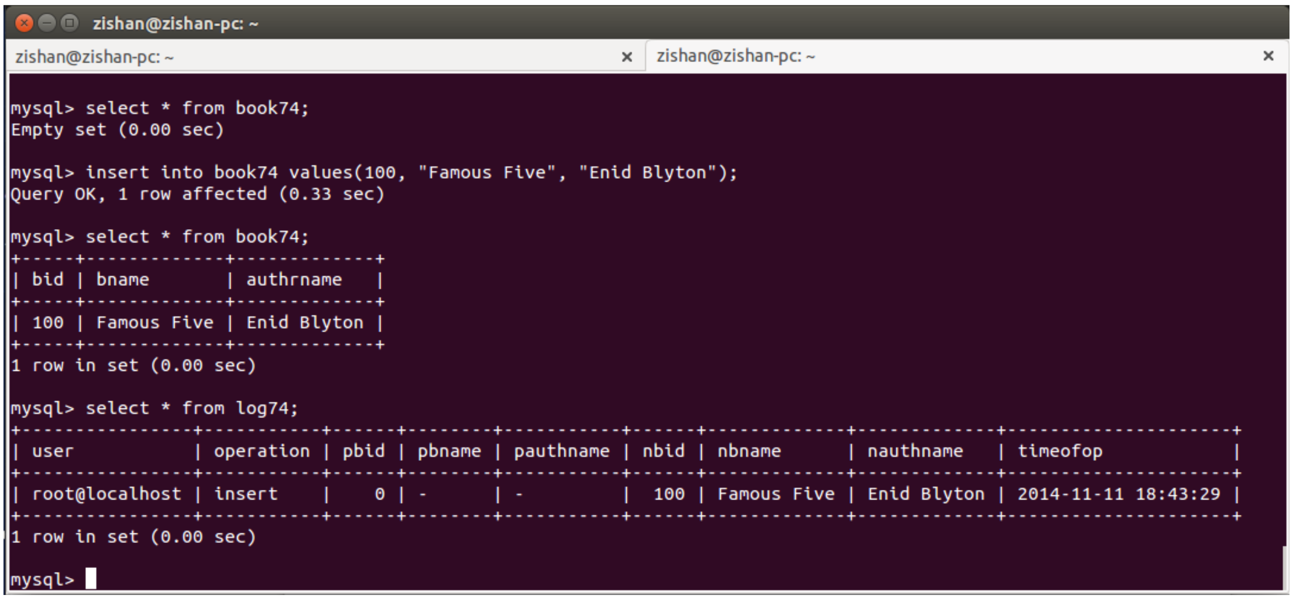


```
    -> RETURNS INT
    -> BEGIN
    -> DECLARE age INT DEFAULT 0;
    -> SELECT DATEDIFF(now(), dob)/365 INTO age;
    -> RETURN age <= 60 AND age >= 18;
    -> END//
Query OK, 0 rows affected (0.03 sec)

mysql> SELECT checkage('1993-01-02')//
+------------------------+
| checkage('1993-01-02') |
+------------------------+
|                      1 |
+------------------------+
1 row in set (0.00 sec)

mysql> SELECT checkage('1999-01-02')//
+------------------------+
| checkage('1999-01-02') |
+------------------------+
|                      0 |
+------------------------+
1 row in set (0.00 sec)

mysql> 
```

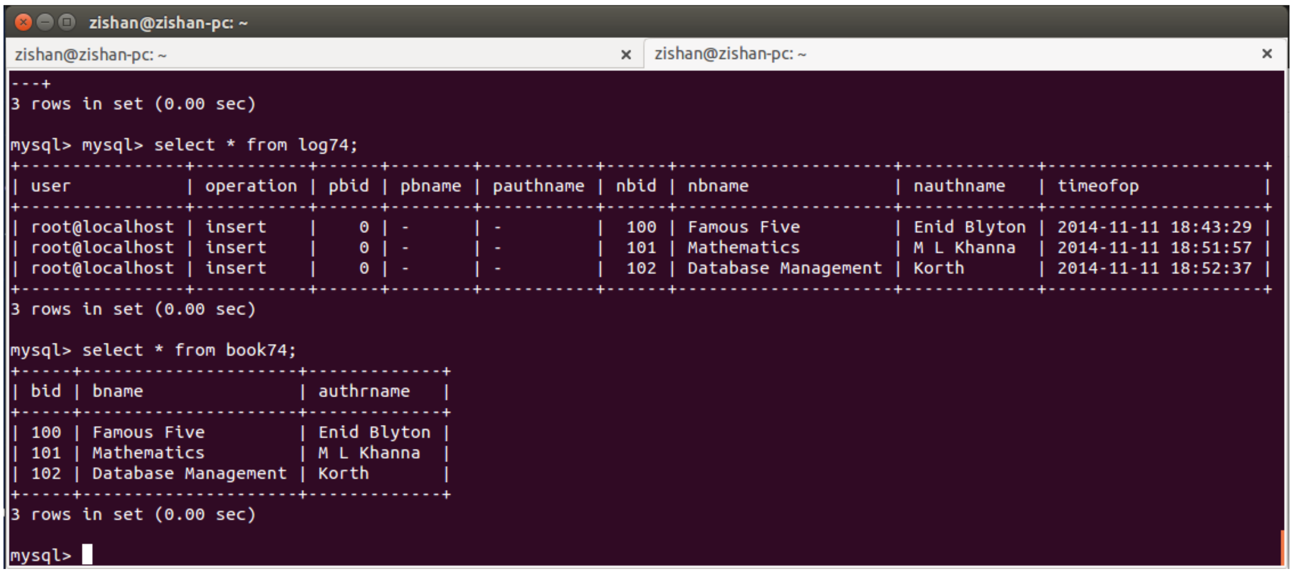
Q6. Consider a following table of a database :
Book(bid, bname,authrname)
1. Create triggers which create a log of every Insert ,Delete and Upda te operation on the book table record.
It should also hold the username who was operating at that time and t ime and type of operation.
NOTE: log table attributes are user, operation, pbid, pbname, pauthnam
e, nbid, nbname, nauthname and timeofop

INSERT TRIGGER:

```
CREATE TRIGGER insertlog AFTER INSERT ON book74  FOR EACH ROW
BEGIN
	INSERT INTO log74 VALUE(user(), "insert", '-', "-", "-", new.bid, new.bname,
new.authrname, now());
END
```



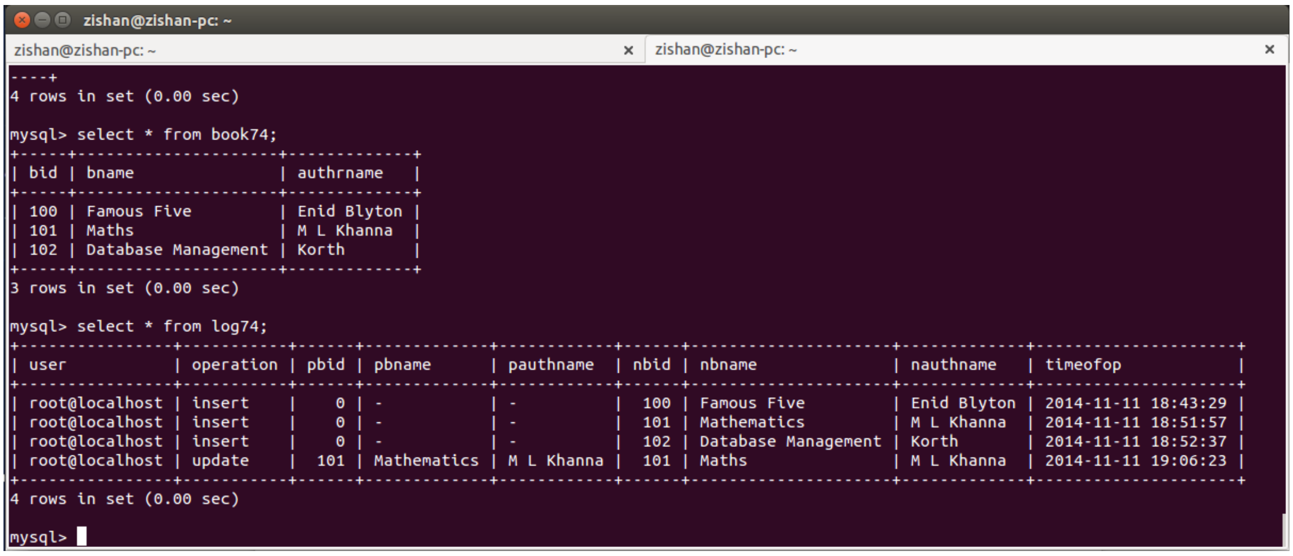
```
mysql> select * from book74;
Empty set (0.00 sec)

mysql> insert into book74 values(100, "Famous Five", "Enid Blyton");
Query OK, 1 row affected (0.33 sec)

mysql> select * from book74;
+-----+-------------+-------------+
| bid | bname       | authrname   |
+-----+-------------+-------------+
| 100 | Famous Five | Enid Blyton |
+-----+-------------+-------------+
1 row in set (0.00 sec)

mysql> select * from log74;
+----------------+-----------+------+--------+-----------+------+-------------+-------------+---------------------+
| user           | operation | pbid | pbname | pauthname | nbid | nbname      | nauthname   | timeofop            |
+----------------+-----------+------+--------+-----------+------+-------------+-------------+---------------------+
| root@localhost | insert    |    0 | -      | -         |  100 | Famous Five | Enid Blyton | 2014-11-11 18:43:29 |
+----------------+-----------+------+--------+-----------+------+-------------+-------------+---------------------+
1 row in set (0.00 sec)

mysql> 
```



```
---+
3 rows in set (0.00 sec)

mysql> mysql> select * from log74;
+----------------+-----------+------+--------+-----------+------+---------------------+-------------+---------------------+
| user           | operation | pbid | pbname | pauthname | nbid | nbname              | nauthname   | timeofop            |
+----------------+-----------+------+--------+-----------+------+---------------------+-------------+---------------------+
| root@localhost | insert    |    0 | -      | -         |  100 | Famous Five         | Enid Blyton | 2014-11-11 18:43:29 |
| root@localhost | insert    |    0 | -      | -         |  101 | Mathematics         | M L Khanna  | 2014-11-11 18:51:57 |
| root@localhost | insert    |    0 | -      | -         |  102 | Database Management | Korth       | 2014-11-11 18:52:37 |
+----------------+-----------+------+--------+-----------+------+---------------------+-------------+---------------------+
3 rows in set (0.00 sec)

mysql> select * from book74;
+-----+---------------------+-------------+
| bid | bname               | authrname   |
+-----+---------------------+-------------+
| 100 | Famous Five         | Enid Blyton |
| 101 | Mathematics         | M L Khanna  |
| 102 | Database Management | Korth       |
+-----+---------------------+-------------+
3 rows in set (0.00 sec)

mysql> 
```

UPDATE TRIGGER:

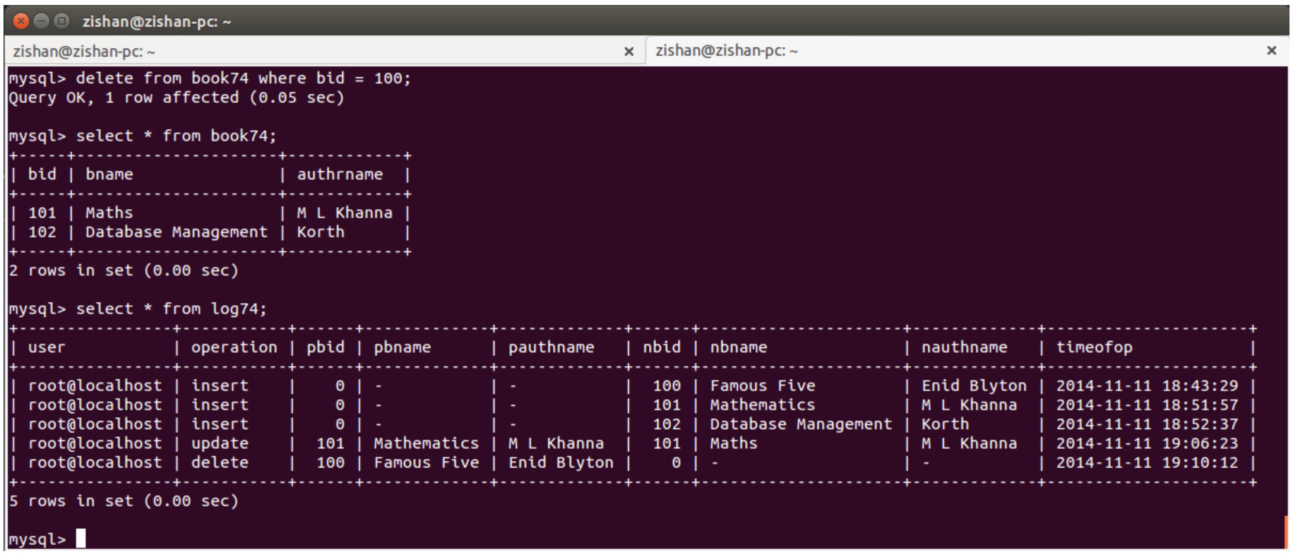
```
CREATE TRIGGER updatelog AFTER UPDATE ON book74 FOR EACH ROW
BEGIN
        INSERT INTO log74 VALUE(user(), 'update', old.bid, old.bname, old.authrname,
new.bid, new.bname, new.authrname, now());
END
```



```
----+
4 rows in set (0.00 sec)

mysql> select * from book74;
+-----+---------------------+-------------+
| bid | bname               | authrname   |
+-----+---------------------+-------------+
| 100 | Famous Five         | Enid Blyton |
| 101 | Maths               | M L Khanna  |
| 102 | Database Management | Korth       |
+-----+---------------------+-------------+
3 rows in set (0.00 sec)

mysql> select * from log74;
+----------------+-----------+------+-------------+------------+------+---------------------+-------------+---------------------+
| user           | operation | pbid | pbname      | pauthname  | nbid | nbname              | nauthname   | timeofop            |
+----------------+-----------+------+-------------+------------+------+---------------------+-------------+---------------------+
| root@localhost | insert    |    0 | -           | -          |  100 | Famous Five         | Enid Blyton | 2014-11-11 18:43:29 |
| root@localhost | insert    |    0 | -           | -          |  101 | Mathematics         | M L Khanna  | 2014-11-11 18:51:57 |
| root@localhost | insert    |    0 | -           | -          |  102 | Database Management | Korth       | 2014-11-11 18:52:37 |
| root@localhost | update    |  101 | Mathematics | M L Khanna |  101 | Maths               | M L Khanna  | 2014-11-11 19:06:23 |
+----------------+-----------+------+-------------+------------+------+---------------------+-------------+---------------------+
4 rows in set (0.00 sec)

mysql> 
```

DELETE TRIGGER:

```
CREATE TRIGGER deletelog BEFORE DELETE ON book74 FOR EACH ROW
BEGIN
        INSERT INTO log74 VALUE(user(), 'delete', old.bid, old.bname, old.authrname,
'-','-','-', now());
END
```



```
mysql> delete from book74 where bid = 100;
Query OK, 1 row affected (0.05 sec)

mysql> select * from book74;
+-----+---------------------+------------+
| bid | bname               | authrname  |
+-----+---------------------+------------+
| 101 | Maths               | M L Khanna |
| 102 | Database Management | Korth      |
+-----+---------------------+------------+
2 rows in set (0.00 sec)

mysql> select * from log74;
+----------------+-----------+------+-------------+-------------+------+---------------------+-------------+---------------------+
| user           | operation | pbid | pbname      | pauthname   | nbid | nbname              | nauthname   | timeofop            |
+----------------+-----------+------+-------------+-------------+------+---------------------+-------------+---------------------+
| root@localhost | insert    |    0 | -           | -           |  100 | Famous Five         | Enid Blyton | 2014-11-11 18:43:29 |
| root@localhost | insert    |    0 | -           | -           |  101 | Mathematics         | M L Khanna  | 2014-11-11 18:51:57 |
| root@localhost | insert    |    0 | -           | -           |  102 | Database Management | Korth       | 2014-11-11 18:52:37 |
| root@localhost | update    |  101 | Mathematics | M L Khanna  |  101 | Maths               | M L Khanna  | 2014-11-11 19:06:23 |
| root@localhost | delete    |  100 | Famous Five | Enid Blyton |    0 | -                   | -           | 2014-11-11 19:10:12 |
+----------------+-----------+------+-------------+-------------+------+---------------------+-------------+---------------------+
5 rows in set (0.00 sec)

mysql> 
```