

```

mysql> create database db3;
Query OK, 1 row affected (0.01 sec)

mysql> use db3;
Database changed
mysql> create table jobs(job_id int PRIMARY KEY,job_title varchar(45)not
null,min_salary decimal(10,2),max_salary decimal(10,2));
Query OK, 0 rows affected (0.02 sec)

mysql> create table regions(region_id int primary key,region_name varchar(40)
not null);
Query OK, 0 rows affected (0.02 sec)

mysql> create table countries(country_id int primary key,country_name
varchar(40) not null,region_id int,foreign key(region_id) references
regions(region_id));
Query OK, 0 rows affected (0.05 sec)

mysql> create table locations(location_id int primary key,street_address
varchar(50) not null,postal_code varchar(40) not null,city varchar(40) not
null,state_province varchar(40) not null,country_id int,foreign key(country_id)
references countries(country_id));
Query OK, 0 rows affected (0.04 sec)

mysql> create table departments(department_id int primary key,department_name
varchar(40) not null,location_id int,foreign key(location_id) references
locations(location_id));
Query OK, 0 rows affected (0.03 sec)

mysql> create table employees(employee_id int primary key,first_name varchar(40)
not null,last_name varchar(24) not null,email varchar(40) not null,phone_number
varchar(25) not null,hire_date date,job_id int,foreign key(job_id) references
jobs(job_id),salary decimal(10,2),manager_id int,department_id int,foreign
key(department_id) references departments(department_id));
Query OK, 0 rows affected (0.04 sec)

mysql> create table dependents(dependent_id int primary key,first_name
varchar(40) not null,last_name varchar(40) not null,relationship
varchar(40),employee_id int,foreign key(employee_id) references
employees(employee_id));
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO jobs VALUES (1,'stock manager',4200.00,9000.00),
(2,'developer',8200.00,16000.00),(3,'computer Assistant',3000.00,6000.00),
(4,'manager',20000.00,40000.00),(5,'vice manager',15000.00,3000);
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> insert into regions values (1,'Europe'), (2,'America'), (3,'Asia'),
(4,'Middle East and Africa');
Query OK, 4 rows affected (0.00 sec)
Records: 4 Duplicates: 0 Warnings: 0

mysql> insert into countries values (1,'india',3),(2,'china',3),
(3,'switzerland',1),(4,'canada',2),(5,'brazil',2),(6,'sharja',4);
Query OK, 6 rows affected (0.00 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> insert into locations values(1700,'001 juma
street','890901','delhi','new delhi',1),(1500,'2014 Jaberwocky
Rd','26192','southlake','santiago',5),(1300,'147 Spadina Ave','M5V
2L7','Toronto','Ontario','4'),(1100,'sharja road 1500','488133','sharja
palace','new sharja',6),(2500,'Magdalen Centre, The Oxford Science Park','OX9
9ZB','Oxford','Oxford','3');

```

Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0

```
mysql> insert into departments values (1,'finance',1700),(2,'marketing',1100),
(3,'sales',1500),(4,'accounting',1100);
Query OK, 4 rows affected (0.01 sec)
Records: 4 Duplicates: 0 Warnings: 0
```

```
mysql> insert into employees values
(01,'smith','hope','smith@gmail.com','9565654531','1989/10/09',1,150000,101,1);
Query OK, 1 row affected, 1 warning (0.01 sec)
```

```
mysql> insert into employees values
(02,'zen','hope','zen@gmail.com','9565614531','1989/11/09',1,1900000,201,2);
Query OK, 1 row affected, 1 warning (0.01 sec)
```

```
mysql> insert into employees values
(02,'john','taylor','john@gmail.com','9565314531','1990/11/09',4,230000,102,null
);
ERROR 1062 (23000): Duplicate entry '2' for key 'employees.PRIMARY'
mysql> insert into employees values
(03,'john','taylor','john@gmail.com','9565314531','1990/11/09',4,230000,102,null
);
Query OK, 1 row affected, 1 warning (0.01 sec)
```

```
mysql> insert into employees values
(04,'arjun','varma','arjun@gmail.com','8565314531','1992/11/09',3,280000,103,1);
Query OK, 1 row affected, 1 warning (0.00 sec)
```

```
mysql> insert into employees values
(05,'arun','varma','arun@gmail.com','7565314531','1997/11/09',3,6000,null,2);
Query OK, 1 row affected, 1 warning (0.03 sec)
```

```
mysql> insert into dependents values (1,'amala','arun','wife',5),
(2,'akhila','arjun','child',4),(3,'hari','murali','brother',3);
Query OK, 3 rows affected (0.03 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> select * from employees where department_id in (select department_id from
departments where location_id='1700');
```

```
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email                | phone_number |
hire_date   | job_id    | salary    | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|             | 1 | smith      | hope          | smith@gmail.com | 9565654531 | 1989-
10-09 | 1 | 150000.00 | 101 | 1 |
|             | 4 | arjun      | varma         | arjun@gmail.com | 8565314531 | 1992-
11-09 | 3 | 280000.00 | 103 | 1 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

```
mysql> select * from employees where department_id in (select department_id from
departments where location_id!='1700');
```

```
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email                | phone_number |
hire_date   | job_id    | salary    | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|             | 2 | zen        | hope          | zen@gmail.com   | 9565614531 | 1989-
11-09 | 1 | 1900000.00 | 201 | 2 |
```

```

|          5 | arun          | varma          | arun@gmail.com | 7565314531 | 1997-
11-09 |          3 |      6000.00 |          NULL |          2 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

```

mysql> select * from employees where salary = (select max(salary) from
employees);
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email          | phone_number |
hire_date | job_id | salary      | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|          2 | zen        | hope      | zen@gmail.com | 9565614531 | 1989-11-
09 |          1 | 1900000.00 |          201 |          2 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

```

```

mysql> select * from employees where salary > (select avg(salary) from
employees);
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email          | phone_number |
hire_date | job_id | salary      | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|          2 | zen        | hope      | zen@gmail.com | 9565614531 | 1989-11-
09 |          1 | 1900000.00 |          201 |          2 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

```

```

mysql> select department_id,department_name from departments where exists
(select 1 from employees where salary>10000);
+-----+-----+-----+
| department_id | department_name |
+-----+-----+-----+
|          1 | finance         |
|          2 | marketing        |
|          3 | sales           |
|          4 | accounting       |
+-----+-----+-----+
4 rows in set (0.00 sec)

```

```

mysql> select d.department_id,d.department_name from departments d WHERE
EXISTS(select 1 from employees e where e.department_id =d.department_id AND
e.salary
>10000);
+-----+-----+-----+
| department_id | department_name |
+-----+-----+-----+
|          1 | finance         |
|          2 | marketing        |
+-----+-----+-----+
2 rows in set (0.00 sec)

```

```

mysql> select * from employees e where salary > (select min(salary) from
employees where department_id=e.department_id);
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email          | phone_number |
hire_date | job_id | salary      | manager_id | department_id |

```

```

+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|      2 | zen      | hope      | zen@gmail.com | 9565614531 | 1989-
11-09 | 1 | 1900000.00 | 201 | 2 |
|      4 | arjun     | varma     | arjun@gmail.com | 8565314531 | 1992-
11-09 | 3 | 280000.00 | 103 | 1 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

```
mysql> select * from employees e where salary >= (select max(salary) from
employees where department_id=e.department_id);
```

```

+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email          | phone_number |
hire_date | job_id | salary      | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|      2 | zen      | hope      | zen@gmail.com | 9565614531 | 1989-
11-09 | 1 | 1900000.00 | 201 | 2 |
|      4 | arjun     | varma     | arjun@gmail.com | 8565314531 | 1992-
11-09 | 3 | 280000.00 | 103 | 1 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

```
mysql> select avg(dept_salary) as overall_avg_salary from(select
department_id,avg(salary) as dept_salary from employees group by
department_id)as totalavgsalary;
```

```

+-----+
| overall_avg_salary |
+-----+
| 466000.00000000000 |
+-----+
1 row in set (0.00 sec)

```

```
mysql> select employee_id,first_name,last_name,salary,(select round(avg(salary))
from employees)as avg_salary,salary-(select round(avg(salary)) from employees)as
difference from employees;
```

```

+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | salary      | avg_salary | difference |
+-----+-----+-----+-----+-----+-----+
|      1 | smith      | hope      | 150000.00 | 513200 | -363200.00 |
|      2 | zen        | hope      | 1900000.00 | 513200 | 1386800.00 |
|      3 | john       | taylor    | 230000.00 | 513200 | -283200.00 |
|      4 | arjun      | varma     | 280000.00 | 513200 | -233200.00 |
|      5 | arun       | varma     | 6000.00 | 513200 | -507200.00 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

```
mysql> select e.*from employees e where e.salary>(select avg(salary) from
employees e2 where e2.department_id = e.department_id);
```

```

+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email          | phone_number |
hire_date | job_id | salary      | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
|      2 | zen      | hope      | zen@gmail.com | 9565614531 | 1989-
11-09 | 1 | 1900000.00 | 201 | 2 |
|      4 | arjun     | varma     | arjun@gmail.com | 8565314531 | 1992-
11-09 | 3 | 280000.00 | 103 | 1 |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+

```

2 rows in set (0.00 sec)

```
mysql> select * from employees where employee_id not in (select employee_id
from dependents);
```

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	manager_id	department_id
1	smith	hope	smith@gmail.com	9565654531	1989-10-09	1	150000.00	101	1
2	zen	hope	zen@gmail.com	9565614531	1989-11-09	1	1900000.00	201	2

2 rows in set (0.00 sec)

```
mysql> select e.first_name,e.last_name,d.department_name from employees e join
departments d on e.department_id=d.department_id where e.department_id
in(1,2,3);
```

first_name	last_name	department_name
smith	hope	finance
arjun	varma	finance
zen	hope	marketing
arun	varma	marketing

4 rows in set (0.00 sec)

```
mysql> select e.first_name,e.last_name,d.department_name from employees e join
departments d on e.department_id=d.department_id where e.department_id in(1,2,3)
and e.salary>10000;
```

first_name	last_name	department_name
smith	hope	finance
arjun	varma	finance
zen	hope	marketing

3 rows in set (0.00 sec)

```
mysql> select
d.department_name,l.street_address,l.postal_code,c.country_name,r.region_name
from departments d join locations l on d.location_id=l.location_id join
countries c on l.country_id = c.country_id join regions r on c.region_id =
r.region_id;
```

department_name	street_address	postal_code	country_name	region_name
finance	001 juma street	890901	india	Asia
marketing	sharja road 1500	488133	sharja	Middle East and Africa
sales	2014 Jabberwocky Rd	26192	brazil	America
accounting	sharja road 1500	488133	sharja	Middle East and Africa

4 rows in set (0.00 sec)

```
mysql> select e.first_name,e.last_name,d.department_id,d.department_name from
employees e left join departments d on e.department_id=d.department_id;
```

first_name	last_name	department_id	department_name
smith	hope	1	finance
zen	hope	2	marketing
john	taylor	NULL	NULL
arjun	varma	1	finance
arun	varma	2	marketing

5 rows in set (0.00 sec)

```
mysql> select
e.first_name,e.last_name,d.department_id,d.department_name,l.city,l.state_provin
ce from employees e join departments d on e.department_id=d.department_id join
locations l on d.location_id=l.location_id where e.first_name like '%Z%';
```

first_name	last_name	department_id	department_name	city	state_province
zen	hope	2	marketing	sharja palace	new sharja

1 row in set (0.00 sec)

```
mysql> select e.first_name,e.last_name,d.department_id,d.department_name from
departments d left join employees e on d.department_id=e.department_id;
```

first_name	last_name	department_id	department_name
arjun	varma	1	finance
smith	hope	1	finance
arun	varma	2	marketing
zen	hope	2	marketing
NULL	NULL	3	sales
NULL	NULL	4	accounting

6 rows in set (0.00 sec)

```
mysql> SELECT e.first_name AS employee_first_name, m.first_name AS
manager_first_name FROM employees e LEFT JOIN employees m ON e.manager_id =
m.employee_id;
```

employee_first_name	manager_first_name
smith	NULL
zen	NULL
john	NULL
arjun	NULL
arun	NULL

5 rows in set (0.00 sec)

```
mysql> SELECT e.first_name, e.last_name, e.department_id FROM employees e INNER
JOIN employees t ON e.department_id = t.department_id WHERE t.last_name =
'taylor';
```

first_name	last_name	department_id
------------	-----------	---------------

```
+-----+-----+-----+
| john   | taylor   |          3 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT j.job_title, CONCAT(e.first_name, ' ', e.last_name) AS
employee_name, (j.max_salary - e.salary) AS salary_difference FROM employees e
INNER JOIN jobs j ON e.job_id = j.job_id;
```

```
+-----+-----+-----+
| job_title          | employee_name | salary_difference |
+-----+-----+-----+
| stock manager      | smith hope    | -141000.00        |
| stock manager      | zen hope      | -1891000.00       |
| manager            | john taylor   | -190000.00        |
| computer Assistant | arjun varma    | -274000.00        |
| computer Assistant | arun varma     | 0.00              |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> SELECT d.department_name AS department_name, AVG(e.salary) AS
average_salary, COUNT(e.department_id) AS number_of_employees FROM departments d
LEFT JOIN employees e ON d.department_id = e.department_id GROUP BY
d.department_name;
```

```
+-----+-----+-----+
| department_name | average_salary | number_of_employees |
+-----+-----+-----+
| finance         | 215000.000000  | 2                   |
| marketing       | 953000.000000  | 2                   |
| sales           | 230000.000000  | 1                   |
| accounting      | NULL           | 0                   |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> CREATE VIEW v_employee_details AS SELECT e.first_name, e.last_name,
e.employee_id, e.phone_number, j.job_title, d.department_name,
CONCAT(m.first_name, ' ', m.last_name) AS manager_name FROM employees e INNER
JOIN jobs j ON e.job_id = j.job_id INNER JOIN departments d ON e.department_id =
d.department_id LEFT JOIN employees m ON e.manager_id = m.employee_id WHERE
d.location_id IN (SELECT location_id FROM locations WHERE city = 'DELHI');
Query OK, 0 rows affected (0.03 sec)
mysql> select * from v_employee_details;
```

```
+-----+-----+-----+-----+-----+
| first_name | last_name | employee_id | phone_number | job_title          |
| department_name | manager_name |
+-----+-----+-----+-----+-----+
| smith      | hope      | 1           | 9565654531   | stock manager      |
| finance    | NULL      |             |              |                    |
| arjun      | varma     | 4           | 8565314531   | computer Assistant |
| finance    | NULL      |             |              |                    |
+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

```
mysql> SELECT first_name, last_name FROM v_employee_details WHERE job_title =
'stock manager' AND department_name = 'Finance';
```

```
+-----+-----+
| first_name | last_name |
+-----+-----+
| smith      | hope      |
+-----+-----+
1 row in set (0.00 sec)
```

```
mysql> UPDATE v_employee_details SET phone_number = 6985741230 WHERE first_name
= 'smith';
ERROR 1288 (HY000): The target table v_employee_details of the UPDATE is not
updatable
```

```
mysql> SELECT e.employee_id, e.first_name, e.last_name, e.phone_number FROM
employees e LEFT JOIN dependents dep ON e.employee_id = dep.employee_id WHERE
dep.employee_id IS NULL;
```

employee_id	first_name	last_name	phone_number
1	smith	hope	9565654531
2	zen	hope	9565614531

2 rows in set (0.00 sec)

```
mysql> select * from employees where manager_id = '101' UNION select * from
employees where manager_id='201';
```

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	manager_id	department_id
1	smith	hope	smith@gmail.com	9565654531	1989-10-09	1	150000.00	101	1
2	zen	hope	zen@gmail.com	9565614531	1989-11-09	1	1900000.00	201	2

2 rows in set (0.01 sec)

```
mysql> select * from employees where employee_id in (select
distinct(employee_id) from dependents);
```

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	manager_id	department_id
3	john	taylor	john@gmail.com	9565314531	1990-11-09	4	230000.00	102	3
4	arjun	varma	arjun@gmail.com	8565314531	1992-11-09	3	280000.00	103	1
5	arun	varma	arun@gmail.com	7565314531	1997-11-09	3	6000.00	NULL	2

3 rows in set (0.00 sec)