Creating tables

```
Database changed
mysql> CREATE TABLE CUSTOMERS (
    ->    ID INT NOT NULL,
    ->    NAME VARCHAR (20) NOT NULL,
    ->    AGE INT NOT NULL,
    ->    ADDRESS CHAR (25),
    ->    SALARY DECIMAL (18, 2),
    ->    PRIMARY KEY (ID)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO CUSTOMERS VALUES
    -> (1, 'Ramesh', 32, 'Ahmedabad', 2000.00),
    -> (2, 'Khilan', 25, 'Delhi', 1500.00),
    -> (3, 'Kaushik', 23, 'Kota', 2000.00),
    -> (4, 'Chaitali', 25, 'Mumbai', 6500.00),
    -> (5, 'Hardik', 27, 'Bhopal', 8500.00),
    -> (6, 'Komal', 22, 'Hyderabad', 4500.00),
    -> (7, 'Muffy', 24, 'Indore', 10000.00);
Query OK, 7 rows affected (0.01 sec)
Records: 7  Duplicates: 0  Warnings: 0

mysql> CREATE TABLE ORDERS (
    ->    OID INT NOT NULL,
    ->    DATE VARCHAR (20) NOT NULL,
    ->    CUSTOMER_ID INT NOT NULL,
    ->    AMOUNT DECIMAL (18, 2)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO ORDERS VALUES
    -> (102, '2009-10-08 00:00:00', 3, 3000.00),
    -> (100, '2009-10-08 00:00:00', 3, 1500.00),
    -> (101, '2009-11-20 00:00:00', 2, 1560.00),
    -> (103, '2008-05-20 00:00:00', 4, 2060.00);
```

```
mysql> create table CARS(
    ->    ID INT NOT NULL,
    ->    NAME VARCHAR(20) NOT NULL,
    ->    PRICE INT NOT NULL,
    ->    PRIMARY KEY(ID)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> insert INTO CARS VALUES
    -> (2, 'Maruti Swift', 450000),
    -> (4, 'VOLVO', 2250000),
    -> (7, 'Toyota', 2400000);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from cars;
+----+--------------+---------+
| ID | NAME         | PRICE   |
+----+--------------+---------+
|  2 | Maruti Swift |  450000 |
|  4 | VOLVO        | 2250000 |
|  7 | Toyota       | 2400000 |
+----+--------------+---------+
3 rows in set (0.00 sec)
```

```
mysql> select * from customers;
+----+----------+-----+-----------+----------+
| ID | NAME     | AGE | ADDRESS   | SALARY   |
+----+----------+-----+-----------+----------+
|  1 | Ramesh   |  32 | Ahmedabad |  2000.00 |
|  2 | Khilan   |  25 | Delhi     |  1500.00 |
|  3 | Kaushik  |  23 | Kota      |  2000.00 |
|  4 | Chaitali |  25 | Mumbai    |  6500.00 |
|  5 | Hardik   |  27 | Bhopal    |  8500.00 |
|  6 | Komal    |  22 | Hyderabad |  4500.00 |
|  7 | Muffy    |  24 | Indore    | 10000.00 |
+----+----------+-----+-----------+----------+
7 rows in set (0.00 sec)

mysql> select * from orders;
+-----+---------------------+-------------+---------+
| OID | DATE                | CUSTOMER_ID | AMOUNT  |
+-----+---------------------+-------------+---------+
| 102 | 2009-10-08 00:00:00 |           3 | 3000.00 |
| 100 | 2009-10-08 00:00:00 |           3 | 1500.00 |
| 101 | 2009-11-20 00:00:00 |           2 | 1560.00 |
| 103 | 2008-05-20 00:00:00 |           4 | 2060.00 |
+-----+---------------------+-------------+---------+
4 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE STUDENTS_HOBBY(
    ->    ID INT NOT NULL,
    ->    NAME VARCHAR(20) NOT NULL,
    ->    HOBBY VARCHAR(20) NOT NULL,
    ->    AGE INT NOT NULL,
    ->    PRIMARY KEY(ID)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO STUDENTS_HOBBY VALUES
    -> (1, 'Vijay', 'Cricket', 18),
    -> (2, 'Varun', 'Football', 26),
    -> (3, 'Surya', 'Cricket', 19),
    -> (4, 'Karthik', 'Cricket', 25),
    -> (5, 'Sunny', 'Football', 26),
    -> (6, 'Dev', 'Cricket', 23);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> select * from students_hobby;
+----+---------+----------+-----+
| ID | NAME    | HOBBY    | AGE |
+----+---------+----------+-----+
|  1 | Vijay   | Cricket  |  18 |
|  2 | Varun   | Football |  26 |
|  3 | Surya   | Cricket  |  19 |
|  4 | Karthik | Cricket  |  25 |
|  5 | Sunny   | Football |  26 |
|  6 | Dev     | Cricket  |  23 |
+----+---------+----------+-----+
6 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE STUDENTS(
    ->    ID INT NOT NULL,
    ->    NAME VARCHAR(20) NOT NULL,
    ->    SUBJECT VARCHAR(20) NOT NULL,
    ->    AGE INT NOT NULL,
    ->    HOBBY VARCHAR(20) NOT NULL,
    ->    PRIMARY KEY(ID)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO STUDENTS VALUES
    -> (1, 'Naina', 'Maths', 24, 'Cricket'),
    -> (2, 'Varun', 'Physics', 26, 'Football'),
    -> (3, 'Dev', 'Maths', 23, 'Cricket'),
    -> (4, 'Priya', 'Physics', 25, 'Cricket'),
    -> (5, 'Aditya', 'Chemistry', 21, 'Cricket'),
    -> (6, 'Kalyan', 'Maths', 30, 'Football');
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> select * from students;
+----+--------+-----------+-----+----------+
| ID | NAME   | SUBJECT   | AGE | HOBBY    |
+----+--------+-----------+-----+----------+
|  1 | Naina  | Maths     |  24 | Cricket  |
|  2 | Varun  | Physics   |  26 | Football |
|  3 | Dev    | Maths     |  23 | Cricket  |
|  4 | Priya  | Physics   |  25 | Cricket  |
|  5 | Aditya | Chemistry |  21 | Cricket  |
|  6 | Kalyan | Maths     |  30 | Football |
+----+--------+-----------+-----+----------+
6 rows in set (0.00 sec)
```

Inner join

```
mysql> SELECT ID, NAME, AMOUNT, DATE
    -> FROM CUSTOMERS
    -> INNER JOIN ORDERS
    -> ON CUSTOMERS.ID = ORDERS.CUSTOMER_ID;
+----+----------+---------+---------------------+
| ID | NAME     | AMOUNT  | DATE                |
+----+----------+---------+---------------------+
|  3 | Kaushik  | 3000.00 | 2009-10-08 00:00:00 |
|  3 | Kaushik  | 1500.00 | 2009-10-08 00:00:00 |
|  2 | Khilan   | 1560.00 | 2009-11-20 00:00:00 |
|  4 | Chaitali | 2060.00 | 2008-05-20 00:00:00 |
+----+----------+---------+---------------------+
4 rows in set (0.00 sec)
```

Left join

```
mysql> SELECT ID, NAME, AMOUNT, DATE
    -> FROM CUSTOMERS
    -> LEFT JOIN ORDERS
    -> ON CUSTOMERS.ID = ORDERS.CUSTOMER_ID;
+----+----------+---------+---------------------+
| ID | NAME     | AMOUNT  | DATE                |
+----+----------+---------+---------------------+
|  1 | Ramesh   |    NULL | NULL                |
|  2 | Khilan   | 1560.00 | 2009-11-20 00:00:00 |
|  3 | Kaushik  | 1500.00 | 2009-10-08 00:00:00 |
|  3 | Kaushik  | 3000.00 | 2009-10-08 00:00:00 |
|  4 | Chaitali | 2060.00 | 2008-05-20 00:00:00 |
|  5 | Hardik   |    NULL | NULL                |
|  6 | Komal    |    NULL | NULL                |
|  7 | Muffy    |    NULL | NULL                |
+----+----------+---------+---------------------+
8 rows in set (0.00 sec)
```

Right join

```
mysql> SELECT ID, NAME, AMOUNT, DATE
    -> FROM CUSTOMERS
    -> RIGHT JOIN ORDERS
    -> ON CUSTOMERS.ID = ORDERS.CUSTOMER_ID;
+------+----------+---------+---------------------+
| ID   | NAME     | AMOUNT  | DATE                |
+------+----------+---------+---------------------+
|    3 | Kaushik  | 3000.00 | 2009-10-08 00:00:00 |
|    3 | Kaushik  | 1500.00 | 2009-10-08 00:00:00 |
|    2 | Khilan   | 1560.00 | 2009-11-20 00:00:00 |
|    4 | Chaitali | 2060.00 | 2008-05-20 00:00:00 |
+------+----------+---------+---------------------+
4 rows in set (0.00 sec)
```

Cross join

```
mysql> SELECT  ID, NAME, AMOUNT, DATE
    -> FROM CUSTOMERS
    -> CROSS JOIN ORDERS;
+----+----------+---------+---------------------+
| ID | NAME     | AMOUNT  | DATE                |
+----+----------+---------+---------------------+
|  1 | Ramesh   | 2060.00 | 2008-05-20 00:00:00 |
|  1 | Ramesh   | 1560.00 | 2009-11-20 00:00:00 |
|  1 | Ramesh   | 1500.00 | 2009-10-08 00:00:00 |
|  1 | Ramesh   | 3000.00 | 2009-10-08 00:00:00 |
|  2 | Khilan   | 2060.00 | 2008-05-20 00:00:00 |
|  2 | Khilan   | 1560.00 | 2009-11-20 00:00:00 |
|  2 | Khilan   | 1500.00 | 2009-10-08 00:00:00 |
|  2 | Khilan   | 3000.00 | 2009-10-08 00:00:00 |
|  3 | Kaushik  | 2060.00 | 2008-05-20 00:00:00 |
|  3 | Kaushik  | 1560.00 | 2009-11-20 00:00:00 |
|  3 | Kaushik  | 1500.00 | 2009-10-08 00:00:00 |
|  3 | Kaushik  | 3000.00 | 2009-10-08 00:00:00 |
|  4 | Chaitali | 2060.00 | 2008-05-20 00:00:00 |
|  4 | Chaitali | 1560.00 | 2009-11-20 00:00:00 |
|  4 | Chaitali | 1500.00 | 2009-10-08 00:00:00 |
|  4 | Chaitali | 3000.00 | 2009-10-08 00:00:00 |
|  5 | Hardik   | 2060.00 | 2008-05-20 00:00:00 |
|  5 | Hardik   | 1560.00 | 2009-11-20 00:00:00 |
|  5 | Hardik   | 1500.00 | 2009-10-08 00:00:00 |
|  5 | Hardik   | 3000.00 | 2009-10-08 00:00:00 |
|  6 | Komal    | 2060.00 | 2008-05-20 00:00:00 |
|  6 | Komal    | 1560.00 | 2009-11-20 00:00:00 |
|  6 | Komal    | 1500.00 | 2009-10-08 00:00:00 |
|  6 | Komal    | 3000.00 | 2009-10-08 00:00:00 |
|  7 | Muffy    | 2060.00 | 2008-05-20 00:00:00 |
|  7 | Muffy    | 1560.00 | 2009-11-20 00:00:00 |
|  7 | Muffy    | 1500.00 | 2009-10-08 00:00:00 |
|  7 | Muffy    | 3000.00 | 2009-10-08 00:00:00 |
+----+----------+---------+---------------------+
28 rows in set (0.00 sec)
```

Equi Join

```
mysql> SELECT customers.name,customers.id,orders.oid
    -> from customers,orders
    -> where customers.id = orders.customer_id;
+----------+----+-----+
| name     | id | oid |
+----------+----+-----+
| Kaushik  |  3 | 102 |
| Kaushik  |  3 | 100 |
| Khilan   |  2 | 101 |
| Chaitali |  4 | 103 |
+----------+----+-----+
4 rows in set (0.00 sec)
```

Non Equi join

```
mysql> SELECT customers.name,customers.id,orders.oid
    -> from customers,orders
    -> where customers.id > orders.customer_id;
+----------+----+-----+
| name     | id | oid |
+----------+----+-----+
| Chaitali |  4 | 102 |
| Hardik   |  5 | 102 |
| Komal    |  6 | 102 |
| Muffy    |  7 | 102 |
| Chaitali |  4 | 100 |
| Hardik   |  5 | 100 |
| Komal    |  6 | 100 |
| Muffy    |  7 | 100 |
| Kaushik  |  3 | 101 |
| Chaitali |  4 | 101 |
| Hardik   |  5 | 101 |
| Komal    |  6 | 101 |
| Muffy    |  7 | 101 |
| Hardik   |  5 | 103 |
| Komal    |  6 | 103 |
| Muffy    |  7 | 103 |
+----------+----+-----+
16 rows in set (0.00 sec)
```

Self Join

```
mysql> SELECT a.ID, b.NAME as EARNS_HIGHER, a.NAME as EARNS_LESS, a.SALARY as LOWER_SALARY
    -> FROM CUSTOMERS a, CUSTOMERS b
    -> WHERE a.SALARY < b.SALARY;
+----+--------------+------------+--------------+
| ID | EARNS_HIGHER | EARNS_LESS | LOWER_SALARY |
+----+--------------+------------+--------------+
|  2 | Ramesh       | Khilan     |      1500.00 |
|  2 | Kaushik      | Khilan     |      1500.00 |
|  6 | Chaitali     | Komal      |      4500.00 |
|  3 | Chaitali     | Kaushik    |      2000.00 |
|  2 | Chaitali     | Khilan     |      1500.00 |
|  1 | Chaitali     | Ramesh     |      2000.00 |
|  6 | Hardik       | Komal      |      4500.00 |
|  4 | Hardik       | Chaitali   |      6500.00 |
|  3 | Hardik       | Kaushik    |      2000.00 |
|  2 | Hardik       | Khilan     |      1500.00 |
|  1 | Hardik       | Ramesh     |      2000.00 |
|  3 | Komal        | Kaushik    |      2000.00 |
|  2 | Komal        | Khilan     |      1500.00 |
|  1 | Komal        | Ramesh     |      2000.00 |
|  6 | Muffy        | Komal      |      4500.00 |
|  5 | Muffy        | Hardik     |      8500.00 |
|  4 | Muffy        | Chaitali   |      6500.00 |
|  3 | Muffy        | Kaushik    |      2000.00 |
|  2 | Muffy        | Khilan     |      1500.00 |
|  1 | Muffy        | Ramesh     |      2000.00 |
+----+--------------+------------+--------------+
20 rows in set (0.00 sec)
```

Order by

```
mysql> SELECT * FROM CUSTOMERS ORDER BY NAME ASC;
+----+----------+-----+-----------+----------+
| ID | NAME     | AGE | ADDRESS   | SALARY   |
+----+----------+-----+-----------+----------+
|  4 | Chaitali |  25 | Mumbai    |  6500.00 |
|  5 | Hardik   |  27 | Bhopal    |  8500.00 |
|  3 | Kaushik  |  23 | Kota      |  2000.00 |
|  2 | Khilan   |  25 | Delhi     |  1500.00 |
|  6 | Komal    |  22 | Hyderabad |  4500.00 |
|  7 | Muffy    |  24 | Indore    | 10000.00 |
|  1 | Ramesh   |  32 | Ahmedabad |  2000.00 |
+----+----------+-----+-----------+----------+
7 rows in set (0.00 sec)
```

Group by

```
mysql> SELECT AGE, COUNT(Name) FROM CUSTOMERS GROUP BY AGE;
+-----+--------------+
| AGE | COUNT(Name) |
+-----+--------------+
|  32 |            1 |
|  25 |            2 |
|  23 |            1 |
|  27 |            1 |
|  22 |            1 |
|  24 |            1 |
+-----+--------------+
6 rows in set (0.00 sec)
```

Having by

```
mysql> SELECT ADDRESS, AGE, MIN(SALARY) AS MIN_SUM
    -> FROM CUSTOMERS
    -> GROUP BY ADDRESS, AGE HAVING AGE > 25;
+-----------+-----+---------+
| ADDRESS   | AGE | MIN_SUM |
+-----------+-----+---------+
| Ahmedabad |  32 | 2000.00 |
| Bhopal    |  27 | 8500.00 |
+-----------+-----+---------+
2 rows in set (0.00 sec)
```

Distinct operator

```
mysql> SELECT DISTINCT SALARY FROM CUSTOMERS ORDER BY SALARY;
+----------+
| SALARY   |
+----------+
|  1500.00 |
|  2000.00 |
|  4500.00 |
|  6500.00 |
|  8500.00 |
| 10000.00 |
+----------+
6 rows in set (0.00 sec)
```

In operator

```
mysql> SELECT * FROM CUSTOMERS
    -> WHERE NAME IN ('Khilan', 'Hardik', 'Muffy');
+----+--------+-----+---------+----------+
| ID | NAME   | AGE | ADDRESS | SALARY   |
+----+--------+-----+---------+----------+
|  2 | Khilan |  25 | Delhi   |  1500.00 |
|  5 | Hardik |  27 | Bhopal  |  8500.00 |
|  7 | Muffy  |  24 | Indore  | 10000.00 |
+----+--------+-----+---------+----------+
3 rows in set (0.00 sec)
```

Any operator

```
mysql> SELECT * FROM CUSTOMERS
    -> WHERE SALARY > ANY (SELECT SALARY FROM CUSTOMERS WHERE AGE = 32);
+----+----------+-----+-----------+----------+
| ID | NAME     | AGE | ADDRESS   | SALARY   |
+----+----------+-----+-----------+----------+
|  4 | Chaitali |  25 | Mumbai    |  6500.00 |
|  5 | Hardik   |  27 | Bhopal    |  8500.00 |
|  6 | Komal    |  22 | Hyderabad |  4500.00 |
|  7 | Muffy    |  24 | Indore    | 10000.00 |
+----+----------+-----+-----------+----------+
4 rows in set (0.00 sec)
```

All operator

```
mysql> SELECT * FROM CUSTOMERS
    -> WHERE SALARY <>
    -> ALL (SELECT SALARY FROM CUSTOMERS WHERE AGE = 25);
+----+---------+-----+-----------+----------+
| ID | NAME    | AGE | ADDRESS   | SALARY   |
+----+---------+-----+-----------+----------+
|  1 | Ramesh  |  32 | Ahmedabad |  2000.00 |
|  3 | Kaushik |  23 | Kota      |  2000.00 |
|  5 | Hardik  |  27 | Bhopal    |  8500.00 |
|  6 | Komal   |  22 | Hyderabad |  4500.00 |
|  7 | Muffy   |  24 | Indore    | 10000.00 |
+----+---------+-----+-----------+----------+
5 rows in set (0.00 sec)
```

Exists operator

```
mysql> SELECT * FROM CUSTOMERS WHERE
    -> EXISTS (
    ->    SELECT PRICE FROM CARS
    ->    WHERE CARS.ID = CUSTOMERS.ID AND PRICE > 2000000
    -> );
+----+----------+-----+---------+----------+
| ID | NAME     | AGE | ADDRESS | SALARY   |
+----+----------+-----+---------+----------+
|  4 | Chaitali |  25 | Mumbai  |  6500.00 |
|  7 | Muffy    |  24 | Indore  | 10000.00 |
+----+----------+-----+---------+----------+
2 rows in set (0.00 sec)
```

AND & OR Operator

```
mysql> SELECT ID, NAME, SALARY FROM CUSTOMERS
    -> WHERE SALARY > 2000 AND AGE < 25;
+----+-------+----------+
| ID | NAME  | SALARY   |
+----+-------+----------+
|  6 | Komal |  4500.00 |
|  7 | Muffy | 10000.00 |
+----+-------+----------+
2 rows in set (0.00 sec)

mysql> SELECT ID, NAME, SALARY FROM CUSTOMERS
    -> WHERE SALARY > 2000 OR AGE < 25;
+----+----------+----------+
| ID | NAME     | SALARY   |
+----+----------+----------+
|  3 | Kaushik  |  2000.00 |
|  4 | Chaitali |  6500.00 |
|  5 | Hardik   |  8500.00 |
|  6 | Komal    |  4500.00 |
|  7 | Muffy    | 10000.00 |
+----+----------+----------+
5 rows in set (0.00 sec)
```

LIKE operator

```
mysql> SELECT * FROM CUSTOMERS WHERE NAME LIKE '%al%';
+----+----------+-----+-----------+---------+
| ID | NAME     | AGE | ADDRESS   | SALARY  |
+----+----------+-----+-----------+---------+
|  4 | Chaitali |  25 | Mumbai    | 6500.00 |
|  6 | Komal    |  22 | Hyderabad | 4500.00 |
+----+----------+-----+-----------+---------+
2 rows in set (0.00 sec)
```

BETWEEN operator

```
mysql> SELECT * FROM CUSTOMERS WHERE AGE BETWEEN 20 AND 25;
+----+----------+-----+-----------+----------+
| ID | NAME     | AGE | ADDRESS   | SALARY   |
+----+----------+-----+-----------+----------+
|  2 | Khilan   |  25 | Delhi     |  1500.00 |
|  3 | Kaushik  |  23 | Kota      |  2000.00 |
|  4 | Chaitali |  25 | Mumbai    |  6500.00 |
|  6 | Komal    |  22 | Hyderabad |  4500.00 |
|  7 | Muffy    |  24 | Indore    | 10000.00 |
+----+----------+-----+-----------+----------+
5 rows in set (0.00 sec)
```

Union Operator

```
mysql> SELECT SALARY FROM CUSTOMERS UNION SELECT AMOUNT FROM ORDERS;
+----------+
| SALARY   |
+----------+
|  2000.00 |
|  1500.00 |
|  6500.00 |
|  8500.00 |
|  4500.00 |
| 10000.00 |
|  3000.00 |
|  1560.00 |
|  2060.00 |
+----------+
9 rows in set (0.00 sec)
```

Intersect operator

```
mysql> SELECT NAME, AGE, HOBBY FROM STUDENTS_HOBBY
    -> INTERSECT
    -> SELECT NAME, AGE, HOBBY FROM STUDENTS;
+-------+-----+----------+
| NAME  | AGE | HOBBY    |
+-------+-----+----------+
| Varun |  26 | Football |
| Dev   |  23 | Cricket  |
+-------+-----+----------+
2 rows in set (0.00 sec)
```

Except Operator

```
mysql> SELECT NAME, HOBBY, AGE FROM STUDENTS
    -> EXCEPT
    -> SELECT NAME, HOBBY, AGE FROM STUDENTS_HOBBY;
+--------+----------+-----+
| NAME   | HOBBY    | AGE |
+--------+----------+-----+
| Naina  | Cricket  |  24 |
| Priya  | Cricket  |  25 |
| Aditya | Cricket  |  21 |
| Kalyan | Football |  30 |
+--------+----------+-----+
4 rows in set (0.00 sec)
```

Aggregate functions:

Average

```
mysql> SELECT AVG(SALARY) AS avg_salary FROM customers;
+-------------+
| avg_salary  |
+-------------+
| 5000.000000 |
+-------------+
1 row in set (0.00 sec)
```

COUNT

```
mysql> SELECT COUNT(AGE) AS num_of_age FROM customers;
+------------+
| num_of_age |
+------------+
|          7 |
+------------+
1 row in set (0.00 sec)
```

Sum

```
mysql> SELECT SUM(SALARY) as summation
    -> from CUSTOMERS
    -> ;
+-----------+
| summation |
+-----------+
|  35000.00 |
+-----------+
1 row in set (0.00 sec)
```

MIN & MAX

```
mysql> SELECT MIN(SALARY) AS min_salary from CUSTOMERS;
+------------+
| min_salary |
+------------+
|    1500.00 |
+------------+
1 row in set (0.00 sec)

mysql> SELECT MAX(SALARY) AS max_salary from CUSTOMERS;
+------------+
| max_salary |
+------------+
|   10000.00 |
+------------+
1 row in set (0.00 sec)
```