```
Your MariaDB connection id is 31
Server version: 10.1.43-MariaDB-Oubuntu0.18.04.1 Ubuntu 18.04
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MariaDB [(none)]> show databases;
+----+
 Database
+----+
 C3hsDB
 bondDB
 information_schema
 mysql
 performance_schema
 vsearchlogDB
 weatherDB
7 rows in set (0.00 sec)
MariaDB [(none)]> create database leaderboardDB;
Query OK, 1 row affected (0.00 sec)
MariaDB [(none)]> show databases;
+----+
| Database
+----+
 C3hsDB
 bondDB
 information_schema
 leaderboardDB
 mysql
 performance_schema
 vsearchlogDB
 weatherDB
+----+
8 rows in set (0.00 sec)
MariaDB [(none)] > grant all on leaderboardDB.* to 'g3user' identified by 'g3userpasswd';
Query OK, 0 rows affected (0.00 sec)
MariaDB [(none)]> quit
Bye
```

Welcome to the MariaDB monitor. Commands end with ; or \g.

```
C:\> mysql -u g3user -p leaderboardDB
Enter password:
Welcome to the MariaDB monitor. Commands end with; or \q.
Your MariaDB connection id is 32
Server version: 10.1.43-MariaDB-Oubuntu0.18.04.1 Ubuntu 18.04
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MariaDB [leaderboardDB]> show tables;
Empty set (0.00 sec)
MariaDB [leaderboardDB] > create table leaderboard (
   -> name varchar(64),
   -> thetime decimal(16,2),
   -> attempts int
   -> );
Query OK, 0 rows affected (0.01 sec)
MariaDB [leaderboardDB]> show tables;
+----+
| Tables_in_leaderboardDB |
+----+
| leaderboard
+----+
1 row in set (0.00 sec)
MariaDB [leaderboardDB]> describe leaderboard;
+----+
                      | Null | Key | Default | Extra |
| Field
         | varchar(64) | YES | | NULL
| name
 thetime | decimal(16,2) | YES |
                                | NULL
| attempts | int(11) | YES |
                                  I NULL
3 rows in set (0.01 sec)
MariaDB [leaderboardDB]> drop table leaderboard;
Query OK, 0 rows affected (0.00 sec)
MariaDB [leaderboardDB]> show tables;
Empty set (0.00 sec)
MariaDB [leaderboardDB] > create table leaderboard ( name varchar(64) not null, thetime decimal(16,2) not null, attempts int not null);
Query OK, 0 rows affected (0.01 sec)
```

```
+----+----+
 Field
                       | Null | Key | Default | Extra |
           varchar(64) | NO |
                                     NULL
 name
 thetime | decimal(16,2) | NO
                                     NULL
| attempts | int(11) | NO
                                     NULL
+----+
3 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Paul', 42.16, 5);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Paul', 42.16, 5);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Paul', 42.16, 5);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+----+
| name | thetime | attempts |
+----+
 Paul | 42.16 |
 Paul |
         42.16
                       5
 Paul I
         42.16 l
3 rows in set (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Harry', 62.16, 4);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Mary', 12.16, 4);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Joe', 22.16, 3);
Query OK, 1 row affected (0.00 sec)
```

MariaDB [leaderboardDB]> describe leaderboard;

```
MariaDB [leaderboardDB]> select * from leaderboard;
```

| T | name | thetime | attempts |
|---|-------|---------|----------|
| Paul 42.16 5 Paul 42.16 5 Paul 42.16 5 Harry 62.16 4 Mary 12.16 4 Joe 22.16 3 | Paul | 42.16 | 5 |
| | Paul | 42.16 | 5 |
| | Harry | 62.16 | 4 |
| | Mary | 12.16 | 4 |

MariaDB [leaderboardDB]> insert into leaderboard (name, thetime, attempts) values ('Mike', 72.16, 7); Query OK, 1 row affected (0.00 sec)

MariaDB [leaderboardDB]> insert into leaderboard (name, thetime, attempts) values ('Mike', 12.46, 2); Query OK, 1 row affected (0.00 sec)

MariaDB [leaderboardDB]> select * from leaderboard;

| 4 4 | | |
|---|--|---------------------------------|
| name | thetime | attempts |
| Paul Paul Paul Paul Harry Mary Joe Mike | 42.16 42.16 42.16 62.16 12.16 22.16 72.16 12.46 | 5 5 4 4 3 7 2 |
| | | |

8 rows in set (0.00 sec)

```
MariaDB [leaderboardDB]> select attempts from leaderboard;
```

MariaDB [leaderboardDB]> select attempts, name, thetime from leaderboard;

| 4 | L | L _ |
|------------------------|---|---|
| attempts | name | thetime |
| 5 5 4 4 | Paul Paul Paul Paul Harry Mary | 42.16 42.16 42.16 62.16 12.16 |
| 3 7 | Joe Mike | 22.16 72.16 |
| 2 | Mike | 12.46 |
| | | |

8 rows in set (0.00 sec)

MariaDB [leaderboardDB]> select * from leaderboard;

| + | · + | |
|--|--|--|
| name | thetime | attempts |
| Paul Paul Paul Paul Harry Mary Joe Mike Mike | 42.16 42.16 42.16 62.16 12.16 22.16 72.16 12.46 | 5 5 5 4 4 3 7 2 |
| ++ | + | + |

8 rows in set (0.00 sec)

```
MariaDB [leaderboardDB]> select attempts, name, thetime from leaderboard;
 attempts | name | thetime |
        5 | Paul |
                    42.16
        5 I
           Paul
                    42.16
        5 | Paul
                    42.16
        4 | Harry |
                    62.16
        4 | Mary
                    12.16
        3 | Joe
                    22.16
        7 | Mike
                    72.16
        2 | Mike
                    12.46
           ----+
8 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select count(*) from leaderboard;
+----+
| count(*) |
+----+
        8 |
+----+
1 row in set (0.00 sec)
MariaDB [leaderboardDB]> select attempts, thetime, name from leaderboard;
+----+
| attempts | thetime | name |
             42.16 | Paul
        5 I
        5 I
             42.16 |
                    Paul
        5
             42.16 |
                    Paul
        4
             62.16
                    Harry
        4
             12.16 |
                    Mary
        3
             22.16 |
                    Joe
        7
             72.16 | Mike
             12.46 | Mike
8 rows in set (0.00 sec)
```

MariaDB [leaderboardDB] > select attempts, thetime, name from leaderboard order by attempts, thetime;

| 2 12.46 Mike | i |
|--|-------------------------------|
| 3 22.16 Joe 4 12.16 Mary 4 62.16 Harry 5 42.16 Paul 5 42.16 Paul 5 42.16 Paul 7 72.16 Mike | |

8 rows in set (0.00 sec)

MariaDB [leaderboardDB]> select attempts, thetime, name from leaderboard order by attempts, thetime desc;

8 rows in set (0.00 sec)

MariaDB [leaderboardDB]> select attempts, thetime, name from leaderboard order by attempts, thetime asc

| -> ; | | |
|----------|------------------|-------------------|
| attempts | thetime | name |
| 2 | 12.46 | Mike |
| 3 4 | 22.16 12.16 | Joe |
| 4 5 | 62.16 42.16 | Harry Paul |
| 5 | 42.16 | Paul |
| 5 7 | 42.16 72.16 | Paul Mike |
| + | + | + |

8 rows in set (0.00 sec)

```
MariaDB [leaderboardDB] > select attempts, thetime, name from leaderboard order by attempts, thetime desc;
+----+
 attempts | thetime | name
       2 |
            12.46 | Mike
       3 |
            22.16 l
                   Joe
       4 |
            62.16
                   Harry
            12.16
                   Mary
       5 I
            42.16
                   Paul
       5 |
            42.16
                   Paul
       5
            42.16 l
                   Paul
       7
            72.16 | Mike
8 rows in set (0.00 sec)
MariaDB [leaderboardDB] > select attempts, thetime, name from leaderboard order by attempts desc, thetime desc;
 attempts | thetime | name |
            72.16 | Mike
       7
       5 I
            42.16 l
                   Paul
       5 I
            42.16 |
                   Paul
       5 I
            42.16 |
                   Paul
       4 |
            62.16
                   Harry
       4
            12.16
                   Mary
       3
            22.16 l
                   Joe
            12.46 | Mike
8 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard where name = 'Mike';
+----+
| name | thetime | attempts |
+----+
 Mike |
        72.16 |
| Mike | 12.46 |
                      2 |
+----+
2 rows in set (0.00 sec)
MariaDB [leaderboardDB] > select * from leaderboard where name = 'Mike' order by attempts;
+----+
| name | thetime | attempts |
+----+
 Mike | 12.46 |
                    7 I
| Mike | 72.16 |
+----+
```

```
MariaDB [leaderboardDB]> select * from leaderboard
   -> where name = 'Harry'
   -> order by thetime;
+----+
| name | thetime | attempts |
+-----+
| Harry | 62.16 |
+-----+
1 row in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+----+
| name | thetime | attempts |
+-----+
 Paul | 42.16 |
 Paul | 42.16 |
                    5 |
                    5
 Paul |
        42.16
         62.16 |
                    4
 Harry |
 Mary |
        12.16
 Joe
         22.16 |
                    3 |
                    7 Ì
 Mike | 72.16 |
 Mike | 12.46 |
8 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard where name = 'Paul';
+----+
| name | thetime | attempts |
+----+
```

5

Paul | 42.16 | Paul | 42.16 |

Paul | 42.16 |

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

```
MariaDB [leaderboardDB]> select * from leaderboard;
+----+
| name | thetime | attempts |
 Paul | 42.16 |
 Paul |
        42.16
 Paul I
        42.16 l
         62.16
 Harry |
 Mary |
        12.16 |
 Joe I
       22.16 l
                    3
 Mike | 72.16 |
                    7 |
 Mike | 12.46 |
                    2
+----+
8 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard where name = 'Mary';
+----+
| name | thetime | attempts |
+----+
| Mary | 12.16 |
+----+
1 row in set (0.00 sec)
MariaDB [leaderboardDB] > update leaderboard set thetime = 32.16 where name = 'Mary';
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0
MariaDB [leaderboardDB]> select * from leaderboard where name = 'Mary';
+----+
| name | thetime | attempts |
+----+
| Mary | 32.16 |
+----+
1 row in set (0.00 sec)
```

```
MariaDB [leaderboardDB]> select * from leaderboard;
+----+
 name | thetime | attempts |
+----+
                      5 I
 Paul | 42.16 |
 Paul I
          42.16 I
                      5
 Paul
          42.16 |
                      5
 Harry |
          62.16
          32.16
 Mary |
 Joe
          22.16
                      3
 Mike | 72.16
                      7
 Mike | 12.46 |
8 rows in set (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard where name = 'Paul';
| name | thetime | attempts |
 Paul | 42.16 |
 Paul | 42.16 |
 Paul | 42.16 |
+----+
3 rows in set (0.00 sec)
MariaDB [leaderboardDB]> describe leaderboard;
```

| Field | + Type + | Null | Key | Default | Extra |
|-----------------------------|--------------------------------|--------------------|-----|----------------------|-------|
| name thetime attempts | varchar(64) decimal(16,2) | NO NO NO | | NULL NULL NULL | |

MariaDB [leaderboardDB]>
MariaDB [leaderboardDB]> drop table leaderboard;
Query OK, 0 rows affected (0.01 sec)

```
MariaDB [leaderboardDB]> show tables;
Empty set (0.00 sec)
MariaDB [leaderboardDB] > create table leaderboard (
   ->
         id int not null auto_increment primary key,
   ->
         name varchar(64) not null,
   ->
         thetime decimal(16,2) not null,
         attempts int not null
   ->
   -> );
Query OK, 0 rows affected (0.01 sec)
MariaDB [leaderboardDB]> describe leaderboard;
+----+
                       | Null | Key | Default | Extra
| Field
+----+
 id
          int(11)
                       I NO
                             | PRI | NULL
                                            auto increment
 name
          varchar(64) | NO
                                   NULL
 thetime | decimal(16,2) | NO
                                   NULL
 attempts | int(11) | NO
                                   NULL
+-----
4 rows in set (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Mike', 72.16, 7);
Query OK, 1 row affected (0.01 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Mike', 72.16, 7);
Ouery OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Mike', 72.16, 7);
Query OK, 1 row affected (0.01 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+---+
| id | name | thetime | attempts |
  1 | Mike |
             72.16
             72.16
                          7 |
     Mike |
  3 | Mike |
             72.16 l
                          7 I
+---+
3 rows in set (0.00 sec)
```

```
MariaDB [leaderboardDB] > select * from leaderboard where name = 'Mike' and id <> 1;
+---+
| id | name | thetime | attempts |
+---+
  2 | Mike | 72.16 |
           72.16 l
  3 | Mike |
                         7 I
2 rows in set (0.00 sec)
MariaDB [leaderboardDB] > delete from leaderboard where name = 'Mike' and id <> 1;
Query OK, 2 rows affected (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+---+
| id | name | thetime | attempts |
+---+
| 1 | Mike | 72.16 | 7 |
+---+
1 row in set (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Joe', 32.16, 6);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+---+
| id | name | thetime | attempts |
  1 | Mike | 72.16 |
  4 | Joe | 32.16 |
+---+
2 rows in set (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (id, name, thetime, attempts) values (2, 'Linda', 22.16, 4);
Query OK, 1 row affected (0.00 sec)
MariaDB [leaderboardDB]> select * from leaderboard;
+---+
| id | name | thetime | attempts |
+---+
                          7 |
  1 | Mike | 72.16 |
  2 | Linda |
             22.16 |
                          4
  4 | Joe | 32.16 |
                          6 I
3 rows in set (0.00 sec)
MariaDB [leaderboardDB] > insert into leaderboard (name, thetime, attempts) values ('Timmy', 52.16, 3);
Query OK, 1 row affected (0.00 sec)
```

| <pre>MariaDB [leaderboardDB]> select * from leaderboard;</pre> |
|---|
| id name thetime attempts |
| 1 Mike 72.16 7 |
| 2 Linda 22.16 4 |
| 4 Joe 32.16 6 |
| 5 Timmy 52.16 3 |
| ++ |

MariaDB [leaderboardDB]> insert into leaderboard (id, name, thetime, attempts) values (2, 'Linda', 22.16, 4); ERROR 1062 (23000): Duplicate entry '2' for key 'PRIMARY' MariaDB [leaderboardDB]>