

CISC 3810 Section TR9 MariaDB Commands – Part I

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1 show databases

Lists the databases on the MariaDB server host.

1.1 Example

```
MariaDB [(none)]> show databases;
+-----+
| Database          |
+-----+
| information_schema |
| db                 |
+-----+
2 rows in set (0.00 sec)
```

```
MariaDB [(none)]>
```

1.2 Reference

<https://mariadb.com/kb/en/show-databases/>

2 use db_name

Tells MariaDB to use the db_name database as the default (current) database for subsequent statements.

2.1 Example

```
MariaDB [(none)]> use db
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
MariaDB [db]>
```

2.2 Reference

<https://mariadb.com/kb/en/use/>

3 SELECT DATABASE()

Show the default (current) database

3.1 Example

```
MariaDB [db]> SELECT DATABASE();
+-----+
| DATABASE() |
+-----+
| db |
+-----+
1 row in set (0.01 sec)
```

```
MariaDB [db]>
```

4 show tables

Lists the non-TEMPORARY tables, sequences and views in a given database.

4.1 Example

```
MariaDB [db]> show tables;
+-----+
| Tables_in_db |
+-----+
| Courses      |
| Enrollment   |
| Students     |
+-----+
3 rows in set (0.00 sec)
```

```
MariaDB [db]>
```

5 describe tables

Show the schema of a relation or a view.

```
MariaDB [db]> desc Courses;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| title | varchar(255) | YES  |     | NULL    |       |
| idnum | char(5)       | NO   | PRI | NULL    |       |
| hours | int(11)       | YES  |     | NULL    |       |
```

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

```
MariaDB [db]>
```

5.1 Reference

<https://mariadb.com/kb/en/show-tables/>

6 show create table

Shows the CREATE TABLE statement that created the given table.

```
MariaDB [db]> SHOW CREATE TABLE Enrollment;
+-----+-----+-----+-----+-----+
| Table      | Create Table                                     |
+-----+-----+-----+-----+-----+
| Enrollment | CREATE TABLE 'Enrollment' (
  'sname' char(30) NOT NULL DEFAULT '',
  'sphone' char(10) NOT NULL DEFAULT '',
  'cidnum' char(5) NOT NULL DEFAULT '',
  'since' datetime DEFAULT NULL,
  PRIMARY KEY ('sname','sphone','cidnum'),
  CONSTRAINT 'Enrollment_ibfk_1' FOREIGN KEY ('sname', 'sphone')
REFERENCES 'Students' ('name', 'phone')
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

```
MariaDB [db]>
```

6.1 Reference

<https://mariadb.com/kb/en/show-create-table/>

7 Foreign Key Constraint

MariaDB has this limitation as indicated in its documentation,

Note: Until MariaDB 10.4, MariaDB accepts the shortcut format with a REFERENCES clause only in ALTER TABLE and CREATE TABLE statements, but that syntax does nothing. For example:

```
CREATE TABLE b(for_key INT REFERENCES a(not_key));
```

MariaDB simply parses it without returning any error or warning, for compatibility with other DBMS's. Before MariaDB 10.2.1 this was also true for CHECK constraints. However, only the syntax described below creates foreign keys.

From MariaDB 10.5, MariaDB will attempt to apply the constraint. See Foreign Keys examples.

which means if we declare a table like below, the foreign key constraint `REFERENCES Courses (idnum)` on `cidnum` has no effect but to compatible with the standard.

```
CREATE TABLE Enrollment(  
  sname CHAR(30),  
  sphone CHAR(10),  
  -- foreign key constraint  
  cidnum CHAR(5) REFERENCES Courses ( idnum ),  
  since DATETIME,  
  -- primary key constraint  
  PRIMARY KEY(sname, sphone, cidnum),  
  -- also foreign key constraint  
  FOREIGN KEY(sname, sphone)  
    REFERENCES Students (name, phone));
```

To ensure the foreign key constraints are enforce, we must declare it in a separate line in MariaDB, i.e., we'd better to declare the above as follows,

```
CREATE TABLE Enrollment(  
  sname CHAR(30),  
  sphone CHAR(10),  
  -- foreign key constraint  
  cidnum CHAR(5),  
  since DATETIME,  
  -- primary key constraint  
  PRIMARY KEY(sname, sphone, cidnum),  
  -- also foreign key constraint  
  FOREIGN KEY (cidnum) REFERENCES Courses (idnum),  
  FOREIGN KEY(sname, sphone)  
    REFERENCES Students (name, phone));
```

For an example table, we can add the foreign key constraint as follows,

```
MariaDB [db]> ALTER TABLE Enrollment  
  ADD CONSTRAINT  
  FOREIGN KEY(cidnum) REFERENCES Courses(idnum);  
Query OK, 1 row affected (0.03 sec)  
Records: 1 Duplicates: 0 Warnings: 0  
  
MariaDB [db]>
```

7.1 Reference

<https://mariadb.com/kb/en/create-table/#column-definitions>

8 Backing up Database

To back up the database schema and the data inserted, use the `mysqldump` command. For example, assume the database is `db`, the MariaDB username is `bcuser`, the host running MariaDB is `127.0.0.1`,

```
mysqldump -h 127.0.0.1 -u bcuser db -p > db210310.sql
```

which backs up the schema and the data into the text file `db210310.sql`.

8.1 Reference

<https://mariadb.com/kb/en/mariadb-dumpmysqldump/>

9 Restoring Database

To restore a database that you backed up. Use the `mysql` command, such as,

```
mysql -h 127.0.0.1 -u bcuser db -p < db210310.sql
```

where we assume the host running MariaDB is `127.0.0.1`, the user is `bcuser`, the database is `db`, and the backup file is `db210310.sql`

9.1 Reference

<https://mariadb.com/kb/en/restoring-data-from-dump-files/>

10 ALTER TABLE ADD FOREIGN KEY

To add a foreign key constraint, use `ALTER TABLE ADD FOREIGN KEY`.

```
ALTER TABLE Enrollment
ADD FOREIGN KEY(cidnum)
REFERENCES Courses(idnum);
```

10.1 Mysterious KEY

After we use the `ALTER TABLE ADD FOREIGN KEY` to add a foreign key constraint, we observe a mysterious `KEY ...` when we do `show create table ...`, e.g.,

```

MariaDB [db]> SHOW CREATE TABLE Enrollment;
+-----+-----+
| Table          | Create Table                                     |
+-----+-----+
| Enrollment    | CREATE TABLE 'Enrollment' (
  'sname' char(30) NOT NULL DEFAULT '',
  'sphone' char(10) NOT NULL DEFAULT '',
  'cidnum' char(5) NOT NULL DEFAULT '',
  'since' datetime DEFAULT NULL,
  PRIMARY KEY ('sname','sphone','cidnum'),
  KEY 'Enrollment_ibfk_2' ('cidnum'),
  CONSTRAINT 'Enrollment_ibfk_2' FOREIGN KEY ('cidnum')
  REFERENCES 'Courses' ('idnum'),
  CONSTRAINT 'Enrollment_ibfk_1' FOREIGN KEY ('sname', 'sphone')
  REFERENCES 'Students' ('name', 'phone')
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
+-----+-----+
1 row in set (0.00 sec)

```

```
MariaDB [db]>
```

The explanation of this is in MariaDB's documentation,

The columns in the child table must be an index, or the leftmost part of an index. Index prefixes are not supported (thus, TEXT and BLOB columns cannot be used as foreign keys). If MariaDB automatically creates an index for the foreign key (because it does not exist and is not explicitly created), its name will be `index_name`.

The KEY here simply declares that there is an index on `cidnum`.

10.2 Reference

<https://mariadb.com/kb/en/foreign-keys/>