DATABASE SYSTEM

DATA DEFINITON LANGUNGE(DDL)

Disusun oleh:

Aulia Septianingrum Revyana Nurcahyani

L200183070

INFORMATION STUDY PROGRAM

COMMUNICATION AND INFORMATION FACULTY

MUHAMMADIYAH UNIVERSITY OF SURAKARTA

A. EXERCISE

1. Buka Command Prompt dan login sebagai root ke MySQL

```
C:\Users\ASUS>cd..

C:\Users>cd C:\xampp\mysql\bin

C:\xampp\mysql\bin>mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 10
Server version: 10.4.11-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

2. Membuat database perbankan

```
MariaDB [(none)]> create database perbankan;
Query OK, 1 row affected (0.002 sec)

MariaDB [(none)]> use perbankan;
Database changed
```

3. Membuat table nasabah

```
MariaDB [(none)]> use perbankan
Database changed
MariaDB [perbankan]> CREATE TABLE nasabah(
    -> id_nasabah INTEGER PRIMARY KEY,
    -> nama_nasabah VARCHAR(45) NOT NULL,
    -> alamat_nasabah VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.260 sec)
```

4. Membuat table cabang_bank

```
MariaDB [perbankan]> CREATE TABLE cabang_bank(
    -> kode_cabang VARCHAR(20) PRIMARY KEY,
    -> nama_cabang VARCHAR(45) UNIQUE NOT NULL,
    -> alamat_cabang VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.267 sec)
```

5. Membuat table rekening

```
MariaDB [perbankan]> CREATE TABLE rekening(
    -> no_rekening INTEGER PRIMARY KEY,
    -> kode_cabangFK VARCHAR(20) REFERENCES cabang_bank(kode_cabang)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> pin VARCHAR(20) DEFAULT '1234' NOT NULL,
    -> saldo INTEGER DEFAULT 0 NOT NULL
    -> );
Query OK, 0 rows affected (0.289 sec)
```

6. Membuat table transaksi

```
MariaDB [perbankan]> CREATE TABLE transaksi(
    -> no_transaksi SERIAL PRIMARY KEY,
    -> id_nasabahFK INTEGER REFERENCES nasabah(id_nasabah)
    -> ON DELETE SET NULL ON UPDATE CASCADE,
    -> jenis_transaksi VARCHAR(20) DEFAULT 'debit' NOT NULL,
    -> tanggal DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP,
    -> jumlah INTEGER NOT NULL CHECK(jumlah>=20000)
    -> );
Query OK, 0 rows affected (0.283 sec)
```

7. Membuat table nasabah_has_rekening

```
MariaDB [perbankan]> CREATE TABLE nasabah_has_rekening(
    -> id_nasabahFK INTEGER REFERENCES nasabah(id_nasabah)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> no_rekeningFK INTEGER REFERENCES rekening(no_rekening)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(id_nasabahFK, no_rekeningFK)
    -> );
Query OK, 0 rows affected (0.262 sec)
```

8. Mengecek hasil pembuatan database

```
MariaDB [perbankan]> show tables;
+----------------------+
| Tables_in_perbankan  |
+----------------------+
| cabang_bank          |
| nasabah              |
| nasabah_has_rekening |
| rekening             |
| transaksi            |
+----------------------+
5 rows in set (0.001 sec)
```

9. Melihat struktur tiap table

a. Cabang_bank

```
MariaDB [perbankan]> describe cabang_bank;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_cabang   | varchar(20) | NO   | PRI | NULL    |       |
| nama_cabang   | varchar(45) | NO   | UNI | NULL    |       |
| alamat_cabang | varchar(255)| NO   |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
3 rows in set (0.022 sec)
```

b. Nasabah

```
MariaDB [perbankan]> describe nasabah;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| id_nasabah     | int(11)     | NO   | PRI | NULL    |       |
| nama_nasabah   | varchar(45) | NO   |     | NULL    |       |
| alamat_nasabah | varchar(255)| NO   |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
3 rows in set (0.133 sec)
```

c. Nasabah_has_rekening

```
MariaDB [perbankan]> describe nasabah_has_rekening;
+---------------+---------+------+-----+---------+-------+
| Field         | Type    | Null | Key | Default | Extra |
+---------------+---------+------+-----+---------+-------+
| id_nasabahFK  | int(11) | NO   | PRI | NULL    |       |
| no_rekeningFK | int(11) | NO   | PRI | NULL    |       |
+---------------+---------+------+-----+---------+-------+
2 rows in set (0.019 sec)
```

d. Rekening

```
MariaDB [perbankan]> describe rekening;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| no_rekening   | int(11)     | NO   | PRI | NULL    |       |
| kode_cabangFK | varchar(20) | YES  |     | NULL    |       |
| pin           | varchar(20) | NO   |     | 1234    |       |
| saldo         | int(11)     | NO   |     | 0       |       |
+---------------+-------------+------+-----+---------+-------+
4 rows in set (0.019 sec)
```

e. Transaksi

```
MariaDB [perbankan]> describe transaksi;
+-----------------+---------------------+------+-----+---------------------+----------------+
| Field           | Type                | Null | Key | Default             | Extra          |
+-----------------+---------------------+------+-----+---------------------+----------------+
| no_transaksi    | bigint(20) unsigned | NO   | PRI | NULL                | auto_increment |
| id_nasabahFK    | int(11)             | YES  |     | NULL                |                |
| jenis_transaksi | varchar(20)         | NO   |     | debit               |                |
| tanggal         | datetime            | NO   |     | current_timestamp() |                |
| jumlah          | int(11)             | NO   |     | NULL                |                |
+-----------------+---------------------+------+-----+---------------------+----------------+
5 rows in set (0.019 sec)
```

B. ASSIGNMENT

Database Kuliah

1) Data untuk database kuliah

- Attribute

a) Mahasiswa

- Nama_mhs : nama lengkap mahasiswa (varchar(45))
- NIM_mhs : NIM mahasiswa (varchar(10)) PK
- Jurusan_mhs : jurusan mahasiswa (varchar(45))
- Alamat_mhs : alamat mahasiswa (varchar(255))

b) Dosen

- nama_dosen : nama lengkap dosen (varchar(45))
- NIK_dosen : NIK dosen (integer) PK
- Alamat_dosen : alamat dosen (varchar(255))

c) Matakuliah

- nama_MK : nama mata kuliah (varchar(45))
- kode_MK : kode mata kuliah (varchar(10)) PK
- jumlah_SKS : bobot SKS(integer)

d) Kelas

- Nomer ruang : nomer ruang kelas (varchar(20)) PK
- nama_gedung : nama Gedung (varchar(45))
- kapasitas : kapasitas yang dapat ditampung kelas(integer)

	Mahasiswa	Dosen	MataKuliah	kelas
Mahasiswa	-	m:n	m:n	-
Dosen		-	m:n	-
MataKuliah			-	m:n
Kelas				-

2) Membuat database kuliah

```
MariaDB [(none)]> create database kuliah;
Query OK, 1 row affected (0.092 sec)

MariaDB [(none)]> use kuliah;
Database changed
```

3) Membuat table mahasiswa

```
MariaDB [kuliah]> CREATE TABLE mahasiswa(
    -> NIM_mhs VARCHAR(20) PRIMARY KEY,
    -> nama_mhs VARCHAR(45) NOT NULL,
    -> jurusan_mhs VARCHAR(45) NOT NULL,
    -> dosen_NIKFK VARCHAR(20) REFERENCES dosen(NIK_dosen)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> alamat_mhs VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.297 sec)
```

4) Membuat table dosen

```
MariaDB [kuliah]> create TABLE dosen(
    -> NIK_dosen VARCHAR(20) PRIMARY KEY,
    -> nama_dosen VARCHAR(45) NOT NULL,
    -> alamat_dosen VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.283 sec)
```

5) Membuat table kelas

```
MariaDB [kuliah]> CREATE TABLE kelas(
    -> nomer_kelas VARCHAR(20) PRIMARY KEY,
    -> nama_gedung VARCHAR(20) NOT NULL,
    -> kapasitas INTEGER NOT NULL
    -> );
Query OK, 0 rows affected (0.343 sec)
```

6) Membuat table mataKuliah

```
MariaDB [kuliah]> CREATE TABLE matakuliah(
    -> kode_mk VARCHAR(20) PRIMARY KEY,
    -> nama_mk VARCHAR(20) NOT NULL,
    -> jumlah_sks INTEGER NOT NULL
    -> );
Query OK, 0 rows affected (0.313 sec)
```

7) Membuat table mahasiswa_has_dosen

```
MariaDB [kuliah]> CREATE TABLE mahasiswa_has_dosen(
    -> NIM_mhsFK VARCHAR(20) REFERENCES mahasiswa(NIM_mhs)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> NIK_dosenFK VARCHAR(20) REFERENCES dosen(NIK_dosen)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(NIM_mhsFK, NIK_dosenFK)
    -> );
Query OK, 0 rows affected (0.281 sec)
```

8) Membuat table mahasiswa_has_mataKuliah

```
MariaDB [kuliah]> CREATE TABLE mahasiswa_has_matakuliah(
    -> NIM_mhsFK VARCHAR(20) REFERENCES mahasiswa(NIM_mhs)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(kode_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(NIM_mhsFK, kode_mkFK)
    -> );
Query OK, 0 rows affected (0.393 sec)
```

9) Membuat table dosen_has_mataKuliah

```
MariaDB [kuliah]> CREATE TABLE dosen_has_matakuliah(
    -> NIK_dosenFK VARCHAR(20) REFERENCES dosen(NIK_dosen)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(kode_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(NIK_dosenFK, kode_mkFK)
    -> );
Query OK, 0 rows affected (0.406 sec)
```

10) Membuat table mataKuliah_has_kelas

```
MariaDB [kuliah]> CREATE TABLE matakuliah_has_kelas(
    -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(kode_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    ->
    -> nomer_kelasFK VARCHAR(20) REFERENCES kelas(nomer_kelas)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(kode_mkFK, nomer_kelasFK)
    -> );
Query OK, 0 rows affected (0.368 sec)
```

11) Mengecek hasil pembuatan database

```
MariaDB [kuliah]> show tables;
+--------------------------+
| Tables_in_kuliah         |
+--------------------------+
| dosen                    |
| dosen_has_matakuliah     |
| kelas                    |
| mahasiswa                |
| mahasiswa_has_dosen      |
| mahasiswa_has_matakuliah |
| matakuliah               |
| matakuliah_has_kelas     |
+--------------------------+
8 rows in set (0.001 sec)
```

12) Melihat struktur tiap table

a. Dosen

```
MariaDB [kuliah]> describe dosen;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| NIK_dosen    | varchar(20)  | NO   | PRI | NULL    |       |
| nama_dosen   | varchar(45)  | NO   |     | NULL    |       |
| alamat_dosen | varchar(255) | NO   |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
3 rows in set (0.021 sec)
```

b. Dosen_has_mataKuliah

```
MariaDB [kuliah]> describe dosen_has_mataKuliah;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| NIK_dosenFK | varchar(20) | NO   | PRI | NULL    |       |
| kode_mkFK   | varchar(20) | NO   | PRI | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
2 rows in set (0.019 sec)
```

c. Kelas

```
MariaDB [kuliah]> describe kelas;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| nomer_kelas | varchar(20) | NO   | PRI | NULL    |       |
| nama_gedung | varchar(20) | NO   |     | NULL    |       |
| kapasitas   | int(11)     | NO   |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.020 sec)
```

d. Mahasiswa

```
MariaDB [kuliah]> describe mahasiswa;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| NIM_mhs     | varchar(20) | NO   | PRI | NULL    |       |
| nama_mhs    | varchar(45) | NO   |     | NULL    |       |
| jurusan_mhs | varchar(45) | NO   |     | NULL    |       |
| dosen_NIKFK | varchar(20) | YES  |     | NULL    |       |
| alamat_mhs  | varchar(255)| NO   |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
5 rows in set (0.020 sec)
```

e. Mahasiswa_has_dosen

```
MariaDB [kuliah]> describe mahasiswa_has_dosen;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| NIM_mhsFK   | varchar(20) | NO   | PRI | NULL    |       |
| NIK_dosenFK | varchar(20) | NO   | PRI | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
2 rows in set (0.021 sec)
```

f. Mahasiswa_has_mataKuliah

```
MariaDB [kuliah]> describe mahasiswa_has_mataKuliah;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| NIM_mhsFK | varchar(20) | NO   | PRI | NULL    |       |
| kode_mkFK | varchar(20) | NO   | PRI | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
2 rows in set (0.020 sec)
```

g. mataKuliah

```
MariaDB [kuliah]> describe matakuliah;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| kode_mk    | varchar(20) | NO   | PRI | NULL    |       |
| nama_mk    | varchar(20) | NO   |     | NULL    |       |
| jumlah_sks | int(11)     | NO   |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.019 sec)
```

h. mataKuliah_has_kelas

```
MariaDB [kuliah]> describe matakuliah_has_kelas;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_mkFK     | varchar(20) | NO   | PRI | NULL    |       |
| nomer_kelasFK | varchar(20) | NO   | PRI | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
2 rows in set (0.020 sec)
```