DATABASE SYSTEM PRACTICUM
PRACTICUM 4

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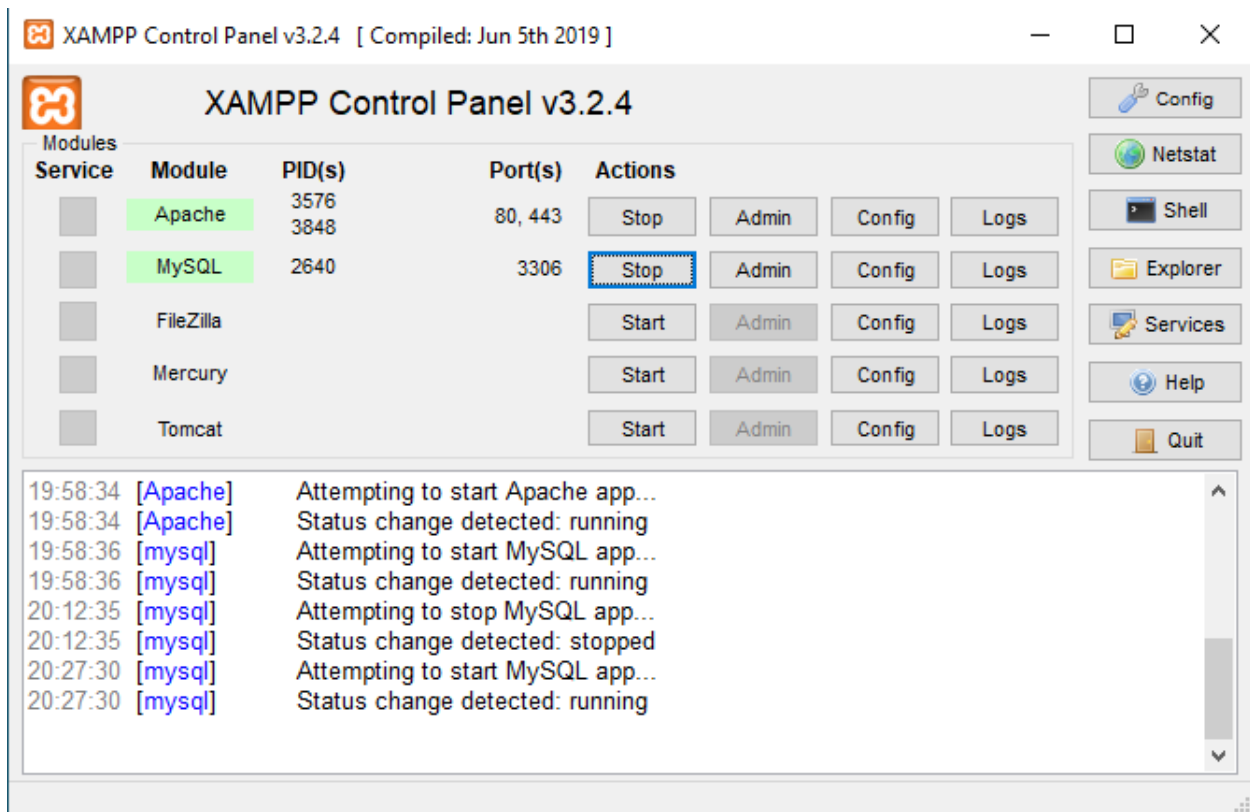
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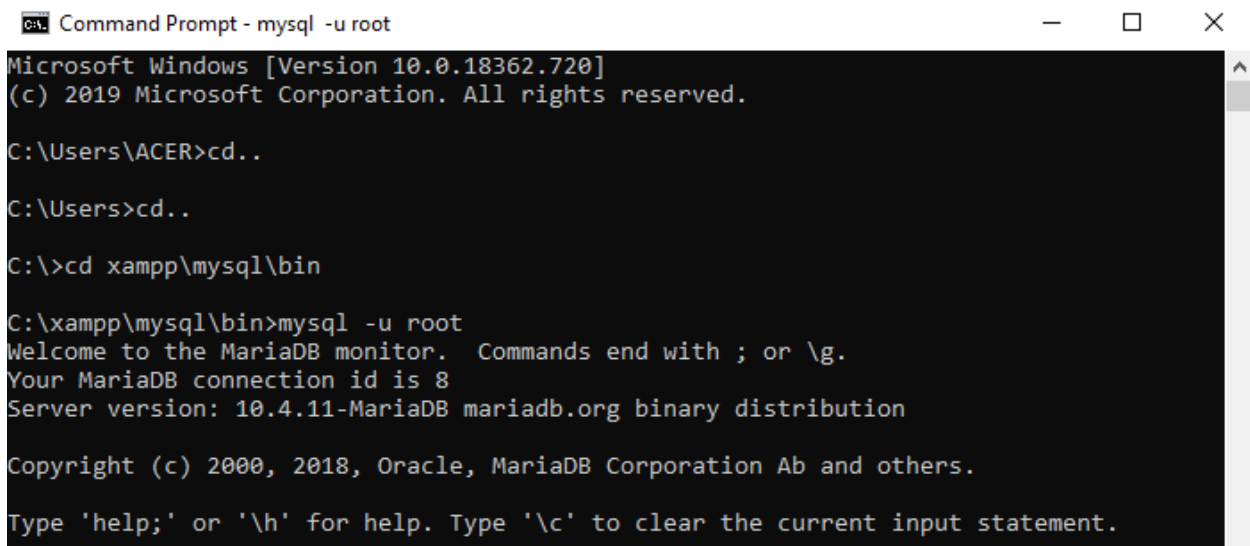
Class   : X

INFORMATION TECHNOLOGY

FACULTY OF COMMUNICATION AND INFORMATICS

MUHAMMADIYAH UNIVERSITY OF SURAKARTA

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Practicum Activity Steps

1. Run the XAMPP Control Panel, then Run the Apache and MySQL server.

2. Open the Command Prompt and log in as root to MySQL.

3. Create and use perbankan's database

```
Command Prompt - mysql -u root                                    —    □    ×

MariaDB [(none)]> create database perbankan;
Query OK, 1 row affected (0.039 sec)

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

4. Create a nasabah's table

```
Command Prompt - mysql -u root                                    —    □    ×

MariaDB [perbankan]> CREATE TABLE nasabah (
    -> id_nasabah INTEGER PRIMARY KEY,
    -> nama_nasabah VARCHAR(45) NOT NULL,
    -> alamat_cabang VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.529 sec)
```

5. Create cabang_nasabah's table

```
Command Prompt - mysql -u root                                    —    □    ×

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 (0.350 sec)
```

6. Create rekening's table

```
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 (0.428 sec)
```

7. Create transaksi's table

```
MariaDB [perbankan]> CREATE TABLE transaksi(
    -> no_transaksi SERIAL PRIMARY KEY,
    -> id_nasabahFK INTEGER REFERENCES nasabah(id_nasabah)
    -> ON DELETE SET NULL ON UPDATE CASCADE,
    -> no_rekeningFK INTEGER REFERENCES rekening(no_rekening)
    -> 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 (0.397 sec)
```

8. Create nasabah_has_rekening's table

```
Command Prompt - mysql  -u root                               —    □    ✕

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 (0.444 sec)
```

9. Show tables

```
MariaDB [perbankan]> show tables;
+----------------------+
| Tables_in_perbankan  |
+----------------------+
| cabang_bank          |
| nasabah              |
| nasabah_has_rekening |
| rekening             |
| transaksi            |
+----------------------+
5 rows in set (0.188 sec)
```

10. Describe all of them (nasabah, until nasabah_has_rekening)

```
Command Prompt - mysql -u root                                         —    □    ×

MariaDB [perbankan]> describe nasabah;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| id_nasabah     | int(11)      | NO   | PRI | NULL    |       |
| nama_nasabah   | varchar(45)  | NO   |     | NULL    |       |
| alamat_cabang  | varchar(255) | NO   |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
3 rows in set (0.105 sec)

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 (3.533 sec)

MariaDB [perbankan]>
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 (0.286 sec)
```

```
Command Prompt - mysql -u root                                         —    □    ×

MariaDB [perbankan]> describe transaksi;
+-----------------+-------------------+------+-----+---------------------+--------
-------+
| Field           | Type              | Null | Key | Default             | Extra
       |
+-----------------+-------------------+------+-----+---------------------+--------
-------+
| no_transaksi    | bigint(20) unsigned | NO | PRI | NULL                | auto_inc
rement |
| id_nasabahFK    | int(11)           | YES  |     | NULL                |
       |
| no_rekeningFK   | int(11)           | YES  |     | NULL                |
       |
| jenis_transaksi | varchar(20)       | NO   |     | debit               |
       |
| tanggal         | datetime          | NO   |     | current_timestamp() |
       |
| jumlah          | int(11)           | NO   |     | NULL                |
       |
+-----------------+-------------------+------+-----+---------------------+--------
-------+
6 rows in set (0.382 sec)

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 (0.289 sec)
```

TASK

Implement the results of the database design that handles the database in assignment module 2 into the mysql program.

- a. mahasiswa
  - nim_mhs : nomor induk mahasiswa (integer) PK
  - nama_mhs : nama lengkap mahasiswa (varchar (45))
  - alamat_mhs : alamat lengkap mahasiswa (varchar (255))
- b. dosen
  - nip_dosen : nomer induk pegawai (integer) PK
  - nama_dosen : nama lengkap dosen(varchar(45))
  - alamat_dosen : alamat lengkap dosen(varchar (255))
- c. mata_kuliah
  - id_mk (integer)PK
  - nama_mk (varchar (25))
- d. ruang_kelas
  - kode_ruang (integer) PK
  - nama_ruang (varchar (25))

Menentukan relationship antar entitas

	mahasiswa	dosen	mata_kuliah	ruang_kelas
mahasiswa	-	m:n	m:n	-
dosen		-	m:n	-
mata_kuliah			-	m:n
ruang_kelas				-

1. Create a kuliah's database

2. Make a table of mahasiswa, dosen, mata_kuliah, dan ruang_kelas.

```
Command Prompt - mysql -u root                                    —    □    ×

MariaDB [kuliah]> create table mahasiswa(
    -> nim_mhs INTEGER PRIMARY KEY,
    -> nama_mhs VARCHAR(45) NOT NULL,
    -> alamat_mhs VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.645 sec)

MariaDB [kuliah]> create table dosen(
    -> nip_dosen INTEGER PRIMARY KEY,
    -> nama_dosen VARCHAR(45) NOT NULL,
    -> alamat_dosen VARCHAR(255) NOT NULL
    -> );
Query OK, 0 rows affected (0.543 sec)

MariaDB [kuliah]> create table mata_kuliah(
    -> id_mk INTEGER PRIMARY KEY,
    -> nama_mk VARCHAR(25) NOT NULL
    -> );
Query OK, 0 rows affected (3.929 sec)

MariaDB [kuliah]> create table ruang_kelas(
    -> kode_ruang INTEGER PRIMARY KEY,
    -> nama_ruang VARCHAR(25) NOT NULL
    -> );
Query OK, 0 rows affected (4.046 sec)
```

3. Create mahasiswa_has_dosen's table

```
MariaDB [kuliah]> create table mahasiswa_has_dosen(
    -> nim_mhsFK INTEGER REFERENCES mahasiswa(nim_mhs)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> nip_dosenFK INTEGER REFERENCES dosen(nip_dosen)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(nim_mhsFK,nip_dosenFK)
    -> );
Query OK, 0 rows affected (0.442 sec)
```

4. Create mahasiswa_has_mata_kuliah's table

```
MariaDB [kuliah]> create table mahasiswa_has_mata_kuliah(
    -> nim_mhsFK INTEGER REFERENCES mahasiswa(nim_mhs)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> id_mkFK INTEGER REFERENCES mata_kuliah(id_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(nim_mhsFK,id_mkFK)
    -> );
Query OK, 0 rows affected (4.124 sec)
```

5. Create dosen_has_mata_kulaih's table

```
ON DELETE' at line 1
MariaDB [kuliah]> create table dosen_has_mata_kuliah(
    -> nip_dosenFK INTEGER REFERENCES dosen(nip_dosen)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> id_mkFK INTEGER REFERENCES mata_kuliah(id_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(nip_dosenFK,id_mkFK)
    -> );
Query OK, 0 rows affected (0.441 sec)
```

6. Create mata_kuliah_has_ruang_kelas's table

```
MariaDB [kuliah]> create table mata_kuliah_has_ruang_kelas(
    -> id_mkFK INTEGER REFERENCES mata_kuliah(id_mk)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> kode_ruangFK INTEGER REFERENCES ruang_kelas(kode_ruang)
    -> ON DELETE CASCADE ON UPDATE CASCADE,
    -> PRIMARY KEY(id_mkFK,kode_ruangFK)
    -> );
Query OK, 0 rows affected (0.929 sec)
```

7. Show and describe all the tables in the kuliah's database

```
MariaDB [kuliah]> show tables;
+-----------------------------+
| Tables_in_kuliah            |
+-----------------------------+
| dosen                       |
| dosen_has_mata_kuliah       |
| mahasiswa                   |
| mahasiswa_has_dosen         |
| mahasiswa_has_mata_kuliah   |
| mata_kuliah                 |
| mata_kuliah_has_ruang_kelas |
| ruang_kelas                 |
+-----------------------------+
8 rows in set (0.663 sec)
```

Command Prompt - mysql -u root

```
MariaDB [kuliah]> describe mahasiswa;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| nim_mhs     | int(11)      | NO   | PRI | NULL    |       |
| nama_mhs    | varchar(45)  | NO   |     | NULL    |       |
| alamat_mhs  | varchar(255) | NO   |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
3 rows in set (0.704 sec)

MariaDB [kuliah]> describe dosen;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| nip_dosen     | int(11)      | NO   | PRI | NULL    |       |
| nama_dosen    | varchar(45)  | NO   |     | NULL    |       |
| alamat_dosen  | varchar(255) | NO   |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
3 rows in set (0.158 sec)

MariaDB [kuliah]> describe mata_kuliah;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| id_mk   | int(11)     | NO   | PRI | NULL    |       |
| nama_mk | varchar(25) | NO   |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
2 rows in set (0.219 sec)

MariaDB [kuliah]> describe ruang_kelas;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| kode_ruang | int(11)     | NO   | PRI | NULL    |       |
| nama_ruang | varchar(25) | NO   |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.167 sec)
```

Command Prompt - mysql -u root

```
MariaDB [kuliah]> describe mahasiswa_has_dosen;
+-------------+---------+------+-----+---------+-------+
| Field       | Type    | Null | Key | Default | Extra |
+-------------+---------+------+-----+---------+-------+
| nim_mhsFK   | int(11) | NO   | PRI | NULL    |       |
| nip_dosenFK | int(11) | NO   | PRI | NULL    |       |
+-------------+---------+------+-----+---------+-------+
2 rows in set (0.161 sec)

MariaDB [kuliah]> describe mahasiswa_has_mata_kuliah;
+-----------+---------+------+-----+---------+-------+
| Field     | Type    | Null | Key | Default | Extra |
+-----------+---------+------+-----+---------+-------+
| nim_mhsFK | int(11) | NO   | PRI | NULL    |       |
| id_mkFK   | int(11) | NO   | PRI | NULL    |       |
+-----------+---------+------+-----+---------+-------+
2 rows in set (0.256 sec)

MariaDB [kuliah]> describe dosen_has_mata_kuliah;
+-------------+---------+------+-----+---------+-------+
| Field       | Type    | Null | Key | Default | Extra |
+-------------+---------+------+-----+---------+-------+
| nip_dosenFK | int(11) | NO   | PRI | NULL    |       |
| id_mkFK     | int(11) | NO   | PRI | NULL    |       |
+-------------+---------+------+-----+---------+-------+
2 rows in set (0.112 sec)

MariaDB [kuliah]> describe mata_kuliah_has_ruang_kelas;
+--------------+---------+------+-----+---------+-------+
| Field        | Type    | Null | Key | Default | Extra |
+--------------+---------+------+-----+---------+-------+
| id_mkFK      | int(11) | NO   | PRI | NULL    |       |
| kode_ruangFK | int(11) | NO   | PRI | NULL    |       |
+--------------+---------+------+-----+---------+-------+
2 rows in set (0.097 sec)
```