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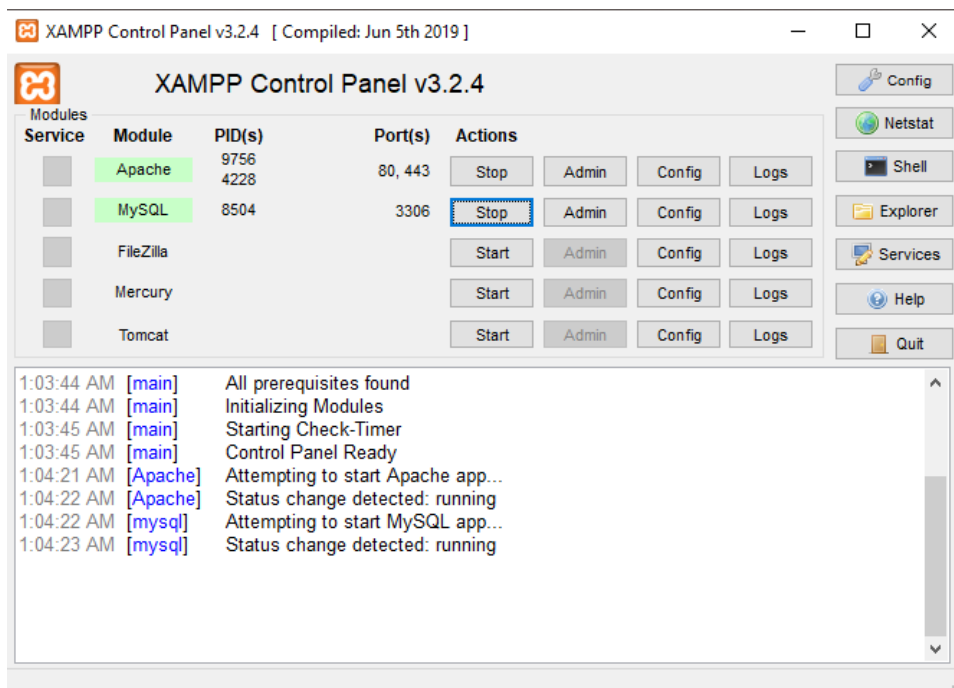
Kelas : D

## PRAKTIKUM BASIS DATA

### MODUL 4

#### 1) PRAKTIKUM

1. Jalankan XAMPP control panel.
2. Jalankan server Apache dan Mysql



3. Buka command promp dan login sebagai root ke MySQL seperti di langkah pada modul 1

```
Command Prompt - mysql -u root -p
Microsoft Windows [Version 10.0.18362.720]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Asus>cd\

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

C:\xampp\mysql\bin>mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 10
Server version: 10.3.15-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.
```

4. Buat database baru dengan perintah berikut ini.

Create database perbankan;

```
Select Command Prompt - mysql -u root -p

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)]> create database perbankan;
Query OK, 1 row affected (0.155 sec)

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

MariaDB [perbankan]> CREATE TABLE cabang_bank(
```

5. Hubungkan ke dalam database yang telah dibuat dengan perintah berikut. Sehingga akan muncul pemberitahuan “database changed”

Use perbankan;

```
Select Command Prompt - mysql -u root -p

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)]> create database perbankan;
Query OK, 1 row affected (0.155 sec)

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

MariaDB [perbankan]> CREATE TABLE cabang_bank(
```

6. Membuat table nasabah.

```
Select Command Prompt - mysql -u root -p

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)]> create database perbankan;
Query OK, 1 row affected (0.155 sec)

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

MariaDB [perbankan]> CREATE TABLE cabang_bank(
```

## 7. Membuat tabel cabang\_bank

```
Select Command Prompt - mysql -u root -p

NOT NULL
)' at line 4
MariaDB [perbankan]> CREATE TABLE cabang_bank(
  -> kode_cabang VARCHAR(20) PRIMARY KEY,
  -> nama_cabang VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_cabang VARCHAR(225) NOT NULL
  -> );
Query OK, 0 rows affected (0.462 sec)

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 (0.411 sec)
```

## 8. Membuat table rekening

```
Select Command Prompt - mysql -u root -p

NOT NULL
)' at line 4
MariaDB [perbankan]> CREATE TABLE cabang_bank(
  -> kode_cabang VARCHAR(20) PRIMARY KEY,
  -> nama_cabang VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_cabang VARCHAR(225) NOT NULL
  -> );
Query OK, 0 rows affected (0.462 sec)

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 (0.411 sec)
```

## 9. Membuat table transaksi

```
Select Command Prompt - mysql -u root -p

  -> pin VARCHAR(20) DEFAULT '1234' NOT NULL,
  -> saldo INTEGER DEFAULT 0 NOT NULL
  -> );
Query OK, 0 rows affected (0.411 sec)

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 (0.402 sec)
```

10. Membuat table nasabah\_has\_rekening karena (m:n)

```
Command Prompt - mysql -u root -p
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 (0.421 sec)
```

11. Untuk mengecek hasil pembuatan database gunakan perintah show tables;

```
Select Command Prompt - mysql -u root -p
MariaDB [perbankan]> show tables;
+-----+
| Tables_in_perbankan |
+-----+
| cabang_bank         |
| nasabah             |
| nasabah_has_rekening |
| rekening            |
| transaksi           |
+-----+
5 rows in set (0.112 sec)
```

12. Untuk meliah setiap struktur tiap-tiap table dilakukan dengan perintah describe

```
Select Command Prompt - mysql -u root -p
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(225) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.122 sec)

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 (0.189 sec)
```

```
Select Command Prompt - mysql -u root -p
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 | |
| 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 (0.561 sec)

MariaDB [perbankan]> describe nasabah_has_rekening;
```

```
Select Command Prompt - mysql -u root -p
6 rows in set (0.561 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 (0.115 sec)

MariaDB [perbankan]>
```

## 2) TUGAS PRAKTIKUM

Implementasikan hasil rancangan database yang mengenai data kuliah pada tugas modul 2!

1. Buka command prompt dan login sebagai root ke MySQL

```
Select Command Prompt - mysql -u root -p
Microsoft Windows [Version 10.0.18362.720]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Asus>cd\

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

C:\xampp\mysql\bin>mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 12
Server version: 10.3.15-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. Buat database baru dengan perintah berikut ini.  
Create database data\_kuliah;

```
Select Command Prompt - mysql -u root -p

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)]> create database data_kuliah;
Query OK, 1 row affected (0.070 sec)

MariaDB [(none)]> use data_kuliah;
Database changed

MariaDB [data_kuliah]> CREATE TABLE mahasiswa(
-> nim VARCHAR(20) PRIMARY KEY,
-> nama_mahasiswa VARCHAR(45) UNIQUE NOT NULL,
-> alamat_mahasiswa VARCHAR(225) NOT NULL,
-> tgllahir_mhs DATE
-> );
```

3. Hubungkan ke dalam database yang telah dibuat dengan perintah berikut. Sehingga akan muncul pemberitahuan “database changed”  
Use data\_kuliah

```
Select Command Prompt - mysql -u root -p

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)]> create database data_kuliah;
Query OK, 1 row affected (0.070 sec)

MariaDB [(none)]> use data_kuliah;
Database changed

MariaDB [data_kuliah]> CREATE TABLE mahasiswa(
-> nim VARCHAR(20) PRIMARY KEY,
-> nama_mahasiswa VARCHAR(45) UNIQUE NOT NULL,
-> alamat_mahasiswa VARCHAR(225) NOT NULL,
-> tgllahir_mhs DATE
-> );
```

#### 4. Membuat tabel mahasiswa

```

Select Command Prompt - mysql -u root -p

MariaDB [(none)]> use data_kuliah;
Database changed
MariaDB [data_kuliah]> CREATE TABLE mahasiswa(
  -> nim VARCHAR(20) PRIMARY KEY,
  -> nama_mahasiswa VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_mahasiswa VARCHAR(225) NOT NULL,
  -> tgllahir_mhs DATE
  -> );
Query OK, 0 rows affected (0.612 sec)

MariaDB [data_kuliah]> CREATE TABLE dosen(
  -> nip_dosen VARCHAR(20) PRIMARY KEY,
  -> nama_dosen VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_dosen VARCHAR(225) NOT NULL,
  -> tgllahir_dosen DATE
  -> );
Query OK, 0 rows affected (0.480 sec)

```

#### 5. Membuat tabel dosen

```

Select Command Prompt - mysql -u root -p

MariaDB [(none)]> use data_kuliah;
Database changed
MariaDB [data_kuliah]> CREATE TABLE mahasiswa(
  -> nim VARCHAR(20) PRIMARY KEY,
  -> nama_mahasiswa VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_mahasiswa VARCHAR(225) NOT NULL,
  -> tgllahir_mhs DATE
  -> );
Query OK, 0 rows affected (0.612 sec)

MariaDB [data_kuliah]> CREATE TABLE dosen(
  -> nip_dosen VARCHAR(20) PRIMARY KEY,
  -> nama_dosen VARCHAR(45) UNIQUE NOT NULL,
  -> alamat_dosen VARCHAR(225) NOT NULL,
  -> tgllahir_dosen DATE
  -> );
Query OK, 0 rows affected (0.480 sec)

```

#### 6. Membuat tabel matakuliah

```

Command Prompt - mysql -u root -p

)' at line 5
MariaDB [data_kuliah]> CREATE TABLE matakuliah(
  -> kode_mk VARCHAR(20) PRIMARY KEY,
  -> nama_mk VARCHAR(45) UNIQUE NOT NULL,
  -> jml_sks INTEGER NOT NULL,
  -> semester INTEGER NOT NULL
  -> );
Query OK, 0 rows affected (0.331 sec)

```

#### 7. Membuat tabel ruang\_kelas

```

Command Prompt - mysql -u root -p

onds to your MariaDB server version for the right syntax to use near ')' at line 1
MariaDB [data_kuliah]>
MariaDB [data_kuliah]>
MariaDB [data_kuliah]> CREATE TABLE ruang_kelas(
  -> kode_ruang VARCHAR(20) PRIMARY KEY,
  -> kapasitas INTEGER NOT NULL
  -> );
Query OK, 0 rows affected (0.581 sec)

MariaDB [data_kuliah]> show tables;

```

8. Membuat tabel mahasiswa\_has\_matakuliah

```
Select Command Prompt - mysql -u root -p

MariaDB [data_kuliah]> CREATE TABLE mahasiswa_has_matakuliah(
  -> nimFK VARCHAR(20) REFERENCES mahasiswa(nim)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(nim)
  -> ON DELETE CASCADE ON UPDATE CASCADE
  -> );
Query OK, 0 rows affected (0.384 sec)

MariaDB [data_kuliah]> CREATE TABLE dosen_has_matakuliah(
  -> nim_dosenFK VARCHAR(20) REFERENCES dosen(nip_dosen)
```

9. Membuat tabel dosen\_has\_matakuliah

```
Select Command Prompt - mysql -u root -p

MariaDB [data_kuliah]> CREATE TABLE dosen_has_matakuliah(
  -> nim_dosenFK VARCHAR(20) REFERENCES dosen(nip_dosen)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(kode_mk)
  -> ON DELETE CASCADE ON UPDATE CASCADE
  -> );
Query OK, 0 rows affected (0.437 sec)

MariaDB [data_kuliah]> show tables;
```

10. Untuk mengecek hasil pembuatan database gunakan perintah show tables;

```
Select Command Prompt - mysql -u root -p

MariaDB [data_kuliah]> CREATE TABLE dosen_has_matakuliah(
  -> nim_dosenFK VARCHAR(20) REFERENCES dosen(nip_dosen)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> kode_mkFK VARCHAR(20) REFERENCES matakuliah(kode_mk)
  -> ON DELETE CASCADE ON UPDATE CASCADE
  -> );
Query OK, 0 rows affected (0.437 sec)

MariaDB [data_kuliah]> show tables;
+-----+
Tables_in_data_kuliah |
+-----+
dosen                  |
dosen_has_matakuliah  |
mahasiswa              |
mahasiswa_has_matakuliah |
matakuliah             |
ruang_kelas            |
+-----+
rows in set (0.001 sec)
```



11. Untuk melihat setiap struktur tiap-tiap table dilakukan dengan perintah describe

```
Select Command Prompt - mysql -u root -p

)' at line 1
MariaDB [data_kuliah]> describe mahasiswa;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nim   | varchar(20) | NO | PRI | NULL |  |
| nama_mahasiswa | varchar(45) | NO | UNI | NULL |  |
| alamat_mahasiswa | varchar(225) | NO |  | NULL |  |
| tgllahir_mhs | date | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.047 sec)

MariaDB [data_kuliah]> describe dosen;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nip_dosen | varchar(20) | NO | PRI | NULL |  |
| nama_dosen | varchar(45) | NO | UNI | NULL |  |
| alamat_dosen | varchar(225) | NO |  | NULL |  |
| tgllahir_dosen | date | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.026 sec)

MariaDB [data_kuliah]> describe matakuliah;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| kode_mk | varchar(20) | NO | PRI | NULL |  |
| nama_mk | varchar(45) | NO | UNI | NULL |  |
| jml_sks | int(11) | NO |  | NULL |  |
| semester | int(11) | NO |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.043 sec)

MariaDB [data_kuliah]> describe ruang_kelas;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| kode_mk | varchar(20) | NO | PRI | NULL |  |
| nama_mk | varchar(45) | NO | UNI | NULL |  |
| jml_sks | int(11) | NO |  | NULL |  |
| semester | int(11) | NO |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.043 sec)

MariaDB [data_kuliah]> describe ruang_kelas;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| kode_ruang | varchar(20) | NO | PRI | NULL |  |
| kapasitas | int(11) | NO |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.106 sec)

MariaDB [data_kuliah]> describe mahasiswa_has_matakuliah;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nimFK | varchar(20) | YES |  | NULL |  |
| kode_mkFK | varchar(20) | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.031 sec)

MariaDB [data_kuliah]> describe dosen_has_matakuliah;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nip_dosenFK | varchar(20) | YES |  | NULL |  |
| kode_mkFK | varchar(20) | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.136 sec)

MariaDB [data_kuliah]>
```