

Database System Practicum
Data Definition Language (DDL)



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PRACTICE

1. Access MySQL via Command Prompt

```
Microsoft Windows [Version 10.0.18363.720]
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C:\Users\Win10>cd\

C:\>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. Create Perbankan database

```
MariaDB [(none)]> create database perbankan;
Query OK, 1 row affected (0.003 sec)

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

3. Create Nasabah table

```
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 (0.169 sec)
```

4. Create cabang_bank table

```
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 (0.144 sec)
```

5. Create rekening 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 (0.190 sec)
```

6. Create transaksi 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 (0.227 sec)

```

7. Create nasabah_has_rekening table

```

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 (0.181 sec)

```

8. Checking the result

```

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

```

9. Look at the table structure

```
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 (0.021 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 (0.085 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 (0.104 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 (0.115 sec)
```



```
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 (0.213 sec)
```

```
MariaDB [perbankan]>
```

ASSIGNMENT

Database School

```

Microsoft Windows [Version 10.0.18363.720]
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C:\Users\Win10>cd\

C:\>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 22
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.

MariaDB [(none)]> create database school;
Query OK, 1 row affected (0.012 sec)

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

```

□ Attribute :

a. Student

- NIM : nim mahasiswa (int)PK
- Name_student : full name of student (varchar(45))
- Address_student : address of student (varchar(255))

```

MariaDB [school]> CREATE TABLE student(
-> nim INTEGER PRIMARY KEY,
-> name_student VARCHAR(45) NOT NULL,
-> address_student VARCHAR(255) NOT NULL
-> );
Query OK, 0 rows affected (0.407 sec)

```

b. Lecturer

- NIP : NIP of lecturer (int)PK
- Name_lect : full name of lecturer (varchar(45))
- Position : position of lecturer (varchar(45))

```

MariaDB [school]> CREATE TABLE lecturer(
-> nip INTEGER PRIMARY KEY,
-> name_lect VARCHAR(45) NOT NULL,
-> position VARCHAR(45) NOT NULL
-> );
Query OK, 0 rows affected (0.246 sec)

```

c. Courses

- Code_courses : code of courses (int)PK
- Name_courses : name of courses (varchar(20))
- totalSKS : total of SKS (int)

```

MariaDB [school]> CREATE TABLE courses(
-> code_courses INTEGER PRIMARY KEY,
-> name_courses VARCHAR(20) NOT NULL,
-> totalSKS INTEGER NOT NULL
-> );
Query OK, 0 rows affected (0.186 sec)

```

d. Room

- Code_room : code of the room (varchar(20))PK
- Location : location of the room (varchar(255))
- Capacity : capacity of the room (int)

```
MariaDB [school]> CREATE TABLE room(
  -> code_room VARCHAR(20) PRIMARY KEY,
  -> location VARCHAR(255) NOT NULL,
  -> capacity INTEGER NOT NULL
  -> );
Query OK, 0 rows affected (0.181 sec)
```

- Relationship

	S	L	C	R
S	-	m:n	m:n	-
L		-	m:n	-
C			-	m:n
R				-

- a. Room used courses

- First table : room, courses
- Second table : room_used_courses
- Relationship : m:n
- Connecting attribute : code_room, code_courses (FK code_room, code_courses in room_used_courses)

```
MariaDB [school]> CREATE TABLE room_used_courses(
  -> code_roomFK VARCHAR(20) REFERENCES room(code_room)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> code_coursesFK INTEGER REFERENCES courses(code_courses)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> PRIMARY KEY(code_roomFK, code_coursesFK)
  -> );
Query OK, 0 rows affected (0.186 sec)
```

- b. Lecturer teach courses

- First table : lecturer, courses
- Second table : lecturer_teach_courses
- Relationship : m:n
- Connecting attribute : nip, code_courses (FK nip, code_courses in lecturer_teach_courses)

```
MariaDB [school]> CREATE TABLE lecturer_teach_courses(
  -> nipFK INTEGER REFERENCES lecturer(nip)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> code_coursesFK INTEGER REFERENCES courses(code_courses)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> PRIMARY KEY(nipFK, code_coursesFK)
  -> );
Query OK, 0 rows affected (1.590 sec)
```

- c. Student take courses

- First table : student, courses
- Second table : student_take_courses
- Relation : m:n

- Connecting attribute : nim, code_courses (FK nim, code_courses in student_take_courses)

```
MariaDB [school]> CREATE TABLE student_take_courses(
-> nimFK INTEGER REFERENCES student(nim)
-> ON DELETE CASCADE ON UPDATE CASCADE,
-> code_coursesFK INTEGER REFERENCES courses(codr_courses)
-> ON DELETE CASCADE ON UPDATE CASCADE,
-> PRIMARY KEY(nimFK, code_coursesFK)
-> );
Query OK, 0 rows affected (0.532 sec)
```

d. Lecturer teach student

- First table : lecturer, student
- Second table : lecturer_teach_student
- Relation : m:n
- Connecting attribute : nip, nim (FK nip, nim in lecturer_teach_student)

```
MariaDB [school]> CREATE TABLE lecturer_teach_student(
-> nipFK INTEGER REFERENCES lecturer(nip)
-> ON DELETE CASCADE ON UPDATE CASCADE,
-> nimFK INTEGER REFERENCES student(nim)
-> ON DELETE CASCADE ON UPDATE CASCADE,
-> PRIMARY KEY(nipFK, nimFK)
-> );
Query OK, 0 rows affected (0.154 sec)
```

- Checking the result

```
MariaDB [school]> show tables;
+-----+
| Tables_in_school |
+-----+
| courses           |
| lecturer          |
| lecturer_teach_courses |
| lecturer_teach_student |
| room             |
| room_used_courses |
| student           |
| student_take_courses |
+-----+
8 rows in set (0.026 sec)
```

- Look at the table structure

```
MariaDB [school]> describe courses;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code_courses | int(11)    | NO   | PRI | NULL    |       |
| name_courses | varchar(20) | NO   |     | NULL    |       |
| totalSKS     | int(11)    | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.245 sec)

MariaDB [school]> describe lecturer;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nip        | int(11)    | NO   | PRI | NULL    |       |
| name_lect  | varchar(45) | NO   |     | NULL    |       |
| position   | varchar(45) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.072 sec)

MariaDB [school]> describe lecturer_teach_courses;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nipFK      | int(11)    | NO   | PRI | NULL    |       |
| code_coursesFK | int(11)    | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.104 sec)

MariaDB [school]> describe lecturer_teach_student;
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nipFK | int(11)    | NO   | PRI | NULL    |       |
| nimFK | int(11)    | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.042 sec)

MariaDB [school]> describe room;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code_room  | varchar(20) | NO   | PRI | NULL    |       |
| location   | varchar(255) | NO   |     | NULL    |       |
| capacity   | int(11)     | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.162 sec)

MariaDB [school]> describe room_used_courses;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code_roomFK | varchar(20) | NO   | PRI | NULL    |       |
| code_coursesFK | int(11)     | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.461 sec)

MariaDB [school]> describe student;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nim        | int(11)    | NO   | PRI | NULL    |       |
| name_student | varchar(45) | NO   |     | NULL    |       |
| address_student | varchar(255) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.087 sec)

MariaDB [school]> describe student_take_courses;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nimFK      | int(11)    | NO   | PRI | NULL    |       |
| code_coursesFK | int(11)    | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.034 sec)
```