03

Implementasi DDL Lanjut pada MySQL

Materi

A. Sintaks DDL

1. Membuat database

```
create database <database_name>
```

Contoh: `create database dbkuliah;`

2. Membuat table baru dalam sebuah database

```
create table <table-name>
```

Contoh: `create table t_mahasiswa;`

Contoh:

```
    CREATE TABLE mahasiswa2 (
    no INT(6) UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    nama_depan VARCHAR(30) NOT NULL,
    nama_belakang VARCHAR(30) NOT NULL,
    email VARCHAR(50),
    tanggal_registrasi TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON
UPDATE CURRENT_TIMESTAMP
    );
```

Setelah tipe data, Anda dapat menentukan atribut opsional lainnya untuk setiap kolom:

- **NOT NULL** - Setiap baris harus berisi nilai untuk kolom itu, nilai null tidak diperbolehkan
- **DEFAULT** <value> - Tetapkan nilai default yang ditambahkan ketika tidak ada nilai lain yang dilewatkan
- **UNSIGNED** - Digunakan untuk tipe angka, membatasi data yang disimpan ke angka positif dan nol
- **AUTO_INCREMENT** - MySQL secara otomatis meningkatkan nilai bidang sebesar 1 setiap kali catatan baru ditambahkan
- **PRIMARY KEY** - Digunakan untuk mengidentifikasi baris dalam tabel secara unik. Kolom dengan setting PRIMARY KEY sering berupa nomor ID, dan sering digunakan dengan AUTO_INCREMENT

3. Rename suatu table

```
rename <table-name-old> to <table-name-new>
```

Contoh: `rename table t_mahasiswa to mahasiswa;`

4. Menghapus sebuah table

```
drop table <table-name>
```

Contoh: `drop table tmahasiswa;`

5. Menghapus database

```
drop database <database-name>
```

Contoh: `drop database dbkuliah;`

6. Merubah (alter) sebuah table

```
alter table <table-name> <alter-specification>
```

Contoh:

```
alter table tmahasiswa add alamat2;   -->       menambah
   sebuah field bernama alamat2
alter table tmahasiswa drop alamat1; --> menghapus sebuah
   field bernama alamat1
alter table tmahasiswa add constraint fk_tagama
   foreign key (idAgama) references tagama (idAgama)
   --> menambah sebuah relasi dengan table tagama
alter table tmahasiswa drop foreign key fk_tagama
   --> menghapus relationship & foreign key-nya
```

B. Tipe Data MySQL (Version 8.0)

1. Tipe Data String

Data type	Description
CHAR(size)	A FIXED length string (can contain letters, numbers, and special characters). The size parameter specifies the column length in characters - can be from 0 to 255. Default is 1
VARCHAR(size)	A VARIABLE length string (can contain letters, numbers, and special characters). The size parameter specifies the maximum string length in characters - can be from 0 to 65535
BINARY(size)	Equal to CHAR(), but stores binary byte strings. The size parameter specifies the column length in bytes. Default is 1
VARBINARY(size)	Equal to VARCHAR(), but stores binary byte strings. The size parameter specifies the maximum column length in bytes.
TINYBLOB	For BLOBs (Binary Large Objects). Max length: 255 bytes
TINYTEXT	Holds a string with a maximum length of 255 characters
TEXT(size)	Holds a string with a maximum length of 65,535 bytes
BLOB(size)	For BLOBs (Binary Large Objects). Holds up to 65,535 bytes of data
MEDIUMTEXT	Holds a string with a maximum length of 16,777,215 characters
MEDIUMBLOB	For BLOBs (Binary Large Objects). Holds up to 16,777,215 bytes of data
LONGTEXT	Holds a string with a maximum length of 4,294,967,295 characters
LONGBLOB	For BLOBs (Binary Large Objects). Holds up to 4,294,967,295 bytes of data
ENUM(val1, val2, val3, ...)	A string object that can have only one value, chosen from a list of possible values. You can list up to 65535 values in an ENUM list. If a value is inserted that is not in the list, a blank value will be inserted. The values are sorted in the order you enter them
SET(val1, val2, val3, ...)	A string object that can have 0 or more values, chosen from a list of possible values. You can list up to 64 values in a SET list

2. Tipe Data Numerik

Data type	Description
BIT(size)	A bit-value type. The number of bits per value is specified in size. The size parameter can hold a value from 1 to 64. The default value for size is 1.
TINYINT(size)	A very small integer. Signed range is from -128 to 127. Unsigned range is from 0 to 255. The size parameter specifies the maximum display width (which is 255)
BOOL	Zero is considered as false, nonzero values are considered as true.
BOOLEAN	Equal to BOOL
SMALLINT(size)	A small integer. Signed range is from -32768 to 32767. Unsigned range is from 0 to 65535. The size parameter specifies the maximum display width (which is 255)
MEDIUMINT(size)	A medium integer. Signed range is from -8388608 to 8388607. Unsigned range is from 0 to 16777215. The size parameter specifies the maximum display width (which is 255)
INT(size)	A medium integer. Signed range is from -2147483648 to 2147483647. Unsigned range is from 0 to 4294967295. The size parameter specifies the maximum display width (which is 255)
INTEGER(size)	Equal to INT(size)
BIGINT(size)	A large integer. Signed range is from -9223372036854775808 to 9223372036854775807. Unsigned range is from 0 to 18446744073709551615. The size parameter specifies the maximum display width (which is 255)
FLOAT(size, d)	A floating point number. The total number of digits is specified in size. The number of digits after the decimal point is specified in the d parameter. This syntax is deprecated in MySQL 8.0.17, and it will be removed in future MySQL versions
FLOAT(p)	A floating point number. MySQL uses the p value to determine whether to use FLOAT or DOUBLE for the resulting data type. If p is from 0 to 24, the data type becomes FLOAT(). If p is from 25 to 53, the data type becomes DOUBLE()
DOUBLE(size, d)	A normal-size floating point number. The total number of digits is specified in size. The number of digits after the decimal point is specified in the d parameter
DOUBLE PRECISION(size, d)	
DECIMAL(size, d)	An exact fixed-point number. The total number of digits is specified in size. The number of digits after the decimal point is specified in the d parameter. The maximum number for size is 65. The maximum number for d is 30. The default value for size is 10. The default value for d is 0.
DEC(size, d)	Equal to DECIMAL(size,d)

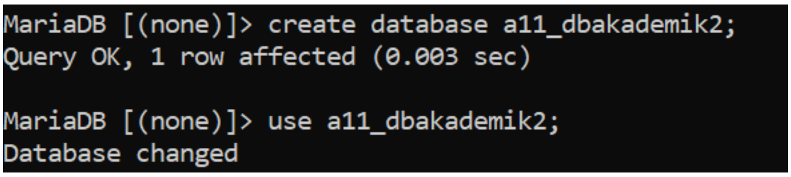
3. Tipe Data Tanggal dan Waktu

Data type	Description
DATE	A date. Format: YYYY-MM-DD. The supported range is from '1000-01-01' to '9999-12-31'
DATETIME(fsp)	A date and time combination. Format: YYYY-MM-DD hh:mm:ss. The supported range is from '1000-01-01 00:00:00' to '9999-12-31 23:59:59'. Adding DEFAULT and ON UPDATE in the column definition to get automatic initialization and updating to the current date and time
TIMESTAMP(fsp)	A timestamp. TIMESTAMP values are stored as the number of seconds since the Unix epoch ('1970-01-01 00:00:00' UTC). Format: YYYY-MM-DD hh:mm:ss. The supported range is from '1970-01-01

	00:00:01' UTC to '2038-01-09 03:14:07' UTC. Automatic initialization and updating to the current date and time can be specified using DEFAULT CURRENT_TIMESTAMP and ON UPDATE CURRENT_TIMESTAMP in the column definition
TIME(fsp)	A time. Format: hh:mm:ss. The supported range is from '-838:59:59' to '838:59:59'
YEAR	A year in four-digit format. Values allowed in four-digit format: 1901 to 2155, and 0000. MySQL 8.0 does not support year in two-digit format.

Latihan Praktikum

1. Buatlah database dengan nama **dbakademik2**



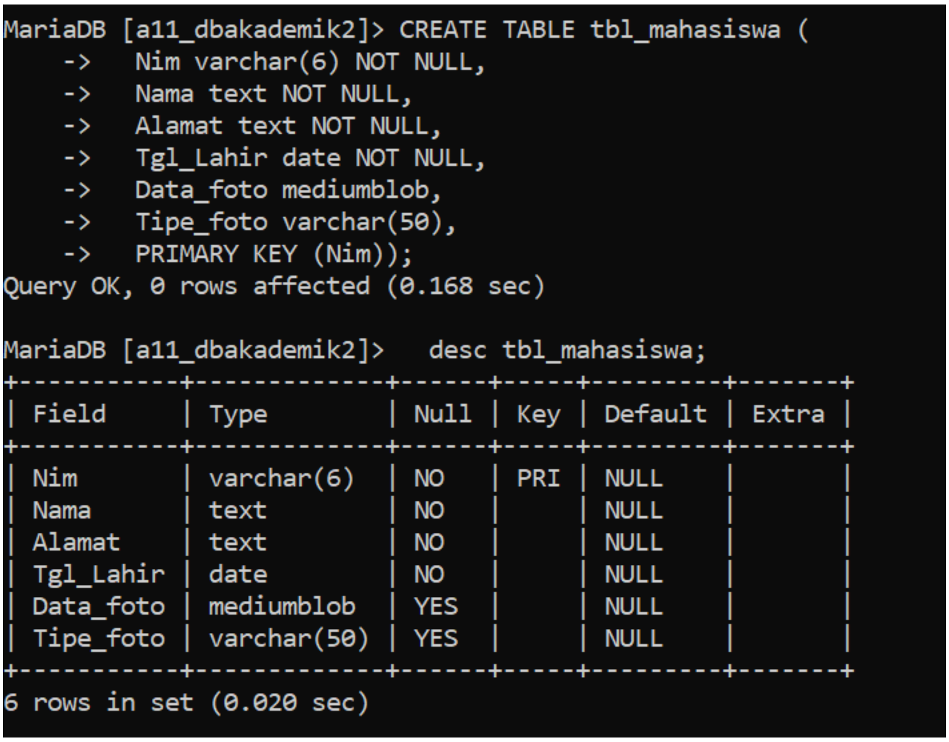
```
MariaDB [(none)]> create database a11_dbakademik2;
Query OK, 1 row affected (0.003 sec)

MariaDB [(none)]> use a11_dbakademik2;
Database changed
```

2. Buatlah tabel dengan skema berikut

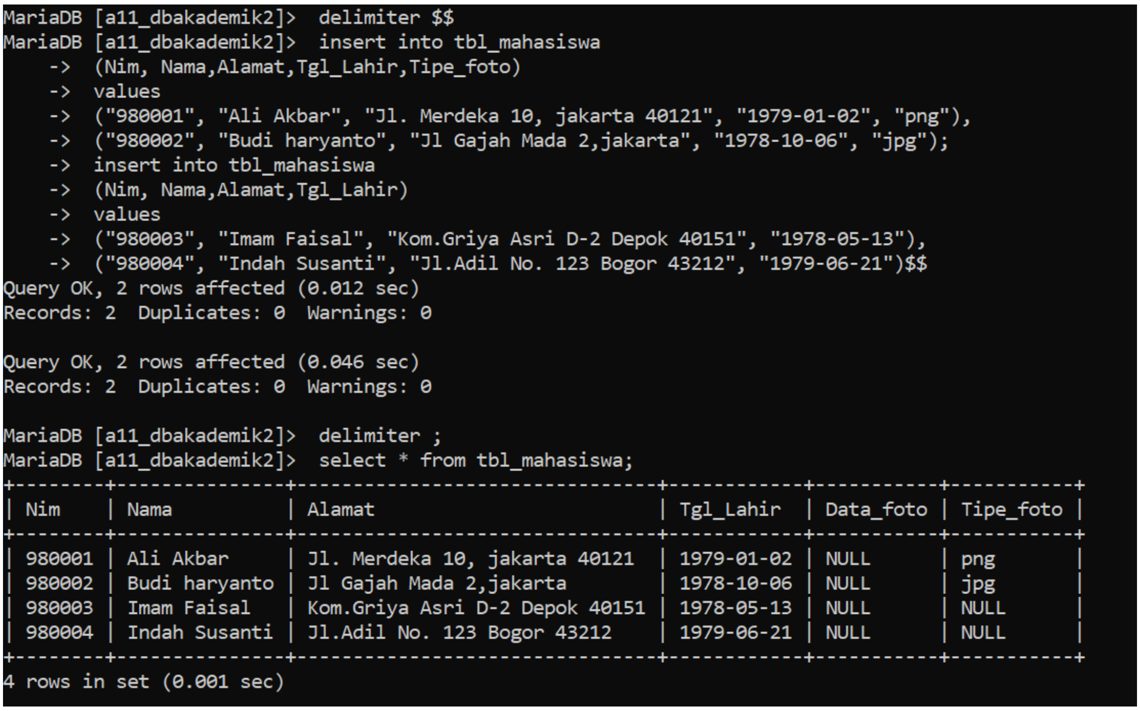
tbl_mahasiswa

Nim	Nama	Alamat	Tgl Lahir	Data foto	Tipe foto
980001	Ali Akbar	Jl. Merdeka 10, jakarta 40121	2 jan 1979	......	png
980002	Budi haryanto	Jl Gajah Mada 2, jakarta	6 Okt 1978	.....	jpg
980003	Imam Faisal	Kom.griya Asri D-2 Depok 40151	13 mei 1978	...	
980004	Indah Susanti	Jl. Adil No. 123 Bogor 43212	21 Juni 1979	......	

Keterangan :
Nim adalah primary key
Nama mahasiswa, alamat, dan tgal lahir tidak boleh kosong
Tgl lahir bertipe tanggal
Data foto digunakan untuk menyimpan data foto (blob)
Tipe foto extensi dari foto yang disimpan



```
MariaDB [a11_dbakademik2]> CREATE TABLE tbl_mahasiswa (
    ->   Nim varchar(6) NOT NULL,
    ->   Nama text NOT NULL,
    ->   Alamat text NOT NULL,
    ->   Tgl_Lahir date NOT NULL,
    ->   Data_foto mediumblob,
    ->   Tipe_foto varchar(50),
    ->   PRIMARY KEY (Nim));
Query OK, 0 rows affected (0.168 sec)

MariaDB [a11_dbakademik2]>  desc tbl_mahasiswa;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| Nim       | varchar(6)  | NO   | PRI | NULL    |       |
| Nama      | text        | NO   |     | NULL    |       |
| Alamat    | text        | NO   |     | NULL    |       |
| Tgl_Lahir | date        | NO   |     | NULL    |       |
| Data_foto | mediumblob  | YES  |     | NULL    |       |
| Tipe_foto | varchar(50) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
6 rows in set (0.020 sec)
```



```
MariaDB [a11_dbakademik2]>  delimiter $$
MariaDB [a11_dbakademik2]>  insert into tbl_mahasiswa
    ->  (Nim, Nama,Alamat,Tgl_Lahir,Tipe_foto)
    ->  values
    ->  ("980001", "Ali Akbar", "Jl. Merdeka 10, jakarta 40121", "1979-01-02", "png"),
    ->  ("980002", "Budi haryanto", "Jl Gajah Mada 2,jakarta", "1978-10-06", "jpg");
    ->  insert into tbl_mahasiswa
    ->  (Nim, Nama,Alamat,Tgl_Lahir)
    ->  values
    ->  ("980003", "Imam Faisal", "Kom.Griya Asri D-2 Depok 40151", "1978-05-13"),
    ->  ("980004", "Indah Susanti", "Jl.Adil No. 123 Bogor 43212", "1979-06-21")$$
Query OK, 2 rows affected (0.012 sec)
Records: 2  Duplicates: 0  Warnings: 0

Query OK, 2 rows affected (0.046 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [a11_dbakademik2]>  delimiter ;
MariaDB [a11_dbakademik2]>  select * from tbl_mahasiswa;
+--------+---------------+--------------------------------+------------+-----------+-----------+
| Nim    | Nama          | Alamat                         | Tgl_Lahir  | Data_foto | Tipe_foto |
+--------+---------------+--------------------------------+------------+-----------+-----------+
| 980001 | Ali Akbar     | Jl. Merdeka 10, jakarta 40121  | 1979-01-02 | NULL      | png       |
| 980002 | Budi haryanto | Jl Gajah Mada 2,jakarta        | 1978-10-06 | NULL      | jpg       |
| 980003 | Imam Faisal   | Kom.Griya Asri D-2 Depok 40151 | 1978-05-13 | NULL      | NULL      |
| 980004 | Indah Susanti | Jl.Adil No. 123 Bogor 43212    | 1979-06-21 | NULL      | NULL      |
+--------+---------------+--------------------------------+------------+-----------+-----------+
4 rows in set (0.001 sec)
```

mata_kuliah

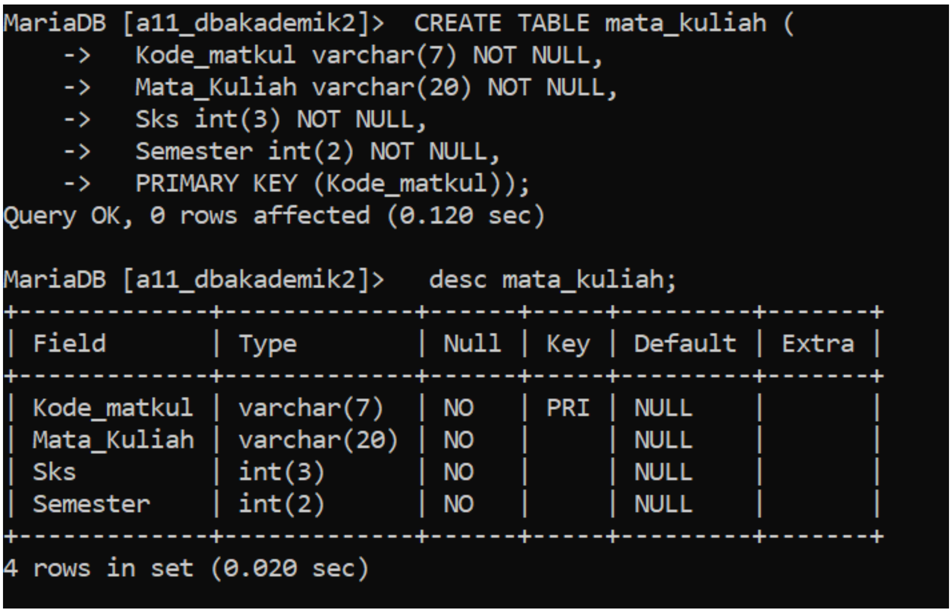
Kode makul	**Mata Kuliah**	**Sks**	**Semester**
EE-110	Struktur Data	3	1
EE-310	Basis Data	3	4
Ku-234	Bahasa indonesia	2	2

Mma-115	Matematika	3	1

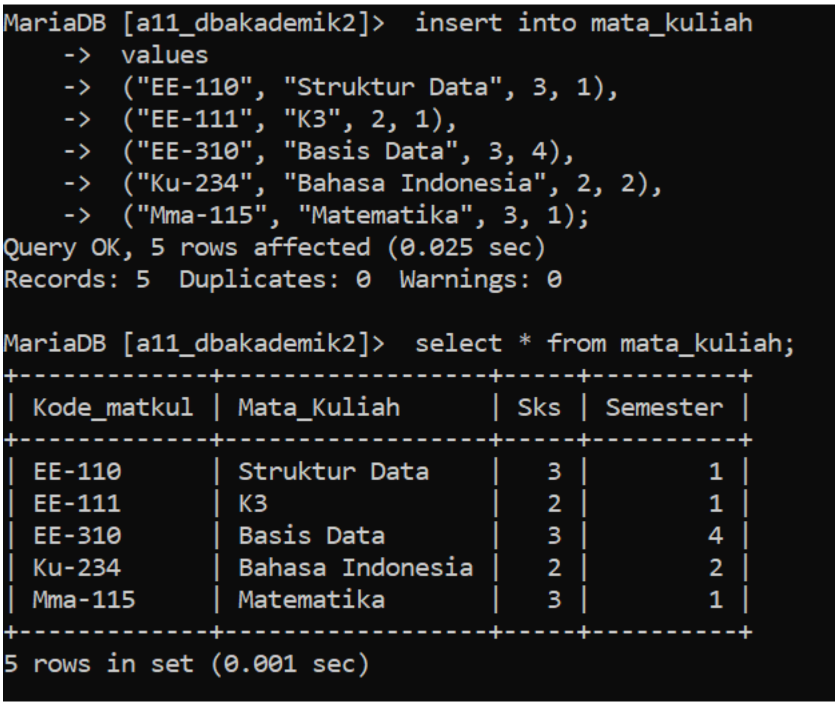
Keterangan :

kode adalah primary key

semua kolom tidak boleh kosong



```
MariaDB [a11_dbakademik2]>  CREATE TABLE mata_kuliah (
    ->   Kode_matkul varchar(7) NOT NULL,
    ->   Mata_Kuliah varchar(20) NOT NULL,
    ->   Sks int(3) NOT NULL,
    ->   Semester int(2) NOT NULL,
    ->   PRIMARY KEY (Kode_matkul));
Query OK, 0 rows affected (0.120 sec)

MariaDB [a11_dbakademik2]>  desc mata_kuliah;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| Kode_matkul | varchar(7)  | NO   | PRI | NULL    |       |
| Mata_Kuliah | varchar(20) | NO   |     | NULL    |       |
| Sks         | int(3)      | NO   |     | NULL    |       |
| Semester    | int(2)      | NO   |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
4 rows in set (0.020 sec)
```



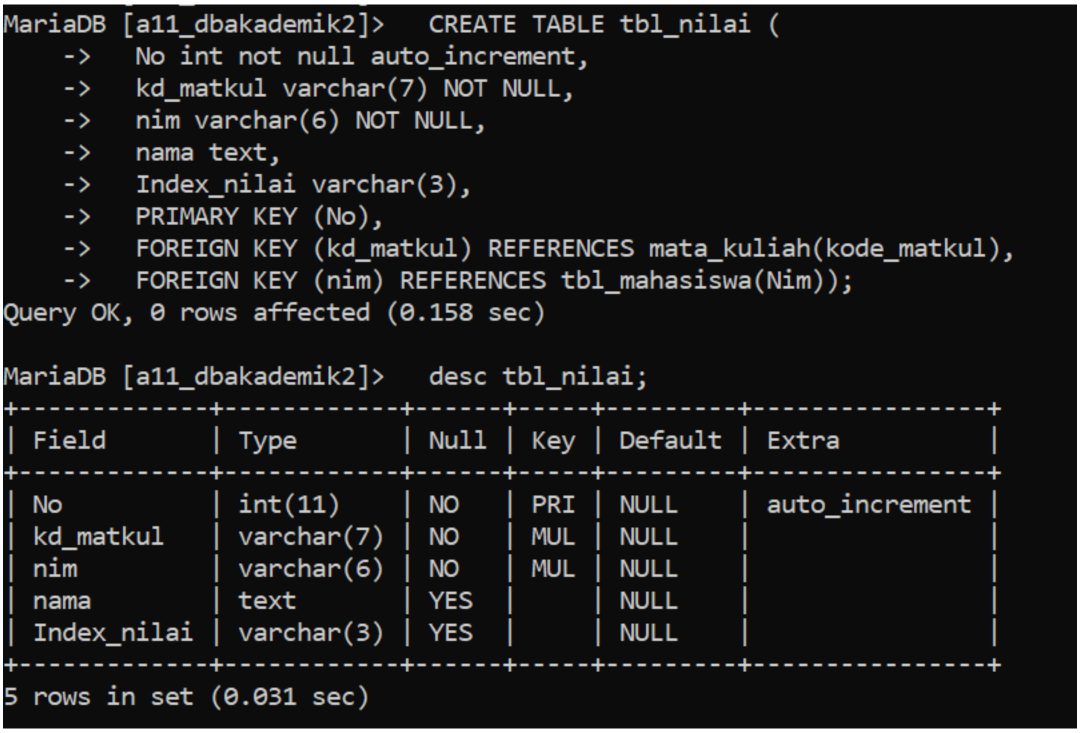
```
MariaDB [a11_dbakademik2]>  insert into mata_kuliah
    ->  values
    ->  ("EE-110", "Struktur Data", 3, 1),
    ->  ("EE-111", "K3", 2, 1),
    ->  ("EE-310", "Basis Data", 3, 4),
    ->  ("Ku-234", "Bahasa Indonesia", 2, 2),
    ->  ("Mma-115", "Matematika", 3, 1);
Query OK, 5 rows affected (0.025 sec)
Records: 5  Duplicates: 0  Warnings: 0

MariaDB [a11_dbakademik2]>  select * from mata_kuliah;
+-------------+------------------+-----+----------+
| Kode_matkul | Mata_Kuliah      | Sks | Semester |
+-------------+------------------+-----+----------+
| EE-110      | Struktur Data    |   3 |        1 |
| EE-111      | K3               |   2 |        1 |
| EE-310      | Basis Data       |   3 |        4 |
| Ku-234      | Bahasa Indonesia |   2 |        2 |
| Mma-115     | Matematika       |   3 |        1 |
+-------------+------------------+-----+----------+
5 rows in set (0.001 sec)
```

tbl_nilai

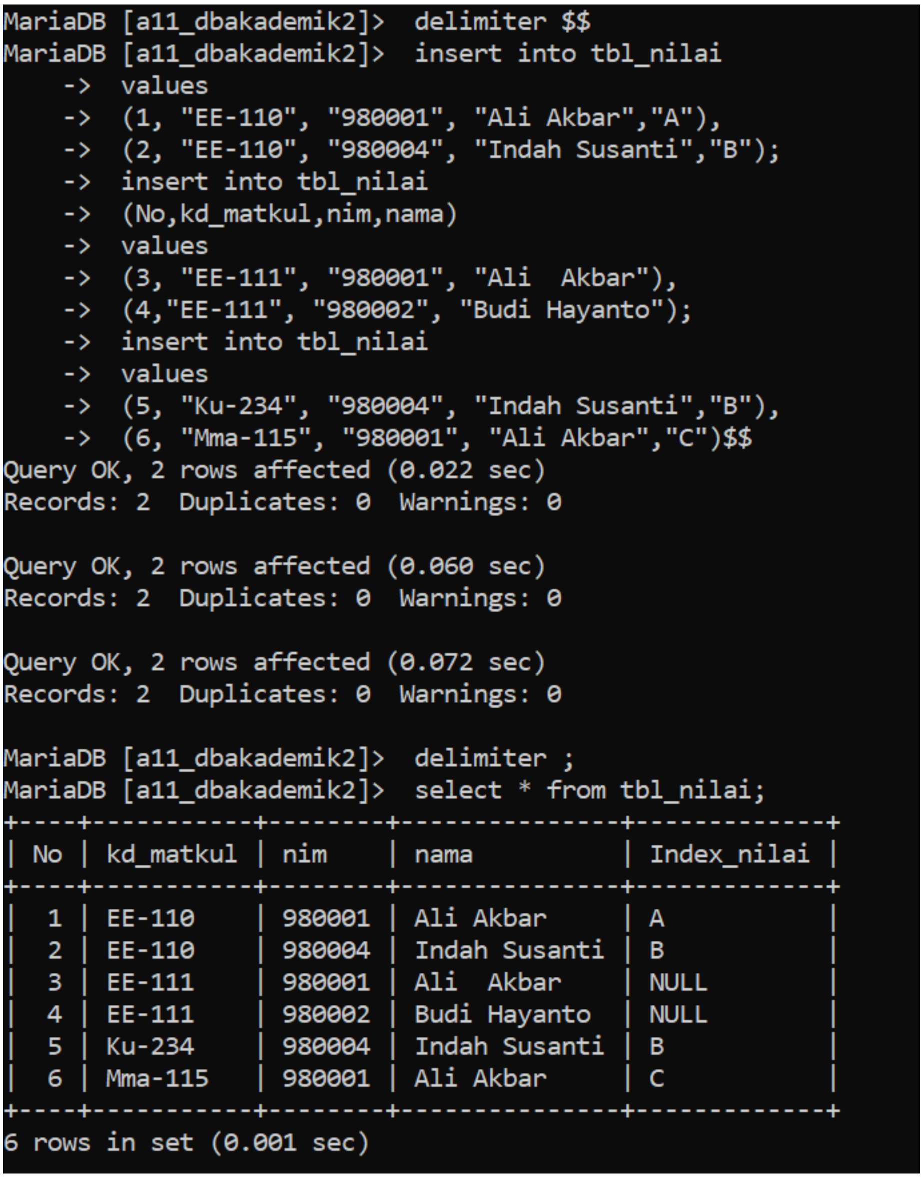
No	Kode matakuliah	nim	Nama Mahasiswa	Index nilai
1	EE-110	980001	Ali Akbar	A
2	EE-110	980004	Indah Susanti	B
3	EE-111	980001	Ali Akbar	
4	EE-111	980002	Budi Hayanto	
5	Ku-234	980004	Indah Susanti	B
6	Mma-115	980001	Ali Akbar	C

Keterangan :
Kode matakuliah merukan referenc dari tabel matakuliah.
Nim merupakan tabel reference dari tabel mahasiswa

```
CREATE TABLE tabel_nilai (
     No int not null auto_increment ,
    kd_matkul varchar(.....) NOT NULL,
    nim varchar(...) NOT NULL,
    nama text,
     ..........................
    PRIMARY KEY (no),
    FOREIGN KEY (kd_matkul) REFERENCES ..........(..............) ........
);
```

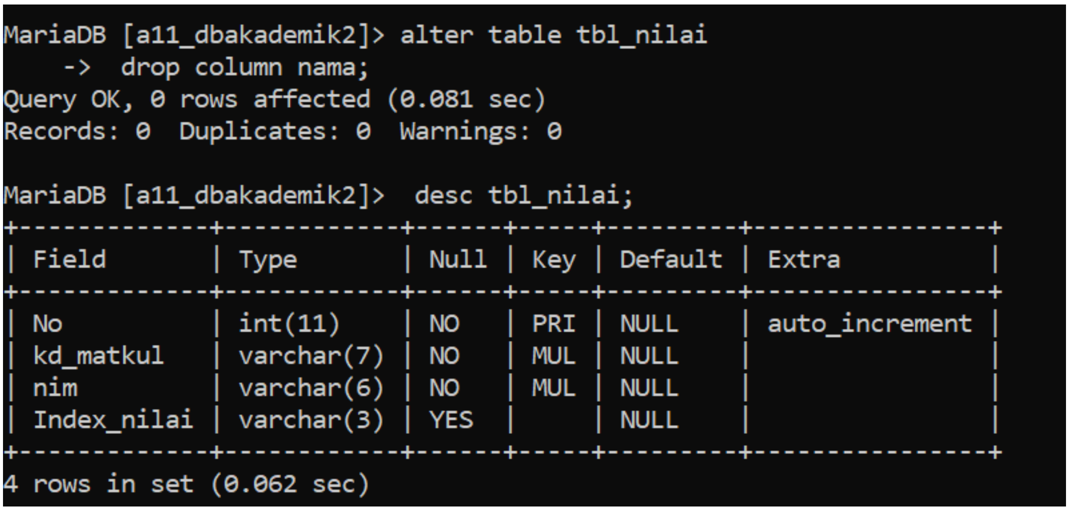


```
MariaDB [a11_dbakademik2]>   CREATE TABLE tbl_nilai (
    ->   No int not null auto_increment,
    ->   kd_matkul varchar(7) NOT NULL,
    ->   nim varchar(6) NOT NULL,
    ->   nama text,
    ->   Index_nilai varchar(3),
    ->   PRIMARY KEY (No),
    ->   FOREIGN KEY (kd_matkul) REFERENCES mata_kuliah(kode_matkul),
    ->   FOREIGN KEY (nim) REFERENCES tbl_mahasiswa(Nim));
Query OK, 0 rows affected (0.158 sec)

MariaDB [a11_dbakademik2]>   desc tbl_nilai;
+-------------+------------+------+-----+---------+----------------+
| Field       | Type       | Null | Key | Default | Extra          |
+-------------+------------+------+-----+---------+----------------+
| No          | int(11)    | NO   | PRI | NULL    | auto_increment |
| kd_matkul   | varchar(7) | NO   | MUL | NULL    |                |
| nim         | varchar(6) | NO   | MUL | NULL    |                |
| nama        | text       | YES  |     | NULL    |                |
| Index_nilai | varchar(3) | YES  |     | NULL    |                |
+-------------+------------+------+-----+---------+----------------+
5 rows in set (0.031 sec)
```



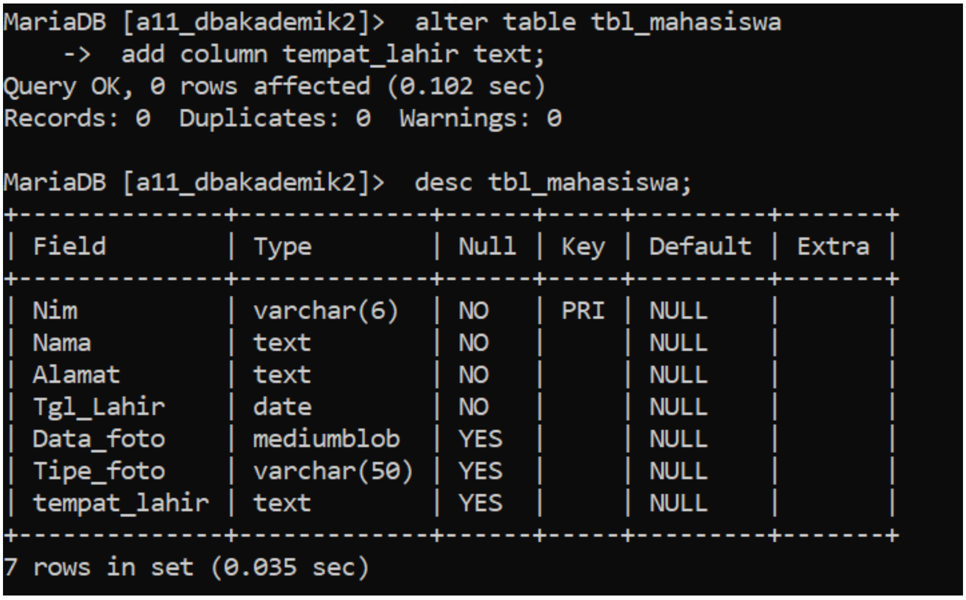
```
MariaDB [a11_dbakademik2]>  delimiter $$
MariaDB [a11_dbakademik2]>  insert into tbl_nilai
    ->  values
    ->  (1, "EE-110", "980001", "Ali Akbar","A"),
    ->  (2, "EE-110", "980004", "Indah Susanti","B");
    ->  insert into tbl_nilai
    ->  (No,kd_matkul,nim,nama)
    ->  values
    ->  (3, "EE-111", "980001", "Ali  Akbar"),
    ->  (4,"EE-111", "980002", "Budi Hayanto");
    ->  insert into tbl_nilai
    ->  values
    ->  (5, "Ku-234", "980004", "Indah Susanti","B"),
    ->  (6, "Mma-115", "980001", "Ali Akbar","C")$$
Query OK, 2 rows affected (0.022 sec)
Records: 2  Duplicates: 0  Warnings: 0

Query OK, 2 rows affected (0.060 sec)
Records: 2  Duplicates: 0  Warnings: 0

Query OK, 2 rows affected (0.072 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [a11_dbakademik2]>  delimiter ;
MariaDB [a11_dbakademik2]>  select * from tbl_nilai;
+----+-----------+--------+---------------+-------------+
| No | kd_matkul | nim    | nama          | Index_nilai |
+----+-----------+--------+---------------+-------------+
|  1 | EE-110    | 980001 | Ali Akbar     | A           |
|  2 | EE-110    | 980004 | Indah Susanti | B           |
|  3 | EE-111    | 980001 | Ali  Akbar    | NULL        |
|  4 | EE-111    | 980002 | Budi Hayanto  | NULL        |
|  5 | Ku-234    | 980004 | Indah Susanti | B           |
|  6 | Mma-115   | 980001 | Ali Akbar     | C           |
+----+-----------+--------+---------------+-------------+
6 rows in set (0.001 sec)
```

3. Hapus kolom nama mahasiswa pada tabel nilai



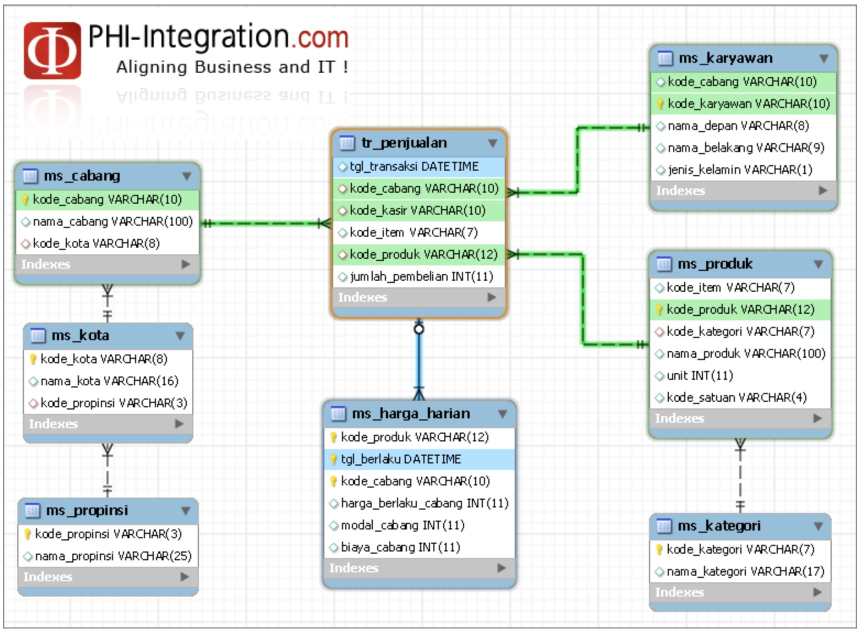
```
MariaDB [a11_dbakademik2]> alter table tbl_nilai
    -> drop column nama;
Query OK, 0 rows affected (0.081 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [a11_dbakademik2]>  desc tbl_nilai;
+-------------+------------+------+-----+---------+----------------+
| Field       | Type       | Null | Key | Default | Extra          |
+-------------+------------+------+-----+---------+----------------+
| No          | int(11)    | NO   | PRI | NULL    | auto_increment |
| kd_matkul   | varchar(7) | NO   | MUL | NULL    |                |
| nim         | varchar(6) | NO   | MUL | NULL    |                |
| Index_nilai | varchar(3) | YES  |     | NULL    |                |
+-------------+------------+------+-----+---------+----------------+
4 rows in set (0.062 sec)
```

4. Tambahkan kolom tempat lahir pada tabel mahasiswa



```
MariaDB [a11_dbakademik2]>  alter table tbl_mahasiswa
    ->  add column tempat_lahir text;
Query OK, 0 rows affected (0.102 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [a11_dbakademik2]>  desc tbl_mahasiswa;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| Nim          | varchar(6)  | NO   | PRI | NULL    |       |
| Nama         | text        | NO   |     | NULL    |       |
| Alamat       | text        | NO   |     | NULL    |       |
| Tgl_Lahir    | date        | NO   |     | NULL    |       |
| Data_foto    | mediumblob  | YES  |     | NULL    |       |
| Tipe_foto    | varchar(50) | YES  |     | NULL    |       |
| tempat_lahir | text        | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
7 rows in set (0.035 sec)
```

5. Buatlah database dengan nama **dbminimarket** dengan skema berikut



ms_cabang
- kode_cabang VARCHAR(10)
- nama_cabang VARCHAR(100)
- kode_kota VARCHAR(8)
- Indexes

ms_kota
- kode_kota VARCHAR(8)
- nama_kota VARCHAR(16)
- kode_propinsi VARCHAR(3)
- Indexes

ms_propinsi
- kode_propinsi VARCHAR(3)
- nama_propinsi VARCHAR(25)
- Indexes

tr_penjualan
- tgl_transaksi DATETIME
- kode_cabang VARCHAR(10)
- kode_kasir VARCHAR(10)
- kode_item VARCHAR(7)
- kode_produk VARCHAR(12)
- jumlah_pembelian INT(11)
- Indexes

ms_harga_harian
- kode_produk VARCHAR(12)
- tgl_berlaku DATETIME
- kode_cabang VARCHAR(10)
- harga_berlaku_cabang INT(11)
- modal_cabang INT(11)
- biaya_cabang INT(11)
- Indexes

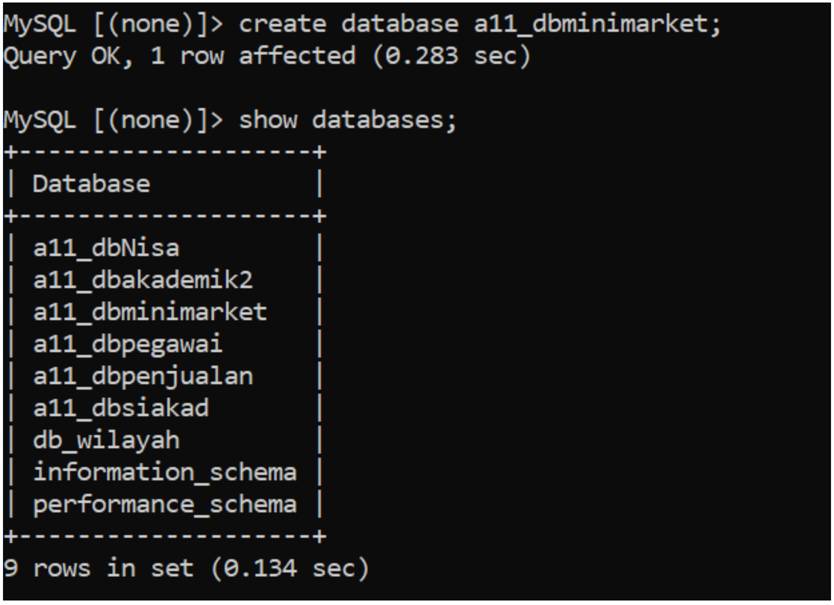
ms_karyawan
- kode_cabang VARCHAR(10)
- kode_karyawan VARCHAR(10)
- nama_depan VARCHAR(8)
- nama_belakang VARCHAR(9)
- jenis_kelamin VARCHAR(1)
- Indexes

ms_produk
- kode_item VARCHAR(7)
- kode_produk VARCHAR(12)
- kode_kategori VARCHAR(7)
- nama_produk VARCHAR(100)
- unit INT(11)
- kode_satuan VARCHAR(4)
- Indexes

ms_kategori
- kode_kategori VARCHAR(7)
- nama_kategori VARCHAR(17)
- Indexes

A. Mempersiapkan Database dan membuat relasi Tabel

1. Membuat Database a11_dbminimarket :



```
MySQL [(none)]> create database a11_dbminimarket;
Query OK, 1 row affected (0.283 sec)

MySQL [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| a11_dbNisa         |
| a11_dbakademik2    |
| a11_dbminimarket   |
| a11_dbpegawai      |
| a11_dbpenjualan    |
| a11_dbsiakad       |
| db_wilayah         |
| information_schema |
| performance_schema |
+--------------------+
9 rows in set (0.134 sec)
```

2. Membuat Tabel tr_penjualan :

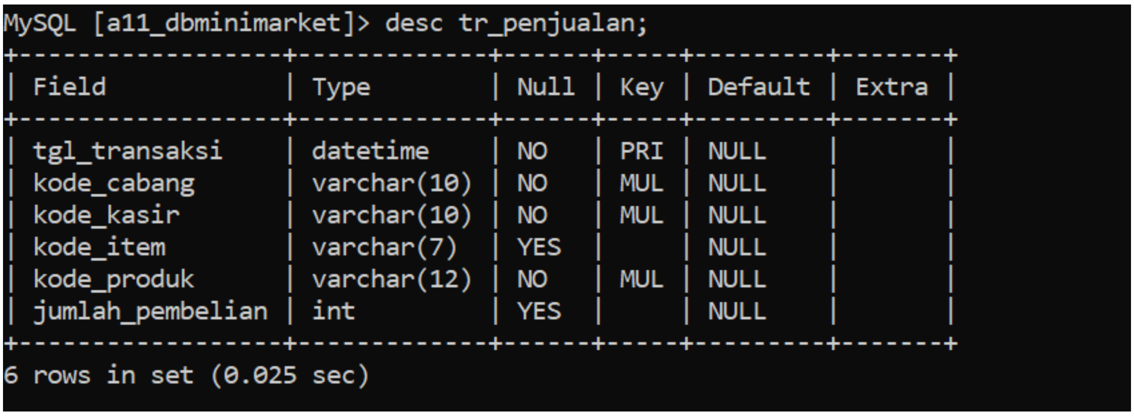
Query :

```
create table tr_penjualan (
                tgl_transaksi datetime not null,
                kode_cabang varchar(10) not null,
                kode_kasir varchar(10) not null,
                kode_item varchar(7),
                kode_produk varchar(12) not null,
                jumlah_pembelian int(11));
```

Relasi :

```
alter table tr_penjualan
add CONSTRAINT fk_penjualan_cabang FOREIGN key (kode_cabang) REFERENCES ms_cabang(kode_cabang),
add CONSTRAINT fk_penjualan_karyawan FOREIGN key (kode_kasir) REFERENCES ms_karyawan(kode_karyawan),
add CONSTRAINT fk_penjualan_produk FOREIGN key (kode_produk) REFERENCES ms_produk(kode_produk)
;
alter table tr_penjualan
add CONSTRAINT UQ_tgl_transaksi UNIQUE (tgl_transaksi);
```

Hasil :



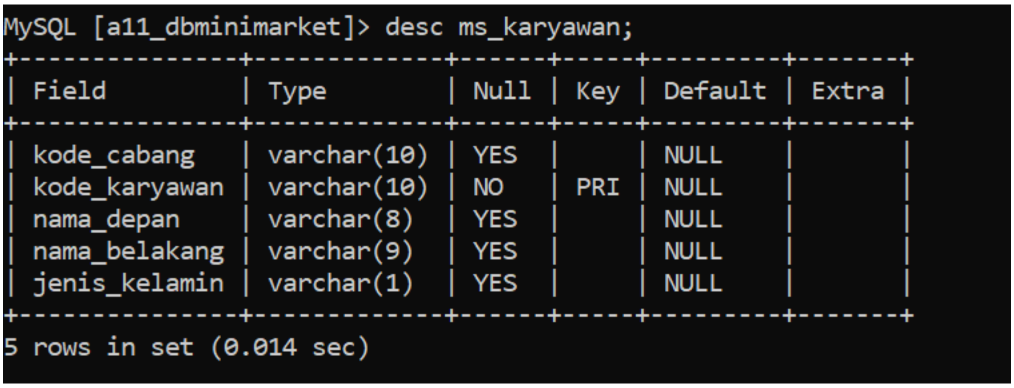
```
MySQL [a11_dbminimarket]> desc tr_penjualan;
+------------------+--------------+------+-----+---------+-------+
| Field            | Type         | Null | Key | Default | Extra |
+------------------+--------------+------+-----+---------+-------+
| tgl_transaksi    | datetime     | NO   | PRI | NULL    |       |
| kode_cabang      | varchar(10)  | NO   | MUL | NULL    |       |
| kode_kasir       | varchar(10)  | NO   | MUL | NULL    |       |
| kode_item        | varchar(7)   | YES  |     | NULL    |       |
| kode_produk      | varchar(12)  | NO   | MUL | NULL    |       |
| jumlah_pembelian | int          | YES  |     | NULL    |       |
+------------------+--------------+------+-----+---------+-------+
6 rows in set (0.025 sec)
```

3. **Membuat Tabel ms_karyawan :**

Query :

```
create table ms_karyawan(
        kode_cabang varchar(10),
        kode_karyawan varchar(10) primary key not null,
        nama_depan varchar(8),
        nama_belakang varchar(9),
        jenis_kelamin varchar(1) check (jenis_kelamin in ('L','P')));
```

Hasil :



```
MySQL [a11_dbminimarket]> desc ms_karyawan;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_cabang   | varchar(10) | YES  |     | NULL    |       |
| kode_karyawan | varchar(10) | NO   | PRI | NULL    |       |
| nama_depan    | varchar(8)  | YES  |     | NULL    |       |
| nama_belakang | varchar(9)  | YES  |     | NULL    |       |
| jenis_kelamin | varchar(1)  | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
5 rows in set (0.014 sec)
```

4. **Membuat Tabel ms_produk :**

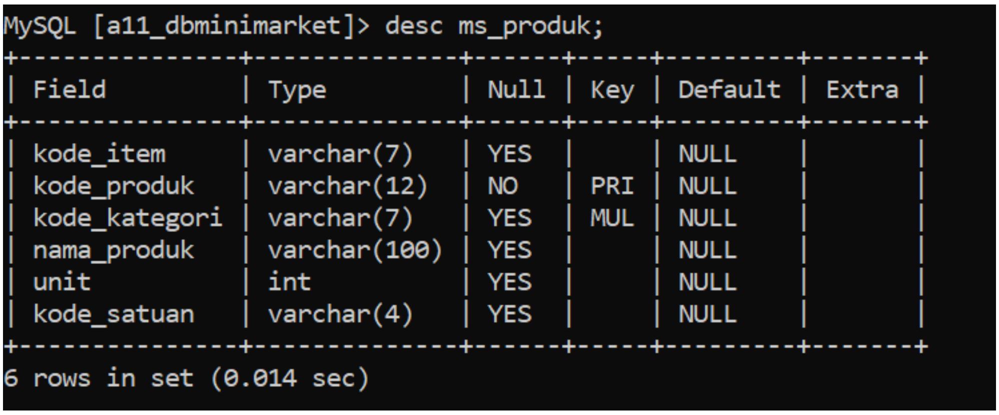
Query :

```
create table ms_produk (
        kode_item varchar(7),
        kode_produk varchar(12) primary key not null,
        kode_kategori varchar(7),
        nama_produk varchar(100),
        unit int(11),
        kode_satuan varchar(4));
```

Relasi :

```
alter table ms_produk
add CONSTRAINT fk_produk_kategori FOREIGN key (kode_kategori) REFERENCES
ms_kategori(kode_kategori);
```

Hasil :



```
MySQL [a11_dbminimarket]> desc ms_produk;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| kode_item     | varchar(7)   | YES  |     | NULL    |       |
| kode_produk   | varchar(12)  | NO   | PRI | NULL    |       |
| kode_kategori | varchar(7)   | YES  | MUL | NULL    |       |
| nama_produk   | varchar(100) | YES  |     | NULL    |       |
| unit          | int          | YES  |     | NULL    |       |
| kode_satuan   | varchar(4)   | YES  |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
6 rows in set (0.014 sec)
```

5. **Membuat Tabel ms_harga_harian :**

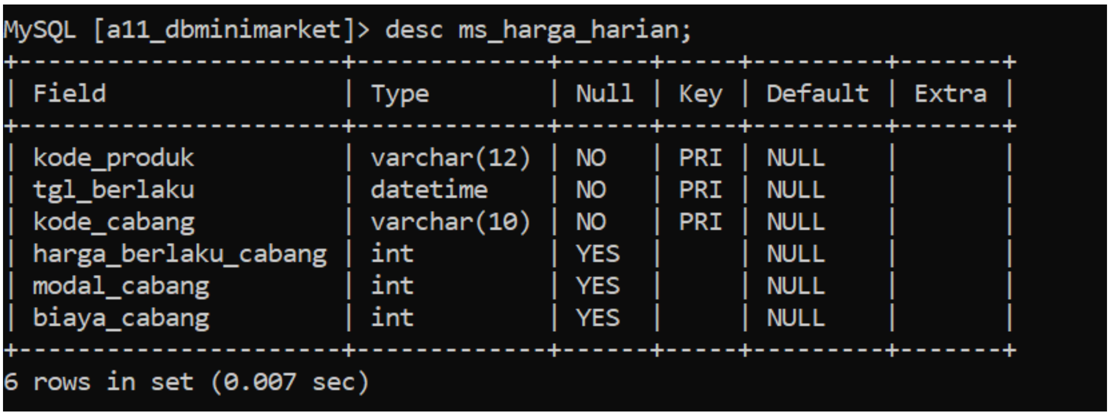
Query :

create table ms_harga_harian (
	kode_produk varchar(12) not null,
	tgl_berlaku datetime not null,
	kode_cabang varchar(10) not null,
	harga_berlaku_cabang int(11),
	modal_cabang int(11),
	biaya_cabang int(11),
	primary key (kode_produk,tgl_berlaku,kode_cabang)
	);

Relasi :

alter table ms_harga_harian
add CONSTRAINT fk_harga_harian_penjualan FOREIGN key (tgl_berlaku) REFERENCES tr_penjualan(tgl_transaksi);

Hasil :



```
MySQL [a11_dbminimarket]> desc ms_harga_harian;
+----------------------+-------------+------+-----+---------+-------+
| Field                | Type        | Null | Key | Default | Extra |
+----------------------+-------------+------+-----+---------+-------+
| kode_produk          | varchar(12) | NO   | PRI | NULL    |       |
| tgl_berlaku          | datetime    | NO   | PRI | NULL    |       |
| kode_cabang          | varchar(10) | NO   | PRI | NULL    |       |
| harga_berlaku_cabang | int         | YES  |     | NULL    |       |
| modal_cabang         | int         | YES  |     | NULL    |       |
| biaya_cabang         | int         | YES  |     | NULL    |       |
+----------------------+-------------+------+-----+---------+-------+
6 rows in set (0.007 sec)
```

6. **Membuat Tabel ms_cabang :**

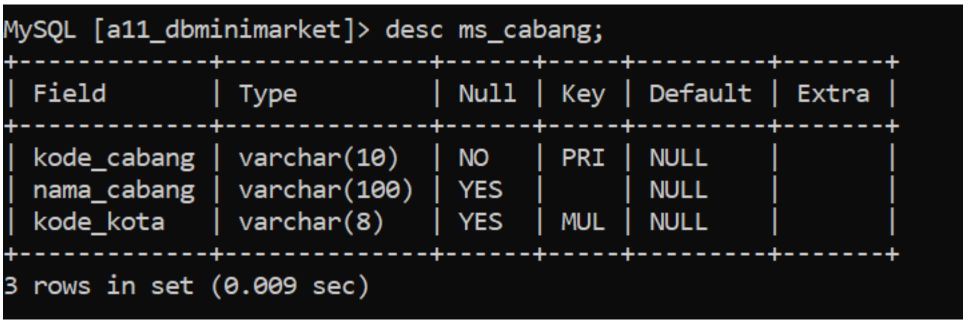
Query :

create table ms_cabang (
	kode_cabang varchar(10) primary key not null,
	nama_cabang varchar(100),
	kode_kota varchar(8)
	);

Relasi :

alter table ms_cabang
add CONSTRAINT fk_cabang_kota FOREIGN key (kode_kota) REFERENCES ms_kota(kode_kota);

Hasil :



```
MySQL [a11_dbminimarket]> desc ms_cabang;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| kode_cabang | varchar(10)  | NO   | PRI | NULL    |       |
| nama_cabang | varchar(100) | YES  |     | NULL    |       |
| kode_kota   | varchar(8)   | YES  | MUL | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
3 rows in set (0.009 sec)
```

7. Membuat Tabel ms_kota :

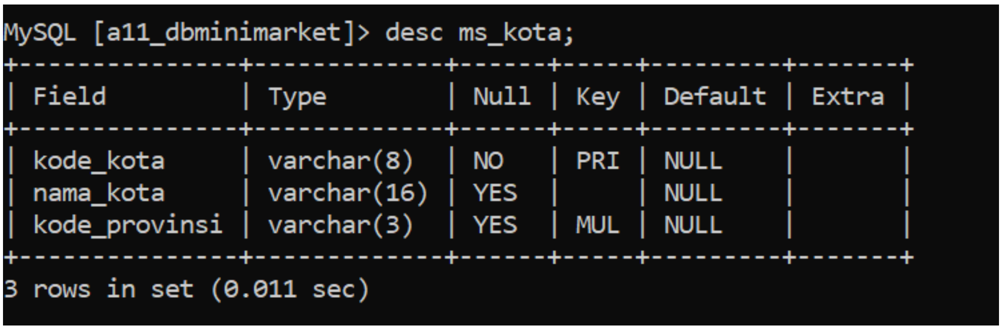
Query :

```
create table ms_kota (
        kode_kota varchar(8) primary key not null,
        nama_kota varchar(16),
        kode_provinsi varchar(3)
        );
```

Relasi :

```
alter table ms_kota
add CONSTRAINT fk_kota_propinsi FOREIGN key (kode_provinsi) REFERENCES
ms_propinsi(kode_provinsi);
```

Hasil :



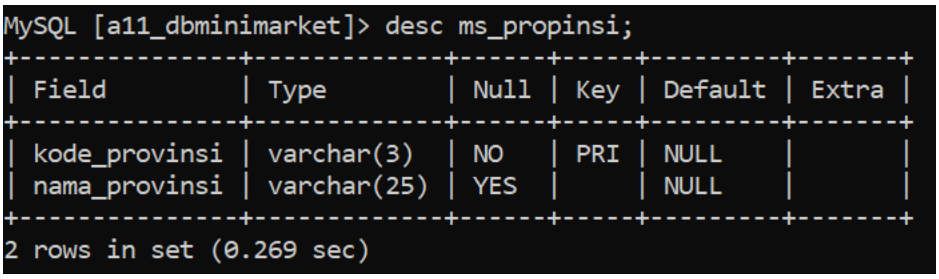
```
MySQL [a11_dbminimarket]> desc ms_kota;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_kota     | varchar(8)  | NO   | PRI | NULL    |       |
| nama_kota     | varchar(16) | YES  |     | NULL    |       |
| kode_provinsi | varchar(3)  | YES  | MUL | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
3 rows in set (0.011 sec)
```

8. Membuat Tabel ms_propinsi :

Query :

```
create table ms_propinsi (
        kode_provinsi varchar(3) primary key not null,
        nama_provinsi varchar(25)
        );
```

Hasil :



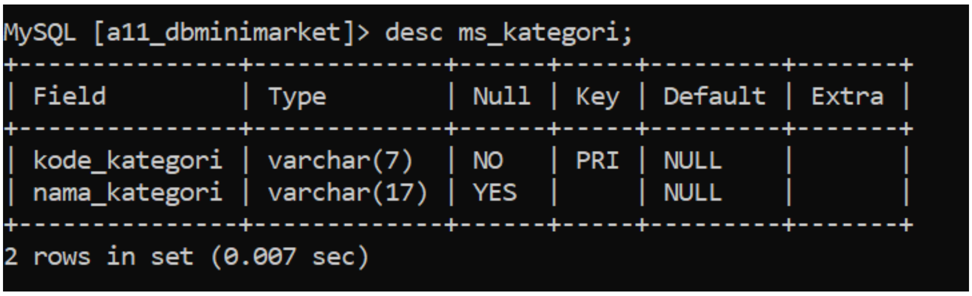
```
MySQL [a11_dbminimarket]> desc ms_propinsi;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_provinsi | varchar(3)  | NO   | PRI | NULL    |       |
| nama_provinsi | varchar(25) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
2 rows in set (0.269 sec)
```

9. Membuat Tabel ms_kategori :

Query :

```
create table ms_kategori (
        kode_kategori varchar(7) primary key not null,
        nama_kategori varchar(17)
        );
```

Hasil :



```
MySQL [a11_dbminimarket]> desc ms_kategori;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| kode_kategori | varchar(7)  | NO   | PRI | NULL    |       |
| nama_kategori | varchar(17) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
2 rows in set (0.007 sec)
```

B. Pembuatan Procedure

1. Procedure insert_penjualan dan harga harian :

```
DELIMITER $$
CREATE PROCEDURE insert_penjualan (
   IN p_kode_cabang VARCHAR(10),
   IN p_kode_kasir VARCHAR(10),
   IN p_kode_produk VARCHAR(12),
   IN p_jumlah_pembelian INT
)
BEGIN
   DECLARE v_now DATETIME;
   SET v_now = NOW();

   INSERT INTO tr_penjualan (tgl_transaksi, kode_cabang, kode_kasir, kode_produk,
jumlah_pembelian)
   VALUES (v_now, p_kode_cabang, p_kode_kasir, p_kode_produk, p_jumlah_pembelian);

   INSERT INTO ms_harga_harian (kode_produk, tgl_berlaku, kode_cabang)
   VALUES (p_kode_produk, DATE_ADD(v_now, INTERVAL 7 DAY), p_kode_cabang);
END$$
DELIMITER ;
```

2. Procedure insert_karyawan :

```
DELIMITER $$
CREATE PROCEDURE insert_karyawan (
   IN p_kode_karyawan VARCHAR(10),
   IN p_nama_depan VARCHAR(8),
   IN p_nama_belakang VARCHAR(9),
   IN p_jenis_kelamin VARCHAR(1),
   IN p_kode_cabang VARCHAR(10)
)
BEGIN
   INSERT INTO ms_karyawan (kode_karyawan, nama_depan, nama_belakang, jenis_kelamin,
kode_cabang)
   VALUES (p_kode_karyawan, p_nama_depan, p_nama_belakang, p_jenis_kelamin,
p_kode_cabang);
END$$
```

```
DELIMITER ;
```

3. **Procedure insert_produk :**

```
DELIMITER $$
CREATE PROCEDURE insert_produk (
   IN p_kode_produk VARCHAR(12),
   IN p_nama_produk VARCHAR(100),
   IN p_kode_kategori VARCHAR(7),
   IN p_kode_item VARCHAR(7),
   IN p_unit INT,
   IN p_kode_satuan VARCHAR(4)
)
BEGIN
   INSERT INTO ms_produk (kode_produk, nama_produk, kode_kategori, kode_item, unit,
kode_satuan)
   VALUES (p_kode_produk, p_nama_produk, p_kode_kategori, p_kode_item, p_unit,
p_kode_satuan);
END$$
DELIMITER ;
```

4. **Procedure insert_cabang :**

```
DELIMITER $$
CREATE PROCEDURE insert_cabang (
   IN p_kode_cabang VARCHAR(10),
   IN p_nama_cabang VARCHAR(100),
   IN p_kode_kota VARCHAR(8)
)
BEGIN
   INSERT INTO ms_cabang (kode_cabang, nama_cabang, kode_kota)
   VALUES (p_kode_cabang, p_nama_cabang, p_kode_kota);
END$$
DELIMITER ;
```

5. **Procedure insert_kota :**

```
DELIMITER $$
CREATE PROCEDURE insert_kota (
   IN p_kode_kota VARCHAR(8),
   IN p_nama_kota VARCHAR(16),
   IN p_kode_provinsi VARCHAR(3)
)
BEGIN
   INSERT INTO ms_kota (kode_kota, nama_kota, kode_provinsi)
   VALUES (p_kode_kota, p_nama_kota, p_kode_provinsi);
END$$
DELIMITER ;
```

6. **Procedure insert_propinsi :**

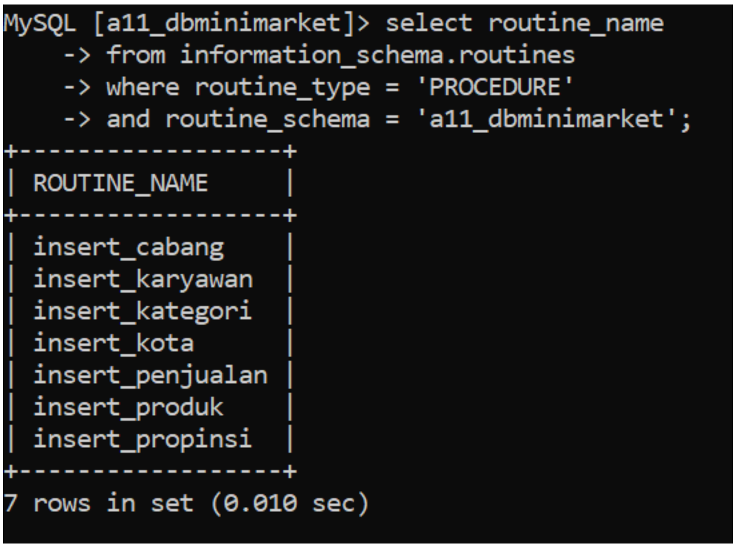
```
DELIMITER $$
CREATE PROCEDURE insert_propinsi (
   IN p_kode_provinsi VARCHAR(3),
   IN p_nama_provinsi VARCHAR(25)
)
```

```
BEGIN
   INSERT INTO ms_propinsi (kode_provinsi, nama_provinsi)
   VALUES (p_kode_provinsi, p_nama_provinsi);
END$$
DELIMITER ;
```

7. **Procedure insert_kategori :**

```
DELIMITER $$
CREATE PROCEDURE insert_kategori (
   IN p_kode_kategori VARCHAR(7),
   IN p_nama_kategori VARCHAR(17)
)
BEGIN
   INSERT INTO ms_kategori (kode_kategori, nama_kategori)
   VALUES (p_kode_kategori, p_nama_kategori);
END$$
DELIMITER ;
```

8. **Hasil :**



```
MySQL [a11_dbminimarket]> select routine_name
    -> from information_schema.routines
    -> where routine_type = 'PROCEDURE'
    -> and routine_schema = 'a11_dbminimarket';
+------------------+
| ROUTINE_NAME     |
+------------------+
| insert_cabang    |
| insert_karyawan  |
| insert_kategori  |
| insert_kota      |
| insert_penjualan |
| insert_produk    |
| insert_propinsi  |
+------------------+
7 rows in set (0.010 sec)
```

C. Menjalankan Transaction dan Membuat View

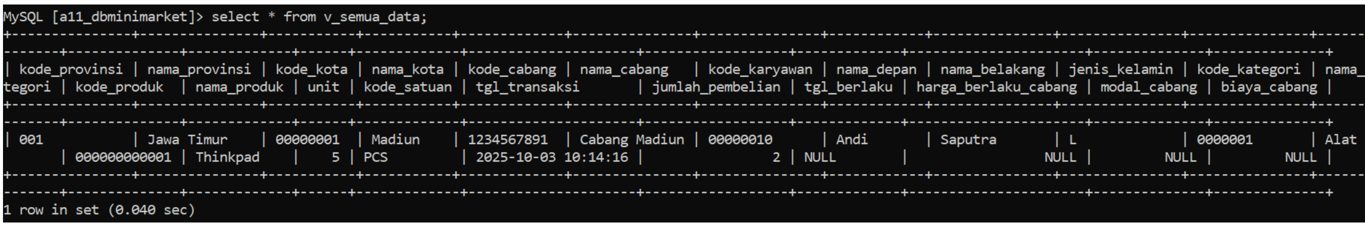
1. **Transaction :**

```
START TRANSACTION;

CALL insert_propinsi('001', 'Jawa Timur');
CALL insert_kota('00000001', 'Madiun', '001');
CALL insert_cabang('1234567891', 'Cabang Madiun', '00000001');
CALL insert_karyawan('00000010', 'Andi', 'Saputra', 'L', '1234567891');
CALL insert_kategori('0000001', 'Alat');
CALL insert_produk('000000000001', 'Thinkpad', '0000001', '0000001', 5, 'PCS');
CALL insert_penjualan('1234567891', '00000010', '000000000001', 2);

COMMIT;
```

2. **View :**

```
CREATE OR REPLACE VIEW v_semua_data AS
SELECT
   prp.kode_provinsi,
   prp.nama_provinsi,

   kt.kode_kota,
   kt.nama_kota,

   cb.kode_cabang,
   cb.nama_cabang,

   kr.kode_karyawan,
   kr.nama_depan,
   kr.nama_belakang,
   kr.jenis_kelamin,

   kat.kode_kategori,
   kat.nama_kategori,

   pd.kode_produk,
   pd.nama_produk,
   pd.unit,
   pd.kode_satuan,

   pj.tgl_transaksi,
   pj.jumlah_pembelian,

   hh.tgl_berlaku,
   hh.harga_berlaku_cabang,
   hh.modal_cabang,
   hh.biaya_cabang

FROM ms_propinsi prp
LEFT JOIN ms_kota kt       ON prp.kode_provinsi = kt.kode_provinsi
LEFT JOIN ms_cabang cb     ON kt.kode_kota = cb.kode_kota
LEFT JOIN ms_karyawan kr   ON cb.kode_cabang = kr.kode_cabang
LEFT JOIN tr_penjualan pj  ON cb.kode_cabang = pj.kode_cabang
LEFT JOIN ms_produk pd     ON pj.kode_produk = pd.kode_produk
LEFT JOIN ms_kategori kat  ON pd.kode_kategori = kat.kode_kategori
LEFT JOIN ms_harga_harian hh
      ON pj.kode_produk = hh.kode_produk
     AND pj.kode_cabang = hh.kode_cabang
     AND hh.tgl_berlaku = DATE_ADD(pj.tgl_transaksi, INTERVAL 7 DAY);
```

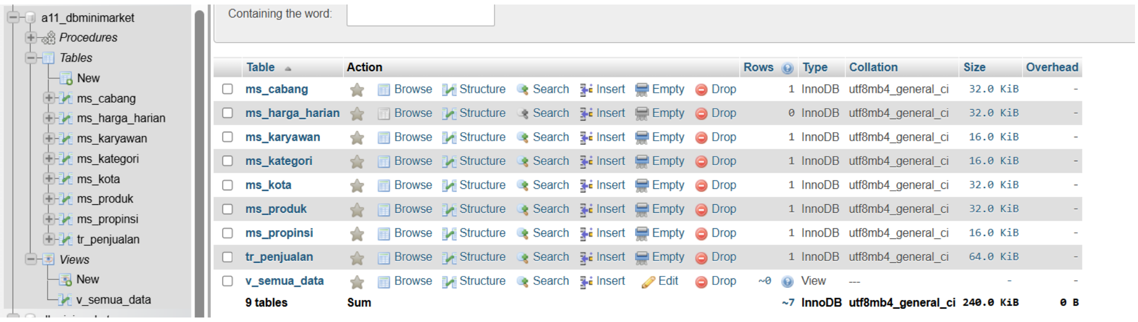
3. **Hasil :**



```
MySQL [a11_dbminimarket]> select * from v_semua_data;
+---------------+---------------+-----------+-----------+-------------+---------------+---------------+------------+---------------+---------------+---------------+-----
-------+--------------+-------------+------+-------------+---------------------+------------------+-------------+----------------------+--------------+--------------+
| kode_provinsi | nama_provinsi | kode_kota | nama_kota | kode_cabang | nama_cabang   | kode_karyawan | nama_depan | nama_belakang | jenis_kelamin | kode_kategori | nama_
tegori | kode_produk  | nama_produk | unit | kode_satuan | tgl_transaksi       | jumlah_pembelian | tgl_berlaku | harga_berlaku_cabang | modal_cabang | biaya_cabang |
+---------------+---------------+-----------+-----------+-------------+---------------+---------------+------------+---------------+---------------+---------------+-----
-------+--------------+-------------+------+-------------+---------------------+------------------+-------------+----------------------+--------------+--------------+
| 001           | Jawa Timur    | 00000001  | Madiun    | 1234567891  | Cabang Madiun | 00000010      | Andi       | Saputra       | L             | 0000001       | Alat
       | 000000000001 | Thinkpad    |    5 | PCS         | 2025-10-03 10:14:16 |                2 | NULL        |                 NULL |         NULL |         NULL |
+---------------+---------------+-----------+-----------+-------------+---------------+---------------+------------+---------------+---------------+---------------+-----
-------+--------------+-------------+------+-------------+---------------------+------------------+-------------+----------------------+--------------+--------------+
1 row in set (0.040 sec)
```

D. Struktur dan Model Database

1. Struktur :

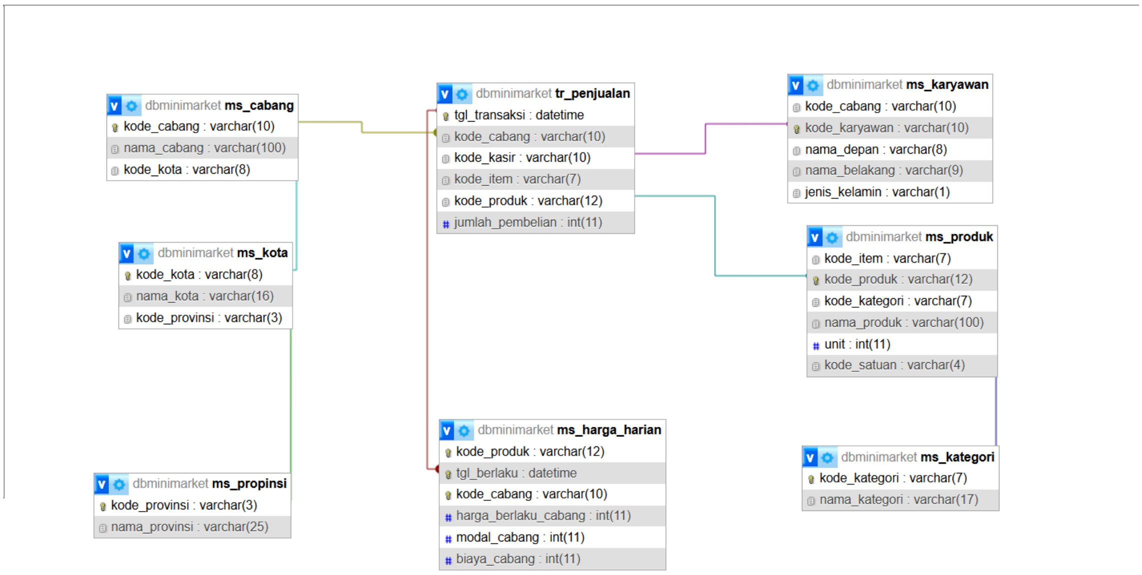


a11_dbminimarket
- Procedures
- Tables
  - New
  - ms_cabang
  - ms_harga_harian
  - ms_karyawan
  - ms_kategori
  - ms_kota
  - ms_produk
  - ms_propinsi
  - tr_penjualan
- Views
  - New
  - v_semua_data

Containing the word:

	Table	Action						Rows	Type	Collation	Size	Overhead
□	ms_cabang	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	ms_harga_harian	Browse	Structure	Search	Insert	Empty	Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	ms_karyawan	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
□	ms_kategori	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
□	ms_kota	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	ms_produk	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	ms_propinsi	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
□	tr_penjualan	Browse	Structure	Search	Insert	Empty	Drop	1	InnoDB	utf8mb4_general_ci	64.0 KiB	-
□	v_semua_data	Browse	Structure	Search	Insert	Edit	Drop	~0	View	---	-	-
	9 tables	Sum						~7	InnoDB	utf8mb4_general_ci	240.0 KiB	0 B

2. Model :



dbminimarket ms_cabang
- kode_cabang : varchar(10)
- nama_cabang : varchar(100)
- kode_kota : varchar(8)

dbminimarket ms_kota
- kode_kota : varchar(8)
- nama_kota : varchar(16)
- kode_provinsi : varchar(3)

dbminimarket ms_propinsi
- kode_provinsi : varchar(3)
- nama_provinsi : varchar(25)

dbminimarket tr_penjualan
- tgl_transaksi : datetime
- kode_cabang : varchar(10)
- kode_kasir : varchar(10)
- kode_item : varchar(7)
- kode_produk : varchar(12)
- jumlah_pembelian : int(11)

dbminimarket ms_harga_harian
- kode_produk : varchar(12)
- tgl_berlaku : datetime
- kode_cabang : varchar(10)
- harga_berlaku_cabang : int(11)
- modal_cabang : int(11)
- biaya_cabang : int(11)

dbminimarket ms_karyawan
- kode_cabang : varchar(10)
- kode_karyawan : varchar(10)
- nama_depan : varchar(8)
- nama_belakang : varchar(9)
- jenis_kelamin : varchar(1)

dbminimarket ms_produk
- kode_item : varchar(7)
- kode_produk : varchar(12)
- kode_kategori : varchar(7)
- nama_produk : varchar(100)
- unit : int(11)
- kode_satuan : varchar(4)

dbminimarket ms_kategori
- kode_kategori : varchar(7)
- nama_kategori : varchar(17)