

Advance Data Base MySQL Basics and Data Definition Language



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Practicum

1. Buka prompt jalankan perintah berikut ini :

C:\>Program Files\xampp\mysql\bin>mysql -u root -p (enter)

```
ASUS@HAQI-G4CE c:\xampp
# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 11
Server version: 10.4.28-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)]> |
```

2. Buatlah sebuah database dengan nama db_polinema

```
MariaDB [(none)]> create database db_polinema;
Query OK, 1 row affected (0.294 sec)
```

```
MariaDB [(none)]> show databases
-> ;
```

```
+-----+
| Database |
+-----+
| db_polinema |
| information_schema |
| mysql |
| performance_schema |
| phpmyadmin |
| test |
+-----+
6 rows in set (0.002 sec)
```

```
MariaDB [(none)]> |
```

3. Buatlah beberapa tabel dalam database tersebut sesuai dengan kriteria berikut:

Tabel prodi

Field	Type Data
kode_prodi	VARCHAR (6) PRIMARY KEY
nama_prodi	VARCHAR (30)

```
MariaDB [db_polinema]> create table prodi (
-> kode_prodi char(6) primary key,
-> nama_prodi char(30)
-> );
Query OK, 0 rows affected (0.020 sec)
```

4. Tabel mahasiswa

Field	Type Data
nim	INT (8) PRIMARY KEY
nama_mhs	VARCHAR (50)
jenis_kelamin	ENUM ('L','P') DEFAULT 'L'
alamat	VARCHAR (50)
kota	VARCHAR (20) DEFAULT 'MALANG'
asal_sma	VARCHAR (30)
no_hp	VARCHAR (12)
umur	INT
kode_prodi	VARCHAR (6) FOREIGN KEY fk0 (kode_prodi) REFERENCES prodi (kode_prodi)

```
MariaDB [db_polinema]> create table mahasiswa (
  -> nim int(8) primary key,
  -> nama_mhs char(50),
  -> jenis_kelamin enum('L', 'P') default 'L',
  -> alamat varchar(50),
  -> kota varchar(20) default 'malang',
  -> asal_sma char(30),
  -> no_hp varchar(12),
  -> umur integer,
  -> kode_prodi char(6),
  -> foreign key fk0 (kode_prodi) references prodi(kode_prodi)
  -> );
Query OK, 0 rows affected (0.046 sec)

MariaDB [db_polinema]> |
```

5. Tabel mata_kuliah

Field	Type Data
mk_id	VARCHAR (10) PRIMARY KEY
nama_mk	VARCHAR (50)
jumlah_jam	FLOAT (4,2)
sks	INTEGER

```
MariaDB [db_polinema]> create table mata_kuliah (
  -> mk_id char(10) primary key,
  -> nama_mk char(50),
  -> jumlah_jam float(4, 2),
  -> sks integer
  -> );
Query OK, 0 rows affected (0.018 sec)

MariaDB [db_polinema]>
```

6. Tabel ruang

Field	Type Data
ruang_id	VARCHAR (10) PRIMARY KEY
nama_ruang	VARCHAR (50)
kapasitas	INTEGER

```
MariaDB [db_polinema]> create table ruang (  
  -> ruang_id char(3) primary key,  
  -> nama_ruang char(20),  
  -> kapasitas integer  
  -> );
```

```
Query OK, 0 rows affected (0.042 sec)
```

```
MariaDB [db_polinema]>
```

7. Tabel dosen

Field	Type Data
nidn	INTEGER (20) PRIMARY KEY
nama_dosen	VARCHAR (50)
status	ENUM ('PNS','KONTRAK') DEFAULT 'PNS'
jenis_kelamin	ENUM ('L','P') DEFAULT 'L'
no_hp	VARCHAR (15)

```
MariaDB [db_polinema]> create table dosen (  
  -> nidn integer(20) primary key,  
  -> nama_dosen char(50),  
  -> status enum ('PNS', 'KONTRAK') default 'PNS',  
  -> jenis_kelamin enum ('L', 'P') default 'L',  
  -> no_hp varchar(15)  
  -> );
```

```
Query OK, 0 rows affected (0.020 sec)
```

```
MariaDB [db_polinema]> |
```

8. <Soal>

Tambahkan sebuah kolom agama (varchar(10)) pada tabel mahasiswa sebagai kolom terakhir

Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> ALTER TABLE mahasiswa ADD agama varchar(10);
Query OK, 0 rows affected (0.047 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_polinema]> desc mahasiswa;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nim            | int(8)        | NO   | PRI | NULL    |       |
| nama_mhs       | char(50)      | YES  |     | NULL    |       |
| jenis_kelamin  | enum('L','P') | YES  |     | L       |       |
| alamat         | varchar(50)   | YES  |     | NULL    |       |
| kota           | varchar(20)   | YES  |     | malang  |       |
| asal_sma       | char(30)      | YES  |     | NULL    |       |
| no_hp          | varchar(12)   | YES  |     | NULL    |       |
| umur          | int(11)       | YES  |     | NULL    |       |
| kode_prodi     | char(6)       | YES  | MUL | NULL    |       |
| agama          | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.022 sec)

MariaDB [db_polinema]> |
```

9. <Soal>

Tambahkan kolom alamat(varchar(50)) pada tabel dosen sebagai kolom terakhir

Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> ALTER TABLE dosen ADD alamat varchar(50);
Query OK, 0 rows affected (0.021 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_polinema]> desc dosen;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nidn  | int(20) | NO | PRI | NULL | |
| nama_dosen | char(50) | YES | | NULL | |
| status | enum('PNS','KONTRAK') | YES | | PNS | |
| jenis_kelamin | enum('L','P') | YES | | L | |
| no_hp | varchar(15) | YES | | NULL | |
| alamat | varchar(50) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.021 sec)

MariaDB [db_polinema]> |
```

10. <Soal>

Lakukan insert data ke dalam tabel-tabel yang ada pada database db_polinema sesuai dengan field, tipe data dan panjang datanya

Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> insert into prodi (kode_prodi, nama_prodi) values (
-> 'TI',
-> 'Teknik Informatika'
-> );
Query OK, 1 row affected (0.037 sec)

MariaDB [db_polinema]> insert into mahasiswa (nim, nama_mhs, jenis_kelamin, alamat, kota, asal_sma, no_hp, umur, kode_prodi, agama) values (
-> 41720145,
-> 'Muhammad Baihaqi Aulia Asyari',
-> 'L',
-> 'Dinoyo',
-> 'malang',
-> 'SMAN 1 Malang',
-> '082336750134',
-> 19,
-> 'TI',
->
-> 'Islam'
-> );
Query OK, 1 row affected (0.003 sec)

MariaDB [db_polinema]> insert into dosen (nidn, nama_dosen, no_hp) values (
-> 0005018104,
-> 'YAN WATEQULIS SYAIFUDIN',
-> '082131552688'
-> );
Query OK, 1 row affected (0.003 sec)

MariaDB [db_polinema]> insert into mata_kuliah (mk_id, nama_mk, jumlah_jam, sks) values (
-> 'RTI223005',
-> 'Basis Data Lanjut',
-> 6,
-> 3
-> );
Query OK, 1 row affected (0.003 sec)

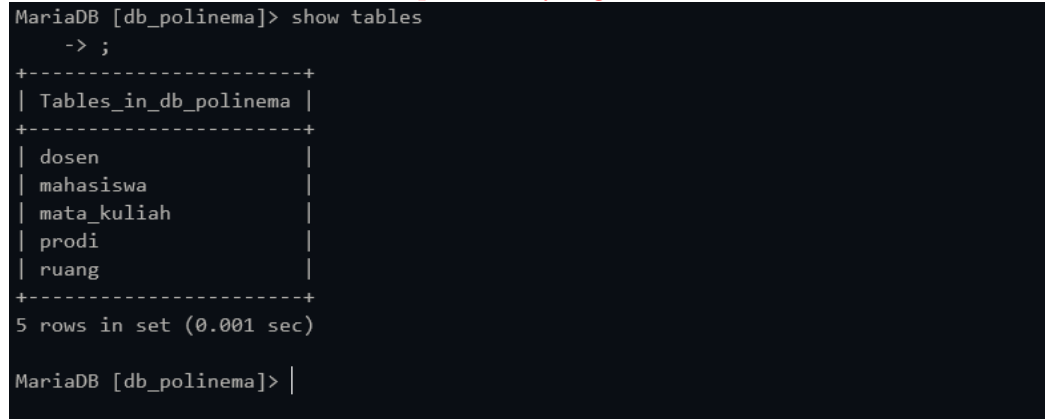
MariaDB [db_polinema]> insert into ruang (ruang_id, nama_ruang, kapasitas) values (
-> 'LPR',
-> 'Lab Pemrograman 2',
-> 30
-> );
Query OK, 1 row affected (0.002 sec)

MariaDB [db_polinema]> |
```

11. <Soal>

Tampilkan semua tabel yang ada didalam database db_polinema

Catat : Buat Screenshot dari perintah yang anda ketikkan



```
MariaDB [db_polinema]> show tables
-> ;
+-----+
| Tables_in_db_polinema |
+-----+
| dosen                  |
| mahasiswa              |
| mata_kuliah            |
| prodi                  |
| ruang                  |
+-----+
5 rows in set (0.001 sec)

MariaDB [db_polinema]> |
```

12. <Soal>

Tampilkan semua isi tabel yang ada didalam tabel mahasiswa

Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> select * from mahasiswa;
+-----+-----+-----+-----+-----+-----+-----+-----+
| nim    | nama_mhs          | jenis_kelamin | alamat | kota   | asal_sma | no_hp    | umur | kode_prodi | agama |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 41720145 | Muhammad Baihaqi Aulia Asyari | L             | Dinoyo | malang | SMAN 1 Malang | 082336750134 | 19 | TI         | Islam |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [db_polinema]> |
```

13. <Soal>

Tampilkan struktur(metadata) tabel mahasiswa Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> desc mahasiswa;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nim        | int(8)        | NO   | PRI | NULL    |       |
| nama_mhs   | char(50)      | YES  |     | NULL    |       |
| jenis_kelamin | enum('L','P') | YES  |     | L        |       |
| alamat     | varchar(50)   | YES  |     | NULL    |       |
| kota       | varchar(20)   | YES  |     | malang   |       |
| asal_sma   | char(30)      | YES  |     | NULL    |       |
| no_hp      | varchar(12)   | YES  |     | NULL    |       |
| umur       | int(11)       | YES  |     | NULL    |       |
| kode_prodi | char(6)       | YES  | MUL | NULL    |       |
| agama      | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.013 sec)

MariaDB [db_polinema]> |
```

14. <Soal>

hilangkan kolom asal_sma yang terdapat didalam tabel mahasiswa

Catat : Buat Screenshot dari perintah yang anda ketikkan

```
MariaDB [db_polinema]> alter table mahasiswa drop column asal_sma
-> ;
Query OK, 0 rows affected (0.014 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_polinema]> desc mahasiswa;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| nim        | int(8)        | NO   | PRI | NULL    |       |
| nama_mhs   | char(50)      | YES  |     | NULL    |       |
| jenis_kelamin | enum('L','P') | YES  |     | L        |       |
| alamat     | varchar(50)   | YES  |     | NULL    |       |
| kota       | varchar(20)   | YES  |     | malang   |       |
| no_hp      | varchar(12)   | YES  |     | NULL    |       |
| umur       | int(11)       | YES  |     | NULL    |       |
| kode_prodi | char(6)       | YES  | MUL | NULL    |       |
| agama      | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.019 sec)

MariaDB [db_polinema]> |
```

Tugas

1. Buatlah basis data Akademik dengan data sebagai berikut :

No_Mhs	Nama_mhs	Jurusan	Kd_MK	Nama_mk	Kd_Dosen	Nm_Dosen	nilai
1921001	Aminah	MI	MI350	Basis Data	B104	Ati	85
1921001	Budiman	MI	MI465	Pemrograman	B105	Dita	87
1921002	Carina	MI	MI465	Pemrograman	B105	Dita	85
1921003	Della	TI	TI201	Mobile	C102	Leo	78
1921004	Firda	TI	TI201	Mobile	C102	Leo	80

```
MariaDB [(none)]> create database db_akademik
-> ;
Query OK, 1 row affected (0.391 sec)

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

- (a) deskripsikan struktur data dari table-table berikut serta isikan datanya:

Tabel Mahasiswa {No_Mhs, Nama_mhs}

Tabel Mata_Kuliah {Kd_MK, Nama_MK}

Tabel nilai {No_Mhs, Kode_MK}

tambahkan kolom Jurusan pada tabel Mahasiswa di kolom terakhir

```
MariaDB [db_akademik]> create table Mahasiswa (
-> No_Mhs int(7) not null primary key,
-> Nama_mhs varchar(15) not null
-> );
Query OK, 0 rows affected (0.014 sec)

MariaDB [db_akademik]> create table Mata_Kuliah (
-> Kd_MK varchar(5) not null primary key,
-> Nama_MK varchar(15) not null
-> );
Query OK, 0 rows affected (0.349 sec)

MariaDB [db_akademik]> create table nilai (
-> No_Mhs int (7) not null,
-> Kode_MK varchar(5) not null
-> );
Query OK, 0 rows affected (0.042 sec)

MariaDB [db_akademik]> alter table Mahasiswa add Jurusan varchar(2);
Query OK, 0 rows affected (0.091 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_akademik]>
```

```

MariaDB [db_akademik]> desc Mahasiswa
-> ;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| No_Mhs     | int(7)        | NO   | PRI | NULL    |       |
| Nama_mhs   | varchar(15)   | NO   |     | NULL    |       |
| Jurusan    | varchar(2)    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.015 sec)

MariaDB [db_akademik]> desc Mata_Kuliah;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Kd_MK      | varchar(5)    | NO   | PRI | NULL    |       |
| Nama_MK    | varchar(15)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.056 sec)

MariaDB [db_akademik]> desc nilai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| No_Mhs     | int(7)        | NO   |     | NULL    |       |
| Kode_MK    | varchar(5)    | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.064 sec)

MariaDB [db_akademik]> |

```

(b) tambahkan kolom Kode Dosen pada tabel Mata_Kuliah

```

MariaDB [db_akademik]> alter table Mata_Kuliah add Kd_Dosen varchar(4) not null;
Query OK, 0 rows affected (0.041 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_akademik]> desc Mata_Kuliah;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Kd_MK      | varchar(5)    | NO   | PRI | NULL    |       |
| Nama_MK    | varchar(15)   | NO   |     | NULL    |       |
| Kd_Dosen   | varchar(4)    | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.049 sec)

MariaDB [db_akademik]> |

```

- (c) tambahkan kolom nilai pada tabel nilai serta berikanlah kunci foreign key

```
MariaDB [db_akademik]> alter table nilai add nilai int(3) not null;
Query OK, 0 rows affected (0.182 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_akademik]> alter table nilai add foreign key No_Mhs references Mahasiswa(No_Mhs);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your Ma
riaDB server version for the right syntax to use near 'references Mahasiswa(No_Mhs)' at line 1
MariaDB [db_akademik]> alter table nilai add foreign key(No_Mhs) references Mahasiswa(No_Mhs);
Query OK, 0 rows affected (0.402 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_akademik]> alter table nilai add foreign key(Kode_MK) references Mata_Kuliah(Kd_MK);
Query OK, 0 rows affected (0.174 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_akademik]> desc nilai;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| No_Mhs | int(7) | NO | MUL | NULL | |
| Kode_MK | varchar(5) | NO | MUL | NULL | |
| nilai | int(3) | NO | | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.062 sec)

MariaDB [db_akademik]> |
```

- (d) tambahkan Tabel Dosen dengan atributnya Kd_Dosen dan Nama Dosen

```
MariaDB [db_akademik]> create table Dosen (
-> Kd_Dosen varchar(4) not null primary key,
-> Nm_Dosen varchar(15) not null
-> );
Query OK, 0 rows affected (0.061 sec)

MariaDB [db_akademik]> desc Dosen;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Kd_Dosen | varchar(4) | NO | PRI | NULL | |
| Nm_Dosen | varchar(15) | NO | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.014 sec)

MariaDB [db_akademik]> |
```

(e) tampilkan semua data yang ada pada tiap tabel

```
MariaDB [db_akademik]> insert into Mahasiswa values
-> (1921001, 'Aminah', 'MI'),
-> (1921002, 'Budiman', 'MI'),
-> (1921003, 'Carina', 'MI'),
-> (1921004, 'Della', 'TI'),
-> (1921005, 'Firda', 'TI');
Query OK, 5 rows affected (0.499 sec)
Records: 5  Duplicates: 0  Warnings: 0

MariaDB [db_akademik]> insert into Dosen values
-> ('B104', 'Ati'),
-> ('B105', 'Dita'),
-> ('C102', 'Leo');
Query OK, 3 rows affected (0.004 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [db_akademik]> insert into Mata_Kuliah values
-> ('MI350', 'Basis Data', 'B104'),
-> ('MI465', 'Pemrograman', 'B105'),
-> ('TI201', 'Mobile', 'C102');
Query OK, 3 rows affected (0.049 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [db_akademik]> insert into nilai values
-> (1921001, 'MI350', 85),
-> (1921002, 'MI465', 87),
-> (1921003, 'MI465', 85),
-> (1921004, 'TI201', 78),
-> (1921005, 'TI201', 80);
Query OK, 5 rows affected (0.005 sec)
Records: 5  Duplicates: 0  Warnings: 0

MariaDB [db_akademik]> |
```

```

MariaDB [db_akademik]> select
-> Mahasiswa.No_Mhs,
-> Mahasiswa>Nama_mhs,
-> Mahasiswa.Jurusan,
-> Mata_Kuliah.Kd_MK,
-> Mata_Kuliah>Nama_MK,
-> Dosen.Kd_Dosen,
-> Dosen.Nm_Dosen,
-> nilai.nilai
-> from Mahasiswa
-> join nilai on Mahasiswa.No_Mhs = nilai.No_Mhs
-> join Mata_Kuliah on nilai.Kode_MK = Mata_Kuliah.Kd_MK
-> join Dosen on Mata_Kuliah.Kd_Dosen = Dosen.Kd_Dosen;
+-----+-----+-----+-----+-----+-----+-----+
| No_Mhs | Nama_mhs | Jurusan | Kd_MK | Nama_MK | Kd_Dosen | Nm_Dosen | nilai |
+-----+-----+-----+-----+-----+-----+-----+
| 1921001 | Aminah | MI | MI350 | Basis Data | B104 | Ati | 85 |
| 1921002 | Budiman | MI | MI465 | Pemrograman | B105 | Dita | 87 |
| 1921003 | Carina | MI | MI465 | Pemrograman | B105 | Dita | 85 |
| 1921004 | Della | TI | TI201 | Mobile | C102 | Leo | 78 |
| 1921005 | Firda | TI | TI201 | Mobile | C102 | Leo | 80 |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.047 sec)

MariaDB [db_akademik]> |

```

2. Buatlah basis data Pegawai yang terdiri dari tabel sebagai berikut :

Noproyek	NamaProyek	Nopegawai	NamaPegawai	Golongan	BesarGaji
NP001	BRR	Peg01	Anton	A	1.000.000
NP001	BRR	Peg02	Paula	B	900.000
NP001	BRR	Peg06	Koko	C	750.000
NP002	PEMDA	Peg01	Anton	A	1.000.000
NP002	PEMDA	Peg12	Sita	B	900.000
NP002	PEMDA	Peg14	Yusni	B	900.000
NP003	CBR	Peg02	Paula	B	900.000
NP003	CBR	Peg03	Daniar	C	750.000
NP003	CBR	Peg04	Lubis	C	750.000
NP004	ASK	Peg07	Keni	B	900.000
NP004	ASK	Peg08	Sofi	B	900.000
NP004	ASK	Peg06	Yuni	C	750.000
NP005	OB	Peg15	Udin	D	500.000
NP005	OB	Peg16	Didit	D	500.000
NP005	OB	Peg17	Dani	D	500.000

```

MariaDB [(none)]> CREATE DATABASE db_pegawai;
Query OK, 1 row affected (0.004 sec)

MariaDB [(none)]> USE db_pegawai;
Database changed
MariaDB [db_pegawai]> |

```

-
- (a) Deskripsikan struktur data dari table-table berikut serta isikan datanya:
Table Pegawai {Nopegawai, NamaPegawai}
Tabel Golongan {Golongan}
Tabel Proyek {Noprojek}
Tabel Proyekpegawai {Noprojek}

```
MariaDB [db_pegawai]> CREATE TABLE Pegawai (  
->     NoPegawai    VARCHAR(5) NOT NULL PRIMARY KEY,  
->     NamaPegawai VARCHAR(15) NOT NULL  
-> );  
Query OK, 0 rows affected (0.170 sec)  
  
MariaDB [db_pegawai]>  
MariaDB [db_pegawai]> CREATE TABLE Golongan (  
->     Golongan VARCHAR(1) NOT NULL PRIMARY KEY  
-> );  
Query OK, 0 rows affected (0.016 sec)  
  
MariaDB [db_pegawai]>  
MariaDB [db_pegawai]> CREATE TABLE Proyek (  
->     NoProyek VARCHAR(5) NOT NULL PRIMARY KEY  
-> );  
Query OK, 0 rows affected (0.029 sec)  
  
MariaDB [db_pegawai]>  
MariaDB [db_pegawai]> CREATE TABLE ProyekPegawai (  
->     NoProyek VARCHAR(5) NOT NULL  
-> );  
Query OK, 0 rows affected (0.021 sec)  
  
MariaDB [db_pegawai]>
```



```

MariaDB [db_pegawai]> DESCRIBE Pegawai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoPegawai  | varchar(5) | NO   | PRI | NULL    |       |
| NamaPegawai | varchar(15) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.159 sec)

MariaDB [db_pegawai]> DESCRIBE Golongan;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Golongan   | varchar(1) | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.056 sec)

MariaDB [db_pegawai]> DESCRIBE Proyek;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoProyek   | varchar(5) | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.005 sec)

MariaDB [db_pegawai]> DESCRIBE ProyekPegawai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoProyek   | varchar(5) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.012 sec)

```

- (b) Tambahkan kolom Golongan pada tabel Pegawai di kolom terakhir

```

MariaDB [db_pegawai]> ALTER TABLE Pegawai ADD COLUMN Golongan VARCHAR(1) NOT NULL;
Query OK, 0 rows affected (0.069 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> ALTER TABLE Pegawai ADD FOREIGN KEY(Golongan) REFERENCES Golongan(Golongan);
Query OK, 0 rows affected (0.158 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> DESCRIBE Pegawai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoPegawai  | varchar(5) | NO   | PRI | NULL    |       |
| NamaPegawai | varchar(15) | NO   |     | NULL    |       |
| Golongan   | varchar(1) | NO   | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.057 sec)

```

- (c) Tambahkan kolom BesarGaji pada tabel Golongan di kolom terakhir

```
MariaDB [db_pegawai]> ALTER TABLE Golongan ADD BesarGaji INTEGER(10) NOT NULL;
Query OK, 0 rows affected (0.103 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> DESCRIBE Golongan;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Golongan   | varchar(1)    | NO   | PRI | NULL    |      |
| BesarGaji  | int(10)       | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.047 sec)
```

- (d) Tambahkan kolom NamaProyek pada table Proyek

```
MariaDB [db_pegawai]> ALTER TABLE Proyek ADD NamaProyek VARCHAR(5) NOT NULL;
Query OK, 0 rows affected (0.053 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> DESCRIBE Proyek;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoProyek   | varchar(5)    | NO   | PRI | NULL    |      |
| NamaProyek | varchar(5)    | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.016 sec)
```

- (e) Tambahkan kolom NoPegawai pada table Proyekpegawai serta berikanlah kunci foreign key

```
MariaDB [db_pegawai]> ALTER TABLE ProyekPegawai ADD NoPegawai VARCHAR(5) NOT NULL;
Query OK, 0 rows affected (0.022 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> ALTER TABLE ProyekPegawai ADD FOREIGN KEY(NoPegawai) REFERENCES Pegawai(NoPegawai);
Query OK, 0 rows affected (0.346 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> ALTER TABLE ProyekPegawai ADD FOREIGN KEY(NoProyek) REFERENCES Proyek(NoProyek);
Query OK, 0 rows affected (0.089 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> DESCRIBE ProyekPegawai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NoProyek   | varchar(5)    | NO   | MUL | NULL    |      |
| NoPegawai  | varchar(5)    | NO   | MUL | NULL    |      |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.141 sec)
```

(f) Tampilkan semua data yang ada pada tiap tabel

```

MariaDB [db_pegawai]> INSERT INTO Golongan
-> VALUES ('A', 1000000),
->          ('B', 900000),
->          ('C', 750000),
->          ('D', 500000);
Query OK, 4 rows affected (0.006 sec)
Records: 4 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> INSERT INTO Pegawai
-> VALUES ('Peg01', 'Anton', 'A'),
->          ('Peg02', 'Paula', 'B'),
->          ('Peg03', 'Danial', 'C'),
->          ('Peg04', 'Lubis', 'C'),
->          ('Peg06', 'Koko', 'C'),
->          ('Peg07', 'Keni', 'B'),
->          ('Peg08', 'Sofi', 'B'),
->          ('Peg12', 'Sita', 'B'),
->          ('Peg14', 'Yusni', 'B'),
->          ('Peg15', 'Udin', 'D'),
->          ('Peg16', 'Didit', 'D'),
->          ('Peg17', 'Dani', 'D');
Query OK, 12 rows affected (0.003 sec)
Records: 12 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> INSERT INTO Proyek
-> VALUES ('NP001', 'BRR'),
->          ('NP002', 'PEMDA'),
->          ('NP003', 'CBR'),
->          ('NP004', 'ASK'),
->          ('NP005', 'OB');
Query OK, 5 rows affected (0.003 sec)
Records: 5 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> INSERT INTO ProyekPegawai
-> VALUES ('NP001', 'Peg01'),
->          ('NP001', 'Peg02'),
->          ('NP001', 'Peg06'),
->          ('NP002', 'Peg01'),
->          ('NP002', 'Peg12'),
->          ('NP002', 'Peg14'),
->          ('NP003', 'Peg02'),
->          ('NP003', 'Peg03'),
->          ('NP003', 'Peg04'),
->          ('NP004', 'Peg07'),
->          ('NP004', 'Peg08'),
->          ('NP004', 'Peg06'),
->          ('NP005', 'Peg15'),
->          ('NP005', 'Peg16'),
->          ('NP005', 'Peg17');
Query OK, 15 rows affected (0.002 sec)
Records: 15 Duplicates: 0 Warnings: 0

MariaDB [db_pegawai]> SELECT
->     Proyek.NoProyek,
->     Proyek>NamaProyek,
->     Pegawai.NoPegawai,
->     Pegawai>NamaPegawai,
->     Golongan.Golongan,
->     Golongan.BesarGaji
-> FROM Pegawai
-> JOIN Golongan ON Pegawai.golongan = Golongan.Golongan
-> JOIN ProyekPegawai ON Pegawai.NoPegawai = ProyekPegawai.NoPegawai
-> JOIN Proyek ON ProyekPegawai.NoProyek = Proyek.NoProyek;
+-----+-----+-----+-----+-----+-----+
| NoProyek | NamaProyek | NoPegawai | NamaPegawai | Golongan | BesarGaji |
+-----+-----+-----+-----+-----+-----+
| NP001    | BRR        | Peg01     | Anton       | A        | 1000000   |
| NP002    | PEMDA     | Peg01     | Anton       | A        | 1000000   |
| NP001    | BRR        | Peg02     | Paula       | B        | 900000    |
| NP002    | PEMDA     | Peg12     | Sita        | B        | 900000    |
| NP002    | PEMDA     | Peg14     | Yusni       | B        | 900000    |
| NP003    | CBR        | Peg02     | Paula       | B        | 900000    |
| NP004    | ASK        | Peg07     | Keni        | B        | 900000    |
| NP004    | ASK        | Peg08     | Sofi        | B        | 900000    |
| NP001    | BRR        | Peg06     | Koko        | C        | 750000    |
| NP003    | CBR        | Peg03     | Danial      | C        | 750000    |
| NP003    | CBR        | Peg04     | Lubis       | C        | 750000    |
| NP004    | ASK        | Peg06     | Koko        | C        | 750000    |
| NP005    | OB         | Peg15     | Udin        | D        | 500000    |
| NP005    | OB         | Peg16     | Didit       | D        | 500000    |
| NP005    | OB         | Peg17     | Dani        | D        | 500000    |
+-----+-----+-----+-----+-----+-----+
15 rows in set (0.002 sec)

```