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) REFERENSCES 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 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 Pemrogramman 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-tabel 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

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

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

(e) tampilkan semua data yang ada pada tiap tabel

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

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

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

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

(d) Tambahkan kolom NamaProyek pada table Proyek

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

(f) Tampilkan semua data yang ada pada tiap tabel