Advanced Database
Jobsheet 10

Name
Dicha Zelianivan Arkana

NIM
2241720002

Class
1i

Department
Information Technology

Study Program
D4 Informatics Engineering

1 Practicum

1. Buka prompt jalankan perintah berikut ini :
   `C\>Program Files\xampp\mysql\bin>mysql –u root –p (enter)`

```
uni-stuff on  master (?↑1) took 2s
❯ /opt/lampp/bin/mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 25
Server version: 10.4.27-MariaDB Source 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 (0.002 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. Tabel `prodi`

```
MariaDB [db_polinema]> create table prodi (kode_prodi char(6) primary key, nama_prodi char(30));
Query OK, 0 rows affected (0.019 sec)

MariaDB [db_polinema]>
```

4. Tabel `mahasiswa`

```
MariaDB [db_polinema]> create table mahasiswa (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 integ
er, kode_prodi varchar(6), foreign key(kode_prodi) references prodi(kode_prodi));
Query OK, 0 rows affected (0.021 sec)

MariaDB [db_polinema]>
```

5. Tabel `mata_kuliah`

```
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 (0.020 sec)

MariaDB [db_polinema]>
```

6. Tabel `ruang`

```
MariaDB [db_polinema]> create table ruang (ruang_id char(3) primary key, nama_ruang char(20), kapasitas integer);
Query OK, 0 rows affected (0.017 sec)

MariaDB [db_polinema]>
```

7. Tabel `dosen`

```
MariaDB [db_polinema]> create table dosen (nidn integer(20) primary key, nama_dosen char(50), status enum ('PNS', 'KONTR
AK') default 'PNS', jenis_kelamin enum ('L','P') default 'L', no_hp varchar(15));
Query OK, 0 rows affected (0.023 sec)

MariaDB [db_polinema]>
```

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

```
MariaDB [db_polinema]> alter table mahasiswa add column agama varchar(10);
Query OK, 0 rows affected (0.038 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [db_polinema]>
```

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

```
MariaDB [db_polinema]> alter table mahasiswa add column agama varchar(10);
Query OK, 0 rows affected (0.038 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [db_polinema]>
```

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

```
MariaDB [db_polinema]> insert into dosen values (12345, 'dosen 1', 'PNS', 'L', 08912345678, 'Jl Melati');
Query OK, 1 row affected (0.008 sec)
```

```
MariaDB [db_polinema]> insert into prodi values ('P00001', 'Teknik Informatika');
Query OK, 1 row affected (0.009 sec)
```

```
MariaDB [db_polinema]> insert into mahasiswa values (12345, 'mahasiswa 1', 'L', 'Jl Mawar', 'Malang', 'SMAN 1', 08912345
6, 19, 'P00001', 'Islam');
Query OK, 1 row affected (0.009 sec)
```

```
MariaDB [db_polinema]> insert into mata_kuliah values ('MK001', 'Basis Data', 4, 2);
Query OK, 1 row affected (0.009 sec)

MariaDB [db_polinema]> insert into ruang values ('RT3', 'Ruang Teori 3', 20);
Query OK, 1 row affected (0.008 sec)
```

11. Tampilkan semua tabel yang ada didalam database `db_polinema`

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

12. Tampilkan semua isi tabel yang ada didalam tabel `mahasiswa`

```
MariaDB [db_polinema]> select * from mahasiswa;
+-------+-------------+---------------+----------+--------+----------+----------+------+------------+--------+
| nim   | nama_mhs    | jenis_kelamin | alamat   | kota   | asal_sma | no_hp    | umur | kode_prodi | agama |
+-------+-------------+---------------+----------+--------+----------+----------+------+------------+--------+
| 12345 | mahasiswa 1 | L             | Jl Mawar | Malang | SMAN 1   | 89123456 |   19 | P00001     | Islam |
+-------+-------------+---------------+----------+--------+----------+----------+------+------------+--------+
1 row in set (0.001 sec)
```

13. Tampilkan struktur(metadata) tabel `mahasiswa`

```
MariaDB [db_polinema]> describe mahasiswa;
+---------------+---------------+------+-----+---------+--------+
| Field         | Type          | Null | Key | Default | Extra  |
+---------------+---------------+------+-----+---------+--------+
| nim           | int(8)        | NO   | PRI | NULL    |        |
| nama_mhs      | varchar(50)   | YES  |     | NULL    |        |
| jenis_kelamin | enum('L','P') | YES  |     | L       |        |
| alamat        | varchar(50)   | YES  |     | NULL    |        |
| kota          | varchar(20)   | YES  |     | Malang  |        |
| asal_sma      | varchar(30)   | YES  |     | NULL    |        |
| no_hp         | varchar(12)   | YES  |     | NULL    |        |
| umur          | int(11)       | YES  |     | NULL    |        |
| kode_prodi    | varchar(6)    | YES  | MUL | NULL    |        |
| agama         | varchar(10)   | YES  |     | NULL    |        |
+---------------+---------------+------+-----+---------+--------+
10 rows in set (0.001 sec)
```

14. Hilangkan kolom `asal_sma` yang terdapat didalam tabel `mahasiswa`

```
MariaDB [db_polinema]> alter table mahasiswa drop column asal_sma;
Query OK, 0 rows affected (0.043 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

2 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

a.
```
CREATE TABLE Mahasiswa (
    No_Mhs   CHAR(7)     NOT NULL PRIMARY KEY,
    Nama_mhs VARCHAR(50) NOT NULL
);

CREATE TABLE Mata_Kuliah (
    Kd_MK    CHAR(5)     NOT NULL PRIMARY KEY,
    Nama_MK  VARCHAR(50) NOT NULL
);

CREATE TABLE Nilai (
    No_Mhs   CHAR(7)     NOT NULL,
    Kode_MK  CHAR(5)     NOT NULL
);

ALTER TABLE Mahasiswa ADD COLUMN Jurusan VARCHAR(50);
```

b.
```
ALTER TABLE Mata_Kuliah ADD COLUMN Kd_Dosen VARCHAR(50);
```

c.
```
ALTER TABLE Nilai ADD COLUMN Nilai FLOAT(4,2);
ALTER TABLE Nilai ADD CONSTRAINT `fk_nilai_mhs` FOREIGN KEY (No_Mhs) REFERENCES Ma
ALTER TABLE Nilai ADD CONSTRAINT `fk_nilai_mk` FOREIGN KEY (Kode_MK) REFERENCES Ma
```

d.
```
CREATE TABLE Dosen (
    Kd_Dosen CHAR(5)       NOT NULL PRIMARY KEY,
    Nama_Dosen VARCHAR(50) NOT NULL
);
```

e.
```
INSERT INTO Mahasiswa
VALUES ('1921000', 'Aminah', 'MI'),
       ('1921001', 'Budiman', 'MI'),
       ('1921002', 'Carina', 'MI'),
       ('1921003', 'Della', 'TI'),
       ('1921004', 'Firda', 'TI');
```

```
INSERT INTO Dosen
VALUES ('B104', 'Ati'),
       ('B105', 'Dita'),
       ('C102', 'Leo');

INSERT INTO Mata_Kuliah
VALUES ('MI350', 'Basis Data', 'B104'),
       ('MI465', 'Pemrograman', 'B105'),
       ('TI201', 'Mobile', 'C102');

INSERT INTO Nilai
VALUES ('1921000', 'MI350', 85),
       ('1921001', 'MI465', 87),
       ('1921002', 'MI465', 85),
       ('1921003', 'TI201', 78),
       ('1921004', 'TI201', 80);
```

f.
```
SELECT
    Mahasiswa.No_Mhs as 'No_Mhs',
    Mahasiswa.Nama_Mhs as 'Nama_Mhs',
    Mahasiswa.Jurusan as 'Jurusan',
    Mata_Kuliah.Kd_MK as 'Kd_MK',
    Mata_Kuliah.Nama_MK as 'Nama_MK',
    Dosen.Kd_Dosen as 'Kd_Dosen',
    Dosen.Nama_Dosen as 'Nama_Dosen',
    Nilai.Nilai as '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;
```

```
MariaDB [akademik]> SELECT
    ->                     Mahasiswa.No_Mhs as 'No_Mhs',
    ->                     Mahasiswa.Nama_Mhs as 'Nama_Mhs',
    ->                     Mahasiswa.Jurusan as 'Jurusan',
    ->                     Mata_Kuliah.Kd_MK as 'Kd_MK',
    ->                     Mata_Kuliah.Nama_MK as 'Nama_MK',
    ->                     Dosen.Kd_Dosen as 'Kd_Dosen',
    ->                     Dosen.Nama_Dosen as 'Nama_Dosen',
    ->                     Nilai.Nilai as '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 | Nama_Dosen  | Nilai |
+---------+-----------+---------+-------+-------------+----------+-------------+-------+
| 1921000 | Aminah    | MI      | MI350 | Basis Data  | B104     | Ati         | 85.00 |
| 1921001 | Budiman   | MI      | MI465 | Pemrograman | B105     | Dita        | 87.00 |
| 1921002 | Carina    | MI      | MI465 | Pemrograman | B105     | Dita        | 85.00 |
| 1921003 | Della     | TI      | TI201 | Mobile      | C102     | Leo         | 78.00 |
| 1921004 | Firda     | TI      | TI201 | Mobile      | C102     | Leo         | 80.00 |
+---------+-----------+---------+-------+-------------+----------+-------------+-------+
5 rows in set (0.002 sec)
```

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.
```
CREATE TABLE Pegawai (
    Nopegawai     CHAR(5)     NOT NULL PRIMARY KEY,
    NamaPegawai   VARCHAR(50) NOT NULL
);

CREATE TABLE Golongan (
    Golongan CHAR(1)     NOT NULL PRIMARY KEY
);

CREATE TABLE Proyek (
    Noproyek CHAR(5)     NOT NULL PRIMARY KEY
);

CREATE TABLE Proyekpegawai (
    Noproyek CHAR(5)     NOT NULL
);
```

b.
```
ALTER TABLE Pegawai ADD COLUMN Golongan CHAR(1);
```

c.
```
ALTER TABLE Golongan ADD COLUMN BesarGaji INT(10);
```

d.
```
ALTER TABLE Proyek ADD COLUMN NamaProyek VARCHAR(50);
```

e.
```
ALTER TABLE Proyekpegawai ADD COLUMN Nopegawai CHAR(5);
ALTER TABLE Proyekpegawai ADD CONSTRAINT `fk_proyekpegawai_proyek` FOREIGN KEY (No
ALTER TABLE Proyekpegawai ADD CONSTRAINT `fk_proyekpegawai_pegawai` FOREIGN KEY (N
```

f.
```
INSERT INTO Golongan
VALUES ('A', 1000000),
       ('B',  900000),
```

```
        ('C',  750000),
        ('D',  500000);

INSERT INTO Pegawai
VALUES ('Peg01', 'Anton', 'A'),
       ('Peg02', 'Paulia', 'B'),
       ('Peg03', 'Daniar', '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');

INSERT INTO Proyek
VALUES ('NP001', 'BRR'),
       ('NP002', 'PEMDA'),
       ('NP003', 'CBR'),
       ('NP004', 'ASK'),
       ('NP005', 'OB');

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');
```

g.
```
SELECT
    Proyek.Noproyek as 'Noproyek',
    Proyek.NamaProyek as 'NamaProyek',
    Pegawai.Nopegawai as 'Nopegawai',
    Pegawai.NamaPegawai as 'NamaPegawai',
```

```
    Golongan.Golongan as 'Golongan',
    Golongan.BesarGaji as 'BesarGaji'
FROM Pegawai
JOIN Golongan ON Pegawai.Golongan = Golongan.Golongan
JOIN Proyekpegawai ON Pegawai.Nopegawai = Proyekpegawai.Nopegawai
JOIN Proyek ON Proyekpegawai.Noproyek = Proyek.Noproyek;
```

```
MariaDB [data_pegawai]> SELECT
    ->                     Proyek.Noproyek as 'Noproyek',
    ->                     Proyek.NamaProyek as 'NamaProyek',
    ->                     Pegawai.Nopegawai as 'Nopegawai',
    ->                     Pegawai.NamaPegawai as 'NamaPegawai',
    ->                     Golongan.Golongan as 'Golongan',
    ->                     Golongan.BesarGaji as '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     | Paulia      | B        |    900000 |
| NP002    | PEMDA      | Peg12     | Sita        | B        |    900000 |
| NP002    | PEMDA      | Peg14     | Yusni       | B        |    900000 |
| NP003    | CBR        | Peg02     | Paulia      | B        |    900000 |
| NP004    | ASK        | Peg07     | Keni        | B        |    900000 |
| NP004    | ASK        | Peg08     | Sofi        | B        |    900000 |
| NP001    | BRR        | Peg06     | Koko        | C        |    750000 |
| NP003    | CBR        | Peg03     | Daniar      | 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)
```