LAPORAN PERTEMUAN 8 TEORI

SISTEM BASIS DATA

Ditulis oleh :

NAMA   : Ilham Romadhani

NIM   : 23.230.0030

KELAS   : 2P52

Dosen Pengampu :

Mosses Aidjilli, M.Kom

PROGRAM STUDI SISTEM INFORMASI

SEKOLAH TINGGI MANAJEMEN INFORMATIKA DAN KOMPUTER

(STMIK) WIDYA PRATAMA PEKALONGAN

2024

➢ DATA DEFINITION LANGUAGE (DDL)

Buatlah database dan aktifkan databasenya.

```
MariaDB [(none)]> create database ilham;
Query OK, 1 row affected (0.016 sec)

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

1. CREATE TABLE

Buat tabel personel_ilham
regno char (10) not null
name char (45) not null
address char (45)
birth date not null with default
primary key (regno)

Penggunaan default pada kolom bertipe date: Tidak diperbolehkan menggunakan default tanpa memberikan nilai default. Jika ingin memberikan nilai default pada kolom bertipe date, Anda harus menentukan nilai yang valid, seperti default '2000-01-01'.

```
MariaDB [ilham]> create table personel_ilham (
    -> regno char(10) not null,
    -> name char(45) not null,
    -> address char(45),
    -> birth date not null with default,
    -> primary key (regno));
ERROR 1064 (42000): You have an error in your SQL synta
ith default,
primary key (regno))' at line 5
```

```
MariaDB [ilham]> CREATE TABLE personel_ilham (
    ->      regno CHAR(10) NOT NULL,
    ->      name CHAR(45) NOT NULL,
    ->      address CHAR(45),
    ->      birth DATE NOT NULL DEFAULT '2000-01-01',
    ->      PRIMARY KEY (regno)
    -> );
Query OK, 0 rows affected (0.322 sec)
```

IINI YANG BENAR

2. CREATE VIEW

Buat tabel view vperson dengan perintah
CREATE VIEW VPERSON (REGNO, NAME) AS
        SELECT REGNO, NAME FROM PERSONEL_ILHAM

```
MariaDB [ilham]> create view vperson (regno, name) as select regno, name from personel_ilham;
Query OK, 0 rows affected (0.052 sec)
```

3. CREATE INDEX

Buatlah index unik prsonidx dengan perintah

    CREATE UNIQUE INDEX PRSONIDX

ON PERSONEL_ILHAM(REGNO)

```
MariaDB [ilham]> CREATE UNIQUE INDEX PRSONIDX ON PERSONEL_ILHAM (REGNO);
Query OK, 0 rows affected (0.378 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

4. DROP TABLE

Hapuslah tabel personel_ilham

```
MariaDB [ilham]> drop table personel_ilham;
Query OK, 0 rows affected (0.191 sec)
```

5. DROP VIEW

Hapuslah tabel view (vperson)

```
MariaDB [ilham]> drop view vperson;
Query OK, 0 rows affected (0.001 sec)
```

6. DROP INDEX

Hapuslah index (drop index prsonidx on personel_ilham;)

```
MariaDB [ilham]> DROP INDEX PRSONIDX ON PERSONEL_ILHAM;
ERROR 1146 (42S02): Table 'ilham.personel_ilham' doesn't exist
MariaDB [ilham]> CREATE TABLE personel_ilham (
    -> regno CHAR(10) NOT NULL,
    -> name CHAR(45) NOT NULL,
    -> address CHAR(45),
    -> birth DATE NOT NULL DEFAULT '2000-01-01',
    -> PRIMARY KEY (regno)
    -> );
Query OK, 0 rows affected (0.168 sec)
```

```
MariaDB [ilham]> CREATE UNIQUE INDEX PRSONIDX ON PERSONEL_ILHAM (REGNO);
Query OK, 0 rows affected (0.191 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> DROP INDEX PRSONIDX ON PERSONEL_ILHAM;
Query OK, 0 rows affected (0.134 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

7. ALTER

Buat tabel dengan nama TABX
id_tabx char (10) not null,
name char (45)
address char (45)

```
MariaDB [ilham]> create table TABX (
    -> id_tabx char(10) not null,
    -> name char(45),
    -> address char(45)
    -> );
Query OK, 0 rows affected (0.168 sec)
```

ADD

Menambahkan primary key pada field id_tabx

```
MariaDB [ilham]> desc tabx;
+---------+----------+------+-----+---------+-------+
| Field   | Type     | Null | Key | Default | Extra |
+---------+----------+------+-----+---------+-------+
| id_tabx | char(10) | NO   |     | NULL    |       |
| name    | char(45) | YES  |     | NULL    |       |
| address | char(45) | YES  |     | NULL    |       |
+---------+----------+------+-----+---------+-------+
3 rows in set (0.023 sec)

MariaDB [ilham]> alter table tabx add primary key (id_tabx);
Query OK, 0 rows affected (0.411 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> desc tabx;
+---------+----------+------+-----+---------+-------+
| Field   | Type     | Null | Key | Default | Extra |
+---------+----------+------+-----+---------+-------+
| id_tabx | char(10) | NO   | PRI | NULL    |       |
| name    | char(45) | YES  |     | NULL    |       |
| address | char(45) | YES  |     | NULL    |       |
+---------+----------+------+-----+---------+-------+
3 rows in set (0.010 sec)
```

MODIFY

Mengganti tipe data field name menjadi varchar (25)

```
MariaDB [ilham]> alter table tabx modify name varchar(25);
Query OK, 0 rows affected (0.601 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> desc tabx;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| id_tabx | char(10)    | NO   | PRI | NULL    |       |
| name    | varchar(25) | YES  |     | NULL    |       |
| address | char(45)    | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
3 rows in set (0.012 sec)
```

Menghapus primary key pada tabel tabx

```
MariaDB [ilham]> alter table tabx drop primary key;
Query OK, 0 rows affected (0.572 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> desc tabx;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| id_tabx | char(10)    | NO   |     | NULL    |       |
| name    | varchar(25) | YES  |     | NULL    |       |
| address | char(45)    | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
3 rows in set (0.011 sec)
```

➢ DATA MANIPULATION LANGUAGE (DML)

1. INSERT DATA PADA TABEL TABX

id_tabx	name	address
LKK21	ANGGI	JL. KENANGA NO.4 PONITANAK
LBB58	BUDI	JL. PANJI NO.7 BANTEN

```
MariaDB [ilham]> insert into tabx values
    -> ('LKK21','ANGGI','JL. KENANGA NO.4 PONITANAK'),
    -> ('LBB58','BUDI','JL. PANJI NO.7 BANTEN ');
Query OK, 2 rows affected (0.086 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [ilham]> SELECT * FROM TABX;
+---------+-------+----------------------------+
| id_tabx | name  | address                    |
+---------+-------+----------------------------+
| LKK21   | ANGGI | JL. KENANGA NO.4 PONITANAK |
| LBB58   | BUDI  | JL. PANJI NO.7 BANTEN       |
+---------+-------+----------------------------+
2 rows in set (0.000 sec)
```

2. UPDATE

Memperbarui data nama BUDI menjadi BUDI HARTONO

UPDATE tbname SET field = ekspresi
WHERE kondisi

```
MariaDB [ilham]> update tabx set name='BUDI HARTONO' where id_tabx='LBB58';
Query OK, 1 row affected (0.042 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [ilham]> select * from tabx;
+---------+--------------+--------------------------+
| id_tabx | name         | address                  |
+---------+--------------+--------------------------+
| LKK21   | ANGGI        | JL. KENANGA NO.4 PONITANAK |
| LBB58   | BUDI HARTONO | JL. PANJI NO.7 BANTEN     |
+---------+--------------+--------------------------+
2 rows in set (0.000 sec)
```

3. DELETE

Menghapus salah satu record

DELETE FROM tbname

WHERE kondisi

```
MariaDB [ilham]> delete from tabx where id_tabx='LKK21';
Query OK, 1 row affected (0.041 sec)

MariaDB [ilham]> select * from tabx;
+---------+--------------+------------------------+
| id_tabx | name         | address                |
+---------+--------------+------------------------+
| LBB58   | BUDI HARTONO | JL. PANJI NO.7 BANTEN  |
+---------+--------------+------------------------+
1 row in set (0.000 sec)
```

4. SELECT

Tambahkan beberapa data

```
MariaDB [ilham]> insert into tabx values
    -> ('KRR67','ANDI','JL. MANGGIS NO.3 MALANG'),
    -> ('RR77','RANGGA','JL. MELATIH NO.9 JAKARTA'),
    -> ('YI88','YENI','JL. BUNGA NO.5 MOJOKERTO');
Query OK, 3 rows affected (0.050 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [ilham]> SELECT * FROM TABX;
+---------+--------------+--------------------------+
| id_tabx | name         | address                  |
+---------+--------------+--------------------------+
| LBB58   | BUDI HARTONO | JL. PANJI NO.7 BANTEN    |
| KRR67   | ANDI         | JL. MANGGIS NO.3 MALANG  |
| RR77    | RANGGA       | JL. MELATIH NO.9 JAKARTA |
| YI88    | YENI         | JL. BUNGA NO.5 MOJOKERTO |
+---------+--------------+--------------------------+
```

Tampilkan data dengan SELECT DISTINC

Mengambil data unik dari kolom tertentu. Misalnya, mengambil semua alamat unik dari tabel TABX:

```
MariaDB [ilham]> SELECT DISTINCT name from TABX;
+--------------+
| name         |
+--------------+
| BUDI HARTONO |
| ANDI         |
| RANGGA       |
| YENI         |
+--------------+
4 rows in set (0.000 sec)
```

Tampilkan data dengan **SELECT colname FROM tbname WHERE kondisi**

Mengambil data dari tabel berdasarkan kondisi tertentu. Misalnya, mengambil data di mana name adalah 'ANDI':

```
MariaDB [ilham]> SELECT * FROM TABX WHERE name = 'ANDI';
+---------+------+------------------------+
| id_tabx | name | address                |
+---------+------+------------------------+
| KRR67   | ANDI | JL. MANGGIS NO.3 MALANG |
+---------+------+------------------------+
1 row in set (0.000 sec)
```

Tampilkan data dengan **SELECT colname FROM tbname GROUP BY kondisi**

Mengelompokkan data berdasarkan kolom tertentu. Misalnya, menghitung jumlah entri berdasarkan name:

```
MariaDB [ilham]> SELECT name, COUNT(*) AS count FROM TABX GROUP BY name;
+--------------+-------+
| name         | count |
+--------------+-------+
| ANDI         |     1 |
| BUDI HARTONO |     1 |
| RANGGA       |     1 |
| YENI         |     1 |
+--------------+-------+
4 rows in set (0.000 sec)
```

Tampilkan data dengan **SELECT colname FROM tbname HAVING kondisi**

```
MariaDB [ilham]> SELECT id_tabx, address FROM tabx having id_tabx='LBB58';
+---------+---------------------+
| id_tabx | address             |
+---------+---------------------+
| LBB58   | JL. PANJI NO.7 BANTEN |
+---------+---------------------+
1 row in set (0.000 sec)
```

Tampilkan data dengan <mark>SELECT colname FROM tbname ORDER BY kondisi</mark>

```
MariaDB [ilham]> SELECT * FROM TABX ORDER BY id_tabx ASC;
+---------+--------------+--------------------------+
| id_tabx | name         | address                  |
+---------+--------------+--------------------------+
| KRR67   | ANDI         | JL. MANGGIS NO.3 MALANG   |
| LBB58   | BUDI HARTONO | JL. PANJI NO.7 BANTEN     |
| RR77    | RANGGA       | JL. MELATIH NO.9 JAKARTA  |
| YI88    | YENI         | JL. BUNGA NO.5 MOJOKERTO  |
+---------+--------------+--------------------------+
4 rows in set (0.000 sec)

MariaDB [ilham]> SELECT * FROM TABX ORDER BY id_tabx DESC;
+---------+--------------+--------------------------+
| id_tabx | name         | address                  |
+---------+--------------+--------------------------+
| YI88    | YENI         | JL. BUNGA NO.5 MOJOKERTO  |
| RR77    | RANGGA       | JL. MELATIH NO.9 JAKARTA  |
| LBB58   | BUDI HARTONO | JL. PANJI NO.7 BANTEN     |
| KRR67   | ANDI         | JL. MANGGIS NO.3 MALANG   |
+---------+--------------+--------------------------+
4 rows in set (0.000 sec)
```

❖ **CONTOH KASUS DDL**

- **Membuat 3 table yakni s_ilham, p_ilham dan sp_ilham;**

```
MariaDB [ilham]> create table s_ilham (
    -> sn char(5) not null,
    -> sname char(20) not null,
    -> status smallint not null,
    -> city char(15) not null
    -> );
Query OK, 0 rows affected (3.943 sec)

MariaDB [ilham]> create table p_ilham (
    -> pn char(6) not null,
    -> pname char(20) not null,
    -> color char(6) not null,
    -> weight smallint not null
    -> );
Query OK, 0 rows affected (0.162 sec)
```

```
MariaDB [ilham]> create table sp_ilham (
    -> sn char(5) not null,
    -> pn char(6) not null,
    -> qty int not null
    -> );
Query OK, 0 rows affected (0.212 sec)
```

CREATE UNIQUE INDEX Sidx ON S_Ilham(Sn);

```
MariaDB [ilham]> CREATE UNIQUE INDEX Sidx ON s_ilham(Sn);
Query OK, 0 rows affected (0.434 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

CREATE UNIQUE INDEX Pidx ON P_Ilham(Pn);

```
MariaDB [ilham]> CREATE UNIQUE INDEX Pidx ON p_ilham(Pn);
Query OK, 0 rows affected (0.372 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

CREATE INDEX Sdx ON SP_ilham(Sn);

```
MariaDB [ilham]> CREATE INDEX Sdx ON SP_ilham(Sn);
Query OK, 0 rows affected (0.209 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

CREATE INDEX Pdx ON SP_ilham(Pn);

```
MariaDB [ilham]> CREATE INDEX Pdx ON SP_ilham(Pn);
Query OK, 0 rows affected (0.175 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

- **Modifikasi Table P dengan perintah :**

  RENAME COLUMN p_ilham.COLOR TO WARNA

  ```
  MariaDB [ilham]> RENAME COLUMN p_ilham.COLOR TO WARNA;
  ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB s
  erver version for the right syntax to use near 'COLUMN p_ilham.COLOR TO WARNA' at line 1
  MariaDB [ilham]>
  ```

  Kesalahan tersebut terjadi karena perintah RENAME COLUMN tidak valid di MariaDB. Untuk mengubah nama kolom dalam tabel di MariaDB, Anda harus menggunakan perintah ALTER TABLE ... CHANGE yang mencakup kolom lama, kolom baru, dan tipe data.

```
MariaDB [ilham]> desc p_ilham;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| pn     | char(6)     | NO   | PRI | NULL    |       |
| pname  | char(20)    | NO   |     | NULL    |       |
| color  | char(6)     | NO   |     | NULL    |       |
| weight | smallint(6) | NO   |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.014 sec)

MariaDB [ilham]> ALTER TABLE p_ilham CHANGE color warna char(6) not null;
Query OK, 0 rows affected (0.070 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> desc p_ilham;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| pn     | char(6)     | NO   | PRI | NULL    |       |
| pname  | char(20)    | NO   |     | NULL    |       |
| warna  | char(6)     | NO   |     | NULL    |       |
| weight | smallint(6) | NO   |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.010 sec)
```

ALTER TABLE p_ilham ADD (City CHAR(15) NOT NULL)

```
MariaDB [ilham]> ALTER TABLE p_ilham ADD (City CHAR(15) NOT NULL);
Query OK, 0 rows affected (0.109 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [ilham]> desc p_ilham;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| pn     | char(6)     | NO   | PRI | NULL    |       |
| pname  | char(20)    | NO   |     | NULL    |       |
| warna  | char(6)     | NO   |     | NULL    |       |
| weight | smallint(6) | NO   |     | NULL    |       |
| City   | char(15)    | NO   |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
5 rows in set (0.010 sec)
```

- **Membuat View (CREATE VIEW)**

  1. Membuat view untuk suplier yang statusnya lebih besar dari 15

     CREATE VIEW GOOD_SUPPLIERS AS SELECT Sn, Status, City FROM S_ilham WHERE Status > 15;

     ```
     MariaDB [ilham]> create view good_suppliers as
         -> select sn, status, city from s_ilham where status > 15;
     Query OK, 0 rows affected (0.050 sec)
     ```

  2. Membuat view yang berisi supplier yang tinggal di Paris

     CREATE VIEW Paris_Suppliers AS SELECT * FROM Suppliers WHERE City = ' Paris '

     ```
     MariaDB [ilham]> CREATE VIEW Paris_Suppliers AS SELECT * FROM Suppliers WHERE City = ' Paris '
         -> ;
     ERROR 1146 (42S02): Table 'ilham.suppliers' doesn't exist
     ```

     CREATE VIEW Paris_Suppliers AS SELECT * FROM S_ilham WHERE City = ' Paris '

     ```
     MariaDB [ilham]> CREATE VIEW Paris_Suppliers AS SELECT * FROM s_ilham WHERE City = ' Paris ';
     Query OK, 0 rows affected (0.039 sec)
     ```

  3. Membuat view dengan mengganti nama_atributnya

     CREATE VIEW Parts (PNum, Part_Name, WT)
     AS SELECT pn, Pname, Weight FROM p_ilham
     WHERE warna = 'Red';

     ```
     ERROR 1146 (42S02): Table 'ilham.part' doesn't exist
     MariaDB [ilham]> CREATE VIEW Parts (PNum, Part_Name, WT)
         -> AS SELECT pn, Pname, Weight FROM p_ilham
         -> WHERE warna = 'Red';
     Query OK, 0 rows affected (0.055 sec)
     ```

❖ **CONTOH KASUS DML**

- **INSERT DATA KE TABEL S_ILHAM;**

Sn	Sname	Status	City
S1	Smith	20	London
S2	Jones	10	Paris
S3	Blake	30	Paris
S4	Clark	20	London
S5	Adams	30	Athens

  ```
  MariaDB [ilham]> insert into s_ilham values
      -> ('S1','Smith','20','London'),
      -> ('S2','Jones','10','Paris'),
      -> ('S3','Blake','30','Paris'),
      -> ('S4','Clark','20','London'),
      -> ('S5','Adams','30','Athens');
  Query OK, 5 rows affected (0.065 sec)
  Records: 5  Duplicates: 0  Warnings: 0
  ```

```
MariaDB [ilham]> select * from s_ilham;
+----+-------+--------+--------+
| sn | sname | status | city   |
+----+-------+--------+--------+
| S1 | Smith |     20 | London |
| S2 | Jones |     10 | Paris  |
| S3 | Blake |     30 | Paris  |
| S4 | Clark |     20 | London |
| S5 | Adams |     30 | Athens |
+----+-------+--------+--------+
5 rows in set (0.000 sec)
```

- **INSERT DATA KE TABEL P_ILHAM;**

Pn	Pname	Warna	Weight	City
P1	Nut	Red	12	London
P2	Bolt	Green	17	Paris
P3	Screw	Blue	17	Rome
P4	Screw	Red	14	London
P5	Cam	Blue	12	Paris
P6	Cog	Red	19	London

```
MariaDB [ilham]> insert into p_ilham values
    -> ('P1','Nut','Red',12,'London'),
    -> ('P2','Bolt','Green',17,'Paris'),
    -> ('P3','Screw','Blue',17,'Rome'),
    -> ('P4','Screw','Red',14,'London'),
    -> ('P5','Cam','Blue',12,'Paris'),
    -> ('P6','Cog','Red',19,'London');
Query OK, 6 rows affected (0.060 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
MariaDB [ilham]> select * from p_ilham;
+----+-------+-------+--------+--------+
| pn | pname | warna | weight | City   |
+----+-------+-------+--------+--------+
| P1 | Nut   | Red   |     12 | London |
| P2 | Bolt  | Green |     17 | Paris  |
| P3 | Screw | Blue  |     17 | Rome   |
| P4 | Screw | Red   |     14 | London |
| P5 | Cam   | Blue  |     12 | Paris  |
| P6 | Cog   | Red   |     19 | London |
+----+-------+-------+--------+--------+
6 rows in set (0.000 sec)
```

- **INSERT DATA KE TABEL SP_ILHAM;**

Sn	Pn	Qty
S1	P1	300
S1	P2	200
S1	P	40
S1	P4	200
S1	P5	100
S1	P6	100
S2	P1	300
S2	P2	400
S3	P2	200
S4	P2	200
S4	P4	300
S4	P5	400

Note: Tidak memberikan nilai untuk Pn, saya anggap ini adalah kesalahan

```
MariaDB [ilham]> INSERT INTO SP_ILHAM VALUES
    -> ('S1', 'P1', 300),
    -> ('S1', 'P2', 200),
    -> ('S1', 'P', 40),
    -> ('S1', 'P4', 200),
    -> ('S1', 'P5', 100),
    -> ('S1', 'P6', 100),
    -> ('S2', 'P1', 300),
    -> ('S2', 'P2', 400),
    -> ('S3', 'P2', 200),
    -> ('S4', 'P2', 200),
    -> ('S4', 'P4', 300),
    -> ('S4', 'P5', 400);
Query OK, 12 rows affected (0.123 sec)
Records: 12  Duplicates: 0  Warnings: 0
```

```
MariaDB [ilham]> select * from sp_ilham;
+----+----+-----+
| sn | pn | qty |
+----+----+-----+
| S1 | P1 | 300 |
| S1 | P2 | 200 |
| S1 | P  |  40 |
| S1 | P4 | 200 |
| S1 | P5 | 100 |
| S1 | P6 | 100 |
| S2 | P1 | 300 |
| S2 | P2 | 400 |
| S3 | P2 | 200 |
| S4 | P2 | 200 |
| S4 | P4 | 300 |
| S4 | P5 | 400 |
+----+----+-----+
12 rows in set (0.000 sec)
```

- **Merubah record (UPDATE)**

  1. Merubah data (record) pada tabel P_ILHAM yang mempunyai nomor part P2, warnanya dirubah menjadi Kuning dan beratnya ditambah 5

  UPDATE P_Ilham SET Warna = 'Yellow',

  Weight = Weight + 5

  WHERE Pn = 'P2'

```
MariaDB [ilham]> select * from p_ilham;
+----+--------+--------+--------+---------+
| pn | pname  | warna  | weight | City    |
+----+--------+--------+--------+---------+
| P1 | Nut    | Red    |     12 | London  |
| P2 | Bolt   | Green  |     17 | Paris   |
| P3 | Screw  | Blue   |     17 | Rome    |
| P4 | Screw  | Red    |     14 | London  |
| P5 | Cam    | Blue   |     12 | Paris   |
| P6 | Cog    | Red    |     19 | London  |
+----+--------+--------+--------+---------+
6 rows in set (0.000 sec)

MariaDB [ilham]> UPDATE P_Ilham SET Warna = 'Yellow',
    -> Weight = Weight + 5
    -> WHERE Pn = 'P2'
    -> ;
Query OK, 1 row affected (0.044 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [ilham]> select * from p_ilham;
+----+--------+--------+--------+---------+
| pn | pname  | warna  | weight | City    |
+----+--------+--------+--------+---------+
| P1 | Nut    | Red    |     12 | London  |
| P2 | Bolt   | Yellow |     22 | Paris   |
| P3 | Screw  | Blue   |     17 | Rome    |
| P4 | Screw  | Red    |     14 | London  |
| P5 | Cam    | Blue   |     12 | Paris   |
| P6 | Cog    | Red    |     19 | London  |
+----+--------+--------+--------+---------+
6 rows in set (0.000 sec)
```

2. Merubah record pada tabel s_ilham, statusnya menjadi dua kali status awal untuk supplier yang bertempat tinggal di kota London

UPDATE S_ilham SET Status = 2 * Status
WHERE City = 'London'

```
MariaDB [ilham]> select * from s_ilham;
+----+-------+--------+--------+
| sn | sname | status | city   |
+----+-------+--------+--------+
| S1 | Smith |     20 | London |
| S2 | Jones |     10 | Paris  |
| S3 | Blake |     30 | Paris  |
| S4 | Clark |     20 | London |
| S5 | Adams |     30 | Athens |
+----+-------+--------+--------+
5 rows in set (0.000 sec)

MariaDB [ilham]> UPDATE S_ilham SET Status = 2 * Status
    -> WHERE City = 'London'
    -> ;
Query OK, 2 rows affected (0.040 sec)
Rows matched: 2  Changed: 2  Warnings: 0

MariaDB [ilham]> select * from s_ilham;
+----+-------+--------+--------+
| sn | sname | status | city   |
+----+-------+--------+--------+
| S1 | Smith |     40 | London |
| S2 | Jones |     10 | Paris  |
| S3 | Blake |     30 | Paris  |
| S4 | Clark |     40 | London |
| S5 | Adams |     30 | Athens |
+----+-------+--------+--------+
5 rows in set (0.000 sec)
```

Nilai status di kali 2

- **Menghapus record (DELETE)**

Menghapus record pada tabel S_ILHAM yang nomor supplier-nya S5
DELETE FROM S_ILHAM
WHERE Sn ='S5'

```
MariaDB [ilham]> DELETE FROM s_ilham WHERE Sn ='S5';
Query OK, 1 row affected (0.051 sec)

MariaDB [ilham]> select * from s_ilham;
+----+-------+--------+--------+
| sn | sname | status | city   |
+----+-------+--------+--------+
| S1 | Smith |     40 | London |
| S2 | Jones |     10 | Paris  |
| S3 | Blake |     30 | Paris  |
| S4 | Clark |     40 | London |
+----+-------+--------+--------+
4 rows in set (0.000 sec)
```

- **Menampilkan record (SELECT 1 tabel)**
    1. Menampilkan semua data supplier

```
MariaDB [ilham]> select * from s_ilham;
+----+-------+--------+--------+
| sn | sname | status | city   |
+----+-------+--------+--------+
| S1 | Smith |     40 | London |
| S2 | Jones |     10 | Paris  |
| S3 | Blake |     30 | Paris  |
| S4 | Clark |     40 | London |
+----+-------+--------+--------+
4 rows in set (0.000 sec)
```

    2. Menampilkan semua nilai Pn pada tabel SP_ILHAM

```
MariaDB [ilham]> SELECT Pn FROM SP_ILHAM;
+----+
| Pn |
+----+
| P  |
| P1 |
| P1 |
| P2 |
| P2 |
| P2 |
| P2 |
| P4 |
| P4 |
| P5 |
| P5 |
| P6 |
+----+
```

3. Menampilkan nomor supplier dan status untuk supplier yang tinggal di paris

```
MariaDB [ilham]> SELECT Sn, Status FROM S_ILHAM WHERE City ='Paris';
+----+--------+
| Sn | Status |
+----+--------+
| S2 |     10 |
| S3 |     30 |
+----+--------+
2 rows in set (0.000 sec)
```

4. Menampilkan no.supplier yang tinggal di Paris dengan status > 20

```
MariaDB [ilham]> SELECT Sn FROM S_ILHAM WHERE City ='Paris' AND Status > 20;
+----+
| Sn |
+----+
| S3 |
+----+
1 row in set (0.000 sec)
```

5. Menampilkan jumlah pengiriman P1

```
MariaDB [ilham]> SELECT COUNT(*) FROM SP_ILHAM WHERE Pn = 'P1';
+----------+
| COUNT(*) |
+----------+
|        2 |
+----------+
1 row in set (0.000 sec)
```

6. Perintah untuk menghindari hasil data yang sama terulang kembali (distinct)

```
MariaDB [ilham]> SELECT DISTINCT Pn FROM SP_ILHAM;
+----+
| Pn |
+----+
| P  |
| P1 |
| P2 |
| P4 |
| P5 |
| P6 |
+----+
6 rows in set (0.000 sec)
```

7. Menampilkan no.supplier dan status bagi supplier yang tinggal di Paris dalam urutan status menurun

```
MariaDB [ilham]> SELECT Sn,Status FROM S_ILHAM WHERE City = 'Paris' ORDER BY Status desc;
+----+--------+
| Sn | Status |
+----+--------+
| S3 |     30 |
| S2 |     10 |
+----+--------+
2 rows in set (0.001 sec)
```

8. Menampilkan no.Part dari semua part yang dipasok oleh lebih dari seorang supplier

```
MariaDB [ilham]> SELECT Pn FROM SP_ILHAM GROUP BY Pn HAVING COUNT(*) > 1;
+----+
| Pn |
+----+
| P1 |
| P2 |
| P4 |
| P5 |
+----+
4 rows in set (0.000 sec)
```

9. Menampilkan semua part yang nomornya dimulai dengan huruf C

```
MariaDB [ilham]> SELECT * FROM P_ILHAM WHERE Pname LIKE 'C%';
+----+-------+-------+--------+--------+
| pn | pname | warna | weight | City   |
+----+-------+-------+--------+--------+
| P5 | Cam   | Blue  |     12 | Paris  |
| P6 | Cog   | Red   |     19 | London |
+----+-------+-------+--------+--------+
2 rows in set (0.000 sec)
```

- **Menampilkan record (SELECT lebih dari satu tabel / JOIN)**

1. Menampilkan semua supplier dan part yang keduanya bertempat tinggal pada kota yang sama

```
MariaDB [ilham]> SELECT Sn, Sname,Status, S_ILHAM.City , Pn, Pname, Warna, Weight FROM S_ILHAM,P_ILHAM WHERE
S_ILHAM.City = P_ILHAM.City;
+----+-------+--------+--------+----+-------+--------+--------+
| Sn | Sname | Status | City   | Pn | Pname | Warna  | Weight |
+----+-------+--------+--------+----+-------+--------+--------+
| S1 | Smith |     40 | London | P1 | Nut   | Red    |     12 |
| S4 | Clark |     40 | London | P1 | Nut   | Red    |     12 |
| S2 | Jones |     10 | Paris  | P2 | Bolt  | Yellow |     22 |
| S3 | Blake |     30 | Paris  | P2 | Bolt  | Yellow |     22 |
| S1 | Smith |     40 | London | P4 | Screw | Red    |     14 |
| S4 | Clark |     40 | London | P4 | Screw | Red    |     14 |
| S2 | Jones |     10 | Paris  | P5 | Cam   | Blue   |     12 |
| S3 | Blake |     30 | Paris  | P5 | Cam   | Blue   |     12 |
| S1 | Smith |     40 | London | P6 | Cog   | Red    |     19 |
| S4 | Clark |     40 | London | P6 | Cog   | Red    |     19 |
+----+-------+--------+--------+----+-------+--------+--------+
10 rows in set (0.000 sec)
```

2. Menampilkan nama supplier yang memasok barang dengan nomor part P2

```
MariaDB [ilham]> SELECT Sname FROM S_ILHAM, SP_ILHAM WHERE S_ILHAM.Sn = SP_ILHAM.Sn AND SP_ILHAM.Pn = 'P2';
+-------+
| Sname |
+-------+
| Smith |
| Jones |
| Blake |
| Clark |
+-------+
4 rows in set (0.001 sec)
```

3. Menampilkan nama supplier yang memasok part berwarna merah

```
MariaDB [ilham]> SELECT Sname FROM S_ILHAM, SP_ILHAM, P_ILHAM WHERE S_ILHAM.Sn = SP_ILHAM.Sn AND SP_ILHAM.Pn
= P_ILHAM.Pn AND P_ILHAM.COLOR = 'RED';
ERROR 1054 (42S22): Unknown column 'P_ILHAM.COLOR' in 'where clause'
MariaDB [ilham]>
```

Error karena field sudah di ubah ke warna bukan color

```
MariaDB [ilham]> SELECT Sname FROM S_ILHAM, SP_ILHAM, P_ILHAM WHERE S_ILHAM.Sn = SP_ILHAM.Sn AND SP_ILHAM.Pn
= P_ILHAM.Pn AND P_ILHAM.warna = 'RED';
+-------+
| Sname |
+-------+
| Smith |
| Smith |
| Smith |
| Jones |
| Clark |
+-------+
5 rows in set (0.001 sec)
```

- ## Menampilkan record (SELECT lebih dari satu tabel / SELECT Bertingkat)

    1. Menampilkan nama supplier yang memasok barang dengan nomor part P2

    ```
    MariaDB [ilham]> SELECT Sname FROM S_ILHAM WHERE Sn IN (SELECT Sn FROM SP_ILHAM WHERE Pn = 'P2');
    +-------+
    | Sname |
    +-------+
    | Smith |
    | Jones |
    | Blake |
    | Clark |
    +-------+
    4 rows in set (0.001 sec)
    ```

    2. Menampilkan nama supplier yang memasok part berwarna merah

    ```
    MariaDB [ilham]> SELECT Sname FROM S_ILHAM WHERE Sn IN (SELECT Sn FROM SP_ILHAM WHERE Pn IN (SELECT Pn FROM P
    _ILHAM WHERE Warna = 'Red'));
    +-------+
    | Sname |
    +-------+
    | Smith |
    | Jones |
    | Clark |
    +-------+
    3 rows in set (0.000 sec)
    ```

    3. Menampilkan no.supplier dengan nilai status lebih kecil daripada nilai maksimum status yang ada pada tabel S_ilham

    ```
    MariaDB [ilham]> SELECT Sn FROM S_ILHAM WHERE Status < (SELECT MAX(Status) FROM S_ILHAM);
    +----+
    | Sn |
    +----+
    | S2 |
    | S3 |
    +----+
    2 rows in set (0.001 sec)
    ```

4. Menampilkan nama supplier yang tidak memasok barang dengan nomor part P2

```
MariaDB [ilham]> SELECT Sname FROM S_ILHAM WHERE Sn NOT IN (SELECT Sn FROM SP_ILHAM WHERE Pn = 'P2');
Empty set (0.001 sec)
```

5. Menampilkan semua nomor supplier yang sama lokasinya dengan S1

```
MariaDB [ilham]> SELECT Sn FROM S_ILHAM WHERE CITY =(SELECT CITY FROM S_ILHAM WHERE Sn = 'S1');
+----+
| Sn |
+----+
| S1 |
| S4 |
+----+
2 rows in set (0.000 sec)
```

- **Fungsi Perhitungan**
  1. Menghitung jumlah supplier

```
MariaDB [ilham]> SELECT COUNT(*) FROM S_ILHAM;
+----------+
| COUNT(*) |
+----------+
|        4 |
+----------+
1 row in set (0.000 sec)
```

  2. Menampilkan nomor part dan total kuantitas pengiriman dari setiap part

```
MariaDB [ilham]> SELECT Pn, SUM(QTY) FROM SP_ILHAM GROUP BY Pn;
+----+----------+
| Pn | SUM(QTY) |
+----+----------+
| P  |       40 |
| P1 |      600 |
| P2 |     1000 |
| P4 |      500 |
| P5 |      500 |
| P6 |      100 |
+----+----------+
6 rows in set (0.000 sec)
```

  3. Menghitung jumlah kuantitas dari P2 yang telah disupply

```
MariaDB [ilham]> SELECT SUM(QTY) FROM SP_ILHAM WHERE Pn = 'P2';
+----------+
| SUM(QTY) |
+----------+
|     1000 |
+----------+
1 row in set (0.000 sec)
```

4. Menampilkan jumlah pengiriman barang dengan nomor P4 dan dipasok oleh nomor suppplier S1

```
MariaDB [ilham]> SELECT COUNT(*) FROM SP_ILHAM WHERE Pn = 'P4' AND Sn = 'S1';
+----------+
| COUNT(*) |
+----------+
|        1 |
+----------+
1 row in set (0.001 sec)
```

5. Menampilkan nomor part dan total kuantitas dari masing-masing part

```
MariaDB [ilham]> SELECT Pn, SUM(QTY) FROM SP_ILHAM GROUP BY 'P3';
+----+----------+
| Pn | SUM(QTY) |
+----+----------+
| P1 |     2740 |
+----+----------+
1 row in set (0.000 sec)
```

- **TAMBAHAN SENDIRI** RELASIKAN TABEL S_ILHAM, P_ILHAM DAN SP_ILHAM

```
MariaDB [ilham]> alter table sp_ilham add foreign key(sn) references s_ilham (sn)
    -> ;
Query OK, 12 rows affected (0.789 sec)
Records: 12  Duplicates: 0  Warnings: 0

MariaDB [ilham]> alter table sp_ilham add foreign key(pn) references p_ilham (pn);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`ilham`.`#sql-2828_8`,
CONSTRAINT `#sql-2828_8_ibfk_2` FOREIGN KEY (`pn`) REFERENCES `p_ilham` (`pn`))
```

ERROR KARENA di tabel sp_ilham di field pn ada yang bernilai P saja dan tidak ada nilai yang cocok di tabel p_ilham

```
MariaDB [ilham]> select * from sp_ilham;
+----+----+-----+
| sn | pn | qty |
+----+----+-----+
| S1 | P1 | 300 |
| S1 | P2 | 200 |
| S1 | P  |  40 |
| S1 | P4 | 200 |
| S1 | P5 | 100 |
| S1 | P6 | 100 |
| S2 | P1 | 300 |
| S2 | P2 | 400 |
| S3 | P2 | 200 |
| S4 | P2 | 200 |
| S4 | P4 | 300 |
| S4 | P5 | 400 |
+----+----+-----+
12 rows in set (0.000 sec)
```

Maka dari itu agar bisa di relasikan MAKA HAPUS DATA TERSEBUT

```
MariaDB [ilham]> delete from sp_ilham where pn='p';
Query OK, 1 row affected (0.051 sec)
```

Relasikan ulang:

```
MariaDB [ilham]> alter table sp_ilham add foreign key(pn) references p_ilham (pn);
Query OK, 11 rows affected (0.624 sec)
Records: 11  Duplicates: 0  Warnings: 0
```

<mark>Tampilan Relasi 3 Tabel tersebut:</mark>