Laporan Praktikum 8

Konsep Basis Data

Fungsi dan Operator

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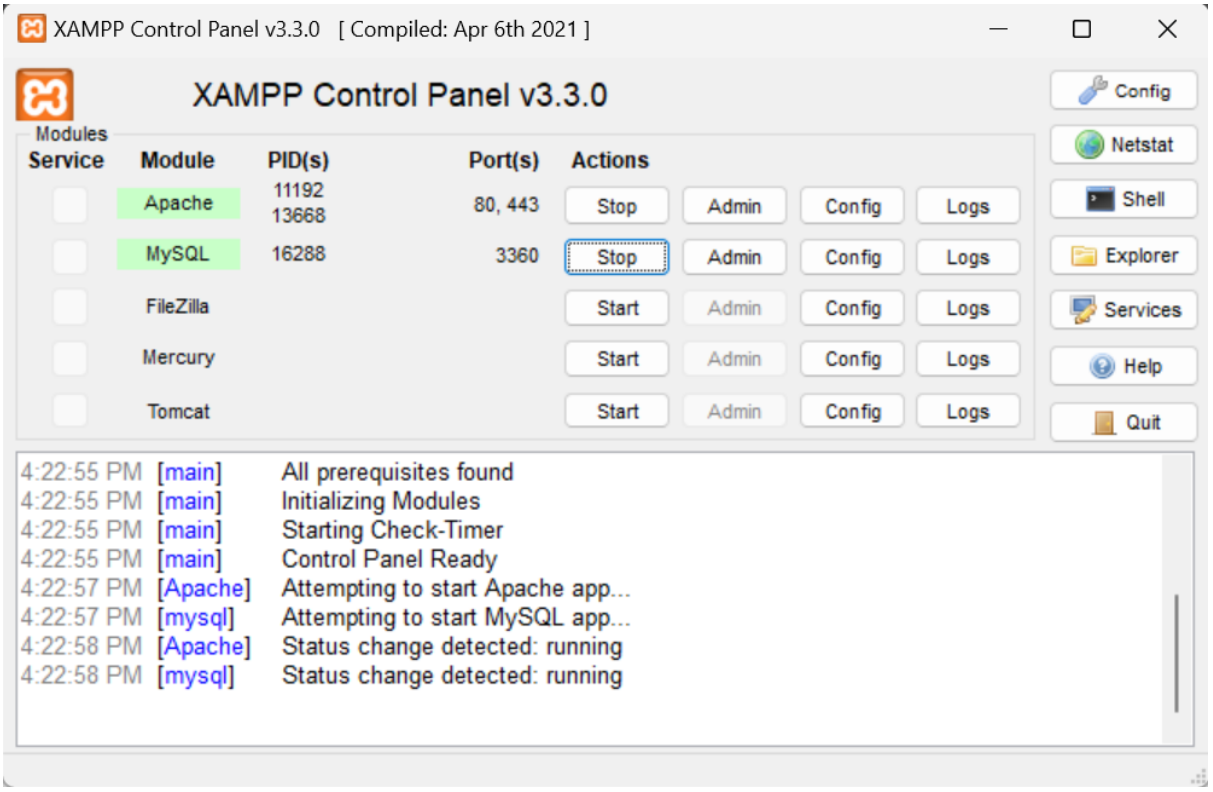
YOGYAKARTA
2023

A. Kompetensi Dasar :

a. Mahasiswa dapat merumuskan query dari beberapa tabel dengan benar.
b. Mahasiswa dapat membuat relasi antar tabel.

B. Percobaan :

1. Sebelum membuat database, pastikan terlebih dahulu bahwa mysql dan apache pada xampp sudah menyala



2. Masuk ke folder bin yang ada pada folder mysql yang berada pada folder xampp

```
Lenovo Ideapad@AlienzWindows C: 〉 cd xampp/mysql/bin
Lenovo Ideapad@AlienzWindows C: 〉 xampp 〉 mysql 〉 bin
```

3. Login ke mysql dengan menggunakan perintah **mysql -u *username_anda***(default=root) atau **mysql -u *root* -p**(jika menggunakan password)

```
Lenovo Ideapad@AlienzWindows  C:  xampp  mysql  bin  mysql -u root -p
Enter password: ********
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.33 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

4. Gunakan tabel digilabs yang telah dibuat pada saat praktikum 2

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

5. Operator dan fungsi perbandingan

5.1. Mencari nilai terbesar menggunakan query GREATEST.

```
MariaDB [digilab]> SELECT GREATEST(2,0);
+--------------+
| GREATEST(2,0) |
+--------------+
|            2 |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT GREATEST(34.0,3.0,5.0,767.0);
+-----------------------------+
| GREATEST(34.0,3.0,5.0,767.0) |
+-----------------------------+
|                       767.0 |
+-----------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT GREATEST('B','A','C');
+----------------------+
| GREATEST('B','A','C') |
+----------------------+
| C                    |
+----------------------+
1 row in set (0.000 sec)
```

5.2. Mencari nilai terkecil menggunakan query LEAST

```
MariaDB [digilab]> SELECT LEAST(2,0);
+-----------+
| LEAST(2,0) |
+-----------+
|          0 |
+-----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT LEAST(34.0,3.0,5.0,767.0);
+-------------------------------+
| LEAST(34.0,3.0,5.0,767.0) |
+-------------------------------+
|                         3.0 |
+-------------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT LEAST('B','A','C');
+---------------------+
| LEAST('B','A','C') |
+---------------------+
| A                   |
+---------------------+
1 row in set (0.000 sec)
```

6. Operator Logika

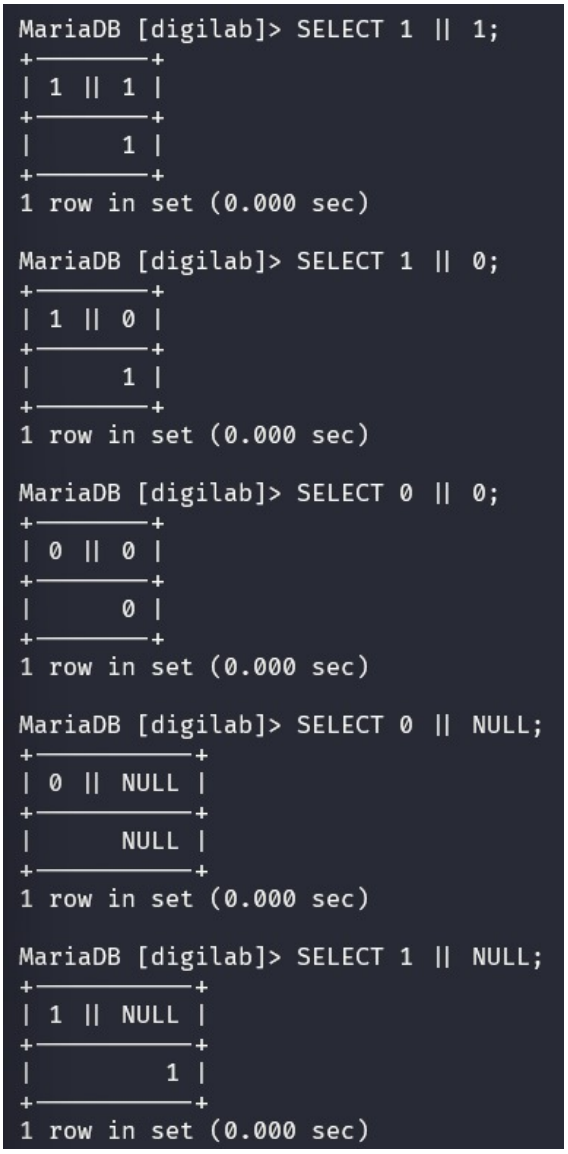
6.1. Operator logika NOT. Akan menghasilkan kebalikan dari value.

```
MariaDB [digilab]> SELECT NOT 0;
+-------+
| NOT 0 |
+-------+
|     1 |
+-------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT NOT NULL;
+----------+
| NOT NULL |
+----------+
|     NULL |
+----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT ! (1+1);
+---------+
| ! (1+1) |
+---------+
|       0 |
+---------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT ! 1+1;
+-------+
| ! 1+1 |
+-------+
|     1 |
+-------+
1 row in set (0.000 sec)
```

6.2. Operator && akan mengembalikan TRUE/1 jika kedua value adalah TRUE/1

```
MariaDB [digilab]> SELECT 1 && 1;
+--------+
| 1 && 1 |
+--------+
|      1 |
+--------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 && 0;
+--------+
| 1 && 0 |
+--------+
|      0 |
+--------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 && NULL;
+-----------+
| 1 && NULL |
+-----------+
|      NULL |
+-----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 0 && NULL;
+-----------+
| 0 && NULL |
+-----------+
|         0 |
+-----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT NULL && 0;
+-----------+
| NULL && 0 |
+-----------+
|         0 |
+-----------+
1 row in set (0.000 sec)
```

6.3. Operasi logika || akan mengembalikan TRUE/1 jika salah satu atau kedua value merupakan TRUE/1



```
MariaDB [digilab]> SELECT 1 || 1;
+--------+
| 1 || 1 |
+--------+
|      1 |
+--------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 || 0;
+--------+
| 1 || 0 |
+--------+
|      1 |
+--------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 0 || 0;
+--------+
| 0 || 0 |
+--------+
|      0 |
+--------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 0 || NULL;
+-----------+
| 0 || NULL |
+-----------+
|      NULL |
+-----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 || NULL;
+-----------+
| 1 || NULL |
+-----------+
|         1 |
+-----------+
1 row in set (0.000 sec)
```

6.4. Operator logika XOR akan mengembalikan TRUE/1 jika salahh satu value TRUE/1, namun akan menghasilkan FALSE/0 jika kedua value benar/salah

```
MariaDB [digilab]> SELECT 1 XOR 1;
+----------+
| 1 XOR 1 |
+----------+
|        0 |
+----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 XOR 0;
+----------+
| 1 XOR 0 |
+----------+
|        1 |
+----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 XOR NULL;
+--------------+
| 1 XOR NULL |
+--------------+
|         NULL |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 1 XOR 1 XOR 1;
+----------------+
| 1 XOR 1 XOR 1 |
+----------------+
|              1 |
+----------------+
1 row in set (0.000 sec)
```

7. Fungsi untuk kendali

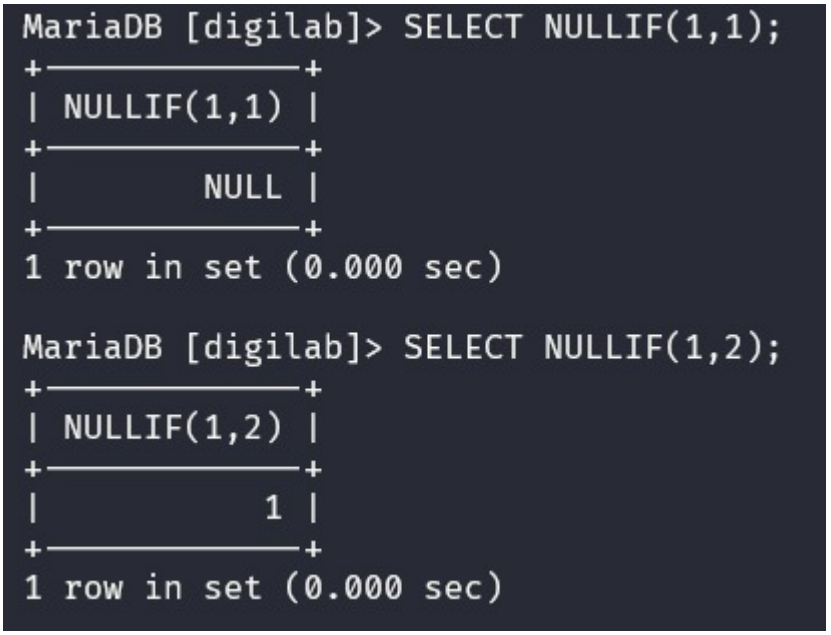
7.1. Fungsi IF. syntax : IF(expr1, expr2, expr3)

```
MariaDB [digilab]> SELECT IF(1>2,2,3);
+-------------+
| IF(1>2,2,3) |
+-------------+
|           3 |
+-------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT IF(1<2,'yes','no');
+--------------------+
| IF(1<2,'yes','no') |
+--------------------+
| yes                |
+--------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT IF(STRCMP('test','test1'),'no','yes');
+-----------------------------------------+
| IF(STRCMP('test','test1'),'no','yes') |
+-----------------------------------------+
| no                                      |
+-----------------------------------------+
1 row in set (0.000 sec)
```

7.2. Fungsi IFNULL digunakan untuk mengevaluasi apakah suatu ekspresi memiliki nilai NULL, jika nilai tersebut NULL fungsi IFNULL akan mengembalikan nilai yang ditentukan sebagai gantinya

```
MariaDB [digilab]> SELECT IFNULL(1,0);
+-------------+
| IFNULL(1,0) |
+-------------+
|           1 |
+-------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT IFNULL(NULL,10);
+--------------------+
| IFNULL(NULL,10) |
+--------------------+
|              10 |
+--------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT IFNULL(1/0,10);
+-----------------+
| IFNULL(1/0,10) |
+-----------------+
|        10.0000 |
+-----------------+
1 row in set, 1 warning (0.000 sec)

MariaDB [digilab]> SELECT IFNULL(1/0,'yes');
+---------------------+
| IFNULL(1/0,'yes') |
+---------------------+
| yes                 |
+---------------------+
1 row in set, 1 warning (0.000 sec)
```

7.3. Fungsi NULLIF digunakan untuk membandingkan dua ekspresi atau nilai. Jika kedua ekspresi tersebut sama, maka NULLIF akan mengembalikan nilai NULL dan jika berbeda, maka NULLIF mengembalikan nilai pertama



8. Fungsi untuk pengolahan string.

```
MariaDB [digilab]> SELECT CHAR(77,77.3,'77.3');
+-----------------------+
| CHAR(77,77.3,'77.3') |
+-----------------------+
| MMM                   |
+-----------------------+
1 row in set, 1 warning (0.000 sec)

MariaDB [digilab]> SELECT CONCAT('My', 'S', 'QL');
+-------------------------+
| CONCAT('My', 'S', 'QL') |
+-------------------------+
| MySQL                   |
+-------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT CONCAT('My', NULL, 'QL');
+----------------------------+
| CONCAT('My', NULL, 'QL') |
+----------------------------+
| NULL                       |
+----------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT CONCAT(14.3);
+--------------+
| CONCAT(14.3) |
+--------------+
| 14.3         |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT CONCAT_WS(',','First name','Second name','Last Name');
+---------------------------------------------------------+
| CONCAT_WS(',','First name','Second name','Last Name') |
+---------------------------------------------------------+
| First name,Second name,Last Name                        |
+---------------------------------------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT CONV('a',16,2);
+-----------------+
| CONV('a',16,2) |
+-----------------+
| 1010           |
+-----------------+
```

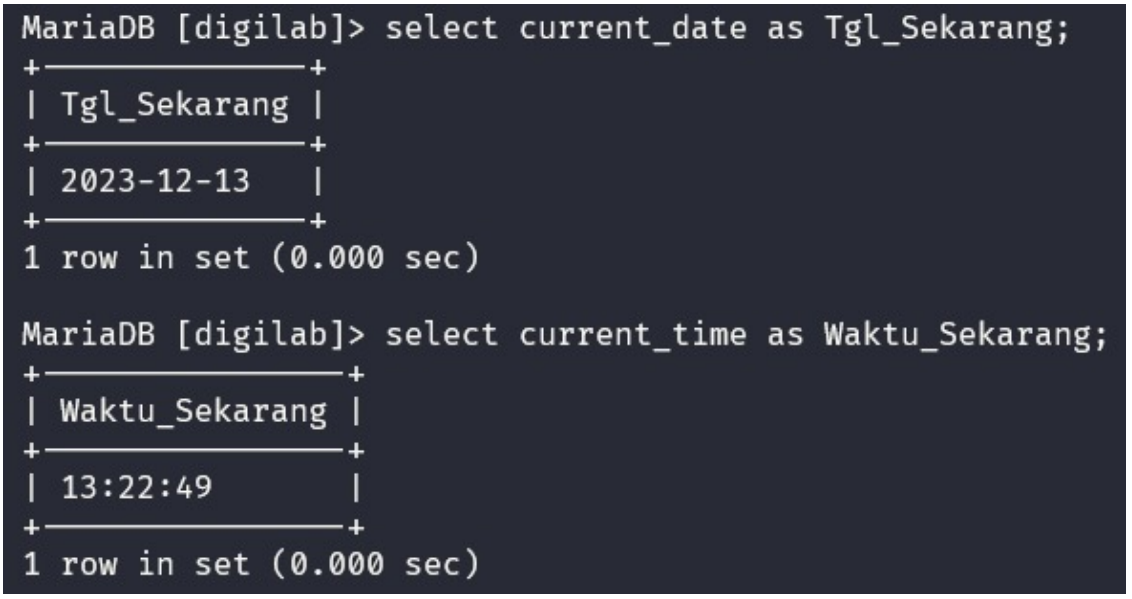
```
MariaDB [digilab]> SELECT ASCII('2'); SELECT ASCII(2); SELECT ASCII('dx');
+--------------+
| ASCII('2') |
+--------------+
|         50 |
+--------------+
1 row in set (0.000 sec)

+------------+
| ASCII(2) |
+------------+
|       50 |
+------------+
1 row in set (0.000 sec)

+---------------+
| ASCII('dx') |
+---------------+
|         100 |
+---------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT BIN(12);
+----------+
| BIN(12) |
+----------+
| 1100    |
+----------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT BIT_LENGTH('text');
+----------------------+
| BIT_LENGTH('text') |
+----------------------+
|                 32 |
+----------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT CHAR(77,121,83,81,'76');
+-----------------------------+
| CHAR(77,121,83,81,'76') |
+-----------------------------+
| MySQL                       |
+-----------------------------+
```

```
MariaDB [digilab]> SELECT CONV('6E',18,8);
+--------------------+
| CONV('6E',18,8) |
+--------------------+
| 172                |
+--------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT LOWER('QUADRATICALLY');
+-----------------------------+
| LOWER('QUADRATICALLY') |
+-----------------------------+
| quadratically              |
+-----------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT LEFT('foobarbar', 5);
+--------------------------+
| LEFT('foobarbar', 5) |
+--------------------------+
| fooba                    |
+--------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT STRCMP('text', 'text2');
+-------------------------------+
| STRCMP('text', 'text2') |
+-------------------------------+
|                           -1 |
+-------------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT STRCMP('text2', 'text');
+-------------------------------+
| STRCMP('text2', 'text') |
+-------------------------------+
|                            1 |
+-------------------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT STRCMP('text', 'text');
+-------------------------------+
| STRCMP('text', 'text') |
+-------------------------------+
|                            0 |
+-------------------------------+
```

9. Operator dan fungsi numerik. Operator Numerik, untuk menjumlahkan dua value gunakan (+), untuk pengurangan gunakan (-), untuk perkalian gunakan (*), untuk pembagian gunakan (/)

```
MariaDB [digilab]> SELECT 3+5;
+-----+
| 3+5 |
+-----+
|   8 |
+-----+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 3-5;
+-----+
| 3-5 |
+-----+
|  -2 |
+-----+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 3*5;
+-----+
| 3*5 |
+-----+
|  15 |
+-----+
1 row in set (0.000 sec)

MariaDB [digilab]> SELECT 3/5;
+--------+
| 3/5    |
+--------+
| 0.6000 |
+--------+
1 row in set (0.000 sec)
```

10. fungsi yang terkait dengan waktu. Untuk menampilkan tanggal sekarang gunakan SELECT CURRENT_DATE ataupun untuk menampilkan waktu sekarang gunakan SELECT CURRENT_TIME



```
MariaDB [digilab]> select current_date as Tgl_Sekarang;
+---------------+
| Tgl_Sekarang |
+---------------+
| 2023-12-13   |
+---------------+
1 row in set (0.000 sec)

MariaDB [digilab]> select current_time as Waktu_Sekarang;
+----------------+
| Waktu_Sekarang |
+----------------+
| 13:22:49       |
+----------------+
1 row in set (0.000 sec)
```

11. fungsi agregasi (MIN, MAX, COUNT, AVG, dll)

```
MariaDB [digilab]> select min(jumlah) from buku;
+--------------+
| min(jumlah) |
+--------------+
| 100          |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> select max(jumlah) from buku;
+--------------+
| max(jumlah) |
+--------------+
| 80           |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> select count(nama) from mahasiswa;
+--------------+
| count(nama) |
+--------------+
|            6 |
+--------------+
1 row in set (0.000 sec)

MariaDB [digilab]> select avg(Jumlah) from buku;
+-----------------------+
| avg(Jumlah)          |
+-----------------------+
| 106.66666666666667 |
+-----------------------+
1 row in set (0.000 sec)

MariaDB [digilab]> select sum(jumlah) from buku;
+--------------+
| sum(jumlah) |
+--------------+
|          640 |
+--------------+
1 row in set (0.000 sec)
```