

LAPORAN RESPONSI
BASIS DATA PRAKTIK KELAS II
SOAL B

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BAB I

MEMBUAT DATABASE DAN RELASI DATABASE

1. Membuat database akademik dan menggunakan database

```
mysql> create database db_akademik
-> ;
Query OK, 1 row affected (0.01 sec)

mysql> use db_akademik
Database changed
```

Kueri:

```
CREATE DATABASE db_akademik;
USE db_akademik;
```

2. Membuat tabel mahasiswa

```
mysql> CREATE TABLE mahasiswa(
->     NIM VARCHAR(10) PRIMARY KEY,
->     Nama_Mhs VARCHAR(50),
->     TempatLahir VARCHAR(50),
->     TanggalLahir DATE,
->     JenisKelamin ENUM('L', 'P'),
->     Alamat TEXT,
->     NoTelepon VARCHAR(15),
->     Email VARCHAR(50),
->     Jurusan VARCHAR(50)
-> );
Query OK, 0 rows affected (0.01 sec)

mysql> █
```

Kueri:

```
CREATE TABLE mahasiswa(
    NIM VARCHAR(10) PRIMARY KEY,
    Nama_Mhs VARCHAR(50),
    TempatLahir VARCHAR(50),
    TanggalLahir DATE,
    JenisKelamin ENUM('L', 'P'),
    Alamat TEXT,
    NoTelepon VARCHAR(15),
    Email VARCHAR(50),
    Jurusan VARCHAR(50)
);
```

Describe:

```
mysql> describe mahasiswa;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NIM        | varchar(10)   | NO   | PRI | NULL    |       |
| Nama_Mhs   | varchar(50)   | YES  |     | NULL    |       |
| TempatLahir | varchar(50)   | YES  |     | NULL    |       |
| TanggalLahir | date          | YES  |     | NULL    |       |
| JenisKelamin | enum('L','P') | YES  |     | NULL    |       |
| Alamat     | text          | YES  |     | NULL    |       |
| NoTelepon  | varchar(15)   | YES  |     | NULL    |       |
| Email      | varchar(50)   | YES  |     | NULL    |       |
| Jurusan    | varchar(50)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

3. Membuat tabel dosen

```
mysql> CREATE TABLE dosen(
->     NIP VARCHAR(10) PRIMARY KEY,
->     Nama_Dosen VARCHAR(50),
->     Alamat VARCHAR(255),
->     Email VARCHAR(50),
->     NoTelepon VARCHAR(15)
-> );
Query OK, 0 rows affected (0.01 sec)

mysql>
```

Kueri:

```
CREATE TABLE dosen(
    NIP VARCHAR(10) PRIMARY KEY,
    Nama_Dosen VARCHAR(50),
    Alamat VARCHAR(255),
    Email VARCHAR(50),
    NoTelepon VARCHAR(15)
);
```

Describe:

```
mysql> describe dosen;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NIP        | varchar(10)   | NO   | PRI | NULL    |       |
| Nama_Dosen | varchar(50)   | YES  |     | NULL    |       |
| Alamat     | varchar(255)  | YES  |     | NULL    |       |
| Email      | varchar(50)   | YES  |     | NULL    |       |
| NoTelepon  | varchar(15)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

4. Membuat tabel matakuliah

```
mysql> CREATE TABLE matakuliah(
->     KodeMK VARCHAR(10) PRIMARY KEY,
->     NamaMK VARCHAR(50),
->     SKS INT,
->     Semester INT
-> );
Query OK, 0 rows affected (0.01 sec)

mysql>
```

Kueri:

```
CREATE TABLE matakuliah(
    KodeMK VARCHAR(10) PRIMARY KEY,
    NamaMK VARCHAR(50),
    SKS INT,
    Semester INT
);
```

Describe:

```
mysql> describe matakuliah;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| KodeMK     | varchar(10)   | NO   | PRI | NULL    |       |
| NamaMK     | varchar(50)   | YES  |     | NULL    |       |
| SKS        | int           | YES  |     | NULL    |       |
| Semester   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

5. Membuat tabel nilai

```
mysql> CREATE TABLE nilai (
->     IDNilai VARCHAR(10) PRIMARY KEY,
->     NIM VARCHAR(10),
->     KodeMK VARCHAR(10),
->     Nilai DECIMAL(4,2),
->     Semester INT,
->     FOREIGN KEY (NIM) REFERENCES mahasiswa(NIM),
->     FOREIGN KEY (KodeMK) REFERENCES matakuliah(KodeMK)
-> );
Query OK, 0 rows affected (0.02 sec)
```

Kueri:

```
CREATE TABLE nilai (
    IDNilai VARCHAR(10) PRIMARY KEY,
    NIM VARCHAR(10),
    KodeMK VARCHAR(10),
    Nilai DECIMAL(4,2),
    Semester INT,
    FOREIGN KEY (NIM) REFERENCES mahasiswa(NIM),
    FOREIGN KEY (KodeMK) REFERENCES matakuliah(KodeMK)
);
```

Describe:

```
mysql> describe nilai;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| IDNilai    | varchar(10)   | NO   | PRI | NULL    |       |
| NIM        | varchar(10)   | YES  | MUL | NULL    |       |
| KodeMK     | varchar(10)   | YES  | MUL | NULL    |       |
| Nilai      | decimal(4,2)  | YES  |     | NULL    |       |
| Semester   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

6. Membuat tabel jadwal

```
mysql> CREATE TABLE jadwal(
->     IDJadwal VARCHAR(10) PRIMARY KEY,
->     Hari ENUM('Senin', 'Selasa', 'Rabu', 'Kamis', 'Jumat', 'Sabtu', 'Minggu'),
->     Jam TIME,
->     KodeMK VARCHAR(10),
->     NIP VARCHAR(10),
->     Ruangan VARCHAR(20),
->     FOREIGN KEY (KodeMK) REFERENCES matakuliah(KodeMK),
->     FOREIGN KEY (NIP) REFERENCES dosen(NIP)
-> );
Query OK, 0 rows affected (0.06 sec)

mysql>
```

Kueri:

```
CREATE TABLE jadwal(
    IDJadwal VARCHAR(10) PRIMARY KEY,
    Hari ENUM('Senin', 'Selasa', 'Rabu', 'Kamis', 'Jumat', 'Sabtu',
'Minggu'),
    Jam TIME,
    KodeMK VARCHAR(10),
    NIP VARCHAR(10),
    Ruangan VARCHAR(20),
    FOREIGN KEY (KodeMK) REFERENCES matakuliah(KodeMK),
    FOREIGN KEY (NIP) REFERENCES dosen(NIP)
);
```

Describe:

```
mysql> describe jadwal;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| IDJadwal   | varchar(10)   | NO   | PRI | NULL    |       |
| Hari       | enum('Senin', 'Selasa', 'Rabu', 'Kamis', 'Jumat', 'Sabtu', 'Minggu') | YES  |     | NULL    |       |
| Jam        | time         | YES  |     | NULL    |       |
| KodeMK     | varchar(10)   | YES  | MUL | NULL    |       |
| NIP        | varchar(10)   | YES  | MUL | NULL    |       |
| Ruangan    | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

BAB II

INSERT TABEL

1. Insert tabel mahasiswa

```
mysql> INSERT INTO mahasiswa(NIM, Nama_MHS, TempatLahir, TanggalLahir, JenisKelamin, Alamat, NoTelepon, Email, Jurusan)
-> VALUES
-> ('M230', 'Gita Putri', 'Denpasar', '1998-09-05', 'P', 'Denpasar', '81234567896', 'gita@gmail.com', 'Informatika'),
-> ('M231', 'Hendra Pratama', 'Makasar', '2001-04-18', 'L', 'Makasar', '81234567897', 'hendra@gmail.com', 'Sistem Informasi'),
-> ('M232', 'Indah Permata', 'Palembang', '1999-11-20', 'P', 'Palembang', '81234567899', 'indah@gmail.com', 'Informatika'),
-> ('M233', 'Joko Supriyadi', 'Balikpapan', '2000-06-03', 'L', 'Balikpapan', '81234567899', 'joko@gmail.com', 'Informatika'),
-> ('M234', 'Karin Anindya', 'Bandung', '1998-11-11', 'P', 'Bandung', '81234567900', 'karin@gmail.com', 'Sistem Informasi'),
-> ('M235', 'Leo Santoso', 'Semarang', '2001-03-19', 'L', 'Semarang', '81234567900', 'leo@gmail.com', 'Informatika');
Query OK, 6 rows affected (0.00 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql>
```

Kueri:

```
INSERT INTO mahasiswa(NIM, Nama_MHS, TempatLahir, TanggalLahir,
JenisKelamin, Alamat, NoTelepon, Email, Jurusan)
VALUES
('M230', 'Gita Putri', 'Denpasar', '1998-09-05', 'P', 'Denpasar',
'81234567896', 'gita@gmail.com', 'Informatika'),
('M231', 'Hendra Pratama', 'Makasar', '2001-04-18', 'L', 'Makasar',
'81234567897', 'hendra@gmail.com', 'Sistem Informasi'),
('M232', 'Indah Permata', 'Palembang', '1999-11-20', 'P', 'Palembang',
'81234567899', 'indah@gmail.com', 'Informatika'),
('M233', 'Joko Supriyadi', 'Balikpapan', '2000-06-03', 'L', 'Balikpapan',
'81234567899', 'joko@gmail.com', 'Informatika'),
('M234', 'Karin Anindya', 'Bandung', '1998-11-11', 'P', 'Bandung',
'81234567900', 'karin@gmail.com', 'Sistem Informasi'),
('M235', 'Leo Santoso', 'Semarang', '2001-03-19', 'L', 'Semarang',
'81234567900', 'leo@gmail.com', 'Informatika');
```

2. Insert tabel dosen

```
mysql> INSERT INTO dosen(NIP, Nama_Dosen, Alamat, Email, NoTelepon)
-> VALUES
-> ('D001', 'Dr. Eka Putra', 'Bandung', 'eka@kampus.com', '82123456784'),
-> ('D002', 'Prof. Dr. Fina Larasati', 'Surabaya', 'fina@kampus.com', '82123456785'),
-> ('D003', 'Dr. Guntur Wibowo', 'Semarang', 'guntur@kampus.com', '82123456786'),
-> ('D004', 'Dr. Hesti Pramudita', 'Yogyakarta', 'hesti@kampus.com', '82123456787');
Query OK, 4 rows affected (0.00 sec)
Records: 4 Duplicates: 0 Warnings: 0

mysql>
```

Kueri:

```
INSERT INTO dosen(NIP, Nama_Dosen, Alamat, Email, NoTelepon)
VALUES
('D001', 'Dr. Eka Putra', 'Bandung', 'eka@kampus.com', '82123456784'),
('D002', 'Prof. Dr. Fina Larasati', 'Surabaya', 'fina@kampus.com',
'82123456785'),
```

```

('D003', 'Dr. Guntur Wibowo', 'Semarang', 'guntur@kampus.com',
'82123456786'),
('D004', 'Dr. Hesti Pramudita', 'Yogyakarta', 'hesti@kampus.com',
'82123456787');

```

3. Insert tabel matakuliah

```

mysql> INSERT INTO matakuliah(KodeMK, NamaMK, SKS, Semester)
-> VALUES
-> ('MK001', 'Big data & Data Analytic', 4, 1),
-> ('MK002', 'Coding Machine Learning', 3, 1),
-> ('MK003', 'Sistem Basis Data', 3, 1),
-> ('MK004', 'Sistem Komputer', 3, 2),
-> ('MK005', 'Matematika Diskrit', 3, 2),
-> ('MK006', 'Data Warehouse', 4, 2);
Query OK, 6 rows affected (0.01 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql>

```

Kueri:

```

INSERT INTO matakuliah(KodeMK, NamaMK, SKS, Semester)
VALUES
('MK001', 'Big data & Data Analytic', 4, 1),
('MK002', 'Coding Machine Learning', 3, 1),
('MK003', 'Sistem Basis Data', 3, 1),
('MK004', 'Sistem Komputer', 3, 2),
('MK005', 'Matematika Diskrit', 3, 2),
('MK006', 'Data Warehouse', 4, 2);

```

4. Insert tabel nilai

```

mysql> INSERT INTO nilai(IDNilai, NIM, KodeMK, Nilai, Semester)
-> VALUES
-> ('N001', 'M230', 'MK001', 80, 1),
-> ('N002', 'M230', 'MK002', 76, 1),
-> ('N003', 'M231', 'MK003', 90, 1),
-> ('N004', 'M232', 'MK001', 77, 1),
-> ('N005', 'M232', 'MK003', 79, 1),
-> ('N006', 'M233', 'MK005', 65, 2),
-> ('N007', 'M234', 'MK004', 93, 2),
-> ('N008', 'M234', 'MK005', 78, 2),
-> ('N009', 'M235', 'MK005', 60, 2),
-> ('N010', 'M235', 'MK006', 58, 2);
Query OK, 10 rows affected (0.00 sec)
Records: 10 Duplicates: 0 Warnings: 0

mysql>

```

Kueri:

```

INSERT INTO nilai(IDNilai, NIM, KodeMK, Nilai, Semester)
VALUES
('N001', 'M230', 'MK001', 80, 1),
('N002', 'M230', 'MK002', 76, 1),
('N003', 'M231', 'MK003', 90, 1),
('N004', 'M232', 'MK001', 77, 1),

```



```
('N005', 'M232', 'MK003', 79, 1),
('N006', 'M233', 'MK005', 65, 2),
('N007', 'M234', 'MK004', 93, 2),
('N008', 'M234', 'MK005', 78, 2),
('N009', 'M235', 'MK005', 60, 2),
('N010', 'M235', 'MK006', 5
```

5. Insert tabel jadwal

```
mysql> INSERT INTO jadwal(IDJadwal, Hari, Jam, KodeMK, NIP, Ruangan)
-> VALUES
-> ('JD01', 'Selasa', '8:40', 'MK001', 'D001', 'D408'),
-> ('JD02', 'Senin', '10:30', 'MK002', 'D004', 'B205'),
-> ('JD03', 'Rabu', '12:50', 'MK003', 'D002', 'C302'),
-> ('JD04', 'Kamis', '9:00', 'MK004', 'D001', 'A101'),
-> ('JD05', 'Jumat', '14:40', 'MK005', 'D001', 'E503'),
-> ('JD06', 'Sabtu', NULL, 'MK006', 'D003', 'A101');
Query OK, 6 rows affected (0.01 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql>
```

Kueri:

```
INSERT INTO jadwal(IDJadwal, Hari, Jam, KodeMK, NIP, Ruangan)
VALUES
('JD01', 'Selasa', '8:40', 'MK001', 'D001', 'D408'),
('JD02', 'Senin', '10:30', 'MK002', 'D004', 'B205'),
('JD03', 'Rabu', '12:50', 'MK003', 'D002', 'C302'),
('JD04', 'Kamis', '9:00', 'MK004', 'D001', 'A101'),
('JD05', 'Jumat', '14:40', 'MK005', 'D001', 'E503'),
('JD06', 'Sabtu', NULL, 'MK006', 'D003', 'A101');
```

BAB III

SUB QUERY, DML, DDL JOIN

1. SUB QUERI

-- Tampilkan nama mahasiswa dengan nilai rata rata terendah

```
SELECT m>Nama_Mhs, AVG(n.Nilai) AS RataRataNilai FROM mahasiswa m JOIN nilai n ON  
m.NIM = n.NIM GROUP BY n.NIM ORDER BY RataRataNilai ASC LIMIT 1;
```

Hasil:

```
mysql> SELECT m>Nama_Mhs, AVG(n.Nilai) AS RataRataNilai FROM mahasiswa m JOIN nilai n ON m.NIM = n.NIM GROUP BY n.NIM ORDER BY RataRataNilai ASC LIMIT 1;  
+-----+-----+  
| Nama_Mhs | RataRataNilai |  
+-----+-----+  
| Leo Santoso | 59.000000 |  
+-----+-----+  
1 row in set (0.00 sec)  
  
mysql>
```

-- Tampilkan daftar matakuliah yang diambil oleh mahasiswa dengan NIM "M232"

```
SELECT NamaMK, NIM FROM matakuliah mk JOIN nilai n ON mk.KodeMK = n.KodeMK WHERE  
NIM = 'M232';
```

Hasil:

```
mysql> SELECT NamaMK, NIM FROM matakuliah mk JOIN nilai n ON mk.KodeMK = n.KodeMK WHERE NIM = 'M232';  
+-----+-----+  
| NamaMK | NIM |  
+-----+-----+  
| Big data & Data Analytic | M232 |  
| Sistem Basis Data | M232 |  
+-----+-----+  
2 rows in set (0.00 sec)  
  
mysql>
```

-- Tampilkan daftar matakuliah yang tidak diajarkan oleh dosen "D001"

```
SELECT * FROM jadwal j JOIN matakuliah mk ON j.KodeMK = mk.KodeMK WHERE j.NIP !=  
'D001';
```

Hasil:

```
mysql> SELECT * FROM jadwal j JOIN matakuliah mk ON j.KodeMK = mk.KodeMK WHERE j.NIP != 'D001';  
+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
| IDJadwal | Hari | Jam | KodeMK | NIP | Ruangan | KodeMK | NamaMK | SKS | Semester |  
+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
| JD02 | Senin | 10:30:00 | MK002 | D004 | B205 | MK002 | Coding Machine Learning | 3 | 1 |  
| JD03 | Rabu | 12:50:00 | MK003 | D002 | C302 | MK003 | Sistem Basis Data | 3 | 1 |  
| JD06 | Sabtu | NULL | MK006 | D003 | A101 | MK006 | Data Warehouse | 4 | 2 |  
+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
3 rows in set (0.00 sec)  
  
mysql>
```

2. DML

```
-- Tampilkan nama matakuliah yang memiliki jumlah SKS = 3 DAN merupakan matakuliah semester 1
SELECT NamaMK
FROM matakuliah
WHERE SKS = 3 AND semester = 1;
```

Hasil:

```
mysql> SELECT NamaMK
      -> FROM matakuliah
      -> WHERE SKS = 3 AND semester = 1;
+-----+
| NamaMK                |
+-----+
| Coding Machine Learning |
| Sistem Basis Data      |
+-----+
2 rows in set (0.00 sec)
```

```
-- Tampilkan nama & email dosen yang berasal dari Jakarta
SELECT nama_dosen, email
FROM dosen
WHERE alamat LIKE '%Jakarta%';
```

Hasil:

```
mysql> SELECT nama_dosen, email
      -> FROM dosen
      -> WHERE alamat LIKE '%Jakarta%';
Empty set (0.00 sec)

mysql> █
```

3. DDL

```
-- Ubah kolom email pada table mahasiswa menjadi email_mahasiswa
ALTER TABLE mahasiswa
CHANGE COLUMN email email_mahasiswa VARCHAR(100) NOT NULL;
```

Hasil:

```
mysql> ALTER TABLE mahasiswa
-> CHANGE COLUMN email email_mahasiswa VARCHAR(100) NOT NULL;
Query OK, 6 rows affected (0.04 sec)
Records: 6 Duplicates: 0 Warnings: 0
```

```
-- Ubah tipe data pada kolom jurusan di table mahasiswa menjadi
ENUM('Informatika', 'Teknik Informatika', 'Sistem Informasi');
ALTER TABLE mahasiswa
MODIFY COLUMN Jurusan ENUM('Informatika', 'Teknik Informatika', 'Sistem
Informasi');
```

Hasil:

```
mysql> ALTER TABLE mahasiswa
-> MODIFY COLUMN Jurusan ENUM('Informatika', 'Teknik Informatika', 'Sistem Informasi');
Query OK, 6 rows affected (0.03 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> █
```

4. JOIN

```
SELECT
    mahasiswa>Nama_Mhs AS Nama_Mahasiswa,
    mahasiswa.Alatat AS Alamat
FROM
    mahasiswa
JOIN
    dosen
ON
    mahasiswa.Alatat = dosen.Alatat;
```

Hasil:

```
mysql> SELECT
->     mahasiswa>Nama_Mhs AS Nama_Mahasiswa,
->     mahasiswa.Alatat AS Alamat
-> FROM
->     mahasiswa
-> JOIN
->     dosen
-> ON
->     mahasiswa.Alatat = dosen.Alatat;
+-----+-----+
| Nama_Mahasiswa | Alamat |
+-----+-----+
| Karin Anindya  | Bandung |
| Leo Santoso    | Semarang |
+-----+-----+
2 rows in set (0.00 sec)

mysql> █
```

BAB IV

PENUTUP

Dengan selesainya responsi ini, saya menyadari pentingnya penerapan konsep dan teknik basis data dalam konteks praktis. Studi kasus yang telah saya hadapi memberikan wawasan yang berharga tentang bagaimana merancang, mengelola, dan menerapkan basis data dalam lingkungan nyata. Saya percaya bahwa pengalaman ini telah memperkaya pemahaman saya tentang basis data dan akan menjadi landasan yang kuat untuk eksplorasi lebih lanjut di masa depan. Saya berterima kasih atas bimbingan dan dukungan yang telah saya terima selama proses ini, dan saya berharap dapat terus mengembangkan kemampuan saya dalam bidang ini.

DAFTAR PUSTAKA

Itje Sela, E., & Wulandari, S. (2024). *Machine Learning Praktik*. Yogyakarta: Universitas Teknologi Yogyakarta.