

LAPORAN TUGAS BESAR

BASIS DATA

(SISTEM INFORMASI AKADEMIK)



PENYUSUN

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DAFTAR ISI

DAFTAR ISI	2
DAFTAR GAMBAR	3
DAFTAR TABEL	5
BAB 1 PROSES BISNIS	6
BAB 2 DIAGRAM BASIS DATA	7
BAB 3 NORMALISASI	13
BAB 4 IMPLEMENTASI	17
BAB 5 KESIMPULAN DAN SARAN	49
DAFTAR PUSTAKA	50

DAFTAR GAMBAR

Gambar 1	7
Gambar 2	8
Gambar 3	9
Gambar 4	17
Gambar 5	18
Gambar 6	19
Gambar 7	20
Gambar 8	21
Gambar 9	22
Gambar 10	23
Gambar 11	24
Gambar 12	25
Gambar 13	26
Gambar 14	27
Gambar 15	28
Gambar 16	29
Gambar 17	29
Gambar 18	30
Gambar 19	31
Gambar 20	32
Gambar 21	33
Gambar 22	33
Gambar 23	34
Gambar 24	34
Gambar 25	35
Gambar 26	35
Gambar 27	36
Gambar 28	37
Gambar 29	38
Gambar 30	38
Gambar 31	39
Gambar 32	39
Gambar 33	40
Gambar 34	40
Gambar 35	41
Gambar 36	41
Gambar 37	42
Gambar 38	42
Gambar 39	43
Gambar 40	44
Gambar 41	44
Gambar 42	45

Gambar 43	45
Gambar 44	46
Gambar 45	46
Gambar 46	47
Gambar 47	47
Gambar 48	48

DAFTAR TABEL

Tabel 2.1.1.3.

10

BAB 1

PROSES BISNIS

Kampus IT Del ingin membuat database yang dimana memuat informasi terkait data-data yang diperlukan ketika melakukan pengisian kartu rencana studi. Database ini akan menyimpan data tentang mahasiswa, BAAK, dan dosen. Setiap mahasiswa diidentifikasi dengan NIM; nama; jurusan; tanggal lahir; jenis kelamin; nomor telephone; dan usia yang dihitung dari tanggal lahir. Untuk data dari nama mahasiswa dibedakan menjadi nama depan dan nama belakang. Dan setiap mahasiswa diperbolehkan memiliki satu atau lebih nomor telephone. Semua mahasiswa harus terdaftar dari program studi diploma atau program studi sarjana.

Mahasiswa nantinya akan mengisi form KRS pada sistem akademik IT Del. Form tersebut diberikan oleh BAAK yang memiliki data ID dan nama pegawai. Pada form KRS yang diisi nantinya data yang diperlukan adalah tahun ajaran; semester; kode KRS; serta total KRS.

Dosen kemudian akan memeriksa KRS yang sudah diisi dan diajukan oleh mahasiswa. Setiap dosen memiliki informasi NIP; nama dosen; dan nomor telephone. Setiap dosen dapat terdaftar menjadi dosen pengampu dan dosen wali. Dan dosen yang ada di IT Del boleh saja bukan dosen pengampu dan dosen wali. Informasi tambahan untuk dosen pengampu memiliki mata kuliah yang diampu dan untuk dosen wali memiliki informasi kelas mana yang diwalikan.

Ketika mahasiswa memilih mata kuliah yang akan diambil setiap mata kuliah akan memiliki informasi berapa sks mata kuliah tersebut, kode mata kuliah, dan nama mata kuliah. BAAK akan menyusun jadwal untuk mahasiswa ketika mengajukan formnya yang dimana untuk informasi jadwal memiliki ruangan dan waktu pelaksanaan. Dan setiap mata kuliah memiliki jadwal.

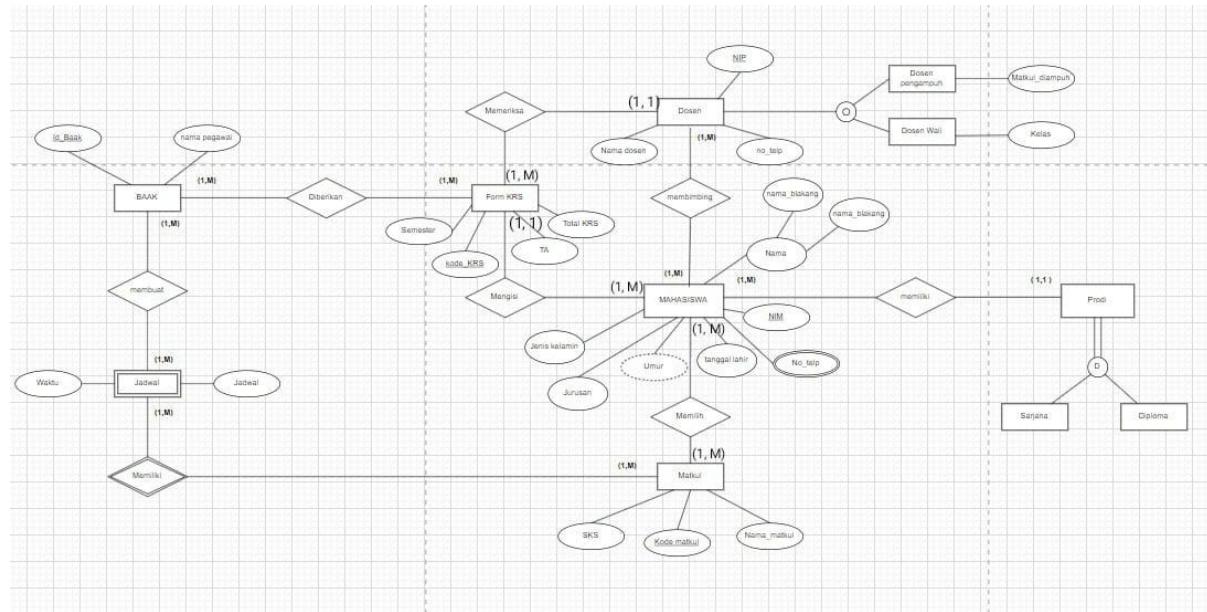
BAB 2

DIAGRAM BASIS DATA

Gambarkan diagram dari basis data yang kelompok anda rancang sesuai dengan bisnis proses yang telah dijelaskan pada bab sebelumnya. Gambar menggunakan aplikasi, bukan tulis tangan (scan), misalnya PowerDesigner. Sertakan caption (penamaan) yang sesuai disetiap gambar dan tabel.

2.1. ER Diagram

Gambarkan ER (maupun EER) dengan selengkap-lengkapnya (atribut, constraint, primary key, serta foreign key) dari sistem yang kelompok anda amati.



Gambar 1. ER Diagram

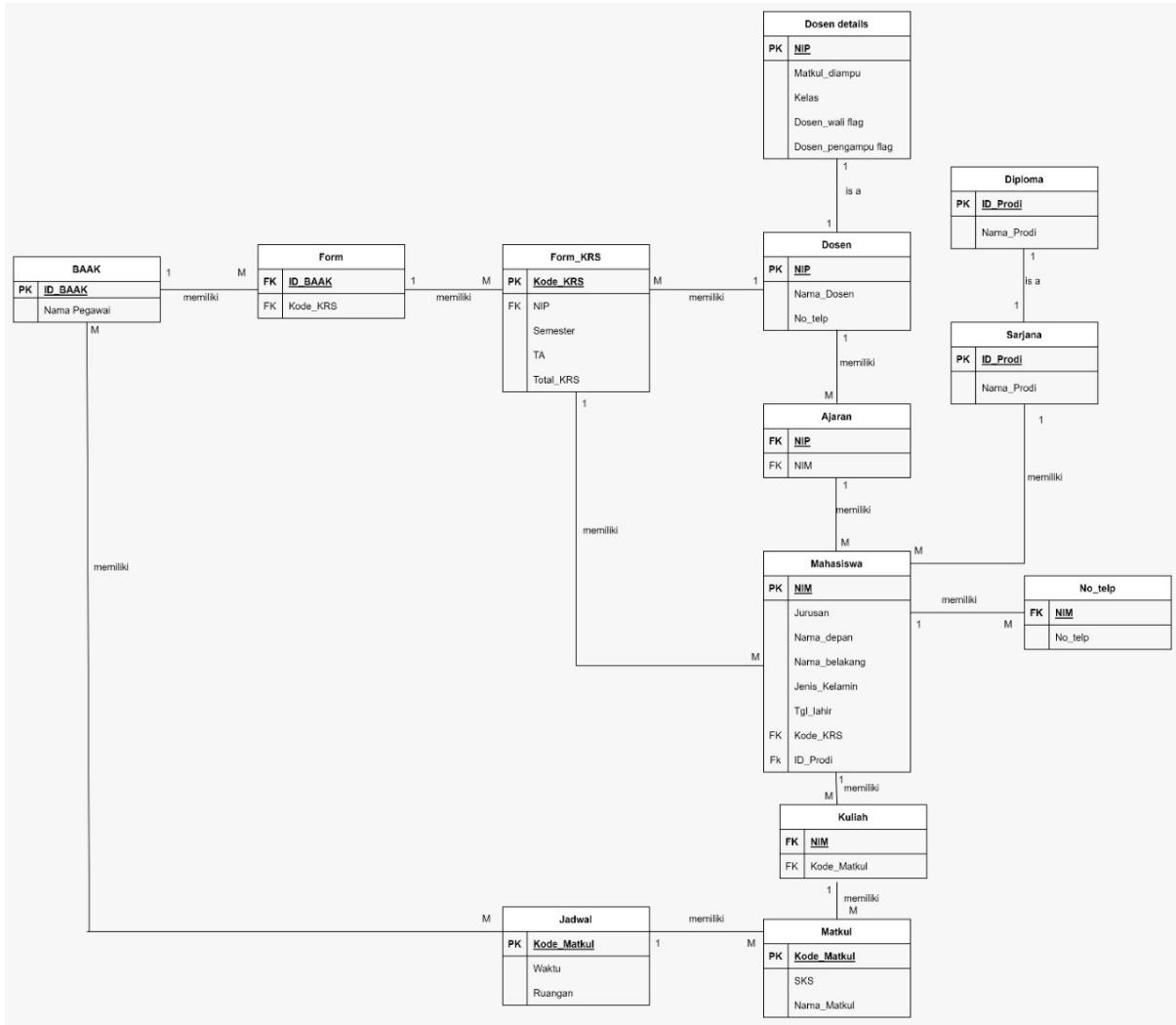
ERD (Entity Relationship Diagram) atau diagram hubungan entitas adalah diagram yang digunakan untuk perancangan suatu database dan menunjukkan relasi antar objek atau entitas beserta atribut-atributnya secara detail.

Pada ERD yang sudah kami kerjakan kami memiliki beberapa entitas yaitu Mahasiswa, BAAK, Form KRS, Dosen, Mata Kuliah, Jadwal, dan Prodi.

2.1.1 CDM & PDM

Petakan diagram ER pada sub bab sebelumnya menjadi Conceptual Data Model (CDM) dan Physical Data Model (PDM).

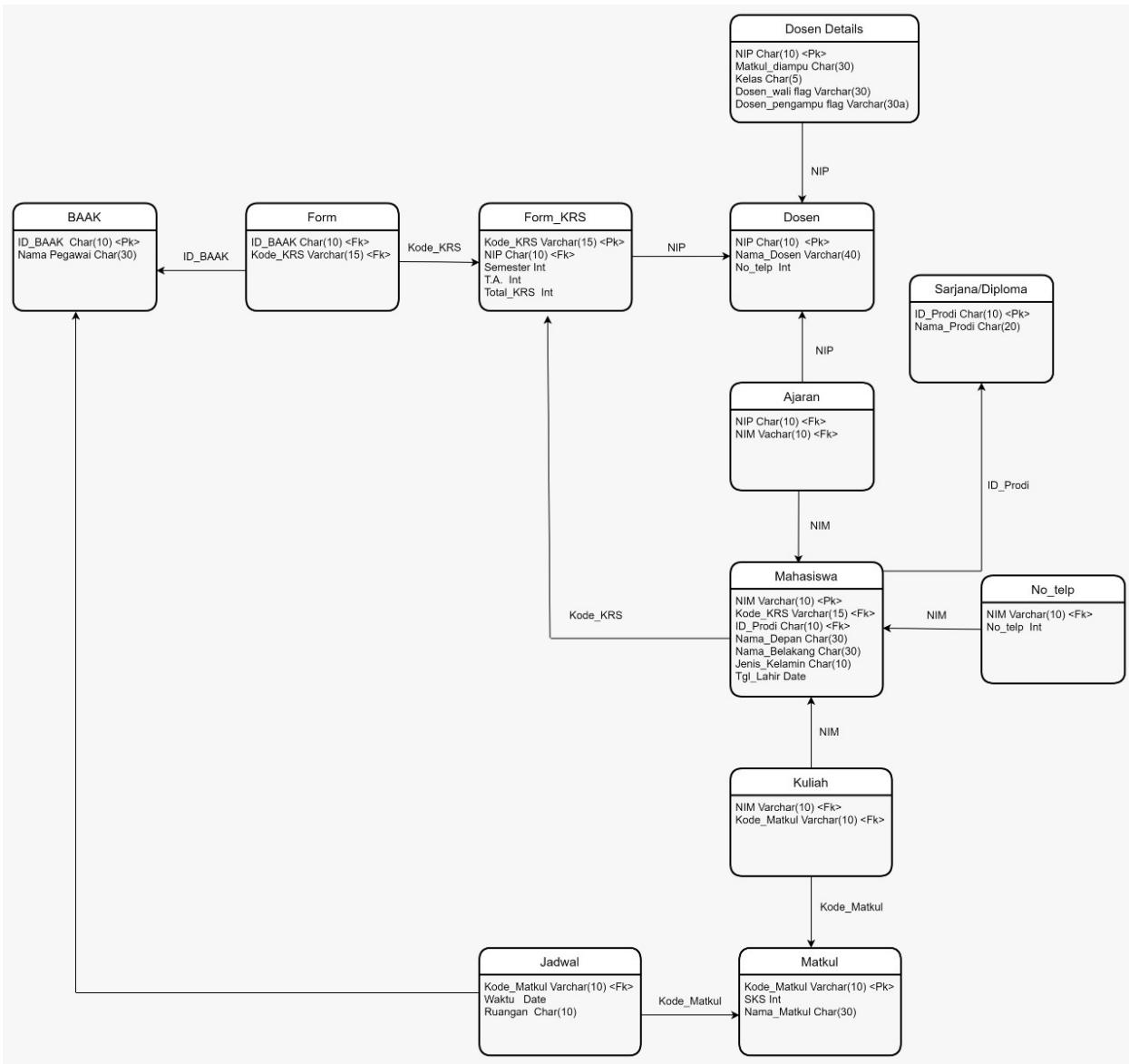
2.1.1.1 CDM



Gambar 2. CDM

Conceptual Data Model (CDM) atau model konsep data merupakan konsep yang berkaitan dengan pandangan pemakai terhadap data yang disimpan dalam basis data. CDM dibuat sudah dalam bentuk tabel-tabel tanpa tipe data yang menggambarkan relasi antar tabel untuk keperluan implementasi ke basis data. Pada CDM juga sudah lebih jelas dalam mengetahui yang mana Primary Key dan Foreign Key.

2.1.1.2 PDM



Gambar 3. PDM

Physical Data Model (PDM) adalah model yang menggunakan sejumlah tabel untuk menggambarkan data serta hubungan antara data. Setiap tabel mempunyai sejumlah kolom dimana setiap kolom memiliki nama yang unik beserta tipe datanya. PDM merupakan konsep yang menerangkan detail dari bagaimana data disimpan di dalam basis data. PDM sudah merupakan bentuk fisik perancangan basis data yang sudah siap diimplementasikan ke dalam DBMS sehingga nama tabel juga sudah merupakan nama asli tabel yang akan diimplementasikan ke dalam DBMS. Beberapa tipe data yang digunakan dalam PDM adalah Char, Varchar, Int, Date, Time.

2.1.1.3. TABEL FISIK

Petakan tabel fisik dari model yang telah anda rancang pada sub bab sebelumnya.

Tabel BAAK	
ID_BAAK	Nama_Pegawai
B1120	Alexa
B1123	Ronald
B1125	Nessi
B1122	Star
B1121	Andy

Tabel Mahasiswa						
NIM	Kode_KRS	ID_Prodi	Nama_Depan	Nama_Belakang	Jenis_Kelamin	Tgl_Lahir
12S21048	12SS4	ISS2105	Nessy	Pangaribuan	Perempuan	20-Apr-03
14S21023	12SS2	ELS2109	Bintang	Simanjuntak	Perempuan	25-Sep-03
11S21020	11336	IFS2106	Priskila	Parapat	Perempuan	12-Apr-03
21S21044	11332	MR2103	Jaden	Hutagalung	Laki-laki	02 Agustus 2003
11321031	12SS9	CE2108	Daniel	Girsang	Laki-laki	06 Juni 2003

Tabel Kuliah	
NIM	Kode_Matkul
12S21048	12S2102
14S21023	11S1213
11S21020	12S2101
21S21044	10S2101
11321031	KUSS3022

Tabel Matkul		
Kode-Matkul	Nama_Matkul	SKS
12S2102	Basis Data	4
11S1213	Rekaya Perangkat Lunak	3
12S2101	Organisasi dan Manajemen	3
10S2101	Algoritma dan Struktur Data	3
KUSS3022	Agama dan Etika	2

Tabel Jadwal		
Kode_Matkul	Waktu Mulai	Ruang
12S2102	10.00	GD 721
11S1213	14.00	GD 943
12S2101	09.00	GD 934
10S2101	15.00	GD 722
KUSS3022	13.00	Audit

Tabel Form	
ID_BAAK	Kode_KRS
B1120	12SS4
B1123	12SS2
B1125	11336
B1122	11332
B1121	12SS9

Tabel Ajaran	
NIP	NIM
DS2233	12S21048
DS2232	14S21023
D12112	11S21020
D12114	21S21044
DS2230	11321031

Tabel Dosen		
NIP	Nama_Dosen	No_telp
DS2233	Rosni	8215576894
DS2232	Arlinta	8536098767
D12112	Tiur	8125676801
D12114	Tennov	8536786570
DS2230	Bonar	8216475850

Tabel Dosen Details		
NIP	Matkul_Diampu	Kelas
DS2233	PEMVIS	11SI 1
DS2232	ALSTRUDAT	11TE 1
D12112	RPL	11IF 2
D12114	PRD	11MR 2
DS2230	MADAS	11TK 1

Tabel Form_KRS				
Kode_KRS	NIP	Semester	T.A.	Total_KRS
12SS4	DS2233	1	2022	20
12SS2	DS2232	5	2022	18
11336	D12112	4	2022	19
11332	D12114	3	2022	22
12SS9	DS2230	2	2022	20

Tabel No_Telp	
NIM	No_telp
12S21048	82146587659
14S21023	85370908546
11S21020	86254753648
21S21044	8975375736
11321031	84375936576

Tabel Sarjana/Diploma	
ID_Prodi	Nama_Prodi
ISS2105	Sistem Informasi
ELS2109	Teknik Elektro
IFS2106	Informatika
MR2103	Manajemen Rekayasa
CE2108	Teknik Komputer

BAB 3

NORMALISASI

Normalisasikan tabel yang telah kelompok anda hasilkan pada bab sebelumnya sampai data yang akan disimpan menjadi lebih efisien dan bebas anomaly (insertion, update, dan deletion anomaly). Jelaskan setiap tahapan normalisasi yang kelompok anda lakukan dengan menggunakan aplikasi, bukan tulisan tangan (scan).

Tabel Fisik yang kami kerjakan sudah normal. Sehingga tabel yang kami masukkan dalam bab ini adalah tabel fisik kami.

Tabel BAAK	
ID_BAAK	Nama_Pegawai
B1120	Alexa
B1123	Ronald
B1125	Nessi
B1122	Star
B1121	Andy

Tabel Mahasiswa						
NIM	Kode_KRS	ID_Prodi	Nama_Depan	Nama_Belakang	Jenis_Kelamin	Tgl_Lahir
12S21048	12SS4	ISS2105	Nessy	Pangaribuan	Perempuan	20-Apr-03
14S21023	12SS2	ELS2109	Bintang	Simanjuntak	Perempuan	25-Sep-03
11S21020	11336	IFS2106	Priskila	Parapat	Perempuan	12-Apr-03
21S21044	11332	MR2103	Jaden	Hutagalung	Laki-laki	02 Agustus 2003
11321031	12SS9	CE2108	Daniel	Girsang	Laki-laki	06 Juni 2003

Tabel Kuliah	
NIM	Kode_Matkul
12S21048	12S2102
14S21023	11S1213
11S21020	12S2101
21S21044	10S2101
11321031	KUSS3022

Tabel Matkul		
Kode-Matkul	Nama_Matkul	SKS
12S2102	Basis Data	4
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12S2101	Organisasi dan Manajemen	3
10S2101	Algoritma dan Struktur Data	3
KUSS3022	Agama dan Etika	2

Tabel Jadwal		
Kode_Matkul	Waktu Mulai	Ruangan
12S2102	10.00	GD 721
11S1213	14.00	GD 943
12S2101	09.00	GD 934
10S2101	15.00	GD 722
KUSS3022	13.00	Audit

Tabel Form	
ID_BAAK	Kode_KRS
B1120	12SS4
B1123	12SS2
B1125	11336
B1122	11332
B1121	12SS9

Tabel Ajaran	
NIP	NIM
DS2233	12S21048
DS2232	14S21023
D12112	11S21020
D12114	21S21044
DS2230	11321031

Tabel Dosen		
NIP	Nama_Dosen	No_telp
DS2233	Rosni	8215576894
DS2232	Arlinta	8536098767
D12112	Tiur	8125676801
D12114	Tennov	8536786570
DS2230	Bonar	8216475850

Tabel Dosen Details		
NIP	Matkul_Diampu	Kelas
DS2233	PEMVIS	11SI 1
DS2232	ALSTRUDAT	11TE 1
D12112	RPL	11IF 2
D12114	PRD	11MR 2
DS2230	MADAS	11TK 1

Tabel Form_KRS				
Kode_KRS	NIP	Semester	T.A.	Total_KRS
12SS4	DS2233	1	2022	20
12SS2	DS2232	5	2022	18
11336	D12112	4	2022	19
11332	D12114	3	2022	22
12SS9	DS2230	2	2022	20

Tabel No_Telp	
NIM	No_telp
12S21048	82146587659
14S21023	85370908546
11S21020	86254753648
21S21044	8975375736
11321031	84375936576

Tabel Sarjana/Diploma	
ID_Prodi	Nama_Prodi
ISS2105	Sistem Informasi
ELS2109	Teknik Elektro
IFS2106	Informatika
MR2103	Manajemen Rekayasa
CE2108	Teknik Komputer

BAB 4

IMPLEMENTASI

Implementasikan tabel hasil normalisasi yang telah dilakukan pada bab sebelumnya ke basis data menggunakan PostgreSQL. Tuliskan setiap SQL syntax pembuatan basis data yang kelompok anda lakukan. Tampilkan pula skema diagram database yang dibangun.

4.1. Tabel Dosen

```
CREATE TABLE Dosen(
    NIP CHAR (10) NOT NULL,
    Nama_Dosen VARCHAR (40) NOT NULL,
    No_Telp CHAR(12) NOT NULL,
    PRIMARY KEY (NIP));
SELECT * FROM Dosen

INSERT INTO Dosen (NIP, Nama_Dosen, No_Telp)
VALUES ('DS2233', 'Rosni', '08215576894'),
('DS2232', 'Arlinta', '08536098767'),
('D12112', 'Tiur', '08125676801'),
('D12114', 'Tennov', '08536786570'),
('DS2230', 'Bonar', '08216475850');
```

ID_BAAK	Nama_Pegawai
1 B1120	Alexa
2 B1121	Andy
3 B1122	Star
4 B1123	Ronald
5 B1125	Nessi

Gambar 4

4.2 TABLE Form_KRS

```
CREATE TABLE Form_KRS(
    Kode_KRS VARCHAR (15) NOT NULL,
    NIP CHAR (10) NOT NULL,
    Semester INT,
    T_A INT,
    Total_KRS INT,
    PRIMARY KEY (Kode_KRS),
    FOREIGN KEY (NIP)
        references DOSEN (NIP));
SELECT * FROM Form_KRS

INSERT INTO Form_KRS (Kode_KRS, NIP, Semester, T_A, Total_KRS)
```

```

VALUES ('12SS4','DS2233','1','2022','20'),
('12SS2','DS2232','5','2022','18'),
('11336','D12112','4','2022','19'),
('11332','D12114','3','2022','22'),
('12SS9','DS2230','2','2022','20');

```

	Kode_KRS	NIP	Semester	T_A	Total_KRS
1	11332	D12114	3	2022	22
2	11336	D12112	4	2022	19
3	12SS2	DS2232	5	2022	18
4	12SS4	DS2233	1	2022	20
5	12SS9	DS2230	2	2022	20

Gambar 5

4.3. TABLE Form

```

CREATE TABLE Form (
ID_BAAK CHAR (10) NOT NULL,
Kode_KRS VARCHAR (15) NOT NULL,
FOREIGN KEY (ID_BAAK)
references BAAK (ID_BAAK),
FOREIGN KEY (Kode_KRS)
references Form_KRS (Kode_KRS));

SELECT * FROM Form

INSERT INTO Form(ID_BAAK, Kode_KRS)
VALUES ('B1120', '12SS4'),
('B1123', '12SS2'),
('B1125', '11336'),
('B1122', '11332'),
('B1121', '12SS9');

```

	ID_BAAK	Kode_KRS
1	B1120	12SS4
2	B1123	12SS2
3	B1125	11336
4	B1122	11332
5	B1121	12SS9

Gambar 6

4.4. TABLE Dosen_Details

```
CREATE TABLE Dosen_Details (
NIP CHAR (10) NOT NULL,
Matkul_Diampu CHAR (30) NOT NULL,
Kelas CHAR (5),
FOREIGN KEY (NIP)
references Dosen (NIP));

SELECT * FROM Dosen_Details

INSERT INTO Dosen_Details(NIP, Matkul_Diampu, Kelas)
VALUES ('DS2233', 'PEMVIS ','11SI1'),
('DS2232', ' ALSTRU DAT','11TE1'),
('D12112', 'RPL','11IF2'),
('D12114', 'PRD','11MR2'),
('DS2230', 'Matdis','11TK1');
```

NIP	Matkul_Diampu	Kelas
1 DS2233	PEMVIS	11SI1
2 DS2232	ALSTRU DAT	11TE1
3 D12112	RPL	11IF2
4 D12114	PRD	11MR2
5 DS2230	Matdis	11TK1

Gambar 7

4.5. TABLE Sarjana_Diploma

```
CREATE TABLE Sarjana_Diploma(
ID_Prodi CHAR (10) NOT NULL,
Nama_Prodi CHAR (20),
PRIMARY KEY (ID_Prodi));

SELECT * FROM Sarjana_Diploma

INSERT INTO Sarjana_Diploma(ID_Prodi,Nama_Prodi)
VALUES ('ISS2105', 'Sistem Informasi'),
('MR2103', 'Manajemen Rekayasa'),
('CE2108', 'Teknik Komputer'),
('IF2106', 'Informatika'),
('ELS2109', 'Teknologi Elektro');
```

ID_Prodi	Nama_Prodi
1 CE2108	Teknik Komputer
2 ELS2109	Teknologi Elektro
3 IF2106	Informatika
4 ISS2105	Sistem Informasi
5 MR2103	Manajemen Rekayasa

Gambar 8

4.6. TABLE Mahasiswa

```

CREATE TABLE Mahasiswa (
NIM VARCHAR (10) NOT NULL,
Kode_KRS VARCHAR (15),
ID_Prodi CHAR (10),
Nama_Depan CHAR (30),
Nama_Belakang CHAR (30),
Jenis_Kelamin CHAR (10),
Tgl_Lahir SMALLINT,
PRIMARY KEY (NIM),
FOREIGN KEY (Kode_KRS)
references Form_KRS (Kode_KRS),
FOREIGN KEY (ID_Prodi)
references Sarjana_Diploma (ID_Prodi));
SELECT * FROM Mahasiswa

INSERT INTO Mahasiswa(NIM, Kode_KRS, ID_Prodi, Nama_Depan, Nama_Belakang, Jenis_Kelamin,
Tgl_Lahir)
VALUES ('12S21048','12SS4','ISS2105','Nessy','Pangaribuan','Perempuan',2003),
('21S21044','11332','MR2103','Jaden','Hutagalung','Laki-laki',2002),
('11321031','12SS9','CE2108','Daniel','Girsang','Laki-laki', 2000),
('11S21020','11336','IF2106','Priskila','Parapat','Perempuan',2003),
('14S21023','12SS2','ELS2109','Bintang','Simanjuntak','Perempuan',2004);

```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the 'TUGAS BESAR KAMI...ael_Pakpahan (77)*' database is selected. In the Results pane, the output of the SQL script is shown, including the table creation and the five rows of data inserted into the 'Mahasiswa' table.

	NIM	Kode_KRS	ID_Prodi	Nama_Depan	Nama_Belakang	Jenis_Kelamin	Tgl_Lahir
1	11321031	12SS9	CE2108	Daniel	Girsang	Laki-laki	2003-06-06
2	11S21020	11336	IF2106	Priskila	Parapat	Perempuan	2003-04-12
3	12S21048	12SS4	ISS2105	Nessy	Pangaribuan	Perempuan	2003-04-20
4	14S21023	12SS2	ELS2109	Bintang	Simanjuntak	Perempuan	2003-09-25
5	21S21044	11332	MR2103	Jaden	Hutagalung	Laki-laki	2003-02-08

Gambar 9

4.7. TABLE Ajaran

```
CREATE TABLE Ajaran (
NIP CHAR (10) NOT NULL,
NIM VARCHAR (10) NOT NULL,
FOREIGN KEY (NIP)
references Dosen (NIP),
FOREIGN KEY (NIM)
REFERENCES Mahasiswa (NIM));
SELECT * FROM Ajaran
```

```
INSERT INTO Ajaran(NIP, NIM)
VALUES ('DS2233', '12S21048'),
('DS2232', '14S21023'),
('D12112', '11S21020'),
('D12114', '21S21044'),
('DS2230', '11321031');
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window displays the creation of the Ajaran table and its data insertion. The results pane shows the inserted data.

```
100: Ruangan_VAKUM (5),
101: FOREIGN KEY (Kode_Matkul)
102: REFERENCES Matkul (Kode_Matkul));
103:
104: -- SELECT --
105: SELECT * FROM BAK
106: SELECT * FROM Dosen
107: SELECT * FROM Form_KRS
108: SELECT * FROM Form
109: SELECT * FROM Dosen_Details
110: SELECT * FROM Sarjana_Diploma
111: SELECT * FROM Mahasiswa
112: SELECT * FROM Ajaran
113: SELECT * FROM Telp
114: SELECT * FROM Matkul
115: SELECT * FROM Kuliah
116: SELECT * FROM Jadwal
117
```

NIP	NIM
DS2233	12S21048
DS2232	14S21023
D12112	11S21020
D12114	21S21044
DS2230	11321031

Gambar 10

4.8. TABLE No_Telp

```
CREATE TABLE No_Telp (
NIM VARCHAR (10) NOT NULL,
No_Telp VARCHAR (15),
FOREIGN KEY (NIM)
REFERENCES Mahasiswa (NIM));

SELECT * FROM No_Telp

INSERT INTO No_Telp(NIM, No_Telp)
VALUES ('12S21048', '082146587659'),
('14S21023', '085370908546'),
('11S21020', '086254753648'),
('21S21044', '08975375736'),
('11321031', '084375936576');
```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, there is a tree view of database objects. In the Results pane, the output of a query is displayed, showing the five rows inserted into the No_Telp table. The status bar at the bottom indicates the query was executed successfully.

NIM	No_Telp
1 12S21048	082146587659
2 14S21023	085370908546
3 11S21020	086254753648
4 21S21044	08975375736
5 11321031	084375936576

Query executed successfully.

DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\Milkae... master 00:00:00 5 rows

Ready 24°C Search 8:52 PM 12/9/2022

Gambar 11

4.9.

```
TABLE Matkul
CREATE TABLE Matkul (
Kode_Matkul VARCHAR (10) NOT NULL,
Nama_Matkul CHAR (30),
SKS INT,
PRIMARY KEY (Kode_Matkul));

SELECT * FROM Matkul

INSERT INTO Matkul(Kode_Matkul, Nama_Matkul, SKS)
VALUES ('12S2102', 'Basis Data', 4),
('12S2101', 'Organisasi dan Manajemen', 3),
('10S2101', 'Algoritma dan Struktur Data', 3),
('11S1213', 'Rekaya Perangkat Lunak', 3),
('KUSS3022', 'Agama dan Etika', 2);
```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, there is a node for 'TUGAS BESAR KAMI...ae_Pakpahan (77)*'. The code pane contains the SQL script for creating the 'Matkul' table and inserting data. The results pane shows the output of the SELECT query, displaying five rows of data from the 'Matkul' table. The status bar at the bottom indicates the query was executed successfully.

Kode_Matkul	Nama_Matkul	SKS
10S2101	Algoritma dan Struktur Data	3
11S1213	Rekaya Perangkat Lunak	3
12S2101	Organisasi dan Manajemen	3
12S2102	Basis Data	4
KUSS3022	Agama dan Etika	2

Gambar 12

4.10. TABLE Kuliah

```
CREATE TABLE Kuliah (
NIM VARCHAR (10),
Kode_Matkul VARCHAR (10),
FOREIGN KEY (NIM)
REFERENCES Mahasiswa (NIM),
FOREIGN KEY (Kode_Matkul)
REFERENCES Matkul (Kode_Matkul));

SELECT * FROM Kuliah

INSERT INTO Kuliah (NIM, Kode_Matkul)
VALUES ('12S21048', '12S2102'),
('14S21023', '11S1213'),
('11S21020', '12S2101'),
('21S21044', '12S2101'),
('11321031', 'KUSS3022');
```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, there is a script named 'TUGAS BESAR KAMI.sql' containing the SQL code for creating the 'Kuliah' table and inserting data into it. The 'Results' tab displays the output of the 'SELECT * FROM Kuliah' query, which shows five rows of data:

	NIM	Kode_Matkul
1	12S21048	12S2102
2	14S21023	11S1213
3	11S21020	12S2101
4	21S21044	12S2101
5	11321031	KUSS3022

At the bottom of the screenshot, a status bar indicates: 'Query executed successfully.' and 'DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\MIkhael_Pakpahan master 00:00:00 5 rows'. The system tray shows the date and time as '12/9/2022 8:55 PM'.

Gambar 13

4.11 TABLE Jadwal

```
CREATE TABLE Jadwal (
Kode_Matkul VARCHAR (10) NOT NULL,
WaktuMulai TIME ,
Ruangan VARCHAR (5),
FOREIGN KEY (Kode_Matkul)
REFERENCES Matkul (Kode_Matkul));

SELECT * FROM Jadwal

INSERT INTO Jadwal (Kode_Matkul, WaktuMulai, Ruangan)
VALUES ('12S2102', '10:00:00', 'GD721'),
('11S1213', '14:00:00', 'GD943'),
('12S2101', '09:00:00', 'GD934'),
('10S2101', '15:00:00', 'GD722' ),
('KUSS3022', '13:00:00', 'Audit');
```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, there is a node for 'TUGAS BESAR KAMI...ael_Pakpahan (77)*'. Below it, several tables are listed: Ruangan, FOREIGN KEY (Kode_Matkul), REFERENCES Matkul (Kode_Matkul), SELECT --, FROM BANK, FROM Dosen, FROM Form_KRS, FROM Form, FROM Dosen_Details, FROM Sarjana_Diploma, FROM Mahasiswa, FROM MataKul, FROM Kuliah, and finally Jadwal. The 'Jadwal' table is selected. In the Results pane, a query is run to select all columns from the Jadwal table. The results show five rows of data:

NIM	Kode_Matkul
12521048	12S2102
14521023	11S1213
11S21020	12S2101
21S21044	12S2101
11321031	KUSS3022

At the bottom of the Results pane, a message indicates: "Query executed successfully." The status bar at the bottom right shows the date and time: "DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\MIKHAEL_Pakpahan master 00:00:00 5 rows 8:55 PM 12/9/2022".

Gambar 14

4.12. TABLE BAAK

```
CREATE TABLE BAAK (
ID_BAAK CHAR (10) NOT NULL,
Nama_Pegawai CHAR (30),
PRIMARY KEY (ID_BAAK));

SELECT * FROM BAAK

INSERT INTO BAAK(ID_BAAK, Nama_Pegawai)
VALUES ('B1120', 'Alexa'),
('B1123', 'Ronald'),
('B1125', 'Nessi'),
('B1122', 'Star'),
('B1121', 'Andy');
```

ID_BAAK	Nama_Pegawai
1 B1120	Alexa
2 B1121	Andy
3 B1122	Star
4 B1123	Ronald
5 B1125	Nessi

Gambar 15

```
-- UPDATE --
UPDATE Jadwal
SET Ruangan = 'GD515'
WHERE Kode_Matkul = '11S1213'
```

Kode_Matkul	WaktuMulai	Ruangan
1 12S2102	10:00:00.000000	GD721
2 11S1213	14:00:00.000000	GD515
3 12S2101	09:00:00.000000	GD934
4 10S2101	15:00:00.000000	GD722
5 KUSS3022	13:00:00.000000	Audit

Gambar 16

```
UPDATE Form_KRS
SET Semester = 8
WHERE Kode_KRS = '12SS4'
```

```

194 INSERT INTO [dosen] ([kode_Kelas], matkul_diampu, Ruangan)
195 VALUES ('12SI121', 'RPL', '0071');
196
197 ('12SI121', '00100000', '00934');
198 ('12SI121', '00100000', '00934');
199 ('12SI121', '00100000', '00934');
200 ('12SI121', '00100000', '00934');
201 ('12SI121', '12100000', 'Audit');
202
203 -- UPDATE --
204 UPDATE [dosen]
205 SET kode_Kelas = '00934';
206 update kode_matkul = '1553213';
207
208 /*UPDATE Form_X5
209 SET ServerID = 0
210 WHERE code_X5 = '125213';
211 */
212 /*UPDATE dosen_Details
213 SET kelas_kode = '12SI121';
214 WHERE nip = '0022233';
215 UPDATE matkul
216 SET matkul_diampu = 'RPL';
217 SET Kode_Deps = 'Sandro';
218 WHERE Kode_KM = '1252104' AND ID_Prodi = '1553213';
219 */
57 %

```

Messages

(1 row affected)

Completion time: 2022-12-10T11:27:00.7780000+07:00

DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\MIkhael_Pakpahan master 00:00:00 0 rows

Ready 28°C Berawan

LN 208 Col 1 Ch 1 INS

11:26 AM 12/10/2022

Gambar 17

```

UPDATE Dosen_Details
SET Kelas = '12SI1'
WHERE NIP = 'DS2233' OR Matkul_Diampu = 'RPL'

```

```

194 INSERT INTO [dosen] ([kode_Kelas], matkul_diampu, Ruangan)
195 VALUES ('12SI121', 'RPL', '0071');
196
197 ('12SI121', '00100000', '00934');
198 ('12SI121', '00100000', '00934');
199 ('12SI121', '00100000', '00934');
200 ('12SI121', '00100000', '00934');
201 ('12SI121', '00100000', '00934');
202
203 -- UPDATE --
204 UPDATE [dosen]
205 SET Kode_Kelas = '00934';
206 update kode_matkul = '1553213';
207
208 /*UPDATE Form_X5
209 SET ServerID = 0
210 WHERE code_X5 = '125213';
211 */
212 /*UPDATE dosen_Details
213 SET kelas_kode = '12SI121';
214 WHERE nip = '0022233' OR Matkul_Diampu = 'RPL';
215 */
216 /*UPDATE matkul
217 SET Kode_Deps = 'Sandro';
218 WHERE Kode_KM = '1252104' AND ID_Prodi = '1553213';
219 */
57 %

```

Messages

(2 rows affected)

Completion time: 2022-12-10T11:27:00.7780000+07:00

DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\MIkhael_Pakpahan master 00:00:00 0 rows

Ready 28°C Hujan sore

LN 212 Col 1 Ch 1 INS

11:27 AM 12/10/2022

Gambar 18

```

UPDATE Mahasiswa
SET Nama_Depan = 'Sandro'
WHERE NIM = '12S21048' AND ID_Prodi = 'ISS2105'

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\MIkhael Pakpahan (77)) - Microsoft SQL Server Management Studio". The Object Explorer pane shows a database named "TUGAS BESAR KAMI...aei_Pakpahan (77)". The Results pane displays the output of the executed query:

```

11321031 12SS9 CE2108 Daniel Gir sang Laki-laki 2003-06-06
11521020 11336 IF2106 Priskila Parap at Perempuan 2003-04-12
12S21048 12SS4 ISS2105 Sandro Pangaribuan Perempuan 2003-04-20
14S21023 12SS2 ELS2109 Bintang Simanjuntak Perempuan 2003-09-25
21S21044 11332 MR2103 Jaden Hutagalung Laki-laki 2003-02-08

```

The status bar at the bottom indicates "Query executed successfully." and "DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkhael Pakpahan | master | 00:00:00 | 5 rows".

Gambar 19

```

UPDATE Matkul
SET SKS = 2
WHERE Nama_Matkul = 'Organisasi dan Manajemen'

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\MIkhael_Pakpahan (63)) - Microsoft SQL Server Management Studio". The main window displays the following SQL code:

```

119 WHERE Kode_KRS = '12354'
120
121 UPDATE Dosen_Details
122 SET Kelas = '12311'
123 WHERE NIM = '093223' OR Matkul_Biampu = 'ADM'
124
125 UPDATE Mahasiswa
126 SET Nama_Dosen = 'Sandro'
127 WHERE NIM = '12331848' AND ID_Prodi = 'SSSE0105'
128
129 UPDATE Matkul
130 SET SKS = 2
131 WHERE Nama_Matkul = 'Organisasi dan Manajemen'
132
133 UPDATE Dosen
134 SET Nama_Dosen = 'Tuhan'
135 WHERE NIM = '093223'
136
137 --Delete --
138 DELETE FROM Dosen WHERE NO_Telp='081355760004';
139 DELETE FROM Mahasiswa WHERE NO_Telp='081360070771';
140
141 --Aggregate Function--
142 SELECT SUM(NIL) FROM Mahasiswa WHERE NIL>10000;
143 SELECT COUNT(NIL) FROM Mahasiswa WHERE NIL<10000;
144 SELECT COUNT(NIL) FROM Mahasiswa WHERE NIL=10000;
145
146

```

The status bar at the bottom indicates "57 %", "Query executed successfully.", and "Completion time: 2022-12-10T11:28:16.5980000+07:00". The taskbar at the bottom shows various application icons and the system clock.

Gambar 20

```

UPDATE Dosen
SET Nama_Dosen = 'Tuani'
WHERE NIP = 'DS2230'

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```

UPDATE Dosen
SET Nama_Dosen = 'Tuani'
WHERE NIP = 'DS2230'

```

The results pane shows the following output:

```

(0 row affected)
Completion time: 2022-12-12 10:11:29.42 4001298e+07 00

```

The status bar at the bottom right shows the system is ready, the date and time (12/10/2022 11:28 AM), and the connection details.

Gambar 21

```

--delete--
DELETE FROM Dosen WHERE No_Telp='08215576894';

```

Basis Data T.A. 2022/202329

```

102 REFERENCES Matkul1 (Kode_Matkul));
103
104 -- SELECT --
105 SELECT * FROM BAAK
106 SELECT * FROM Dosen
107 SELECT * FROM Form_KRS
108 SELECT * FROM Form
109 SELECT * FROM Dosen_Details
110 SELECT * FROM Sarjana_Diploma
111 SELECT * FROM Mahasiswa
112 SELECT * FROM Ajaran
113 SELECT * FROM No_Telp
114 SELECT * FROM Matkul1

110 %

```

Results

	NIP	Nama_Dosen	No_Telp
1	D12112	Tir	081256768801
2	D12114	Tennov	08536786570
3	DS2230	Bonar	08216475850
4	DS2232	Arlinta	08536096767
5	DS2233	Rosni	08215576894

Query executed successfully.

Gambar 22

```
DELETE FROM Dosen WHERE No_Telp='8536098767';
```

```

102 REFERENCES Matkul1 (Kode_Matkul));
103
104 -- SELECT --
105 SELECT * FROM BAAK
106 SELECT * FROM Dosen
107 SELECT * FROM Form_KRS
108 SELECT * FROM Form
109 SELECT * FROM Dosen_Details
110 SELECT * FROM Sarjana_Diploma
111 SELECT * FROM Mahasiswa
112 SELECT * FROM Ajaran
113 SELECT * FROM No_Telp
114 SELECT * FROM Matkul1

110 %

```

Results

	NIP	Nama_Dosen	No_Telp
1	D12112	Tir	081256768801
2	D12114	Tennov	08536786570
3	DS2230	Bonar	08216475850
4	DS2232	Arlinta	08536096767
5	DS2233	Rosni	08215576894

Query executed successfully.

Gambar 23

```
--Aggregate Fungction--
SELECT MIN(NIM) FROM Mahasiswa WHERE NIM='11S21020';
```

Basis Data T.A. 2022/202330

TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\mikhael_Pakpahan (77)) - Microsoft SQL Server Management Studio

```

228 | DELETE FROM Dosen WHERE No_Telp='08215576894';
229 | DELETE FROM Dosen WHERE No_Telp='0536098767';
230 |
231 |
232 |
233 |
234 |
235 |
236 |
237 |
238 |
239 |--Aggregate Function--
240 |SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
241 |SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
242 |SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11521020';
243 |SELECT AVG(SKS)
244 |FROM Matkul;
245 |SELECT SUM(SKS)
246 |FROM Matkul;
247 |

```

Results (No column name)

1 11521020

Query executed successfully.

Ready Ln 240 Col 1 Ch 1 INS

24°C Berawan Search 9:04 PM 12/9/2022

Gambar 24

```
SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11S21020';
```

TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\mikhael_Pakpahan (77)) - Microsoft SQL Server Management Studio

```

228 | DELETE FROM Dosen WHERE No_Telp='08215576894';
229 | DELETE FROM Dosen WHERE No_Telp='0536098767';
230 |
231 |
232 |
233 |
234 |
235 |
236 |
237 |
238 |
239 |--Aggregate Function--
240 |SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
241 |SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
242 |SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11521020';
243 |SELECT AVG(SKS)
244 |FROM Matkul;
245 |SELECT SUM(SKS)
246 |FROM Matkul;
247 |

```

Results (No column name)

1 11521020

Query executed successfully.

Ready Ln 240 Col 1 Ch 1 INS

24°C Berawan Search 9:05 PM 12/9/2022

Gambar 25

```
SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11S21020';
```

Basis Data T.A. 2022/202331

```
SELECT AVG(SKS)
FROM Matkul;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```
228 | DELETE FROM Dosen WHERE No_Telp='08215576894';
229 | DELETE FROM Dosen WHERE No_Telp='0536098767';
230
231
232
233
234
235
236
237
238
239 --Aggregate Function--
240 | SELECT MIN(NIM) FROM Mahasiswa WHERE NIM='11521020';
241 | SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
242 | SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11521020';
243 | SELECT AVG(SKS)
244 | FROM Matkul;
245 | SELECT SUM(SKS)
246 | FROM Matkul;
```

The results pane shows the output of the query:

(No column name)
1 11521020

At the bottom, a message indicates "Query executed successfully." The system tray shows the date and time as 12/9/2022 9:05 PM.

Gambar 26

```
SELECT SUM(SKS)
FROM Matkul;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```
228 | DELETE FROM Dosen WHERE No_Telp='08215576894';
229 | DELETE FROM Dosen WHERE No_Telp='0536098767';
230
231
232
233
234
235
236
237
238
239 --Aggregate Function--
240 | SELECT MIN(NIM) FROM Mahasiswa WHERE NIM='11521020';
241 | SELECT MAX(NIM) FROM Mahasiswa WHERE NIM='11521020';
242 | SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11521020';
243 | SELECT AVG(SKS)
244 | FROM Matkul;
245 | SELECT SUM(SKS)
246 | FROM Matkul;
```

The results pane shows the output of the query:

(No column name)
1 15

At the bottom, a message indicates "Query executed successfully." The system tray shows the date and time as 12/9/2022 9:06 PM.

Gambar 27

```
--Set Operators--  
--union ALL  
SELECT NIM FROM Mahasiswa  
UNION ALL  
SELECT NIM FROM Mahasiswa  
ORDER BY NIM;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\MIkhael_Pakpahan (77)) - Microsoft SQL Server Management Studio". The main area displays a query window with the following SQL code:

```

248 SELECT NIM(NIM) FROM Mahasiswa WHERE NIM='11321031';
249 UNION
250 SELECT COUNT(NIM) FROM Mahasiswa WHERE NIM='11521020';
251 SELECT AVG(SKS)
252 FROM Mahasiswa;
253 SELECT SUM(SKS)
254 FROM Mahasiswa;
255
256 --Set Operators--
257
258 --SELECT NIM FROM Mahasiswa
259 UNION
260 SELECT NIM FROM Mahasiswa
261 ORDER BY NIM;
262
263 --INTERSECT
264
265 --SELECT Nama_Depan, Nama_Belakang
266 FROM Mahasiswa
267
268 --INTERSECT
269 --SELECT Nama_Depan, Nama_Belakang
270 FROM Mahasiswa
271

```

The results pane shows the output of the query:

NIM
11321031
11S21020
12S21048
14S21023
21S21044

Below the results, a message bar indicates "Query executed successfully." and shows the system status: DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkhael_Pakpahan (77) | master | 00:00:00 | 5 rows.

Gambar 28

```
--union--
SELECT NIM FROM Mahasiswa
UNION
SELECT NIM FROM Mahasiswa
ORDER BY NIM;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window displays the following T-SQL code:

```

246 FROM Mahasiswa
247 --Set Operators--
248 UNION ALL
249 --SELECT NIM FROM Mahasiswa
250
251 SELECT NIM FROM Mahasiswa
252 ORDER BY NIM;
253
254 SELECT NIM FROM Mahasiswa
255 UNION
256 SELECT NIM FROM Mahasiswa
257 INTERSECT
258 SELECT NamaDepan, NamaBelakang
259 FROM Mahasiswa
260
261 --Intersect--
262
263 SELECT NamaDepan, NamaBelakang
264 FROM Mahasiswa
265 ORDER BY NamaDepan, NamaBelakang;

```

The results pane shows the output of the query, which contains 10 rows of student IDs (NIM):

	NIM
1	11321031
2	11321031
3	11521020
4	11521020
5	12521048
6	12521048
7	14521023
8	14521023
9	21521044
10	21521044

At the bottom of the screen, the taskbar shows the date and time as 12/9/2022 9:09 PM.

Gambar 29

```
--intersect--
SELECT Nama_Depan, Nama_Belakang
FROM Mahasiswa
INTERSECT
SELECT Nama_Depan, Nama_Belakang
FROM Mahasiswa
ORDER BY Nama_Depan, Nama_Belakang;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window displays the following T-SQL code:

```

252 SELECT NIM FROM Mahasiswa
253 ORDER BY NIM;
254
255 --SELECT NamaDepan, NamaBelakang
256
257 INTERSECT
258
259 SELECT NamaDepan, NamaBelakang
260 FROM Mahasiswa
261 ORDER BY NamaDepan, NamaBelakang;

```

The results pane shows the output of the query, which contains 5 rows of student names:

	Nama Depan	Nama Belakang
1	Bintang	Simanjuntak
2	Daniel	Girsang
3	Jaden	Hutagalung
4	Pekka	Parapat
5	Sandro	Pangaribuan

At the bottom of the screen, the taskbar shows the date and time as 12/9/2022 9:07 PM.

Gambar 30

```
--Minus--
SELECT Nama_Depan, Nama_Belakang
FROM Mahasiswa
MINUS
SELECT Nama_Depan, Nama_Belakang
FROM Mahasiswa;
```

```

-- Null value --
SELECT NIM
FROM Mahasiswa
WHERE NIM IS NULL;

```

Results

Nama Depan	Nama Belakang
Gisang	
Parapat	
Pangaribuan	
Simanjuntak	
Hutagalung	

Results

Nama Depan	Nama Belakang
Daniel	Gisang
Parapat	
Sandro	Pangaribuan
Bintang	Simanjuntak
Jaden	Hutagalung

Query executed successfully.

Gambar 31

```
--Null value--
SELECT NIM
FROM Mahasiswa
WHERE NIM IS NULL;
```

```

-- Null value --
SELECT NIM
FROM Mahasiswa
WHERE NIM IS NULL;

```

Results

NIM

Query executed successfully.

Gambar 32

```
--join--
SELECT Nama_Depan,Nama_Belakang
FROM Mahasiswa
JOIN Ajaran
ON NIP = NIP;
```

Basis Data T.A. 2022/202336

```

--null--
275 SELECT NIM
276 FROM Mahasiswa
277 WHERE NIM IS NULL;
278
279 --join--
280 SELECT Nama_Depan.Nama_Belakang
281 FROM Mahasiswa
282 JOIN Alamat
283 ON NIP = NIP;
284
285
286
287
288
289
290
291
292

```

Results

Nama_Depan	Nama_Belakang
1 Daniel	Girsang
2 Priskila	Parapati
3 Sandro	Pangaribuan
4 Bintang	Simanjuntak
5 Jaden	Hutagalung
6 Daniel	Girsang
7 Priskila	Parapati
8 Sandro	Pangaribuan
9 Bintang	Simanjuntak
10 Jaden	Hutagalung
11 Daniel	Girsang

Query executed successfully.

Gambar 33

```
--right join--
SELECT NIM
FROM Mahasiswa
RIGHT JOIN Form_KRS
ON Mahasiswa.NIM = Form_KRS.Kode_KRS;
```

```

--NIM = NIP;
275
276 --left join--
277 --SELECT NIM
278 FROM Mahasiswa
279 LEFT JOIN Form_KRS
280 ON Mahasiswa.NIM = Form_KRS.Kode_KRS;
281
282 --right join--
283 --SELECT NIM
284 FROM Mahasiswa
285 RIGHT JOIN Form_KRS
286 ON Mahasiswa.NIM = Form_KRS.Kode_KRS;
287
288 --Inner join--
289 --SELECT Mahasiswa.NIM, Form_KRS.Kode_KRS
290 FROM Mahasiswa
291 INNER JOIN Form_KRS ON Mahasiswa.NIM=Mahasiswa.NIM;
292
293

```

Results

NIM
1 11321031
2 11S21020
3 12S21048
4 14S21023
5 21S21044

Query executed successfully.

Gambar 34

```
--inner join--
SELECT Mahasiswa.NIM, Form_KRS.Kode_KRS
FROM Mahasiswa
INNER JOIN Form_KRS ON Mahasiswa.NIM=Mahasiswa.NIM;
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```
281 --right join--  
282 SELECT NIM  
283 FROM Mahasiswa  
284 RIGHT JOIN Form_KRS  
285 ON Mahasiswa.NIM = Form_KRS.Kode_KRS;  
286  
287 --Inner Join--  
288 SELECT Mahasiswa.NIM, Form_KRS.Kode_KRS  
289 FROM Mahasiswa  
290 INNER JOIN Form_KRS ON Mahasiswa.NIM=Mahasiswa.NIM;
```

The results grid displays 25 rows of data:

NIM	Kode_KRS
11321031	11332
11321031	11336
11321031	12SS2
11321031	12SS4
11321031	12SS9
11521020	11332
11521020	11336
11521020	12SS2
11521020	12SS4
11521020	12SS9
12521048	11332
12521048	11336
12521048	12SS2
12521048	12SS4
12521048	12SS9
12521048	11332
12521048	11336
12521048	12SS2
12521048	12SS4
12521048	12SS9
12521048	11332

The status bar at the bottom right shows: DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkh... master | 00:00:00 | 25 rows.

Gambar 35

```
--Nested subqueries--  
SELECT *  
FROM Mahasiswa  
WHERE NIM IN ('12S21048', '11321031')
```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```
286  
287 --Nested subqueries--  
288  
289 SELECT *  
290 FROM Mahasiswa  
291 WHERE NIM IN ('12S21048', '11321031')  
292  
293 --SELECT *  
294 FROM Mahasiswa  
295 WHERE NIM NOT IN ('12S21048', '11321031')  
296  
297 --SELECT DISTINCT SKS  
298 FROM Matakul  
299 WHERE SKS IN ( SELECT Semester FROM Form_KRS)  
300  
301 --SELECT DISTINCT SKS  
302 FROM Matakul  
303 WHERE SKS NOT IN ( SELECT Semester FROM Form_KRS)  
304  
305 --view--
```

The results grid displays 2 rows of data:

NIM	Kode_KRS	ID_Prodi	Nama_Depan	Nama_Belakang	Jenis_Kelamin	Tgl_Lahir
11321031	12SS9	CE2106	Daniel	Girsang	Laki-laki	2003-06-06
12521048	12SS4	ISS2105	Sandro	Pangaribuan	Perempuan	2003-04-20

The status bar at the bottom right shows: DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkh... master | 00:00:00 | 2 rows.

Gambar 36

```
SELECT *  
FROM Mahasiswa  
WHERE NIM NOT IN ('12S21048', '11321031')
```

```

286
287    --Nested subqueries--
288
289    SELECT *
290    FROM Mahasiswa
291    WHERE NIM IN ('12521048', '11321031')
292
293    --SELECT --
294    FROM Mahasiswa
295    WHERE NIM NOT IN ('12521048', '11321031')
296
297    --SELECT DISTINCT SKS
298    FROM Matkul
299    WHERE SKS IN ( SELECT Semester FROM Form_KRS )
300
301    --SELECT DISTINCT SKS
302    FROM Matkul
303    WHERE SKS NOT IN ( SELECT Semester FROM Form_KRS )
304
305    --View--

```

Results of the query:

NIM	Kode_KRS	ID_Prodi	Nama_Depan	Nama_Belakang	Jenis_Kelamin	Tgl_Lahir
11521020	11336	IF2106	Priskila	Parapat	Perempuan	2003-04-12
14521023	12552	ELS2109	Bintang	Simanjuntak	Perempuan	2003-09-25
21521044	11332	MR2103	Jaden	Hutagalung	Laki-laki	2003-01-01

Query executed successfully.

Gambar 37

```

SELECT DISTINCT SKS
FROM Matkul
WHERE SKS IN ( SELECT Semester FROM Form_KRS )

```

```

291
292    --SELECT --
293    FROM Mahasiswa
294    WHERE NIM NOT IN ('12521048', '11321031')
295
296    --SELECT DISTINCT SKS
297    FROM Matkul
298    WHERE SKS IN ( SELECT Semester FROM Form_KRS )
299
300    --SELECT DISTINCT SKS
301    FROM Matkul
302    WHERE SKS NOT IN ( SELECT Semester FROM Form_KRS )
303
304    --View--
305    CREATE VIEW #Temp_Mahasiswa_2022 AS
306    SELECT Jenis_Kelamin,NIM
307    FROM Mahasiswa
308    WHERE Jenis_Kelamin='perempuan';
309
310    CREATE VIEW Form_KRS2022 AS

```

Results of the query:

SKS
1
2
3
4

Query executed successfully.

Gambar 38

```

SELECT DISTINCT SKS

```

Basis Data T.A. 2022/202339

```

FROM Matkul
WHERE SKS NOT IN ( SELECT Semester FROM Form_KRS)

--view--
CREATE VIEW Mahasiswa_2022 AS
SELECT Jenis_Kelamin,NIM
FROM Mahasiswa
where Jenis_Kelamin = 'perempuan';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```

1 SELECT DISTINCT SKS
2 WHERE SKS NOT IN ( SELECT Semester FROM Form_KRS)
3
4 --view-
5 CREATE VIEW Mahasiswa_2022 AS
6     SELECT Jenis_Kelamin,NIM
7     FROM Mahasiswa
8     where Jenis_Kelamin = 'perempuan'
9
10 CREATE VIEW Form_KRS2022 AS
11     SELECT Kode_KRS,NIM
12     FROM Form_KRS
13     WHERE Kode_JAS='11332';
14
15 CREATE VIEW Matkul102 AS
16     SELECT Nama_Matkul,Nama_Matkul
17     FROM Matkul
18     WHERE Kode_Matkul='1151212';

```

The results pane shows the output of the first query:

Jenis_Kelamin	NIM
Perempuan	11S21020
Perempuan	12S21048
Perempuan	14S21023

At the bottom, the status bar indicates "Query executed successfully." and the system tray shows the date and time as 12/10/2022 1:27 AM.

Gambar 39

CREATE VIEW Form_KRS2022 AS

Basis Data T.A. 2022/202340

```

SELECT Kode_KRS,NIP
FROM Form_KRS
where Kode_KRS='11332';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```

SELECT Kode_KRS,NIP
FROM Form_KRS
where Kode_KRS='11332';

```

The results pane shows the output of the query:

Kode_KRS	NIP
11332	D12114

At the bottom of the screen, the taskbar shows the date and time as 12/10/2022 at 1:26 AM.

Gambar 40

```

CREATE VIEW Matkul2022 AS
SELECT SKS,Kode_Matkul,Nama_Matkul
FROM Matkul
where Kode_Matkul='11S1213';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The query window contains the following code:

```

CREATE VIEW Matkul2022 AS
SELECT SKS,Kode_Matkul,Nama_Matkul
FROM Matkul
where Kode_Matkul='11S1213';

```

The results pane shows the output of the query:

SKS	Kode_Matkul	Nama_Matkul
3	11S1213	Rekaya Perangkat Lunak

At the bottom of the screen, the taskbar shows the date and time as 12/10/2022 at 1:26 AM.

Gambar 41

```

CREATE VIEW Dosen_Details2022 AS
SELECT NIP,Matkul_Diampu,Kelas
FROM Dosen_Details
where NIP='DS2233';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, a new view named 'Dosen_Details2022' is listed under 'TUGAS BESAR KAMI...el_Pakpahan (77)*'. The main query window contains the T-SQL code for creating the view. The results pane shows a single row of data: NIP (DS2233), Matkul_Diampu (PEMVIS), and Kelas (11SI1). A status bar at the bottom right shows '1 rows'.

Gambar 42

```

CREATE VIEW Dosen2022 AS
SELECT NIP,Nama_Dosen,No_Telp
FROM Dosen
where NIP='DS2233';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, a new view named 'Dosen2022' is listed under 'TUGAS BESAR KAMI...el_Pakpahan (77)*'. The main query window contains the T-SQL code for creating the view. The results pane shows a single row of data: NIP (DS2233), Nama_Dosen (Rosni), and No_Telp (08215576894). A status bar at the bottom right shows '1 rows'.

Gambar 43

```

CREATE VIEW mahasiswa_DEL AS
SELECT NIM,Tgl_Lahir
FROM Mahasiswa
where NIM='14S21023';

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer pane on the left lists the database 'TUGAS BESAR KAMI'. The main query window contains the T-SQL code for creating a view named 'mahasiswa_DEL'. The results pane shows a single row of data from the 'Mahasiswa' table where NIM is '14S21023'. The status bar at the bottom indicates the query was executed successfully.

Gambar 44

--Function--

```

SELECT NIM, ASCII(NIM) AS jenis_kelamin
FROM Mahasiswa;

```

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer pane on the left lists the database 'TUGAS BESAR KAMI'. The main query window contains the T-SQL code for creating a function named 'jenis_kelamin' that takes the 'NIM' column as input and returns its ASCII value. The results pane shows the ASCII values for five student records. The status bar at the bottom indicates the query was executed successfully.

Gambar 45

```
SELECT REPLICATE('KAEL', 5);

TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\MIkhael_Pakpahan (77)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help
master | Execute | New Query | Quick Launch (Ctrl+Q) | 
Object Explorer TUGAS BESAR KAMI...ael_Pakpahan (77)* | 
Results | Messages | 
(No column name)
1 KAELKAELKAELKAELKAEL

64 % | 
Query executed successfully. DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkhael_Pakpahan (77) | master | 00:00:00 | 1 rows
Ready Ln 341 Col 1 Ch 1 INS
23°C Berawan Search 2:06 AM 12/10/2022
```

Gambar 46

```
--Stored Procedured--
CREATE PROCEDURE SelectAllCMahasiswa
AS
SELECT * FROM Mahasiswa
GO;
EXEC SelectAllCMahasiswa;
```

```
TUGAS BESAR KAMI.sql - DESKTOP-AT1HM8M.master (DESKTOP-AT1HM8M\MIkhael_Pakpahan (77)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help
master | Execute | New Query | Quick Launch (Ctrl+Q) | 
Object Explorer TUGAS BESAR KAMI...ael_Pakpahan (77)* | 
Results | Messages | 
(No column name)
1 NIM Kode_KRS ID_Prodi Nama_Depan Nama_Belakang Jenis_Kelamin Tgl_Lahir
1 11321031 12SS9 CE2108 Daniel Girsang Laki-laki 2003-06-06
2 11521020 1138 IF2108 Priskila Parapat Perempuan 2003-04-12
3 12S21048 12SS4 ISS2105 Sandro Pangaribuan Perempuan 2003-04-20
4 14S21023 12SS2 EL52109 Bintang Simanjuntak Perempuan 2003-09-25
5 21S21044 1132 Jaden Hufagulung Laki-laki 2003-02-08

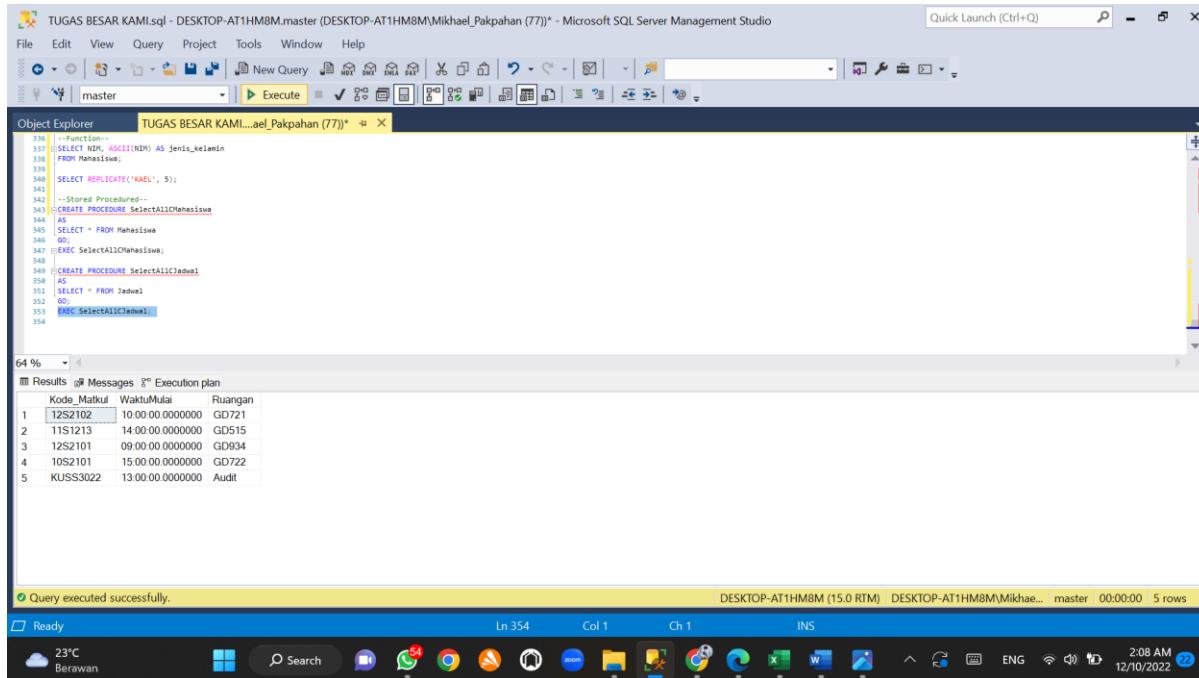
64 % | 
Query executed successfully. DESKTOP-AT1HM8M (15.0 RTM) | DESKTOP-AT1HM8M\MIkhael_Pakpahan (77) | master | 00:00:00 | 5 rows
Ready Ln 348 Col 1 Ch 1 INS
23°C Berawan Search 2:08 AM 12/10/2022
```

Gambar 47

```

CREATE PROCEDURE SelectAllCJadwal
AS
SELECT * FROM Jadwal
GO;
EXEC SelectAllCJadwal;

```



The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, there is a node for 'TUGAS BESAR KAMI...ael_Pakpahan (77)*'. The main pane displays the following T-SQL code:

```

336 --Function--
337     @NIM VARCHAR(10) AS Jenis_kelamin
338     FROM Mahasiswa;
339
340     SELECT REPLICATE('KALE!', 5);
341
342 -- Stored Procedure
343 CREATE PROCEDURE SelectAllMahasiswa
344 AS
345     SELECT * FROM Mahasiswa
346     EXEC SelectAllMahasiswa;
347
348 CREATE PROCEDURE SelectAllCJadwal
349 AS
350     SELECT * FROM Jadwal
351     GO;
352     EXEC SelectAllCJadwal;
354

```

The results grid shows the following data:

Kode_Matkul	WaktuMulai	Ruangan
12S2102	10:00:00.0000000	GD721
11S2123	14:00:00.0000000	GD515
12S2101	09:00:00.0000000	GD934
10S2101	15:00:00.0000000	GD722
KUSS3022	13:00:00.0000000	Audit

At the bottom of the results grid, it says "Query executed successfully." The status bar at the bottom right shows "DESKTOP-AT1HM8M (15.0 RTM) DESKTOP-AT1HM8M\Mikhae... master 00:00:00 5 rows".

Gambar 48

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan dari apa yang sudah dikerjakan pada tugas ini, kami menyadari bahwa materi mata kuliah Basis Data ini bermanfaat untuk diimplementasikan pada hal yang ada pada kehidupan manusia. Contohnya pada lingkungan IT Del, dari apa yang sudah di pelajari pada materi ini ternyata bisa membangun sebuah database dalam setiap lingkup yang ada di IT Del seperti salah satunya adalah Sistem Informasi Akademik mengenai bagaimana cara mahasiswa dalam pengisian KRS.

5.2 Saran

Saran dalam penggerjaan Tugas Besar adalah:

- Sudah mampu menguasai dasar dari materi
- Ketika pembuatan proses bisnis sudah memikirkan scenario sederhananya agar lebih mudah dikembangkan
- Dalam penggerjaan CDM dan PDM harus menyesuaikan segala atribut dan entitas yang ada pada RED
- Pada query, anggota tim harus bisa bekerja sama dalam mengerjakannya agar tidak kesulitan dalam memasukkan semua data-data yang ada

DAFTAR PUSTAKA

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<https://www.dofactory.com/sql/subquery>

https://www.tutorialspoint.com/sql_certificate/using_the_set_operators.htm

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