

Nama: Reyhan Oktavian Putra

NIM: 123140202

Kelas: Sistem Informasi Geografis R

Tugas 2

Tugas Praktikum 2

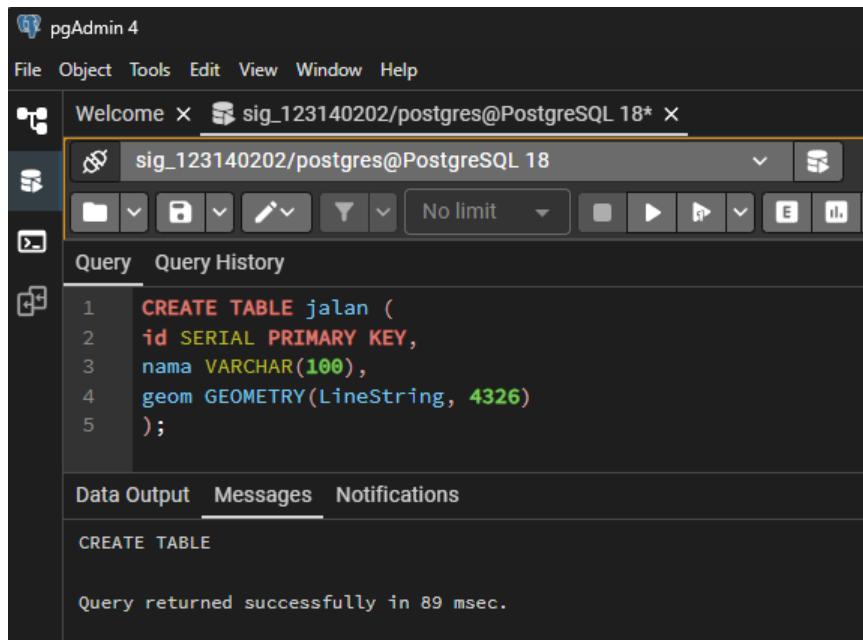
Deskripsi Tugas

Lanjutkan database dari Praktikum 1. Tambahkan tabel untuk menyimpan data jalan (LineString) dan wilayah kelurahan (Polygon) di sekitar tempat tinggal Anda. Lakukan konversi format dan validasi data.

Ketentuan

Buat tabel **jalan** dengan minimal 3 data LineString
Buat tabel **wilayah** dengan minimal 2 data Polygon
Screenshot hasil ST_AsText(), ST_AsGeoJSON(), dan ST_IsValid()
Tampilkan semua data di QGIS dengan layer berbeda

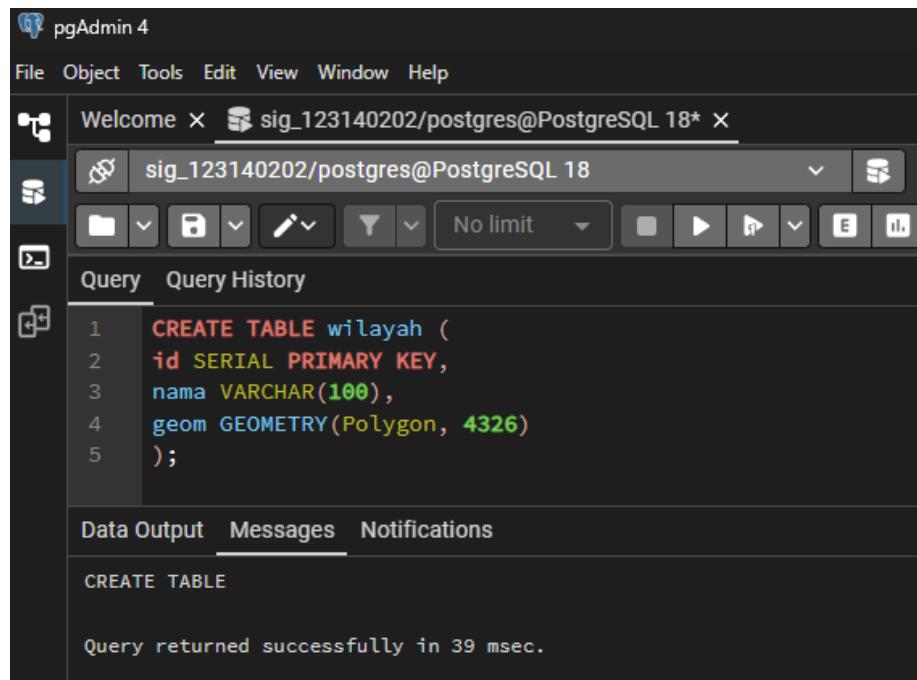
- Membuat table jalan dengan tipe LineString dan wilayah dengan tipe Polygon



The screenshot shows the pgAdmin 4 interface. In the top navigation bar, 'File', 'Object', 'Tools', 'Edit', 'View', 'Window', and 'Help' are visible. The main window title is 'Welcome x sig_123140202/postgres@PostgreSQL 18* x'. Below the title, there's a toolbar with various icons. The main area is titled 'Query' and contains the following SQL code:

```
1 CREATE TABLE jalan (
2   id SERIAL PRIMARY KEY,
3   nama VARCHAR(100),
4   geom GEOMETRY(LineString, 4326)
5 );
```

Below the query, under the 'Data Output' tab, it says 'CREATE TABLE'. At the bottom, a message states 'Query returned successfully in 89 msec.'



The screenshot shows the pgAdmin 4 interface. In the top navigation bar, the title is "Welcome X sig_123140202/postgres@PostgreSQL 18* X". Below the title, there's a toolbar with various icons. The main area is titled "Query" and contains the following SQL code:

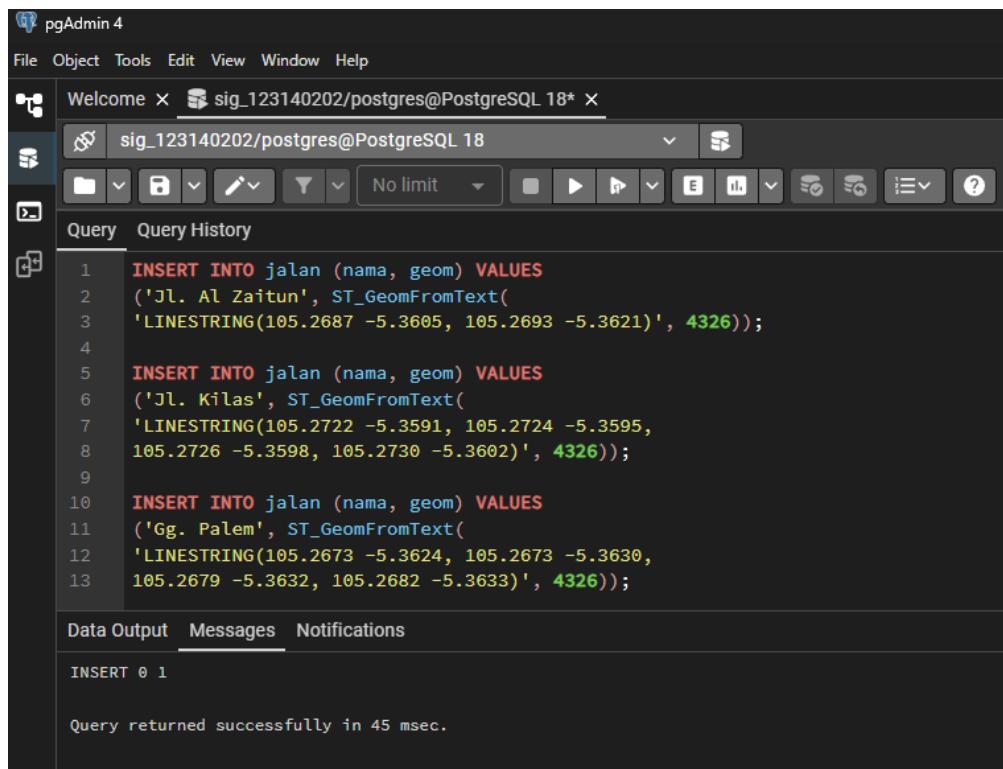
```
1 CREATE TABLE wilayah (
2     id SERIAL PRIMARY KEY,
3     nama VARCHAR(100),
4     geom GEOMETRY(Polygon, 4326)
5 );
```

Below the query editor, there are tabs for "Data Output", "Messages", and "Notifications". The "Messages" tab is selected, showing the output:

```
CREATE TABLE

Query returned successfully in 39 msec.
```

- Membuat 3 data untuk jalan dan 2 data untuk wilayah



The screenshot shows the pgAdmin 4 interface. In the top navigation bar, the title is "Welcome X sig_123140202/postgres@PostgreSQL 18* X". Below the title, there's a toolbar with various icons. The main area is titled "Query" and contains the following SQL code:

```
1 INSERT INTO jalan (nama, geom) VALUES
2 ('Jl. Al Zaitun', ST_GeomFromText(
3     'LINESTRING(105.2687 -5.3605, 105.2693 -5.3621)', 4326));
4
5 INSERT INTO jalan (nama, geom) VALUES
6 ('Jl. Kilas', ST_GeomFromText(
7     'LINESTRING(105.2722 -5.3591, 105.2724 -5.3595,
8     105.2726 -5.3598, 105.2730 -5.3602)', 4326));
9
10 INSERT INTO jalan (nama, geom) VALUES
11 ('Gg. Palem', ST_GeomFromText(
12     'LINESTRING(105.2673 -5.3624, 105.2673 -5.3630,
13     105.2679 -5.3632, 105.2682 -5.3633)', 4326));
```

Below the query editor, there are tabs for "Data Output", "Messages", and "Notifications". The "Messages" tab is selected, showing the output:

```
INSERT 0 1

Query returned successfully in 45 msec.
```

The screenshot shows the pgAdmin 4 interface. The title bar says "pgAdmin 4". The menu bar includes "File", "Object", "Tools", "Edit", "View", "Window", and "Help". The main window has a toolbar with various icons. The query editor tab is selected, showing the following SQL code:

```
1  INSERT INTO wilayah (nama, geom) VALUES
2  ('Perumahan GMP', ST_GeomFromText(
3    'POLYGON((105.2697 -5.3585, 105.2714 -5.3594,
4    105.2729 -5.3618, 105.2693 -5.3626, 105.2697 -5.3585))', 4326));
5
6  INSERT INTO wilayah (nama, geom) VALUES
7  ('Perumdam', ST_GeomFromText(
8    'POLYGON((105.2783 -5.3591, 105.2829 -5.3589, 105.2825 -5.3570,
9    105.2802 -5.3562, 105.2779 -5.3553, 105.2773 -5.3573, 105.2783 -5.3591))', 4326));
```

The "Data Output" tab is selected, showing the result of the query:

INSERT 0 1

Query returned successfully in 35 msec.

- Konversi format ke wkt agar mudah dibaca manusia dengan ST_AsText(), konversi dengan ST_AsGeoJSON() untuk kalau mau mengirim data ke frontend.

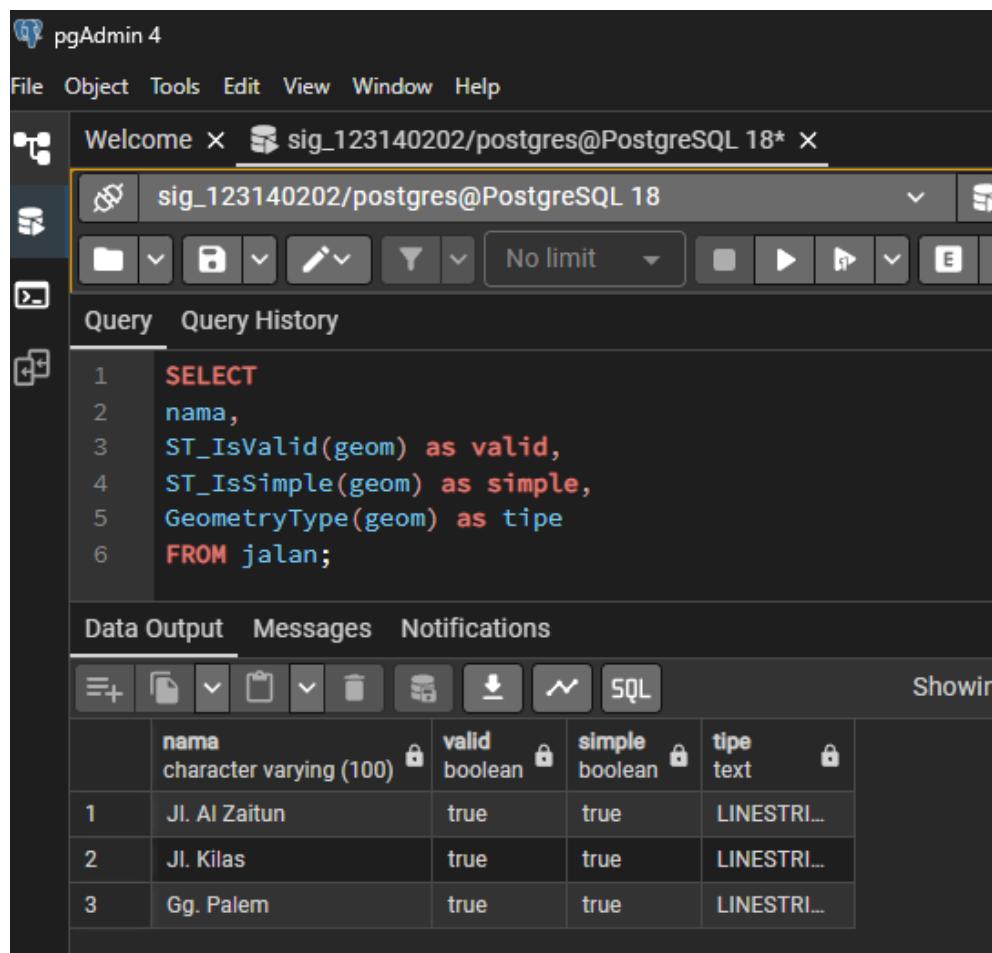
The screenshot shows the pgAdmin 4 interface. The top menu bar includes File, Object, Tools, Edit, View, Window, Help, and a connection dropdown for sig_123140202/postgres@PostgreSQL 18*. Below the menu is a toolbar with various icons for database management. The main area has tabs for Query and Query History, with the Query tab active. The query editor contains the following SQL code:

```
1  SELECT
2    -- Geometry ke WKT
3    ST_AsText(geom) as wkt,
4    -- Geometry ke GeoJSON (untuk web)
5    ST_AsGeoJSON(geom) as geojson,
6    -- Ekstrak koordinat
7    ST_X(geom) as longitude,
8    ST_Y(geom) as latitude,
9    -- Cek SRID
10   ST_SRID(geom) as srid
11  FROM fasilitas_publik;
```

Below the query editor is a Data Output tab, which is currently selected. It displays a table with five columns: wkt (text), geojson (text), longitude (double precision), latitude (double precision), and srid (integer). The table contains five rows of data, each representing a point geometry from the 'fasilitas_publik' table.

	wkt text	geojson text	longitude double precision	latitude double precision	srid integer
1	POINT(105.2674 -5.3647)	{"type": "Point", "coordinates": [105.2674, -5.3647]}	105.2674	-5.3647	4326
2	POINT(105.2688 -5.3627)	{"type": "Point", "coordinates": [105.2688, -5.3627]}	105.2688	-5.3627	4326
3	POINT(105.27 -5.3613)	{"type": "Point", "coordinates": [105.27, -5.3613]}	105.27	-5.3613	4326
4	POINT(105.2889 -5.3534)	{"type": "Point", "coordinates": [105.2889, -5.3534]}	105.2889	-5.3534	4326
5	POINT(105.298 -5.3507)	{"type": "Point", "coordinates": [105.298, -5.3507]}	105.298	-5.3507	4326

- Memvalidasi geometri dari jalan dan wilayah dengan ST_IsValid()



The screenshot shows the pgAdmin 4 interface. The title bar reads "pgAdmin 4" and "Welcome × sig_123140202/postgres@PostgreSQL 18*". The main area is a "Query" editor containing the following SQL code:

```
1 SELECT
2   nama,
3   ST_IsValid(geom) as valid,
4   ST_IsSimple(geom) as simple,
5   GeometryType(geom) as tipe
6 FROM jalan;
```

Below the code, the "Data Output" tab is selected, showing the results of the query:

	nama	valid	simple	tipe
1	Jl. Al Zaitun	true	true	LINESTRI...
2	Jl. Kilas	true	true	LINESTRI...
3	Gg. Palem	true	true	LINESTRI...

pgAdmin 4

File Object Tools Edit View Window Help

Welcome X sig_123140202/postgres@PostgreSQL 18* X

sig_123140202/postgres@PostgreSQL 18

No limit

Query History

Query

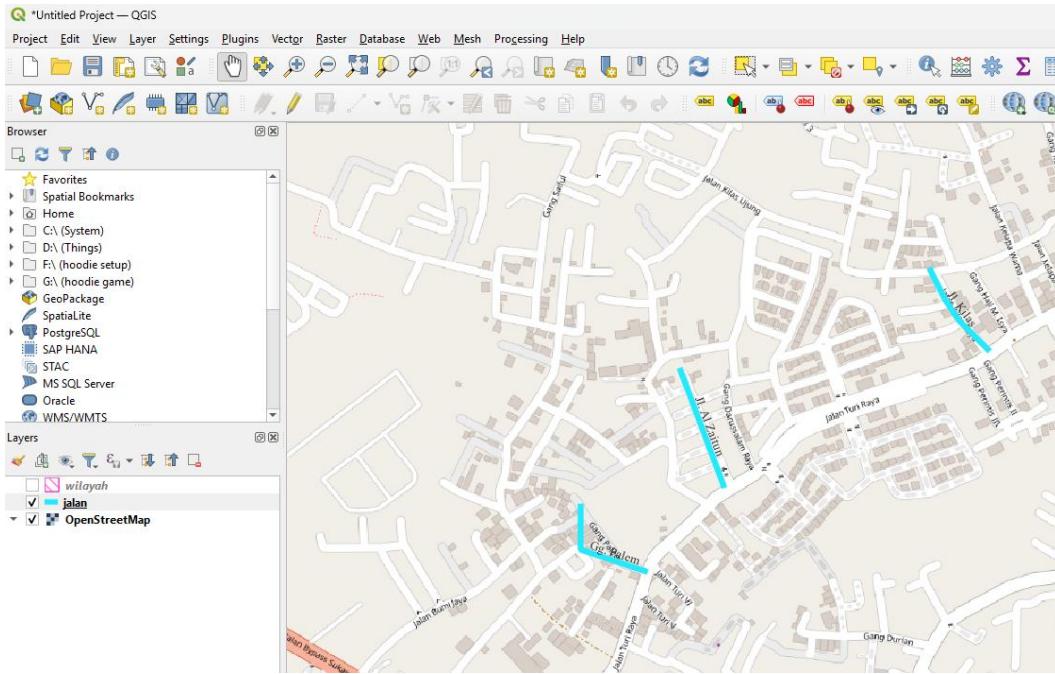
```
1 SELECT
2     nama,
3     ST_IsValid(geom) as valid,
4     ST_IsSimple(geom) as simple,
5     GeometryType(geom) as tipe
6 FROM wilayah;
```

Data Output Messages Notifications

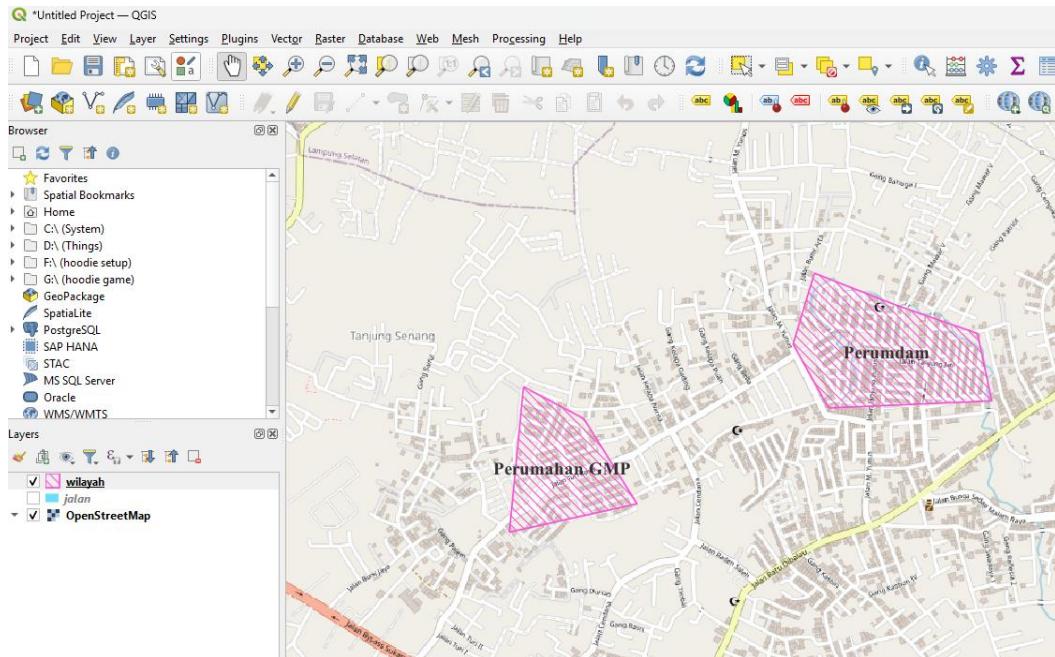
SQL

	nama character varying (100)	valid boolean	simple boolean	tipe text	
1	Perumahan GMP	true	true	POLYG...	
2	Perumdam	true	true	POLYG...	

Tampilan jalan di QGIS:



Tampilan Wilayah di QGIS:



Tampilan kedua jalan dan wilayah:

