

Nama: Reyhan Oktavian Putra

NIM: 123140202

Kelas: Sistem Informasi Geografis R

Tugas 2

Tugas Praktikum 2

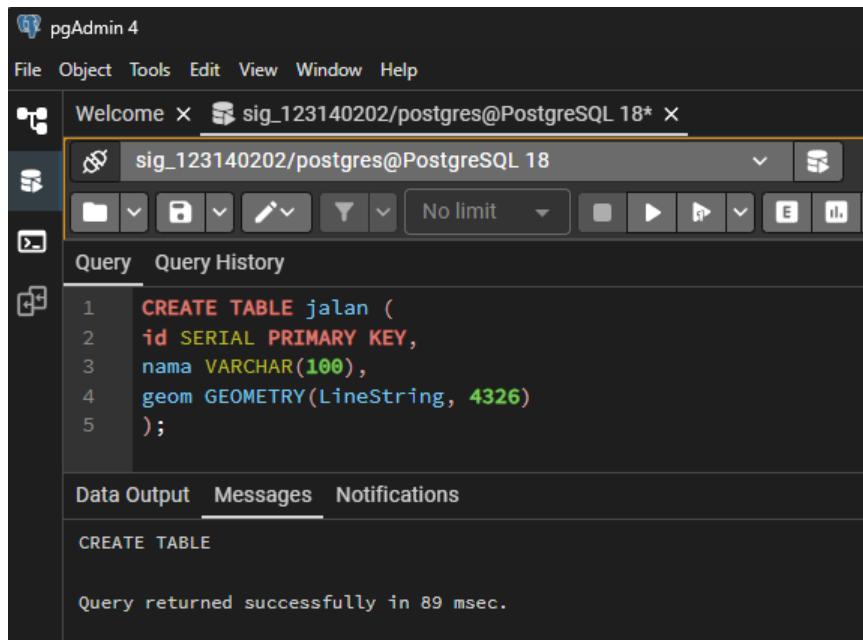
Deskripsi Tugas

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

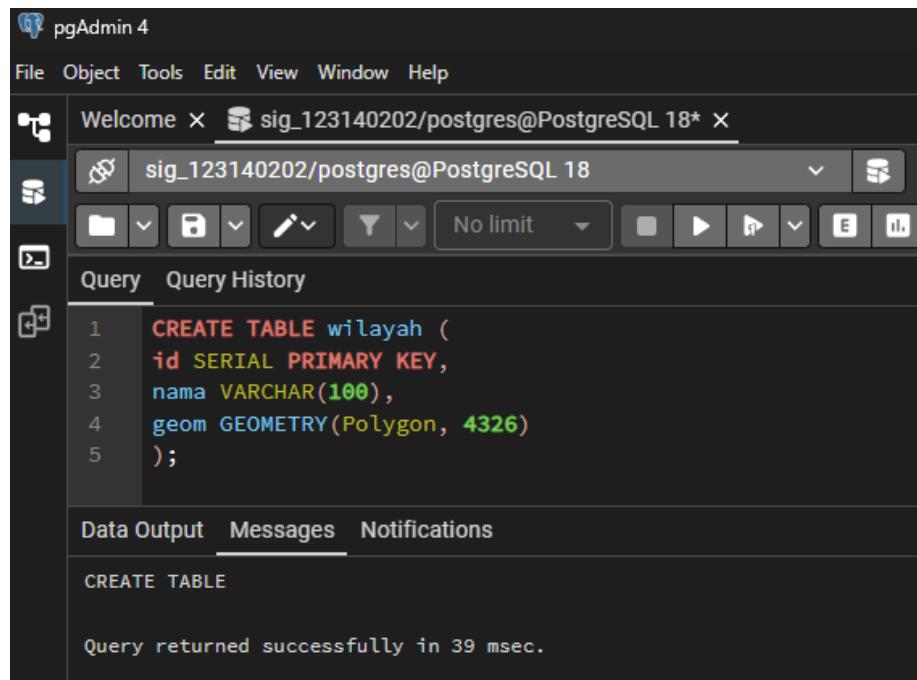
- Membuat table jalan dengan tipe LineString dan wilayah dengan tipe Polygon



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 code, 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:

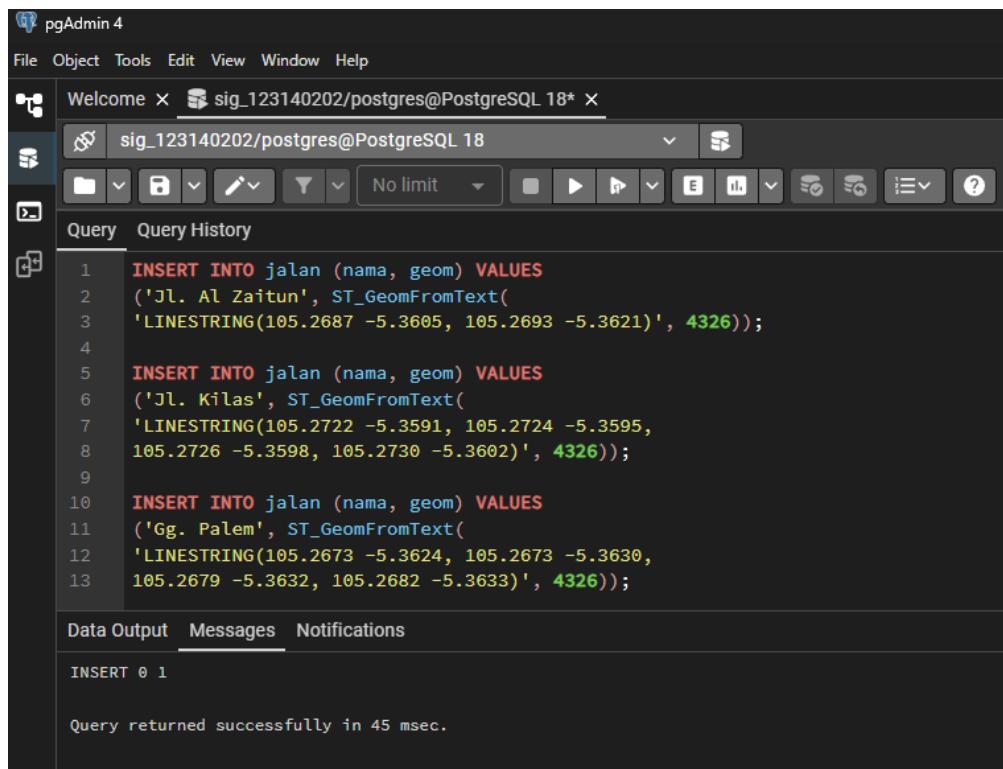
```
1 CREATE TABLE wilayah (
2   id SERIAL PRIMARY KEY,
3   nama VARCHAR(100),
4   geom GEOMETRY(Polygon, 4326)
5 );
```

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



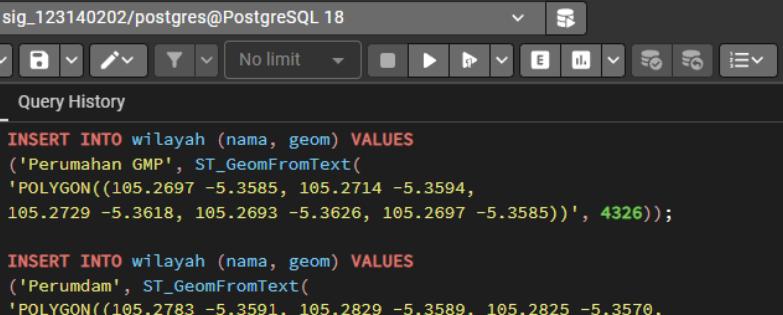
The screenshot shows the pgAdmin 4 interface. In the top navigation bar, the title is "Welcome X sig_123140202/postgres@PostgreSQL 18* X". Below the title, there's a toolbar with various icons. The main area is titled "Query" and contains the following SQL code:

```
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 with the following details:

- Title Bar:** pgAdmin 4
- File Menu:** File, Object, Tools, Edit, View, Window, Help
- Connections:** Welcome (sig_123140202/postgres@PostgreSQL 18*) and sig_123140202/postgres@PostgreSQL 18
- Toolbar:** Includes icons for file operations (New, Open, Save, Print), search, filter, and connection management.
- Query Editor:** Contains two SQL statements for inserting data into the "wilayah" table.

```
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));
```
- Data Output Tab:** Shows the result of the last query: "INSERT 0 1".
- Messages Tab:** Shows the message: "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. The title bar says "Welcome x sig_123140202/postgres@PostgreSQL 18*". The toolbar has various icons for file operations like Open, Save, Copy, Paste, and a search bar set to "No limit". Below the toolbar is a query editor window containing 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 "Scratch Pad" section. At the bottom, there are tabs for Data Output, Messages, and Notifications. The Data Output tab is active, showing a results grid with the following data:

	wkt text	geoson 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 says "pgAdmin 4". The menu bar includes File, Object, Tools, Edit, View, Window, Help. The toolbar has various icons for database management. The main window has tabs for "Welcome" and "sig_123140202/postgres@PostgreSQL 18*". The "Query" tab is active, displaying 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;
```

The "Data Output" tab is also visible, 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

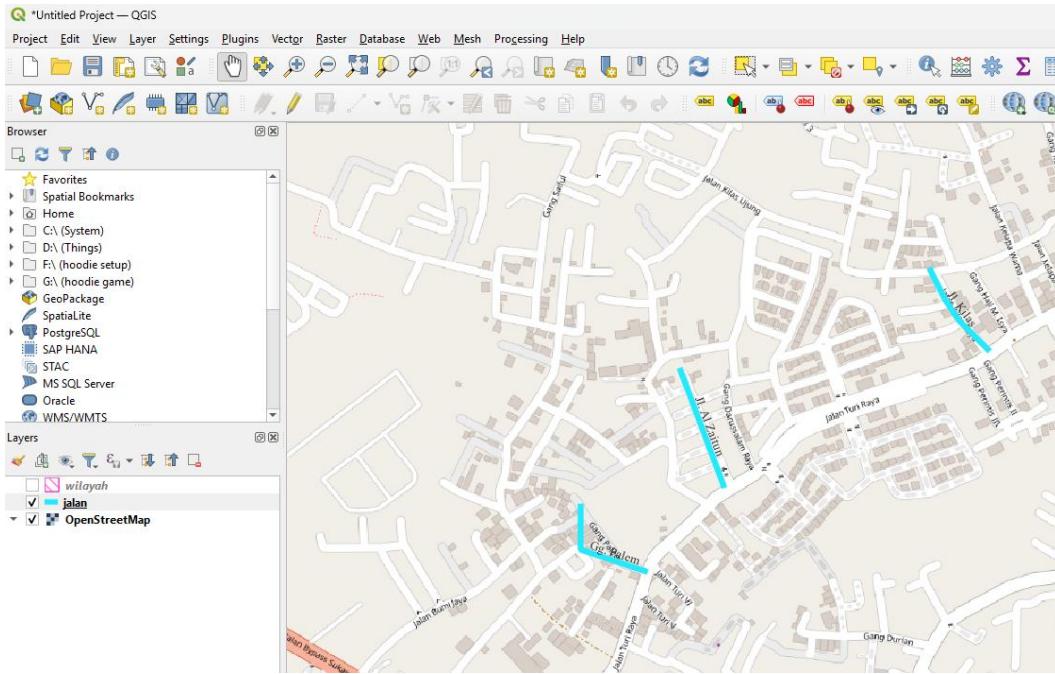
```
1 SELECT
2     nama,
3     ST_IsValid(geom) as valid,
4     ST_IsSimple(geom) as simple,
5     GeometryType(geom) as tipe
6 FROM wilayah;
```

Data Output Messages Notifications

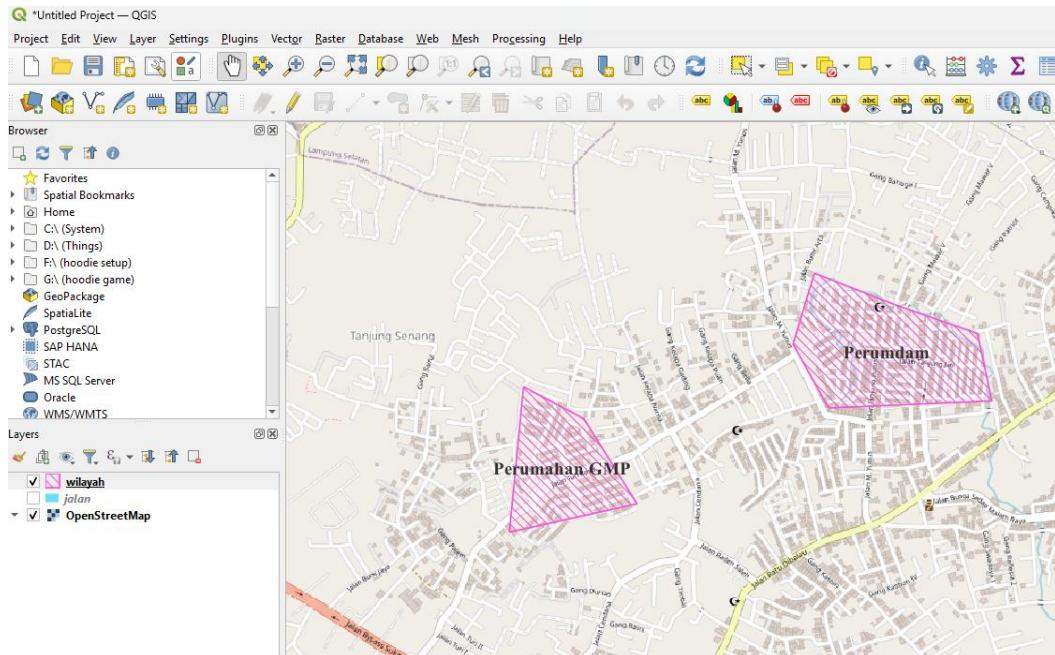
SQL

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

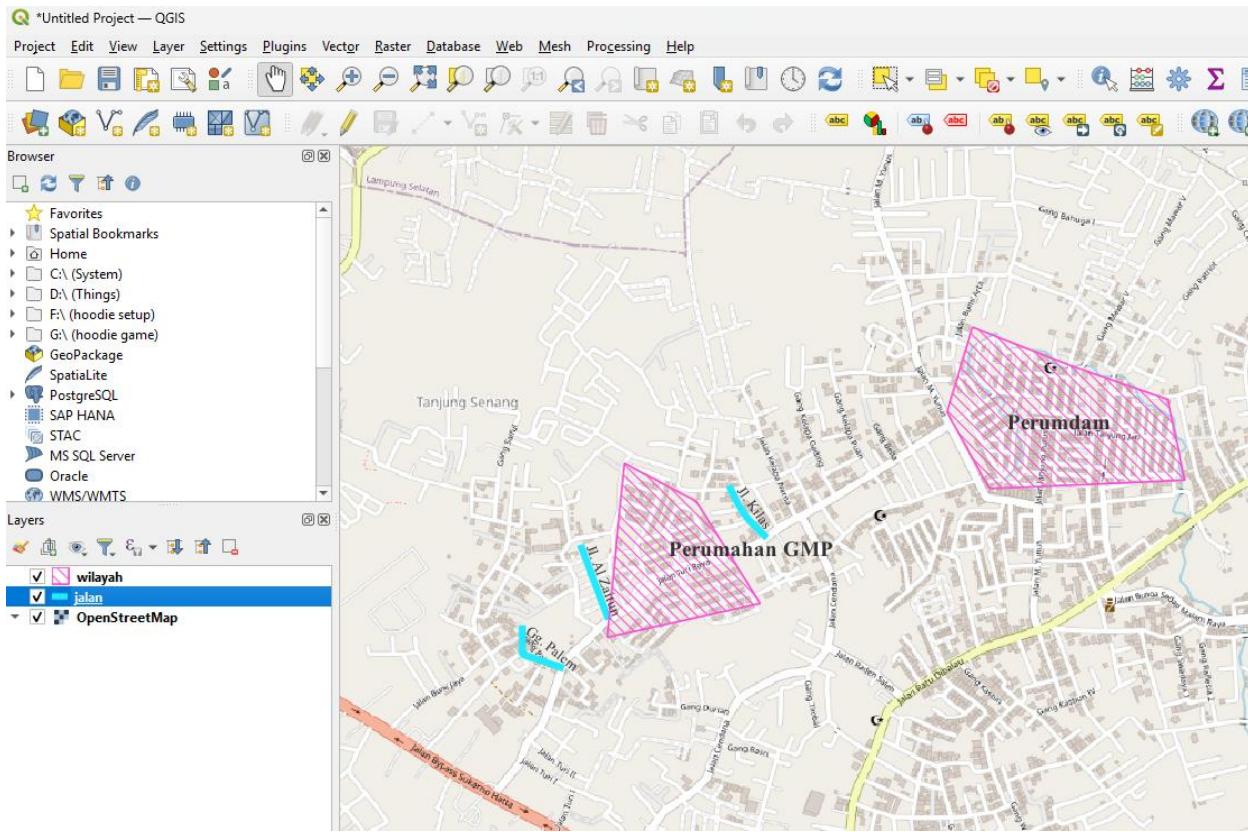
Tampilan jalan di QGIS:



Tampilan Wilayah di QGIS:



Tampilan kedua jalan dan wilayah:



Link Github: https://github.com/Ondor-R/SIG_123140202/tree/main/Tugas_2