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Kelas: Sistem Informasi Geografis R

Tugas 2

Tugas Praktikum 2

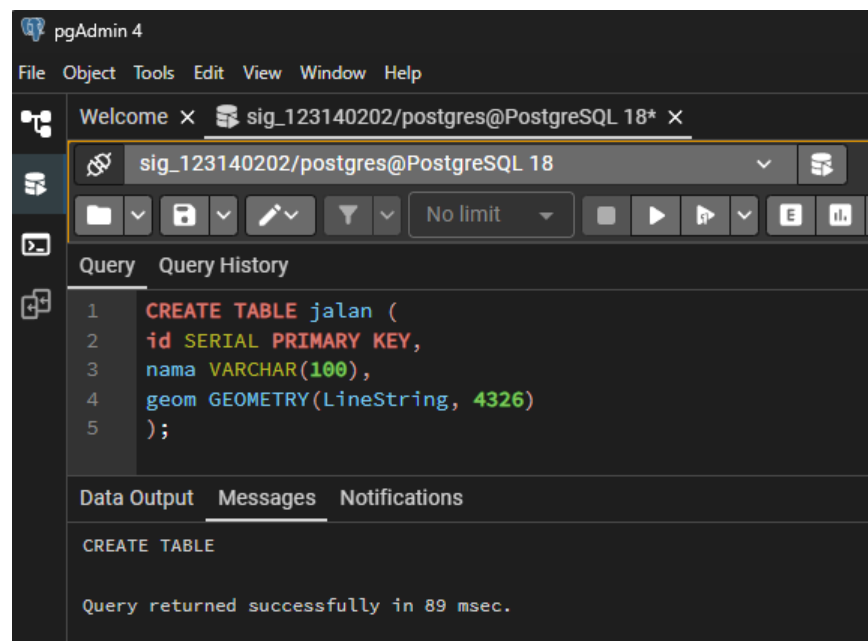
Deskripsi Tugas

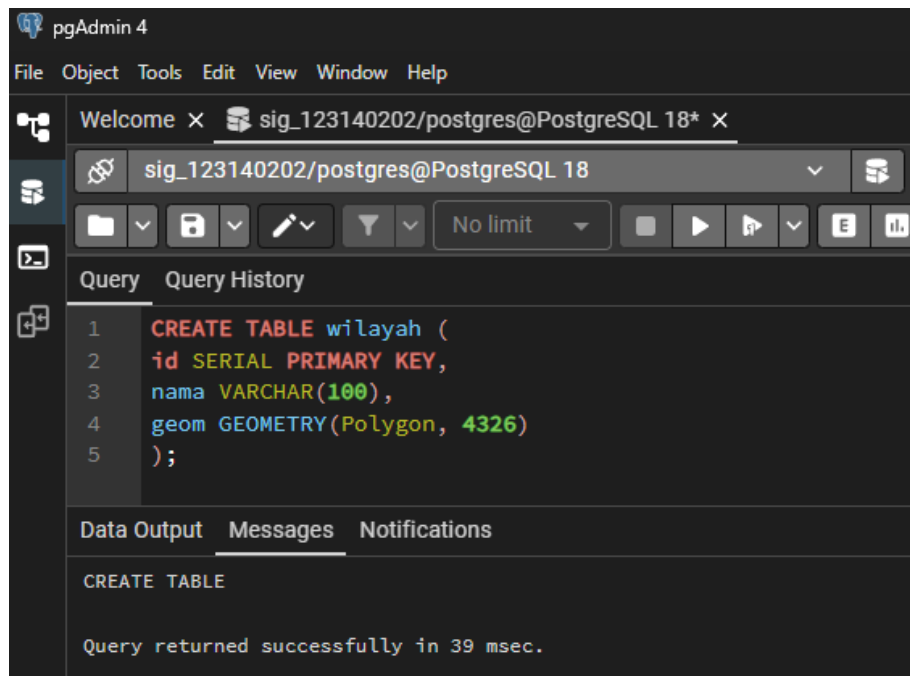
Lanjutkan database dari Praktikum 1. Tambahkan tabel untuk menyimpan data jalan (LineString) dan wilayah kelurahan (Polygon) di sekitar tempat tinggal Anda. Lakukan konversi format dan validasi data.

Ketentuan

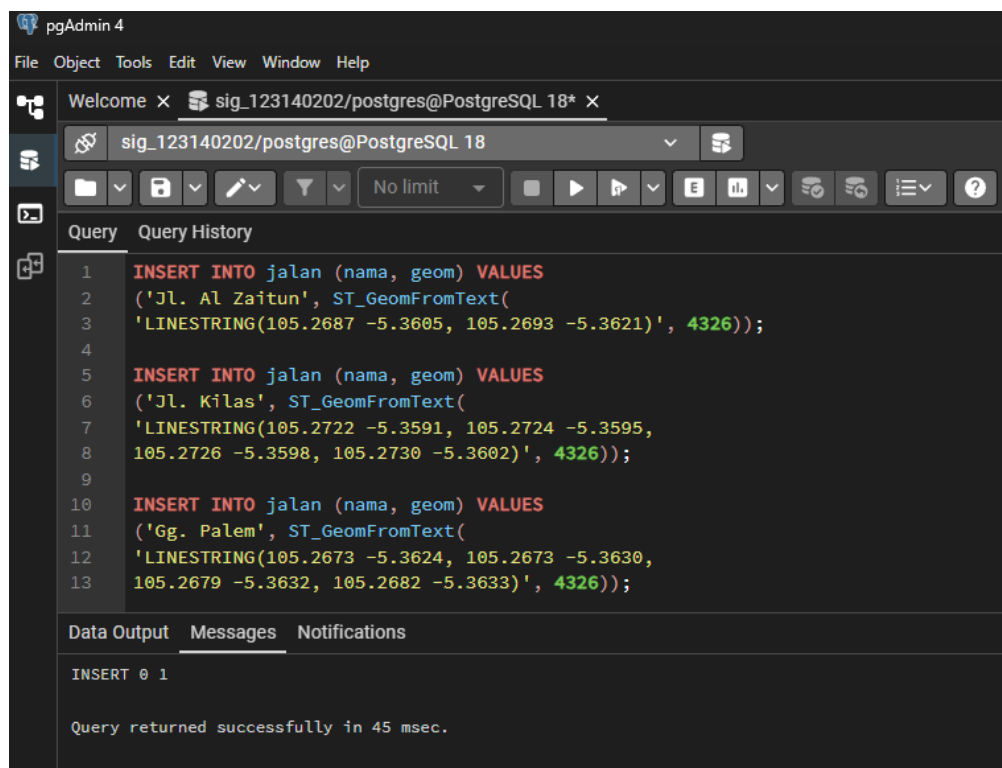
Buat tabel **jalan** dengan minimal 3 data LineString
Buat tabel **wilayah** dengan minimal 2 data Polygon
Screenshot hasil ST_AsText(), ST_AsGeoJSON(), dan ST_IsValid()
Tampilkan semua data di QGIS dengan layer berbeda

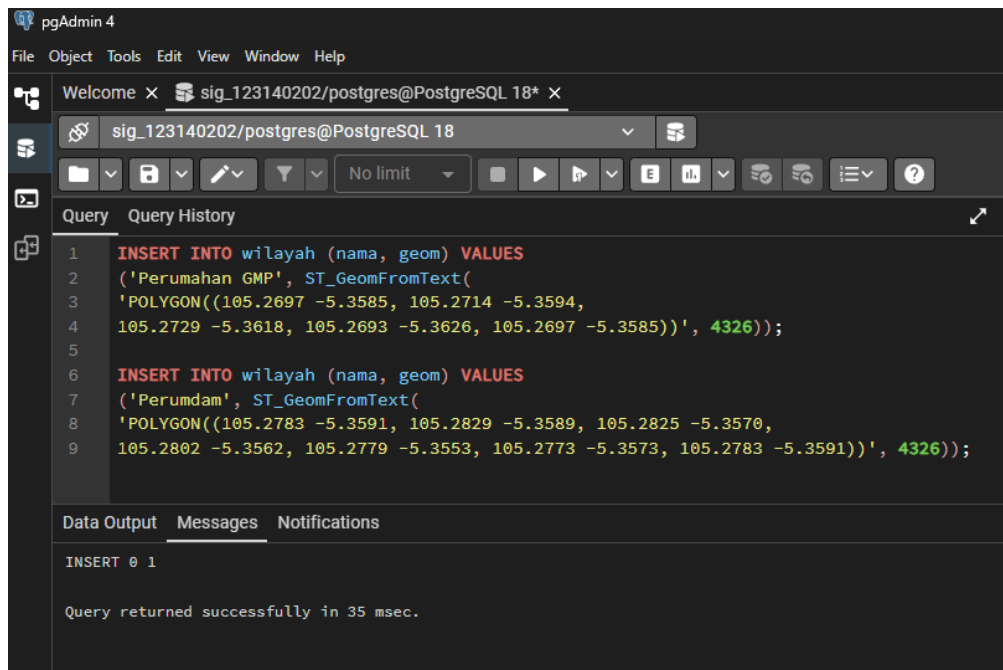
- Membuat table jalan dengan tipe LineString dan wilayah dengan tipe Polygon





- Membuat 3 data untuk jalan dan 2 data untuk wilayah



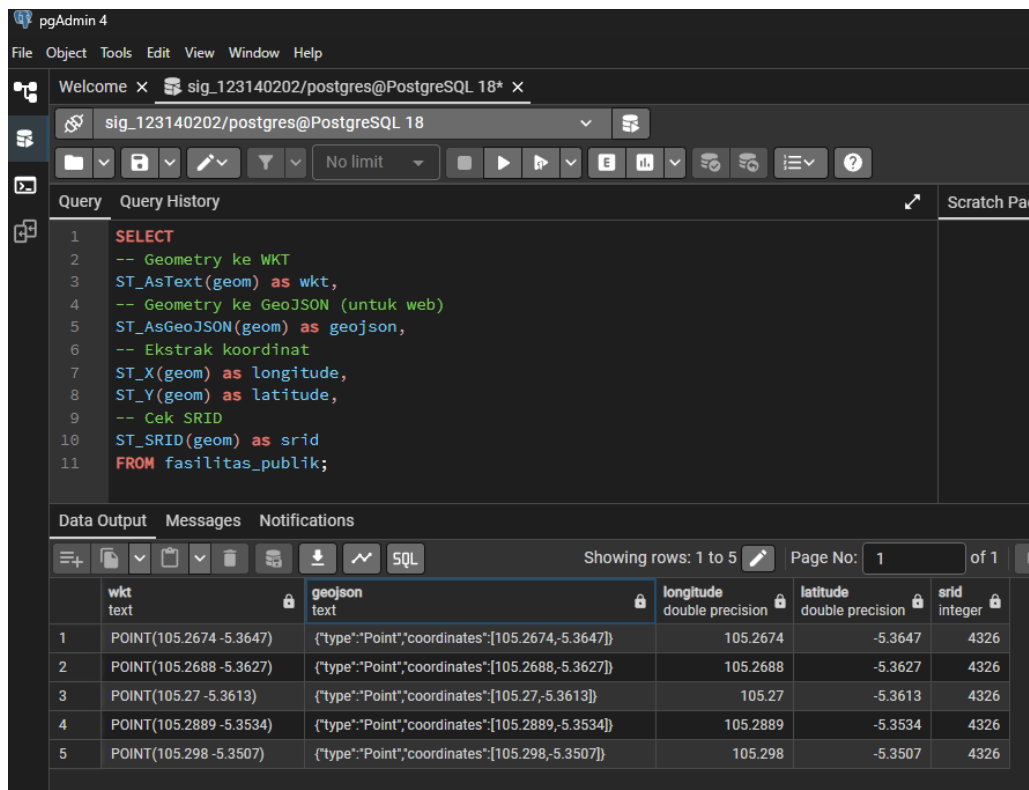


The screenshot shows the pgAdmin 4 interface with a query editor. The query contains two INSERT statements into a table named 'wilayah'. The first statement inserts a polygon geometry for 'Perumahan GMP' with coordinates (105.2697, -5.3585), (105.2714, -5.3594), (105.2729, -5.3618), (105.2693, -5.3626), and (105.2697, -5.3585). The second statement inserts a polygon geometry for 'Perumdam' with coordinates (105.2783, -5.3591), (105.2829, -5.3589), (105.2825, -5.3570), (105.2802, -5.3562), (105.2779, -5.3553), (105.2773, -5.3573), and (105.2783, -5.3591). Both statements specify SRID 4326. The Messages pane shows 'INSERT 0 1' and 'Query returned successfully in 35 msec.'

```
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));
```

Messages: 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 with a query editor. The query is a SELECT statement that converts geometry from a table named 'fasilitas_publik' into WKT, GeoJSON, and extracts coordinates and SRID. The Messages pane shows 'SELECT 5 1'. Below the query editor, the Data Output pane displays a table with 5 rows and 5 columns: wkt, geojson, longitude, latitude, and srid.

```
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;
```

Messages: SELECT 5 1

	wkt	geojson	longitude	latitude	srid
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 top menu bar includes File, Object, Tools, Edit, View, Window, and Help. The main window has a tab for 'sig_123140202/postgres@PostgreSQL 18*'. Below the tab, there's a toolbar with icons for file operations, a filter icon, and a 'No limit' dropdown. The 'Query' tab is active, displaying the following SQL query:

```
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 query editor, the 'Data Output' tab is active, showing a table with the results of the query. The table has five columns: 'nama', 'valid', 'simple', and 'tipe'. The 'nama' column is of type 'character varying (100)', 'valid' is 'boolean', 'simple' is 'boolean', and 'tipe' is 'text'. There are three rows of data:

	nama character varying (100)	valid boolean	simple boolean	tipe text
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 × sig_123140202/postgres@PostgreSQL 18* ×

sig_123140202/postgres@PostgreSQL 18

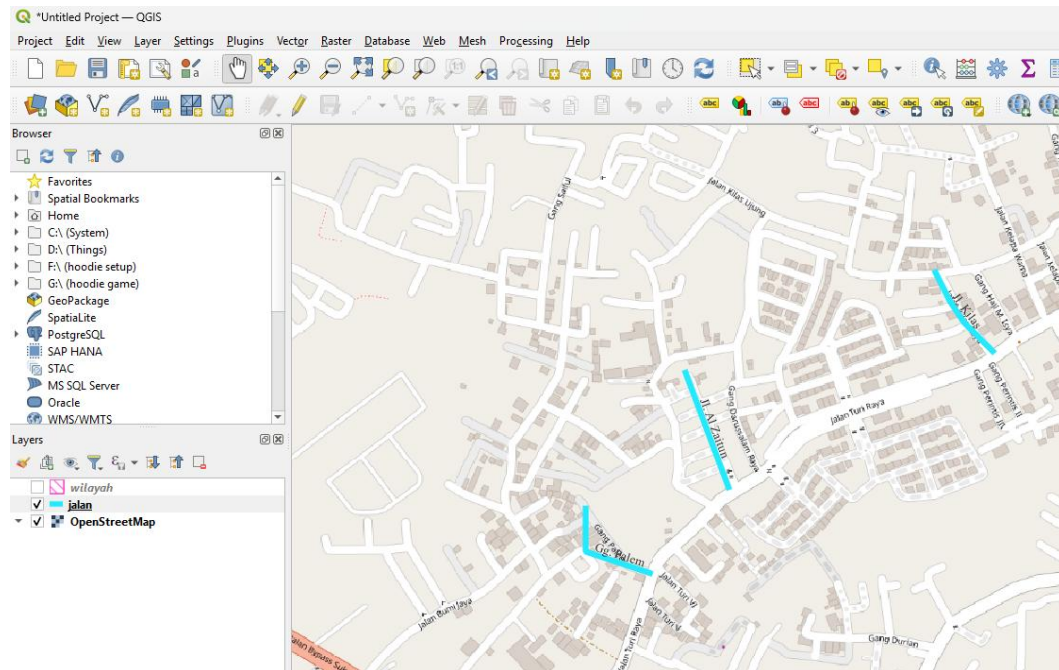
Query Query History

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

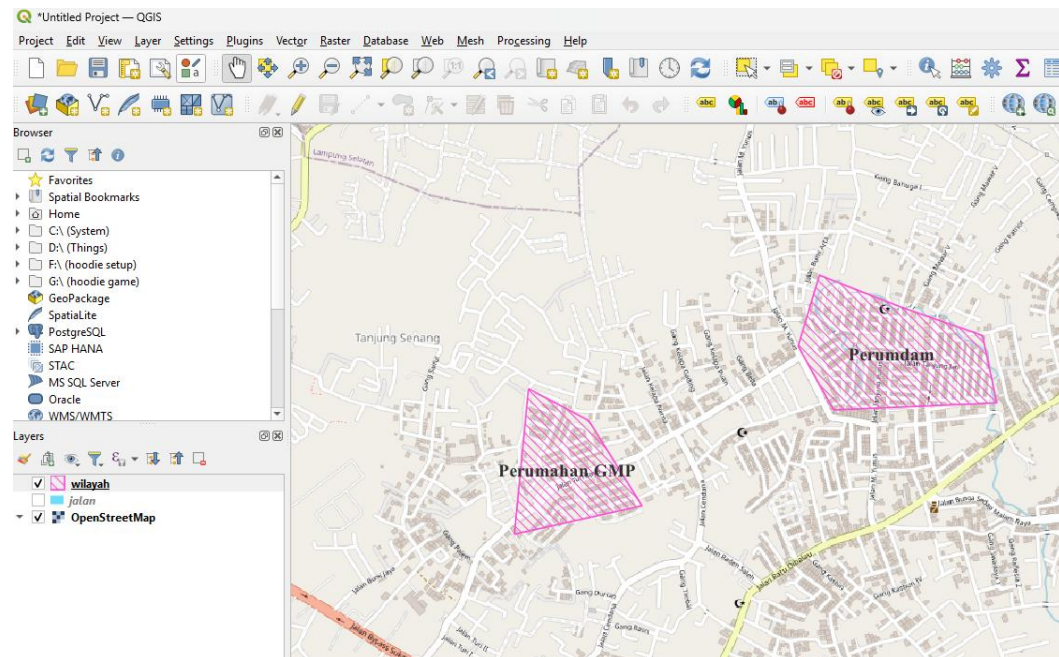
Data Output Messages Notifications

	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:

