

9.1

The screenshot shows the pgAdmin 4 interface. On the left, the 'Object Explorer' pane shows the database structure for 'PostgreSQL 16', including 'databases', 'schemas', and 'extensions'. The 'nyc' database is selected. The main pane displays a SQL query in the 'Query' tab:

```
1 CREATE TABLE geometries (name varchar, geom geometry);
2
3 INSERT INTO geometries VALUES
4 ('Point', 'POINT(0 0)'),
5 ('Linestring', 'LINESTRING(0 0, 1 1, 2 1, 2 2)'),
6 ('Polygon', 'POLYGON((0 0, 1 0, 1 1, 0 1, 0 0))'),
7 ('PolygonWithHole', 'POLYGON((0 0, 10 0, 10 10, 0 10),(1 1, 1 2, 2 2, 2 1, 1 1))'),
8 ('Collection', 'GEOMETRYCOLLECTION(POINT(2 0),POLYGON((0 0, 1 0, 1 1, 0 1, 0 0)))');
9
10 SELECT name, ST_AsText(geom) FROM geometries;
```

The 'Data Output' pane shows the results of the query:

name	st_astext
Point	POINT(0 0)
Linestring	LINESTRING(0 0,1,2 1,2 2)
Polygon	POLYGON((0 0,1 0,1 1,0 1,0 0))
PolygonWithHole	POLYGON((0 0,10 0,10 10,0 10),(1 1,2 2,2 1,1 1))
Collection	GEOMETRYCOLLECTION(POINT(2 0),POLYGON((0 0,1 0,1 1,0 1,0 0...

Total rows: 5 of 5 Query complete 00:00:00.365 Ln 10, Col 46

9.2

The screenshot shows the pgAdmin 4 interface. On the left, the 'Object Explorer' pane shows the database structure for 'PostgreSQL 16', including 'databases', 'schemas', and 'extensions'. The 'nyc' database is selected. The main pane displays a SQL query in the 'Query' tab:

```
1 SELECT *
2 FROM geometry_columns;
```

The 'Data Output' pane shows the results of the query:

f_table_catalog	f_table_schema	f_table_name	f_geometry_column	coord_dimension	srid	type
nyc	public	nyc_census_blocks	geom	2	26918	MULTIPOLYGON
nyc	public	nyc_homicides	geom	2	26918	POINT
nyc	public	nyc_neighborhoods	geom	2	26918	MULTIPOLYGON
nyc	public	nyc_streets	geom	2	26918	MULTILINESTRING
nyc	public	nyc_subway_stations	geom	2	26918	POINT

Total rows: 6 of 6 Query complete 00:00:00.091 Ln 2, Col 23

9.3.1

pgAdmin 4

File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT ST_AsText(geom)
2 FROM geometries
3 WHERE name='Point';
4
```

Data Output Messages Notifications

	st_astext
1	POINT(0 0)

Total rows: 1 of 1 Query complete 00:00:00.082 Ln 3, Col 20

pgAdmin 4

File Object Tools Help

Object Explorer

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT ST_X(geom), ST_Y(geom)
2 FROM geometries
3 WHERE name='Point';
4
```

Data Output Messages Notifications

	st_x	st_y
	double precision	double precision
1	0	0

Total rows: 1 of 1 Query complete 00:00:00.087 Ln 3, Col 20

pgAdmin 4

File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT ST_AsText(geom)
2 FROM geometries
3 WHERE name='Linestring';
4
```

Data Output Messages Notifications

	st_astext	text
1		LINESTRING(0 0,1 1,2 2,2 2)

Total rows: 1 of 1 Query complete 00:00:00.088 Ln 3, Col 25

pgAdmin 4

File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT ST_StartPoint(geom)
2 FROM geometries
3 WHERE name='Linestring';
4
```

Data Output Messages Notifications

	st_startpoint	geometry
1		0101000

Total rows: 1 of 1 Query complete 00:00:00.080 Ln 1, Col 21



pgAdmin 4

File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT ST_NPoints(geom)
2 FROM geometries
3 WHERE name='Linestring';
4
```

Data Output Messages Notifications

st_npoints
4

Total rows: 1 of 1 Query complete 00:00:00.079 Ln 1, Col 18

### 9.3.3

pgAdmin 4

File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT name, ST_GeometryType(geom), ST_NDims(geom), ST_SRID(geom)
2 FROM geometries;
```

Data Output Messages Notifications

name	st_geometrytype	st_ndims	st_srid
Point	ST_Point	2	0
Linestring	ST_LineString	2	0
Polygon	ST_Polygon	2	0
PolygonWithHole	ST_Polygon	2	0
Collection	ST_GeometryCollection	2	0

Total rows: 5 of 5 Query complete 00:00:00.080 Ln 2, Col 17

pgAdmin 4

File Object Tools Help

Object Explorer

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

Query Query History

```
1 SELECT ST_AsText(geom)
2 FROM geometries
3 WHERE name LIKE 'Polygon%';
4
```

Scratch Pad

Data Output Messages Notifications

	st_astext	text
1	POLYGON((0 0,1 0,1 1,0 0))	
2	POLYGON((0 0,10 0,10 10,0 0),(1 1,2 2,2 1,1 1 ...	

Total rows: 2 of 2 Query complete 00:00:00.068 Ln 3, Col 26

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File Object Tools Help

Object Explorer

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

Query Query History

```
1 SELECT ST_Area(geom)
2 FROM geometries
3 WHERE name LIKE 'Polygon%';
4
```

Scratch Pad

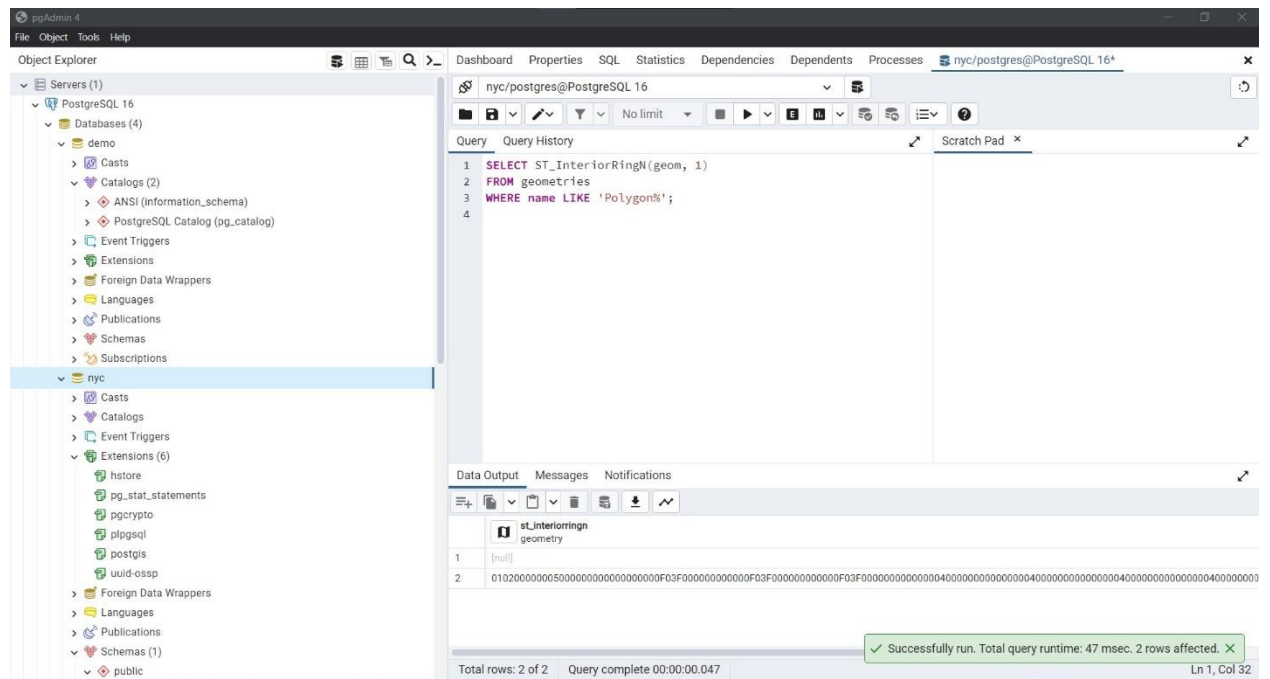
Data Output Messages Notifications

	st_area	double precision
1		1
2		99

Total rows: 2 of 2 Query complete 00:00:00.066 Ln 1, Col 21







### 9.3.4



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File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT name, ST_AsText(geom)
2 FROM geometries
3 WHERE name='Collection';
4
```

Scratch Pad

Data Output Messages Notifications

	name	st_astext
	character varying	text
1	Collection	GEOMETRYCOLLECTION(POINT(2 0),POLYGON((0 0,1 0,1 0,0 0...

Total rows: 1 of 1 Query complete 00:00:00.089 Ln 3, Col 25

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File Object Tools Help

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History

```
1 SELECT name, ST_NumGeometries(geom)
2 FROM geometries
3 WHERE name='Collection';
4
```

Scratch Pad

Data Output Messages Notifications

	name	st_numgeometries
	character varying	integer
1	Collection	2

Total rows: 1 of 1 Query complete 00:00:00.084 Ln 1, Col 30



psqladmin 4

File Object Tools Help

Object Explorer

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Dashboard Properties SQL Statistics Dependencies Dependents Processes nyc/postgres@PostgreSQL 16\*

nyc/postgres@PostgreSQL 16

Query Query History Scratch Pad

```
1 SELECT name, ST_Length(geom)
2 FROM geometries
3 WHERE name='Collection';
4
```

Data Output Messages Notifications

	name	st_length
	character varying	double precision
1	Collection	0

Successfully run. Total query runtime: 110 msec. 1 rows affected. X

Total rows: 1 of 1 Query complete 00:00:00.110 Ln 1, Col 23