**Private vs Public Schema**

**Private Schema in PostgreSQL**

In PostgreSQL, a **schema** is a logical namespace that holds database objects (tables, views, functions, etc.). A **private schema** typically refers to a schema that is **accessible only to a specific user or role**.

**How to Create and Use a Private Schema**

**1. Create a New Schema**

CREATE SCHEMA private\_schema AUTHORIZATION your\_user;

* This creates a schema named private\_schema owned by your\_user.
* Only your\_user has access unless permissions are granted to others.

**2. Create Objects Inside the Schema**

CREATE TABLE private\_schema.secret\_table (

id SERIAL PRIMARY KEY,

info TEXT

);

**3. Restrict Access to Other Users**

If you want to **explicitly prevent others** from using it, **revoke** their rights:

REVOKE ALL ON SCHEMA private\_schema FROM PUBLIC;

REVOKE ALL ON ALL TABLES IN SCHEMA private\_schema FROM PUBLIC;

PUBLIC means "all users." This removes their default rights.

**4. Allow Only Specific Users (Optional)**

GRANT USAGE ON SCHEMA private\_schema TO specific\_user;

GRANT SELECT, INSERT ON ALL TABLES IN SCHEMA private\_schema TO specific\_user;

**Switching to a Private Schema**

To use the private schema without schema-qualified names:

SET search\_path TO private\_schema;

Now you can:

SELECT \* FROM secret\_table;

**Use Cases**

| **Use Case** | **Why Private Schema?** |
| --- | --- |
| Per-user data separation | Each user has isolated tables (multi-tenant systems) |
| Sensitive object isolation | Restrict access to critical data or logic |
| Developer sandbox | Let developers test without interfering with others |
| Custom application namespace | Avoid naming collisions and access between modules |

**View Schema Ownership and Privileges**

-- Check who owns what schema

SELECT schema\_name, schema\_owner

FROM information\_schema.schemata;

-- Check privileges

\dn+ private\_schema -- In psql CLI

**Public Schema vs. Private Schema**

| **Feature** | **Public Schema** | **Private Schema** |
| --- | --- | --- |
| **Definition** | Default schema that exists in every PostgreSQL DB | Custom schema restricted to a specific user/role |
| **Created By** | Automatically created with the database | Created manually by a user |
| **Access by Default** | Accessible by all users (PUBLIC has usage rights) | Only the owner has access unless explicitly granted |
| **Common Use Cases** | Shared tables, quick prototyping, generic objects | Isolated data, user-specific data, secure objects |
| **Security** | Less secure — open to all users unless revoked | More secure — isolated by permissions |
| **Example Creation** | Already exists | CREATE SCHEMA my\_schema AUTHORIZATION my\_user; |
| **Needs Permission Tuning?** | Usually yes, to restrict access | Yes, to share with selected users if needed |

**Permissions**

**Public Schema:**

-- By default, everyone can use it

GRANT USAGE ON SCHEMA public TO PUBLIC;

**Private Schema:**

-- Created with ownership assigned

CREATE SCHEMA private\_schema AUTHORIZATION alice;

-- Restrict it

REVOKE ALL ON SCHEMA private\_schema FROM PUBLIC;

**Example**

**1. Public Schema Use:**

CREATE TABLE public.test1 (id INT);

-- Accessible by any user unless restricted

**2. Private Schema Use:**

CREATE SCHEMA alice\_data AUTHORIZATION alice;

CREATE TABLE alice\_data.secret\_table (id INT);

-- Only 'alice' can access it

**Summary**

* Use the **public schema** for general, shared data or quick testing.
* Use **private schemas** when you need **security, isolation, or per-user data separation**.