**PostgreSQL System Catalogs**

PostgreSQL **system catalogs** are special tables that store metadata about the database itself. This metadata includes information about tables, columns, data types, indexes, functions, users, and more. These catalogs are crucial for the internal operation of PostgreSQL and can also be queried by users for introspection or automation.

**Overview of PostgreSQL System Catalogs**

System catalogs are stored in the pg\_catalog schema. Here are the most important ones, categorized by purpose:

**1. Tables and Columns**

* **pg\_class**  
  Stores information about tables, indexes, sequences, views, and composite types.
* **pg\_attribute**  
  Contains information about table columns (attributes), including data types and column numbers.
* **pg\_type**  
  Defines data types used by PostgreSQL, including base types, domains, arrays, etc.
* **pg\_namespace**  
  Stores information about schemas.

**2. Constraints and Indexes**

* **pg\_constraint**  
  Contains definitions of table constraints, such as primary keys, foreign keys, checks, and unique constraints.
* **pg\_index**  
  Stores information about indexes (linked to pg\_class).

**3. Users and Privileges**

* **pg\_roles**  
  Lists all roles (users and groups).
* **pg\_authid** (superuser access required)  
  Stores authentication information for roles.
* **pg\_shdepend**  
  Manages shared dependencies, such as those between roles and objects.

**4. Functions and Procedures**

* **pg\_proc**  
  Contains information about functions and procedures: names, arguments, return types, etc.
* **pg\_language**  
  Lists the programming languages supported for writing functions (SQL, PL/pgSQL, etc.).

**5. Dependencies and Ownership**

* **pg\_depend**  
  Tracks dependencies between objects (e.g., which table a constraint belongs to).
* **pg\_shdepend**  
  Tracks dependencies shared across databases (used in privileges and shared relations).

**6. Statistics and Performance**

* **pg\_statistic**  
  Stores statistical data used by the query planner (column values, distribution, etc.).
* **pg\_stats** (a view)  
  Readable view of pg\_statistic for users.

**7. Access Control and Permissions**

* **pg\_tables** (a view)  
  Lists user-accessible tables along with schema and owner.
* **pg\_views** (a view)  
  Lists view definitions.
* **pg\_user** (a view)  
  Shows basic role information (public view of pg\_authid).

**Query Examples**

List all user tables:

SELECT relname FROM pg\_class WHERE relkind = 'r' AND relnamespace IN (

SELECT oid FROM pg\_namespace WHERE nspname NOT LIKE 'pg\_%' AND nspname <> 'information\_schema'

);

Get all columns for a table:

SELECT attname, atttypid::regtype, attnotnull

FROM pg\_attribute

WHERE attrelid = 'your\_table\_name'::regclass AND attnum > 0 AND NOT attisdropped;

List all roles:

SELECT rolname, rolsuper, rolcreaterole, rolcreatedb FROM pg\_roles;