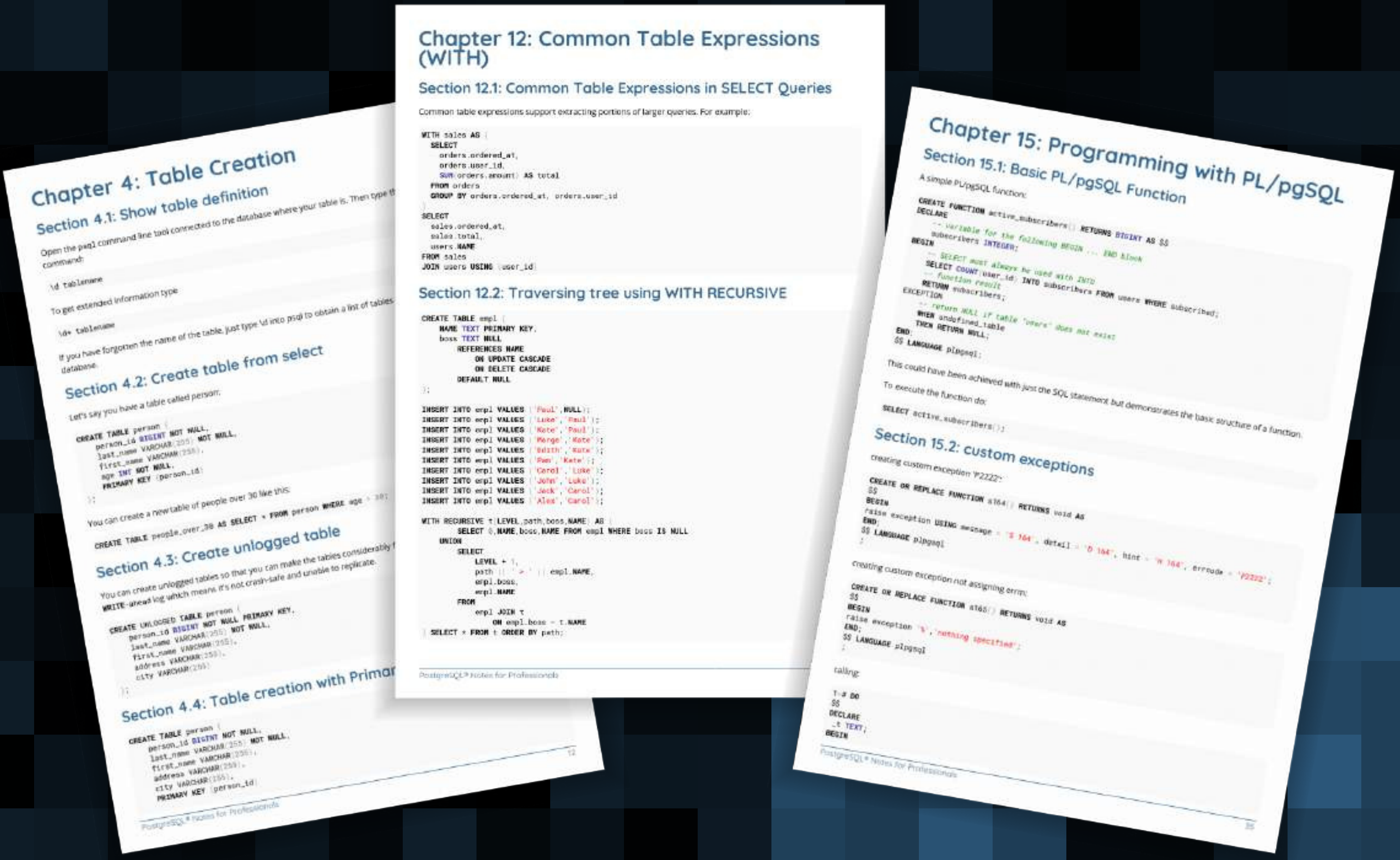
# PostgreSQL®

## Notes for Professionals



### Chapter 4: Table Creation

#### Section 4.1: Show table definition

Open the psql command line tool connected to the database where your table is. Then type th
command:

```
\d tablename
```

To get extended information type

```
\d+ tablename
```

If you have forgotten the name of the table, just type \d into psql to obtain a list of tables
database.

#### Section 4.2: Create table from select

Let's say you have a table called person:

```
CREATE TABLE person (
    person_id BIGINT NOT NULL,
    last_name VARCHAR(255) NOT NULL,
    first_name VARCHAR(255),
    age INT NOT NULL,
    PRIMARY KEY (person_id)
);
```

You can create a new table of people over 30 like this:

```
CREATE TABLE people_over_30 AS SELECT * FROM person WHERE age > 30;
```

#### Section 4.3: Create unlogged table

You can create unlogged tables so that you can make the tables considerably f
WRITE-ahead log which means it's not crash-safe and unable to replicate.

```
CREATE UNLOGGED TABLE person (
    person_id BIGINT NOT NULL PRIMARY KEY,
    last_name VARCHAR(255) NOT NULL,
    first_name VARCHAR(255),
    address VARCHAR(255),
    city VARCHAR(255)
);
```

#### Section 4.4: Table creation with Primar

```
CREATE TABLE person (
    person_id BIGINT NOT NULL,
    last_name VARCHAR(255) NOT NULL,
    first_name VARCHAR(255),
    address VARCHAR(255),
    city VARCHAR(255),
    PRIMARY KEY (person_id)
```

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### Chapter 12: Common Table Expressions (WITH)

#### Section 12.1: Common Table Expressions in SELECT Queries

Common table expressions support extracting portions of larger queries. For example:

```
WITH sales AS (
  SELECT
    orders.ordered_at,
    orders.user_id,
    SUM(orders.amount) AS total
  FROM orders
  GROUP BY orders.ordered_at, orders.user_id
)
SELECT
  sales.ordered_at,
  sales.total,
  users.NAME
FROM sales
JOIN users USING (user_id)
```

#### Section 12.2: Traversing tree using WITH RECURSIVE

```
CREATE TABLE empl (
    NAME TEXT PRIMARY KEY,
    boss TEXT NULL
        REFERENCES NAME
            ON UPDATE CASCADE
            ON DELETE CASCADE
        DEFAULT NULL
);

INSERT INTO empl VALUES ('Paul',NULL);
INSERT INTO empl VALUES ('Luke','Paul');
INSERT INTO empl VALUES ('Kate','Paul');
INSERT INTO empl VALUES ('Marge','Kate');
INSERT INTO empl VALUES ('Edith','Kate');
INSERT INTO empl VALUES ('Pam','Kate');
INSERT INTO empl VALUES ('Carol','Luke');
INSERT INTO empl VALUES ('John','Luke');
INSERT INTO empl VALUES ('Jack','Carol');
INSERT INTO empl VALUES ('Alex','Carol');

WITH RECURSIVE t(LEVEL,path,boss,NAME) AS (
        SELECT 0,NAME,boss,NAME FROM empl WHERE boss IS NULL
    UNION
        SELECT
            LEVEL + 1,
            path || ' > ' || empl.NAME,
            empl.boss,
            empl.NAME
        FROM
            empl JOIN t
                ON empl.boss = t.NAME
) SELECT * FROM t ORDER BY path;
```

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### Chapter 15: Programming with PL/pgSQL

#### Section 15.1: Basic PL/pgSQL Function

A simple PL/pgSQL function:

```
CREATE FUNCTION active_subscribers() RETURNS BIGINT AS $$
DECLARE
    -- variable for the following BEGIN ... END block
    subscribers INTEGER;
BEGIN
    -- SELECT must always be used with INTO
    SELECT COUNT(user_id) INTO subscribers FROM users WHERE subscribed;
    -- function result
    RETURN subscribers;
EXCEPTION
    -- return NULL if table "users" does not exist
    WHEN undefined_table
    THEN RETURN NULL;
END;
$$ LANGUAGE plpgsql;
```

This could have been achieved with just the SQL statement but demonstrates the basic structure of a function.

To execute the function do:

```
SELECT active_subscribers();
```

#### Section 15.2: custom exceptions

creating custom exception 'P2222':

```
CREATE OR REPLACE FUNCTION s164() RETURNS void AS
$$
BEGIN
raise exception USING message = 'S 164', detail = 'D 164', hint = 'H 164', errcode = 'P2222';
END;
$$ LANGUAGE plpgsql
;
```

creating custom exception not assigning errm:

```
CREATE OR REPLACE FUNCTION s165() RETURNS void AS
$$
BEGIN
raise exception '%','nothing specified';
END;
$$ LANGUAGE plpgsql
;
```

calling:

```
t=# do
$$
DECLARE
_t TEXT;
BEGIN
```

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