

Introduction to full-text search

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL



Brian Piccolo

Sr. Director, Digital Strategy

Topics

- Full Text search
- Extending PostgreSQL
- Improving full text search with extensions

The LIKE operator

_ wildcard: Used to match exactly one character.

% wildcard: Used to match zero or more characters.

```
SELECT title
FROM film
WHERE title LIKE 'ELF%';
```

```
+-----+
| title  |
+-----+
| ELF PARTY |
+-----+
```

The LIKE operator

```
SELECT title
FROM film
WHERE title LIKE '%ELF';
```

```
+-----+
| title |
+-----+
| ENCINO ELF |
| GHOSTBUSTERS ELF |
+-----+
```

The LIKE operator

```
SELECT title
FROM film
WHERE title LIKE '%elf%';
```

```
+-----+
| title |
+-----+
```

LIKE versus full-text search

```
SELECT title, description
FROM film
WHERE to_tsvector(title) @@ to_tsquery('elf');
```

```
+-----+
| title          |
+-----+
| ELF PARTY      |
| ENCINO ELF     |
| GHOSTBUSTERS  ELF |
+-----+
```

What is full-text search?

Full text search provides a means for performing natural language queries of text data in your database.

- Stemming
- Spelling mistakes
- Ranking

Full-text search syntax explained

```
SELECT title, description
FROM film
WHERE to_tsvector(title) @@ to_tsquery('elf');
```


Let's practice!

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL

Extending PostgreSQL

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL



Brian Piccolo

Sr. Director, Digital Strategy

User-defined data types

Enumerated data types

```
CREATE TYPE dayofweek AS ENUM (  
    'Monday',  
    'Tuesday',  
    'Wednesday',  
    'Thursday',  
    'Friday',  
    'Saturday',  
    'Sunday'  
);
```

Getting information about user-defined data types

```
SELECT typename, typcategory
FROM pg_type
WHERE typename='dayofweek' ;
```

```
+-----+-----+
| typename | typcategory |
+-----+-----+
| dayofweek | E           |
+-----+-----+
```

Getting information about user-defined data types

```
SELECT column_name, data_type, udt_name
FROM INFORMATION_SCHEMA.COLUMNS
WHERE table_name = 'film';
```

```
+-----+
| column_name | data_type          | udt_name      |
|-----|-----|-----|
| title       | character varying | varchar       |
| rating      | USER-DEFINED      | mpaa_rating   |
+-----+
```

User-defined functions

```
CREATE FUNCTION squared(i integer) RETURNS integer AS $$  
    BEGIN  
        RETURN i * i;  
    END;  
$$ LANGUAGE plpgsql;
```

```
SELECT squared(10);
```

```
+-----+  
| squared |  
+-----+  
| 100     |  
+-----+
```

User-defined functions in the Sakila database

- `get_customer_balance(customer_id, effective_data)`: calculates the current outstanding balance for a given customer.
- `inventory_held_by_customer(inventory_id)`: returns the `customer_id` that is currently renting an inventory item or null if it's currently available.
 - `inventory_in_stock(inventory_id)`: returns a boolean value of whether an inventory item is currently in stock.

Let's practice!

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL

Intro to PostgreSQL extensions

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL



Brian Piccolo

Sr. Director, Digital Strategy

Intro to PostgreSQL extensions

Commonly used extensions

- PostGIS
- PostPic
- fuzzystrmatch
- pg_trgm

Querying extension meta data

Available Extensions

```
SELECT name
FROM pg_available_extensions;
```

```
+-----+
| name   |
+-----+
| dblink |
| pg_stat_statements |
+-----+
```

Installed Extensions

```
SELECT extname
FROM pg_extension;
```

```
+-----+
| name   |
+-----+
| plpgsql |
+-----+
```

```
--Enable the fuzzystmatch extension
CREATE EXTENSION IF NOT EXISTS fuzzystmatch;
--Confirm that fuzzstrmatch has been enabled
SELECT extname FROM pg_extension;
```

```
+-----+
| name   |
|-----|
| plpgsql|
| fuzzystmatch |
+-----+
```

Using fuzzystmatch or fuzzy searching

```
SELECT levenshtein('GUMBO', 'GAMBOL');
```

```
+-----+  
| levenshtein |  
|-----|  
|          2 |  
+-----+
```

Compare two strings with pg_trgm

```
SELECT similarity('GUMBO', 'GAMBOL');
```

```
+-----+  
| similarity |  
+-----+  
| 0.18181818 |  
+-----+
```

Let's practice!

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL

Putting it All Together

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL



Brian Piccolo

Sr. Director, Digital Strategy

Functions for manipulating data recap and review

- Common data types in PostgreSQL
- Date/time functions and operators
- Parsing and manipulating text
- PostgreSQL Extensions and full-text search

Thank you!

FUNCTIONS FOR MANIPULATING DATA IN POSTGRESQL