

Interactive - 43 - indexes on functions - soundex

You can create indexes on the output of functions then use this to quickly lookup a row that matches. An example of this is soundex - a fuzzy match for a name that is based on a phonetic lookup.

Note: If you need to have an effective name lookup there are better functions for this - search for `fuzzy-match postgresql` and there is a built in library - but the other fuzzy match functions are much more complex.

Another example would be an upper or lower case function applied to a text field.

This example is the how-to build an index using a function. So...

The function is...

```
CREATE OR REPLACE FUNCTION soundex(input text) RETURNS text
IMMUTABLE STRICT COST 500 LANGUAGE plpgsql
AS $$
DECLARE
    soundex text = '';
    char text;
    symbol text;
    last_symbol text = '';
    pos int = 1;
BEGIN
    WHILE length(soundex) < 4 LOOP
        char = upper(substr(input, pos, 1));
        pos = pos + 1;
        CASE char
        WHEN '' THEN
            -- End of input string
            IF soundex = '' THEN
                RETURN '';
            ELSE
                RETURN rpad(soundex, 4, '0');
            END IF;
        WHEN 'B', 'F', 'P', 'V' THEN
            symbol = '1';
        WHEN 'C', 'G', 'J', 'K', 'Q', 'S', 'X', 'Z' THEN
            symbol = '2';
        WHEN 'D', 'T' THEN
            symbol = '3';
        WHEN 'L' THEN
            symbol = '4';
        WHEN 'M', 'N' THEN
            symbol = '5';
```

```

        WHEN 'R' THEN
            symbol = '6';
        ELSE
            -- Not a consonant; no output, but next similar consonant will be re-recorded
            symbol = '';
        END CASE;

        IF soundex = '' THEN
            -- First character; only accept strictly English ASCII characters
            IF char ~>= 'A' AND char ~<= 'Z' THEN
                soundex = char;
                last_symbol = symbol;
            END IF;
            ELSIF last_symbol != symbol THEN
                soundex = soundex || symbol;
                last_symbol = symbol;
            END IF;
        END LOOP;

        RETURN soundex;
    END;
$$;

```

You should already have the function loaded. This function should be setup as part of your account so you should not need to run it. The file if it is not there is hw43_1.sql.

To create the index:

```
CREATE INDEX name_list_func_soundex ON name_list (soundex(real_name));
```

Then to query on this field:

```

SELECT *
    FROM name_list
    WHERE soundex(real_name) = soundex('philip schlump')
;

```

This will use the output from the function to do the query. This makes for a fast lookup.

Tags: “fuzzy match”, “soundex”, “function based index”

FilesToRun: hw43_1.sql

Validate: SQL-Select, “select ‘PASS’ as x”