DMD homework 8 (11 октября 2015 г.)

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Part A

Problem 1.

```
DROP FUNCTION print_text();
CREATE OR REPLACE FUNCTION print_text()
RETURNS text AS
$$
DECLARE
    ret text  := '';
    conc text := '';
BEGIN
    FOR i IN 1..100 LOOP
        conc := '';
        IF i % 3 = 0  THEN conc := conc || 'Fizz'; END IF;
        IF i % 5 = 0  THEN conc := conc || 'Buzz'; END IF;
        IF conc = '' THEN conc := conc || i; END IF;
        ret := ret || conc || E'\n';
    END LOOP;
    RETURN ret;
END
$$ LANGUAGE plpgsql;

SELECT * FROM print_text();
```

Problem 2-4.

```
DROP FUNCTION int_to_roman(num integer);
CREATE OR REPLACE FUNCTION int_to_roman(num integer)
RETURNS text AS
$$
BEGIN
    RETURN to_char(num, 'FMRN');
END
$$ LANGUAGE plpgsql;

DROP FUNCTION roman_to_int(roman text);
CREATE OR REPLACE FUNCTION roman_to_int(roman text)
RETURNS integer AS
$$
DECLARE
    ans integer := -1;
BEGIN
    FOR i IN 1..3999 LOOP
```

```
        IF int_to_roman(i) = roman THEN ans := i; END IF;
    END LOOP;
    RETURN ans;
END
$$ LANGUAGE plpgsql;

DROP FUNCTION r_add(num1 text, num2 text);
CREATE OR REPLACE FUNCTION r_add(num1 text, num2 text)
RETURNS text AS
$$
DECLARE
    n1 integer := roman_to_int(num1);
    n2 integer := roman_to_int(num2);
BEGIN
    RETURN int_to_roman(n1 + n2);
END
$$ LANGUAGE plpgsql;

DROP FUNCTION r_sub(num1 text, num2 text);
CREATE OR REPLACE FUNCTION r_sub(num1 text, num2 text)
RETURNS text AS
$$
DECLARE
    n1 integer := roman_to_int(num1);
    n2 integer := roman_to_int(num2);
BEGIN
    RETURN int_to_roman(n1 - n2);
END
$$ LANGUAGE plpgsql;

SELECT * FROM int_to_roman(310);
SELECT * FROM roman_to_int('CXV');
SELECT * FROM r_add('CXV', 'CX');
SELECT * FROM r_sub('CXV', 'X');
```

Part B

Problem 1.

- $\{ABCDEF\}$

- Not lossless, not dependency preserving.

- Lossless, dependency preserving.

Problem 2.

- Lossless, not dependency preserving.

- Lossless, dependency preserving.

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Problem 3.

- - 3NF
  - not BCNF

- $(A, B, C, E), (B, D)$

- $A \rightarrow D, B \rightarrow D$

- Nope.

- $(A, B, C), (B, D), (C, D, E), (E, A)$

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