json和jsonb 的区别

postSql 对 json 和 jsonb 数据格式的操作

官方文档: https://www.postgresql.org/docs/9.3/functions-json.html;
http://www.postgres.cn/docs/10/datatype-json.html#JSON-KEYS-ELEMENTS;

模糊查询:https://juejin.im/entry/586b448761ff4b00578c1b7a ####创建表

```
-- auto-generated definition
create table "UFriendsRelation"
(
    "UFID" serial not null,
    "UHashId" varchar,
    "UFriends" jsonb,
    "UGroupIds" json,
    "UFCreateTime" timestamp
);

comment on column "UFriendsRelation"."UFID" is '自增主键';

comment on column "UFriendsRelation"."UHashId" is '用户的唯一id';

comment on column "UFriendsRelation"."UFriends" is '好友
[{好友ID，好友名称，好友头像，好友备注，关系}]';

comment on column "UFriendsRelation"."UGroupIds" is '用户所在的群组ID集合
[{组群ID，组群名称,群组头像}]';

comment on column "UFriendsRelation"."UFCreateTime" is '创建时间';

-- 插入数据
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (2, 'asdf', null, null, null);
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (1, 'asdfasdf', '[{"name": "张三"}]', '[{"name": "张三"}]',
'2020-05-05 14:40:52.000000');
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (6, '123321', '[{"age": 18, "sex": true, "name": "张三"},
{"age": 18, "sex": true, "name": "李四"}]', '[{"sex":true,"name":"张
三","age":18}]', '2020-05-06 10:52:01.946950');
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (4, '123321', '[{"age": 14, "sex": true}]',
'[{"sex":true,"name":"张三","age":18},{"sex":true,"name":"李四","age":18}]',
'2020-05-05 18:23:28.265772');
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (3, '123321', '[{"age": 12, "sex": true, "name": "张三"}]',
'[{"sex":true,"name":"张三","age":18},{"sex":true,"name":"李四","age":18}]',
'2020-05-05 18:07:16.485417');
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds",
"UFCreateTime") VALUES (7, '123321', '[{"age": 16, "sex": true, "name": "张三"},
{"age": 18, "sex": true, "name": "李四"}]', '[{"sex":true,"name":"张三","age":18}]', '2020-05-06 10:53:40.019885');
INSERT INTO public."UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds", "UFCreateTime") VALUES (5, '123321', '[{"age": 28, "sex": true, "name": "张三"}, {"age": 18, "sex": true, "name": "李四"}]', '[{"sex":true,"name":"张三","age":18}]', '2020-05-05 18:53:49.371678');
```

sql 语句分析

```
explain analyze  +  (sql语句);
```

sql 查询及结果

```
-- 查询 UFriends 等于 '[{"name":"张三"}]' json类型的数据
select * from "UFriendsRelation" where "UFriends" = '[{"name":"张三"}]'::jsonb;

-- 但是同样的语句对json类型的字段好像并不起作用,报错: 操作符不存在: json = json
select * from "UFriendsRelation" where "UGroupIds" = '[{"name":"张三"}]'::json;
```

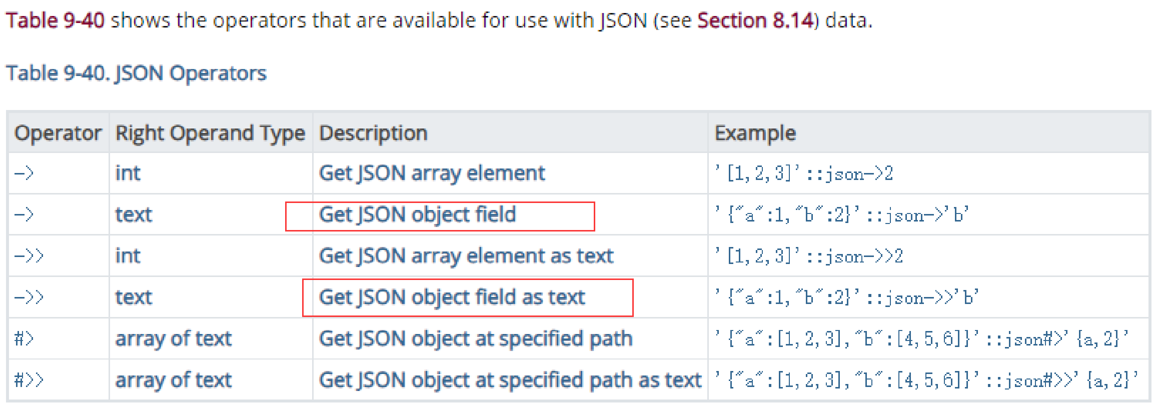


Table 9-40 shows the operators that are available for use with JSON (see Section 8.14) data.

Table 9-40. JSON Operators

Operator	Right Operand Type	Description	Example
->	int	Get JSON array element	'[1,2,3]'::json->2
->	text	Get JSON object field	'{"a":1,"b":2}'::json->'b'
->>	int	Get JSON array element as text	'[1,2,3]'::json->>2
->>	text	Get JSON object field as text	'{"a":1,"b":2}'::json->>'b'
#>	array of text	Get JSON object at specified path	'{"a":[1,2,3],"b":[4,5,6]}'::json#>'{a,2}'
#>>	array of text	Get JSON object at specified path as text	'{"a":[1,2,3],"b":[4,5,6]}'::json#>>'{a,2}'

```
-- 查询所有表中 UFriends 字段
select "UFriends" from "UFriendsRelation";
-- 查询所有表中 UFriends json(json可省略)
select "UFriends"::json from "UFriendsRelation";
-- 在所有查询结果 不为 null 的接送数据追加数组
select "UFriends"||'[{"name":"王五"},{"name":"小明"}]'::jsonb from
"UFriendsRelation";
-- 查询所有 "UFriends" 字段中下标为 0 的数据
select "UFriends"::json->0 from "UFriendsRelation";
-- 查询出的 "UFriends" 字段起别名 默认是 ?column?
select "UFriends"::json->0 "UFriends" from "UFriendsRelation";
-- 查询出的结果是否包含右边的对象,或是数组
select "UFriends"::jsonb @>'[{"name": "张三"}]'::jsonb from "UFriendsRelation";
-- 查询筛选出数组中内容包含 '[{"name": "张三"}]' 的数据
select * from "UFriendsRelation" where "UFriends"::jsonb @> '[{"name": "张三"}]';
```

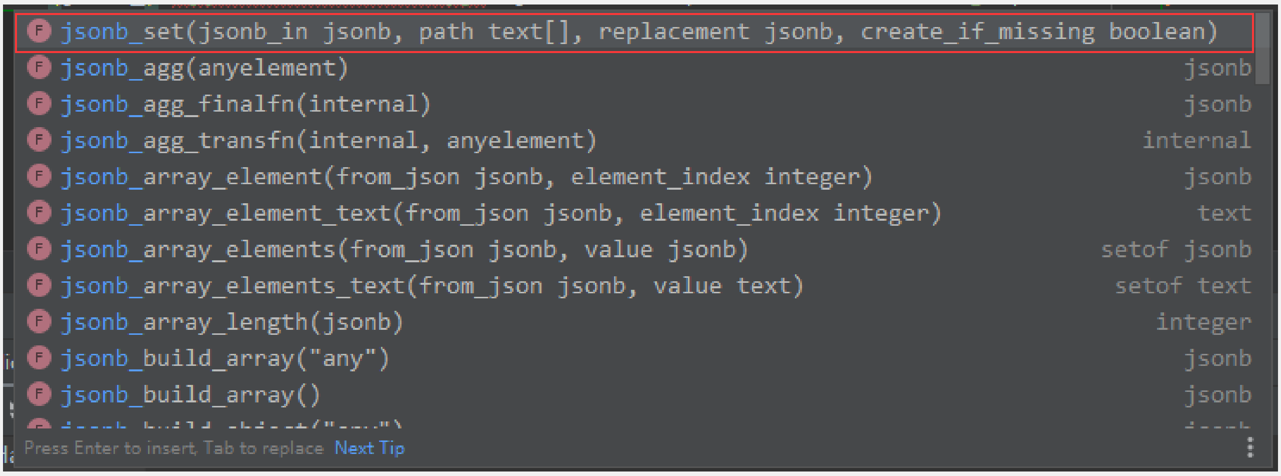
```
-- 使用 json 处理函数，求数组长度
select json_array_length("UFriends"::json) from "UFriendsRelation";
-- 查询出数组长度大于1的数据
select * from "UFriendsRelation" where json_array_length("UFriends"::json) > 1;
-- 查询jsonb数组下标为0的对象中的 age 字段 大于 14 的 UFriends (适合json和jsonb)
select "UFR"."UFriends" from (select "UFriends"::jsonb->0 "UFriends" from "UFriendsRelation") "UFR"
              where ("UFR"."UFriends" ->> 'age')::int > 14;
-- 查询出jsonb数组下标为0的对象中的 age 字段 大于 14 的 UFriends,以及其它所有表字段 (适合json和jsonb)
select * from "UFriendsRelation" where ("UFriends"::jsonb->0 ->>'age')::int > 14;
-- 查询姓名中包含若字的对象集合 -模糊匹配
select * from (select jsonb_array_elements("UFriends") "UFriend" from "UFriendsRelation") t1 where t1."UFriend" ->>'name' like '%若%';
```

sql 数据插入

```
INSERT INTO "UFriendsRelation" ("UFID", "UHashId", "UFriends", "UGroupIds", "UFCreateTime")
VALUES (2, 'asdf', '[{"age": 55, "sex": true, "name": "韩若"}]', '[{"age": 55, "sex": true, "name": "韩若"},{"age": 54, "sex": true, "name": "明瞳"}]', null);
```

sql 数据更新

```
-- 更新所有的内容
update "UFriendsRelation" set "UFriends" = '[{"name": "张三001"}]' where "UFID" = 1
-- 向原来的数组中追加数组
update "UFriendsRelation" set "UFriends" = "UFriends" || '[{"name": "张三002"}]'::jsonb where "UFID" = 1;
-- 向数组下标为0的对象的age大于20的数据，追加对象
update "UFriendsRelation" set "UFriends" = "UFriends" || '[{"name": "张三003"}]'::jsonb where ("UFriends"->0 ->> 'age')::int > 20;
```

> -- 但是有些时候我们需要的是将jsonArray 中某个特定的值给筛选出来并替换掉,而不是更新整个字段
>
> 
>
> ```
> jsonb_set(jsonb_in jsonb, path text[], replacement jsonb, create_if_missing boolean)
> jsonb_agg(anyelement)                                                          jsonb
> jsonb_agg_finalfn(internal)                                                    jsonb
> jsonb_agg_transfn(internal, anyelement)                                     internal
> jsonb_array_element(from_json jsonb, element_index integer)                    jsonb
> jsonb_array_element_text(from_json jsonb, element_index integer)                text
> jsonb_array_elements(from_json jsonb, value jsonb)                       setof jsonb
> jsonb_array_elements_text(from_json jsonb, value text)                    setof text
> jsonb_array_length(jsonb)                                                    integer
> jsonb_build_array("any")                                                       jsonb
> jsonb_build_array()                                                            jsonb
> jsonb_build_object("any")                                                      jsonb
> Press Enter to insert, Tab to replace  Next Tip
> ```

```
-- 将数组下标为0的sex 属性设置为false, 当最后一个值为 true时, 若sex没有或是null, 就会追加该属性
update "UFriendsRelation" set "UFriends" =
(jsonb_set("UFriends",'{0,sex}','false'::jsonb,true)) where "UFID" = 4;
-- 若下标为0 的数组没有name这个属性,就会给这个数组追加该属性
update "UFriendsRelation" set "UFriends" = (jsonb_set("UFriends",'{0,name}','"张三"'::jsonb,true)) where "UFID" = 4;
```