

Managing Partitions - Hash

Let us understand how to manage partitions using table `users_hash_part` which is partitioned using `hash`.

- We would like to divide our data into 8 hash buckets.
- While adding partitions for `hash partitioned table`, we need to specify modulus and remainder.
- For each and every record inserted, following will happen for the column specified as partitioned key.
 - A hash will be computed. Hash is nothing but an integer.
 - The integer generated will be divided by the value specified in `modulus`.
 - Based up on the remainder, the record will be inserted into corresponding partition.

```
%load_ext sql
```

```
The sql extension is already loaded. To reload it, use:
%reload_ext sql
```

```
%env DATABASE_URL=postgresql://itversity_sms_user:sms_password@localhost:5432/itversity_sms_db
```

```
env:
DATABASE_URL=postgresql://itversity_sms_user:sms_password@localhost:5432/itversity_sms_db
```

✖ Error

We cannot have a default partition for hash partitioned table.

```
%%sql
```

```
CREATE TABLE users_hash_part_default
PARTITION OF users_hash_part DEFAULT
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
(psycopg2.errors.InvalidTableDefinition) a hash-partitioned table may not have a default
partition
```

```
[SQL: CREATE TABLE users_hash_part_default PARTITION OF users_hash_part DEFAULT]
(Background on this error at: http://sqlalche.me/e/13/f405)
```

i Note

Let us add partitions using modulus as 8. For each remainder between 0 to 7, we need to add a partition.

```
%%sql
```

```
CREATE TABLE users_hash_part_0_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 0)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

```
%%sql
```

```
CREATE TABLE users_hash_part_1_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 1)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_2_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 2)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_3_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 3)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_4_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 4)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_5_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 5)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_6_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 6)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

%%sql

```
CREATE TABLE users_hash_part_7_of_8
PARTITION OF users_hash_part
FOR VALUES WITH (modulus 8, remainder 7)
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
Done.
```

```
[]
```

```
%%sql
```

```
INSERT INTO users_hash_part
(user_first_name, user_last_name, user_email_id, created_dt)
VALUES
('Scott', 'Tiger', 'scott@tiger.com', '2018-10-01'),
('Donald', 'Duck', 'donald@duck.com', '2019-02-10'),
('Mickey', 'Mouse', 'mickey@mouse.com', '2017-06-22')
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
3 rows affected.
```

```
[]
```

Note

`user_id` is populated by sequence. The hash of every sequence generated integer will be divided by modulus (which is 8) and based up on the remainder data will be inserted into corresponding partition.

```
%%sql
```

```
SELECT * FROM users_hash_part
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
3 rows affected.
```

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_passw |
|---------|-----------------|----------------|------------------|----------------------|------------|
| 1 | Scott | Tiger | scott@tiger.com | False | No |
| 3 | Mickey | Mouse | mickey@mouse.com | False | No |
| 2 | Donald | Duck | donald@duck.com | False | No |

```
%%sql
```

```
SELECT * FROM users_hash_part_0_of_8
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
1 rows affected.
```

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|-----------------|----------------------|---------------|
| 1 | Scott | Tiger | scott@tiger.com | False | None |

```
%%sql
```

```
SELECT * FROM users_hash_part_1_of_8
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
1 rows affected.
```

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_passw |
|---------|-----------------|----------------|------------------|----------------------|------------|
| 3 | Mickey | Mouse | mickey@mouse.com | False | No |

```
%%sql
```

```
SELECT * FROM users_hash_part_2_of_8
```

```
* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
1 rows affected.
```

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|-----------------|----------------------|---------------|
| 2 | Donald | Duck | donald@duck.com | False | Non |

%%**sql**

SELECT * FROM users_hash_part_3_of_8

* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
0 rows affected.

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|---------------|----------------------|---------------|
|---------|-----------------|----------------|---------------|----------------------|---------------|

%%**sql**

SELECT * FROM users_hash_part_4_of_8

* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
0 rows affected.

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|---------------|----------------------|---------------|
|---------|-----------------|----------------|---------------|----------------------|---------------|

%%**sql**

SELECT * FROM users_hash_part_5_of_8

* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
0 rows affected.

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|---------------|----------------------|---------------|
|---------|-----------------|----------------|---------------|----------------------|---------------|

%%**sql**

SELECT * FROM users_hash_part_6_of_8

* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
0 rows affected.

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|---------------|----------------------|---------------|
|---------|-----------------|----------------|---------------|----------------------|---------------|

%%**sql**

SELECT * FROM users_hash_part_7_of_8

* postgresql://itversity_sms_user:***@localhost:5432/itversity_sms_db
0 rows affected.

| user_id | user_first_name | user_last_name | user_email_id | user_email_validated | user_password |
|---------|-----------------|----------------|---------------|----------------------|---------------|
|---------|-----------------|----------------|---------------|----------------------|---------------|