

Temporary Tables

Final Presentation

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5/14/2018

Recall: What is a Temporary Table?

Temporary table: A table automatically dropped at the end of a **session**, or the current **transaction**

Visibility: current **session** (for both table definition and data)

-- Create a temporary table

```
CREATE TEMPORARY TABLE temp_location
```

```
(  
  city VARCHAR(80),  
  street VARCHAR(80)  
)
```

```
ON COMMIT DELETE ROWS;
```

Transaction Level:

ON COMMIT

- PRESERVE ROWS
- DELETE ROWS
- DROP

Goals

- 75%
 - Add support for temp tables from **Parser** and **Planner** ✓
 - Drop table and indexes when closing the **session** ✓
- 100%
 - Change **visibility** of temporary table to current session only ✓
- 125%
 - ON COMMIT:
 - PRESERVE ROWS ✓
 - DELETE ROWS
 - DROP ✓
 - Constraints: foreign keys ✓
 - Compatibility: GLOBAL & LOCAL ✓

Progress (75% & 100%)

- Implemented namespace by adding a new column in pg_table
 - Modified corresponding parser, planner, and executor files to support the functionality
 - Only supported two namespace: public & temp
 - Desired visibility guaranteed

- Created a session namespace for every connection
 - Use socket id to guarantee the reusability of namespace and uniqueness

Progress (100% Cont.)

- Peloton team added schema support!
 - We integrated our namespace implementation with theirs without breaking temporary table functionalities

Progress (125 %)

- Constraints: foreign keys
 - Added support to search foreign table given its schema name
 - Cannot build foreign keys between temporary table and permanent table
- On Commit:
 - Added support to define on commit behavior in create table statement
 - Temporary tables can be either dropped or preserved based on the option
 - Haven't implemented "delete rows"
- Compatibility: GLOBAL & LOCAL
 - Automatically supported by Postgres parser.

Code Quality

- Where to pass session namespace?
 - Should I pass along as an argument?
 - Can I add the session namespace as a member variable in all the classes involved?
 - What default value I should give for session namespace?
 - Confusion between `schema_name` and `session_namespace`

Testing

- Parser:
 - [TEMP | TEMPORARY]
 - [GLOBAL | LOCAL]
 - [ON COMMIT PRESERVE ROWS | DELETE ROWS | DROP]

Testing

- Behavior:
 - TableVisibilityTest
 - A temp table created by a session is invisible to another session
 - A temp table will make the permanent table with the same name invisible
 - but can still access by specifying “public” namespace
 - ForeignKeyTest
 - a permanent table cannot reference a temp table
 - a temp table cannot reference a permanent table
 - a permanent table can reference a hidden permanent table by “public.table”
 - OnCommitOptionsTest
 - [ON COMMIT PRESERVE ROWS | DELETE ROWS | DROP]

Future Work

- Add Delete Rows to the onCommitAction in traffic cop
- Add more comprehensive tests to explore the behavior of temporary table