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)

```sql
-- 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
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