

Descriptor Area

Informix had the concept of descriptors. They were added to postgres in V9.0.

Cursors

The code generator and other embedded SQL code use a cursor for retrieving records. Infx has EXEC SQL CLOSE and EXEC SQL FREE statements to close a cursor and free its resources. psql has the EXEC SQL CLOSE statement which according to the doc frees all resources related to the cursor. The psql SQL doc has no FREE statement listed.

Informix allows a cursor to be declared and opened in one routine and fetched in a different routine. PostgreSQL does not allow this. A "cursor undefined" error is generated by the precompiler in PostgreSQL.

Date/Time Utility Functions

- many functions in timeutil library call Infx functions such as dtcvasc for which there is no equivalent in psql/ecpg
- some Infx functions are not needed in psql because the "+" and "-" operators work for timestamp data types
- OHD will be creating new library functions to work with the generated code

Postgres Key Words

The following is a list of column and table names from the IHFS db which are postgres or SQL standard "key words":

action
admin
date
desc
level
location
name
notify
number
owner
source
state
storage
type
value

Using these key words in SQL statements may cause problems as noted below.

Informix esql statements using the key word "value" such as
EXEC SQL SELECT value FROM ...

will generate a syntax error and must be rewritten as

```
EXEC SQL SELECT "value" FROM ...
```

Note that if the above statement is written using single quotes as in

```
EXEC SQL SELECT 'value' FROM ...
```

there is no syntax error. However, a runtime error of -206 is generated.

Note also that if "value" is used in a prepared statement, the double quotes (") are not necessary.

The statement

```
EXEC SQL SELECT county INTO :county FROM Location ...
```

compiles and executes properly without quoting the key word "location".

The statement

```
EXEC SQL SELECT state INTO :state FROM Location ...
```

compiles and executes properly without quoting the key words "state" and "location".

The statement

```
EXEC SQL SELECT focalpoint INTO :fp FROM Admin ...
```

compiles and executes properly without quoting the key word "admin".

The statement

```
EXEC SQL SELECT level INTO :level FROM RiverStat ...
```

compiles and executes properly without quoting the key word "level".

According to the documentation, quoting a key word makes it case-sensitive. Unquoted key words in postgres are folded into lower case. Note that folding key words into lower case is against the SQL standard. Appendix C of the postgres online documentation contains the full list of key words.

In CREATE TABLE statements, Informix allows fields to be named "old" and "desc".

PostgreSQL will generate an error and the CREATE TABLE statement will fail if an attempt is made to use these as field names.

Sorting Order

Assume that the database has a Location table with the following list of stations:

AAAO2
BLUO2
ZAPO2
xxxo2

If the statement, "SELECT lid FROM Location ORDER BY lid" is executed, the following sorted lists result:

| Postgres | Informix |
|----------|----------|
| ----- | ----- |
| AAAO2 | AAAO2 |
| BLUO2 | BLUO2 |
| xxxo2 | ZAPO2 |
| ZAPO2 | xxxo2 |

The sorted list for postgres above is what will be generated with the AWIPS OB6 install.

The sort order is determined by the locale variables described in Chapter 20 of the postgresql online documentation.

Note that mixing upper and lower case strings in the lid field of the Location table will cause some stations to not be found by the shefdecoder. This is because shefdecode reads the list of lid's into an array and then traverses the list using a binary search with a C strcmp function call. When the binary search finds the lower case string, it will move the pointer to the list in the wrong direction and the station will not found.

Note that the same problem occurs with station identifiers containing an underscore ("_").

Vacuum and Open Transactions

Q: If a java program connects to the DB and does "begin;" and then internally does a "sleep 6 days", does that cause any issues other than eating a connection to the database?

A: In recent versions of PG, no. Before about 8.3 it was a Really Bad Idea because the open transaction would prevent VACUUM from reclaiming storage.

It's *still* a Really Bad Idea to begin a transaction, do something, and then sleep 6 days. But "BEGIN" without any following commands has been fixed to be harmless, mainly because there are so many badly designed clients that do exactly that.

Precision Problem

Q: I'm using a COPY statement to load data into a PostGIS. The issue I am facing is that if I define fields with the REAL type, the COPY will only preserve 4 decimals which is not sufficient for my application.

A: If you use NUMERIC, you can define the precision you need, and be sure of accurate calculation.

.pgpass File

Points to be considered when setting .pgpass file.

1. It should be created in postgres user home directory.
2. It should disallow any access-level to world or group.
3. Location can be controlled with PGPASSFILE environment variable.

Roles

Q: Shouldn't 'carlos' be a superuser based on him being a member of a role which has createdb and superuser rights granted to it?

A:

No. Superuserness is quite intentionally not inheritable.

It's perhaps a bit more debatable whether other role privilege bits such as CREATEDB ought to be inheritable. The position we've taken though is that only grant-able rights inherit via GRANT ROLE.

This is documented under CREATE ROLE:

The INHERIT attribute governs inheritance of grantable privileges (that is, access privileges for database objects and role memberships). It does not apply to the special role attributes set by CREATE ROLE and ALTER ROLE. For example, being a member of a role with CREATEDB privilege does not immediately grant the ability to create databases, even if INHERIT is set; it would be necessary to become that role via SET ROLE before creating a database.