CS 186 C/PostgreSQL Review

CS186 Supplemental Session
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PostgreSQL: The Big Picture
PostgreSQL processes

- Manages multiple client connections
  - Starts one backend process (`postgres`) per client.
- Backends communicate via shared memory
  - Initialized by `postmaster`
- Pros:
  - Hard separation of client and server for good security/reliability
  - Works well in a networked environment
PostgreSQL processes - Cont.

- **Pros:**
  - Portable across most flavors of Unix

- **Cons:**
  - Dependence on shared memory for inter-server communication limits scalability
    - A single server site can't be spread across multiple machines
Bare Backend (Postgres)

- Bare backend mode is the best mode to run in if you are debugging!
- Can attach debuggers (gdb, ddd) to the postgres process to debug your code

```
$ postgres test
DEBUG: database system was shut down at 2004-09-13 14:16:13 PDT
DEBUG: checkpoint record is at 0/181E50
DEBUG: redo record is at 0/181E50; undo record is at 0/0; shutdown TRUE
DEBUG: next transaction id: 104; next oid: 21520
DEBUG: database system is ready

POSTGRES backend interactive interface
$Revision: 1.245.2.2 $ $Date: 2002/02/27 23:17:01 $
```

backend>
Debug Statements

• **Log Messages**
  - `elog(DEBUG, ... );`
  - Similar to printf, but flushes output to the logfile
  - Can define preprocessor conditionals

• **Assert**
  - `Assert(condition);`
  - If condition is false, raises an (uncaught) FailedAssertion exception.
Debuggers

• **GDB**
  - Text based
  - `gdb postgres`

• **DDD**
  - Graphical frontend to GDB
  - `ddd postgres`
Tutorial on HW1

- **Quota Problems:**
  - Delete hw0 data
  - Use /home/tmp
- Use the supplied scripts
- Use the TestStub
Resources

- Resource page on the course website
- man/info pages for gdb, ddd
- developer.postgresql.org
- Newsgroup: ucb.class.cs186
- TAs