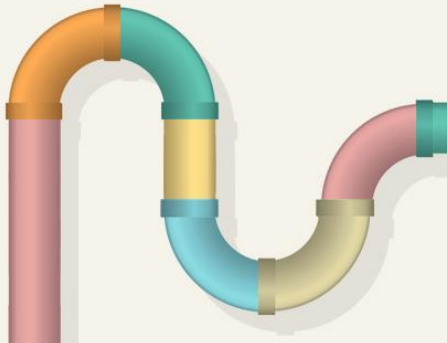
Linking LTO and Make

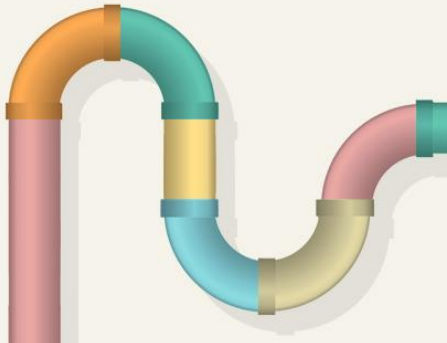
John Ravi
jjravi@ncsu.edu

Google Summer of Code

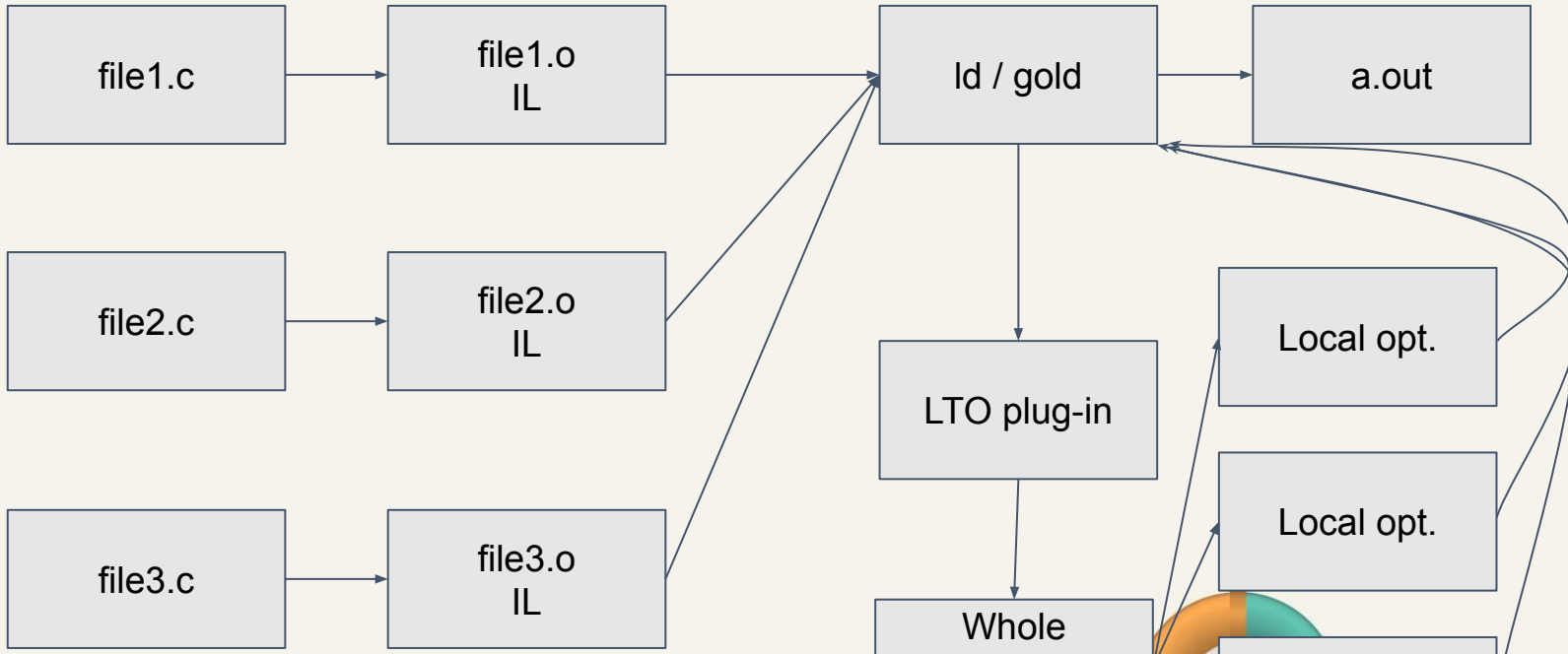


Outline

- GCC and Link-time optimization
- GNU Make Jobserver
- GCC Jobserver Integration
- Final Steps

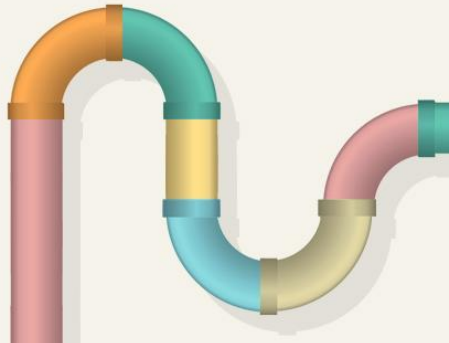


GCC LTO Parallelism (WHOPR)



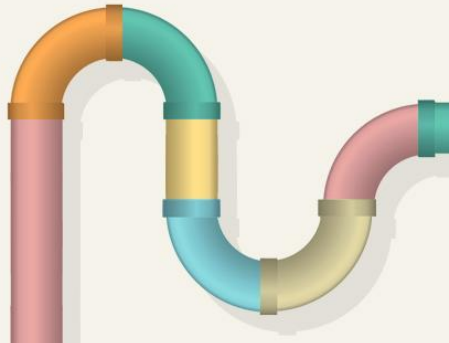
GNU Make Jobserver

- make -j *N*, spawns at most *N* concurrent jobs
- Uses *N* tokens



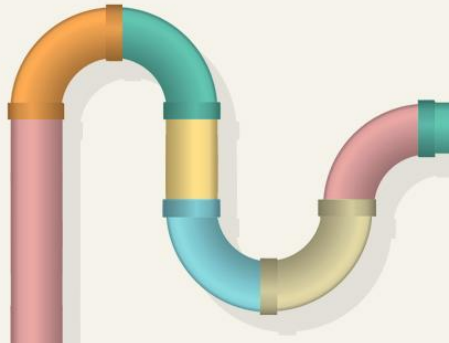
GCC LTO Modifications

- Added libcody
- Set an environment variable to utilize jobserver
- LTO Compilation requests are sent to the jobserver



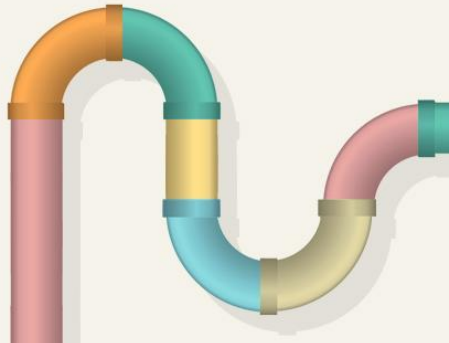
GNU Make Modifications

- Added libcody (ported some make internals to C++)
- Connects to GCC and can spawn LTO compilations



Final steps

- Enable and verify performance with parallelism
- Backport libcody to support C



Thank You

gcc:devel/lto-offload
github.com/gcc-mirror/gcc

Nathan Sidwell's communication library:
github.com/urnathan/libcody

make:lto-hack
github.com/jjravi/make