

C++ as a service — rapid software development and dynamic interoperability with Python and beyond

Interactive C++: cling and clang-repl

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Status

- ❖ LLVM9 Upgrade
 - ❖ Completed.
 - ❖ Cling v0.9 and ROOT v6.24 released
- ❖ Reduced patches from our clang fork
 - ❖ D36368 (fix printing array template args) [Pratyush]
 - ❖ Removed 2 patches due to D92248 (Inform the consumer on invalid template instantiations)
 - ❖ Remove 1 patch from the llvm9 upgrade (replaceStmts in clang) [Jonas Hahnfeld]
- ❖ Progress on clang patches:
 - ❖ Working on D41416 (lazy pcm template deserialization)
 - ❖ D77598 (Integral template argument suffix printing) [Pratyush]

Status

- ❖ Proposed a very limited version of clang-repl following the design of cling: [\[D96033\]](#). Most comments are resolved
- ❖ Started working on new design of the error recovery system based on the suggestions in D96033 which suggests implementing Partial Translation Units which track rigorously the state changes.
- ❖ That new design will also likely remove the need for most of our custom patches in CodeGen (around 1 / 3 of the total).

Status

- ❖ Ioana will give a talk on CUDA and AD

Plans

- ❖ Accelerate upstreaming clang patches
- ❖ Release Clad
- ❖ Second revision of the interoperability spec
- ❖ Investigate crashes in Cling with the thrust library [Ioana]
- ❖ Automatically differentiate the CUDA kernel s(including computation scheduler) [Ioana]
- ❖ Resolve issues with Clad argument passing (“-fdump-derived-fn” combined with “fdump-source-fn-ast”) [Ioana]

CaaS Open Projects

- ❖ Patches against clang.git
 - ❖ Implement FileManager uncaching
 - ❖ Adapt the user of invalidateCache to its new signature
 - ❖ Mark the file entry invalid, until reread
 - ❖ Propagate cache flags from LookupFile() to FileManager::getFile()
 - ❖ Pass the OpenFile flag also to DirectoryLookup
 - ❖ Do not load the source file just to get an irrelevant SourceLoc (ROOT-7111)
 - ❖ Allow interfaces to operate on in-memory buffers with no source location info [Pratyush Das]
- ❖ Open projects are tracked in out open projects page.

Next Meetings

- ❖ Monthly Meeting — 6th May, 1700 CET / 0800 PDT
- ❖ Tentative talk schedule:
 - ❖ Compile Server Technology, William Moses, MIT, June
 - ❖ OrcV2, Lang Hames, Apple, July

If you want to share your knowledge/experience with interactive C++ we can include presentations at an upcoming next meeting

Thank you!