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 of Cling development

- ✣ Currently Cling is being upgraded to LLVM9

  - ✣ Almost complete -- we have 3 failing tests

    - ✣ The relevant branches <u>cling</u>, <u>clang</u>, <u>llvm</u>

  - ✣ Integration in ROOT — ~12 failing tests (likely correlated)

    - ✣ ROOT pull request - <u>PR6385</u>

- ✣ <u>Work on GitHub CI Actions [Pratyush Das]</u>

  - ✣ The idea is to move the travis and appveyor builds to the more robust GitHub actions system

Status

* Presented two related posters for the [LLVM Dev Meeting in October](#)
  * Posters well received. Good amount of feedback. Each has a 5 min video.
  * They will be public soon.
* Prepared a cling blog post for llvm.org (suggested by Chris Lattner)
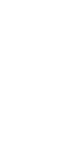 * The link to the draft can be found here. Suggestions are welcome!

Tentative Plans Until End of The Year

✤ Deploy project website.

✤ Develop initial version of Clang-Repl

✤ Propose a patch against clang for libIncremental (aka clang IncrementalAction)

✤ Draft a technical specification of the language interoperability layer. It will focus towards python (and possibly one more language)

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]
* Infrastructure
  * GitHub PR Code Coverage — see [this example](#).
  * Automatically upload nightlies to a special release tag — see [this example](#).
* Packaging
  * Improve cpt -- fix deb package creation; use python instead of calls to mv, wget, etc.

Proposed Next Meetings

✤ Week of 30th of November — please fill in the <u>doodle poll</u>

✤ Week of 11th of Jan

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

Thank you!