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

Interactive C++: cling and clang-repl

Vassil Vassilev

06.07.2023

Status. Cling

- Jonas Hahnfeld moved cling to using the llvm monorepo
- He works on reducing the ROOT patches in llvm/clang: PR13072, PR13099, PR13123

Status. Clang-Repl

- Incremental Input (RFC)
  - D143142 — Enable Lexer to grow its buffer
  - D143144 — Add TryGrowLexerBuffer/SourceFileGrower
  - D143148 — Add basic multiline input support
- Value Handling (RFC)
  - D146809 — [clang-repl] Implement Value pretty printing for containers
  - D152109 — [clang-repl] Improve the clang-repl documentation **Landed!**
  - D154382 — [ClangRepl] support code completion at a REPL

The goal is to provide better stability and robustness which can later cling can reuse.

Status. InterOp

- Updated the ReadMe GitHub file
- Implemented a way to get the class template instantiation arguments
- Properly implement placement new via InterOp::Construct
- Implemented better handling of typedefs
- Added doxygen-style documentation
- libInterOp-based cppyy: passes 207/504 tests.

Status. Clad

- Initial support of forward vector mode AD. Array support to come.
- Clad is able to run one of the major LHC higgs combination benchmarks and show improvements in minimization time.

Status. Xeus-Clang-Repl/Xeus-Cpp

- Progressing in embedding CppInterOp into xeus-clang-repl
- Progress in implementing the inspect request in xeus-cpp
- Progress in implementing the web assembly support

Upstreaming Patches

- Spreadsheet tracking the progress here.
- Total amount of upstreamed cling patches 26(26+0) out of 52 upstreamable.

CaaS Open Projects

- Open projects are tracked in our open projects page.

Next Meetings

- Monthly Meeting — 3rd August, 1700 CET/0800 PDT

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

Thank you!