Project Proposal

C++ Just-in-time compilation

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Size of the project: 1 student

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Abstract

libVersioningCompiler is a library developed at Politecnico di Milano. Its purpose is to allow a program to compile external source code during its execution, dynamically load it and execute it. Goal of the project is to extend its implementation to exploit LLVM and clang APIs for Just-in-time compilation.

Pre-requirements

- Intermediate knowledge of C++11 language and idioms
- Basic Linux skills

Involved Technologies and Frameworks

- C++11
- Linux
- LLVM

Detailed description

Abstract

libVersioningCompiler is a library developed at Politecnico di Milano whose purpose is to allow a C++ program to compile external source code during its execution, dynamically load it and execute it. It can be used to perform dynamic software update, continous optimization, code specializaiton, and so on. At the moment this library supports several compilers through system calls, and the clang-as-a-library paradigm.

All the above mentioned implementations rely on shared objects files to store the code version. Just-in-time compilers use to keep all the code in memory without emitting any file on disk. Provide an implementation of the Just-In-Time compiler for C++ within libVersioningCompiler via the LLVM and clang APIs.