Ciências ULisboa | Informática

Compiler Techniques 2024/25
AGUDA M4: Code Generation
Deliver by May 26, 2025

For the fourth and last milestone (M4) of the compiler we shall convert AGUDA into LLVM code.

Once again M4 is delivered as a docker container (max 1MB), so that I may run your code on my machine, regardless of the programming language and the versions of the software you use.

You are expected to

- Write a code generator for the AGUDA programming language that outputs LLVM code
- Write a short how-to report, in `md` format

What we *need not* implement:

- Arrays and array operations
- Strings
- Top-level declarations initialised to non-constants

Requirements:

- The compiler reads a source file (an `.agu` file) from the command line and outputs an `.ll` file *in the same directory*
- Code is generated only for programs that pass the validation phase of the compiler
- You compiler should pass as many tests as possible. Tests are taken from `https://git.alunos.di.fc.ul.pt/tcomp000/aguda-testing`.
- Include this folder as a git repository in your deliverable, so that I may "`git pull`" before building the container

The testing infrastructure should

- Run the LLVM code (the easiest way is by calling the `lli` LLVM interpreter from within the testing infrastructure)
- Compare the output of running the LLVM code against the contents of *the first line* of the `expect` file in the same directory
- A test passes if the output and the the first line of the `expect` file coincide, and fails otherwise

The how-to report should include:

- How to update your tests (by git pulling from aguda-testing)
- How to build your compiler
- How to run the whole test suite (valid and invalid programs)
- How to run a particular test
- How to interpret the testing output (how many tests passed, which failed)
- A brief description of how you implemented short-circuit boolean expressions (or why you did not follow this approach)
- If your compiler does not pass all tests, explain why
- Name you report `aguda-M4.md`; place it in the top folder of your deliverable