
Compiler Construction Project WS11/12

Project task F. Intermediate Representation

In this project phase you will implement the transformation of ASTs into the intermediate program representation FIRM. There will be an introduction to FIRM in the lecture on 2011-12-09. To get started:

- Download, `./configure` and `make` the version of LIBFIRM provided on the lecture homepage.
- Download and study the provided example programs (`firm_examples.tgz`) to gain some intuition about the LIBFIRM API. The examples show how to directly construct FIRM representations for small but relevant code fragments.
- `make` those examples to test your LIBFIRM installation. You might want to adapt the paths in `config.mak`.
- Execute the example programs and study the generated `.vcg` files using `YCOMP`.

Now, connect your front end to LIBFIRM, i.e. implement a systematic FIRM construction from your AST. The main steps are the following:

1. Construct a type for each class.
2. Construct an entity for each field within each class.
3. Construct a method entity and a program graph for each method.

Project task G. Compiler Optimizations

Implement the following optimizations as presented in the lecture:

1. constant propagation
2. common subexpression elimination
3. control-flow simplification

Of course you are free to add additional program optimizations to your compiler. Please check in your solution into your repository until 2011-01-12, 12:00, noon.