C de analysis *and* transf rmation

Homework H9

1 Description

Write an LLVM pass starting from the code you have developed for H8.

The goal of this assignment is to improve the compilation time of your H8.

2 Testing your work

`H9.tar.bz2` includes the C program you need to test your work.

To test your work, go to `H9/tests/test0`. First, you need to check your H9 work is correct. To this end, run `make check`. If the output contains `Test passed!`, then your pass is correct. If your pass is not correct, then you cannot measure the quality of your work.

To check the quality of your work, run `make clean ; make`. This command will invoke your pass and will measure

1. the compilation time and

2. the number of invocations of CAT functions executed at run-time by the bitcode generated by your pass.

You can obtain up to 20 points for this homework.

- To obtain the first 5 points, your compilation time needs to be lower than 4 seconds.

- To obtain 5 more points, your H9 needs to have a compilation time lower than 2 seconds and a number of invocations lower than or equal to 4606448.

- Finally, to obtain 10 more points, your H9 needs to provide a solution with compilation time lower than 1.06 seconds with a number of invocations lower than or equal to 4603712.

3 What to submit

Submit via Canvas the C++ file you've implemented for H9 (CatPass.cpp).

For your information: my solution for H9 added 39 lines of C++ code to my H8 (computed by `sloccount`).

4 Homework due

12/09 at noon

Good luck with your work!