

LLVM IR

The goal of this assignment is to get familiar with the LLVM IR.

1 Environment

For this assignment, you need to clone the assignment repo from <https://github.com/Systems-IIITD/CSE601.git>.

Run `git clone https://github.com/Systems-IIITD/CSE601.git` to clone the assignment repository.

The assignment repository contains the source code of LLVM and the “tests” folder that contains the sample program “array.c”.

2 Building and generating IR for “array.c”

Follow the steps in README.md file to install the LLVM compiler. After the installation is done, you can execute “make” in the “tests” folder to generate the LLVM IR for “array.c”. The make command will dump the IR into the “array.ll” file. Inspect both “array.ll” and “array.c” files and try to correlate them.

3 Turn in

List all the different instructions that are present in the “array.ll” file. Report your understanding of the semantics of these instructions. For each instruction, explain what are all the operands using an example. You can take help from the LLVM reference manual at <https://llvm.org/docs/LangRef.html>.

3.1 How to submit.

To be done individually. Submit your handwritten report in the class after the lecture. Please feel free to post any installation-related queries on the course page.